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Lise Marie Wollan Porsanger

Teachers' Risk and Safety Management in Physical Education: A Professional Practice?

Doctoral thesis

NTNU
Norwegian University of Science and Technology
Thesis for the Degree of
Philosophiae Doctor
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Department of Teacher Education

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Contents

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Benevolence is described as an inclination toward kindness and as a disposition to do good. This thesis is written thanks to the benevolence of the people who made it possible to conduct these studies. I wish to thank them all.

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Lise Marie Wollan Porsanger

Abstract

This doctoral thesis concerns teachers' risk and safety management in school physical education in Norway. The purpose of the thesis is to generate research-based knowledge about teacher management of physical risk and safety in physical education that can potentially contribute to the development of educational policy, theory, and practice.

Using a mixed-methods research approach along with a hybrid, partly planned partly emergent, design, data were generated in two main phases and through three sub-studies, including document analysis, interviews, and survey. The doctoral thesis comprises four published research articles and a synopsis.

Article I reports the results of a document analysis that examined how teachers' risk and safety management in physical education is constructed in five regulative policy documents. The following three articles address primary and lower secondary teachers' perspectives and reports on risk and safety management in physical education. Article II provides the results from interviews with teachers and explores how teachers develop their risk and safety management knowledge. Articles III and IV have a mixed-methods design in their reports. They integrated those results with the interview and survey results. Article III explores how teachers perceive risk and safety management in their teaching physical education. Article IV explores and strives for an understanding of the aspects that characterize teachers' risk and safety management practice in physical education, along with how teachers relate their practice to risk and safety management.

This study is relevant due to a scarcity of empirical investigations of teachers' risk and safety management in school physical education, and what seems to be a lacking field of research in Norway. Also, the critical examination of regulative policy that targets physical risk and safety in physical education in Norway seems scarce. Therefore, this thesis seeks to contribute to the field of risk and safety management in physical education with a focus on the Norwegian context.

The synopsis incorporates an elaboration of previous research and literature, the guiding theoretical framework, and the research philosophy underpinning the research. The coherence between the philosophical position, research design, methods, and analytical framework are further elaborated and discussed. The study's findings are presented and summarized before a discussion of the research problem. The thesis is then rounded out with conclusions that address the study's limitations and opportunities for further research.

Sammendrag (Norwegian)

Denne doktoravhandlingen handler om læreres risiko- og sikkerhetsarbeid i skolefaget kroppsøving i Norge. Hensikten med avhandlingen er å skape forskningsbasert kunnskap om læreres arbeid med fysisk risiko- og sikkerhet i kroppsøving som mulig kan bidra til utviklingen av utdanningspolitikk, teori, og praksis.

Ved å bruke en mikset metode tilnærming og et delvis planlagt og delvis fremvoksende design, ble data produsert i to hovedfaser og gjennom tre delstudier som inkluderer dokumentanalyse, intervju, og spørreundersøkelse. Doktoravhandlingen omfatter fire publiserte forskningsartikler og en kappe. Artikkel I presenterer resultat fra dokumentanalysen som undersøkte hvordan læreres risiko- og sikkerhetsarbeid blir konstruert i fem styringsdokumenter. De følgende tre artiklene omhandler barne- og ungdomsskolelæreres perspektiver og rapporter angående risiko- og sikkerhetsarbeid i kroppsøving. Artikkel II presenterer resultat fra intervju med lærere og undersøker hvordan lærere utvikler sitt risiko- og sikkerhetsarbeid kunnskap. Artikkel III og IV har et mikset-metode design og integrerer resultat fra både intervju og spørreundersøkelse med lærere. Artikkel III undersøker hvordan lærere oppfatter risiko- og sikkerhetsarbeid i deres undervisning i kroppsøving. Artikkel IV undersøker og forsøker å forstå hva som kjennetegner læreres risiko- og sikkerhetsarbeid praksis i kroppsøving og hvordan de relaterer sin praksis til risiko- og sikkerhetsarbeid.

Studiet er relevant og aktuelt på flere nivå, både som følge av en mangel på empiriske undersøkelser av læreres risiko- og sikkerhetsarbeid i kroppsøving internasjonalt, og hva ser ut til å være et ikke eksisterende forskningsfelt i Norge. Det ser likeledes ut til å være en mangel på kritiske analyser av styringsdokumenter som adresserer læreres arbeid med fysisk risiko og sikkerhet i kroppsøving i Norge. På denne måten søker avhandlingen å bidra til forskningsfeltet risiko- og sikkerhetsarbeid i kroppsøving med utgangspunkt i en norsk kontekst.

Kappen utdyper tidligere forskning og litteratur som omhandler læreres risiko- og sikkerhetsarbeid i kroppsøving, det veiledende teoretiske rammeverk, og dens vitenskapsfilosofiske posisjon. Sammenhengen mellom avhandlingens vitenskapsfilosofiske posisjon, metodologi og design, forskningsmetoder, og analytiske rammeverk, er videre forklart og diskutert. Studiens samlede funn er presentert og oppsummert. En diskusjon av studiets forskningsproblem følges av en konklusjon som adresserer studiets begrensninger og muligheter for fremtidig forskning.

List of Abbreviations

CDA	Critical discourse analysis
CPD	Continuous professional development
ECTS	European Credit Transfer and Accumulation System
HK-dir	Directorate for Higher Education and Skills [Direktoratet for høyere utdanning og kompetanse]
HR	Supreme Court [Høyesterett]
MER	Ministry of Education and Research [Kunnskapsdepartementet]
MMR	Mixed-methods research
NESH	The National Committee for Research Ethics in the Social Sciences and the Humanities
NSD	Norwegian Centre for Research Data
NTNU	Norwegian University of Science and Technology
PE	Physical education
PETE	Physical education teacher education
RSM	Risk and safety management
SRA	Society for Risk Analysis
Udir	Directorate for Education and Training [Utdanningsdirektoratet]

Education Act	Act relating to primary and secondary education [Opplæringsloven]
Personal Data Act	Act relating to the processing of personal data [Personopplysingsloven]
Research Ethics Act	The act concerning the organization of work on ethics and integrity in research [Forskningsetikkloven]
Working Environment Act	Act relating to working environment, working hours and employment protection, etc. [Arbeidsmiljøloven]

List of Tables and Figures

List of Tables

List of Figures

List of Publications

Article I

Porsanger, L. (2020). The reconstruction of physical education teachers: A critical discourse analysis of regulative texts. *Journal for Research in Arts and Sports Education*, *4*(1), 76-91. https://doi.org/10.23865/jased.v4.2134

Article II

Porsanger, L. (2021). Risk and safety management in physical education: Teachers' knowledge. *Physical Education and Sport Pedagogy*, 1–13. https://doi.org/10.1080/17408989.2021.1934663

Article III

Porsanger, L., & Sandseter, E. B. H. (2021). Risk and safety management in physical education: Teachers' perceptions. *Education Sciences*, *11*(7), 321. https://doi.org/10.3390/educsci11070321

Article IV

Porsanger, L., & Magnussen, L. I. (2021). Risk and safety management in physical education: A study of teachers' practice perspectives. *Frontiers in Sports and Active Living*, *3*. https://doi.org/10.3389/fspor.2021.663676

Outline of the Thesis

This article-based thesis comprises four research articles and a synopsis across two parts. **Part I** provides the synopsis, and **Part II** comprises the four research articles (I–IV).

The synopsis consists of six chapters. *Chapter 1* introduces the study and explores the school-based subject of physical education, with a particular emphasis on Norwegian PE. It further seeks to establish the conception of this thesis regarding risk and safety management and to present the problem from which this study began. Through a presentation of previous research and literature concerned with teachers' risk and safety management in physical education, the chapter seeks to elucidate the current knowledge and position this study within the body of literature. The chapter rounds out by presenting the purpose and research problem guiding this thesis, and the articles' sub-research questions. A table provides an overview of the study.

Chapter 2 presents the theoretical framework that guides this thesis.

Chapter 3 concerns the study's methodology and methods and begins with a presentation of the research philosophy underpinning this thesis. It is followed by an elaboration of the study's mixed-methods research design, sampling and samples, methods used to generate data, and analytical framework. This chapter rounds out with a discussion of the thesis quality and ethical considerations relevant to this study.

In *Chapter 4,* the results from each of the four articles are briefly presented and then combined and summarized in a table.

Chapter 5 contains a discussion of the research problem and the results presented in the articles, along with the theoretical framework laid out in Chapter 2 and previous studies.

It is *Chapter 6* that rounds out the synopsis and **Part I** of this thesis, giving concluding remarks regarding the study's limitations and pointers toward future research.

Part II of the thesis presents the four articles (I–IV) in their published formats.

Part I: The Synopsis

1 Introduction

This thesis addresses teachers' risk and safety management (RSM) in the school-based subject of physical education (PE). The purpose of the study is to generate research-based knowledge about teacher management of physical risk and safety in physical education that can potentially contribute to the development of educational policy, theory, and practice.

A mixed-methods research (MMR) approach was used that involved a critical discourse analysis (CDA) of regulative policy documents and interviews and a survey to explore primary and lower secondary teachers' perspectives and reports of RSM in PE. The research problem that guides this thesis is: *How does teachers' risk and safety management in physical education emerge as a professional practice*?

This thesis was inspired by and found its rationale in media reports of near-accidents in schools and of injured students, teacher fears of potential liability, my experiences from outdoor guiding, teaching PE, and PE teacher education (PETE), the reading of social theory centering around risk, collegial discussions regarding internal control requirements. Literature searches targeting teachers' RSM in PE suggested that available research-based knowledge is scarce and Norwegian empirical research is lacking. All of these factors created a need to gain more knowledge.

1.1 Background

Teachers' RSM in PE is at the core of this thesis. A practice theory lens, which is elaborated in Chapter 2 of this synopsis, creates the theoretical foundation for the positioning of teachers' RSM in PE as a professional practice. The following sections in this chapter have several purposes. The first section seeks to conceptualize RSM and an understanding of PE as a school subject with a particular emphasis on Norwegian PE and to illuminate the rationale and problems of teachers' RSM in PE. The next section gives an elaboration of the literature that provides the current knowledge of teachers' RSM in PE and positions this study within the context of the existing literature. The final section presents the thesis purpose and research problem in addition to providing an overview of the study.

1.1.1 Risk and Safety Management

Inspired by a diverse conceptual and theoretical landscape concerning risk and safety-related practices, teachers' practice managing physical risk and safety in PE is defined in this thesis under the umbrella of RSM. However, the term requires some unpacking because "the way we understand and describe risk strongly influences the way risk is analysed and hence it may have serious implications for risk management and decision-making" (Aven, 2016, p. 4). This section elaborates through selected contributions how the concepts of risk and safety can come to generate practices for dealing with risk and safety.

The etymology of risk may provide some insight into how the concept has evolved over time and is a basis for our current understanding (Aven, 2012; Å. Boholm, 2015; Klinke et al., 2021; Renn, 2008; Taylor-Gooby & Zinn, 2006). Studies of language use can demonstrate how the word "risk" is used today (M. Boholm, 2012, 2017, 2018). Social theories of risk (Beck, 1992; Giddens, 1990, 1991, 1999; Luhmann, 1993) demonstrate that risk can be viewed at a societal level in the sense that societies can be shaped by, and people may organize their lives around, how risk is understood. Finally, this section seeks to present the thesis conception of RSM by going into some distinct risk and safety-related practices involving risk analysis, risk management, and safety management. These factors will then be related to several scholars' advocacy for a practitioner-oriented lens described as risk work (e.g., Brown & Gale, 2018a, 2018b; Power, 2016).

1.1.1.1 Risk and Safety Conceptualized

The concept of risk originated in medieval times from Arabic or Latin, which dispersed into multiple European language words, such as the French *risqué* and *risquer* and the Italian *risco* (Aven, 2012; Klinke et al., 2021; Taylor-Gooby & Zinn, 2006). The concept of risk was initially used in navigation and trade in relation to the economic dilemma between fortune (wealth) and misfortune (loss) (Aven, 2012; Klinke et al., 2021). This tension between gain and loss and the balance between positive development and protection from the adverse is a core dilemma in theories of modern life (Luhmann, 1993) and current theories of risk practices (Hansson, 2018; Zinn, 2016). Today, there are multiple definitions of risk that may be general or related to distinct research fields or disciplines, such as economics or engineering (Aven, 2016; Hansson, 2018; Hansson &

Aven, 2014). The qualitative and quantitative definitions might help to demonstrate the primary difference (M. Boholm, 2019). Whereas a qualitative definition of risk could be "the possibility of an unfortunate occurrence," (Aven, 2016, p. 4) a quantitative definition may describe risk as "the combination of probability and magnitude/severity of consequences" (Aven, 2016, p. 4).

Discrepancies between the academic or technical definition and everyday usage may also generate misunderstandings and hobble risk communication (M. Boholm, 2018, 2019; Boholm et al., 2016; Hansson, 2018; Teigen, 1988). Analysis of language use suggests that the prevailing understanding of risk contains a negative association with loss (M. Boholm, 2018) that involves "the possibility of something bad happening at some time in the future; a situation that could be dangerous or have a bad result" (Oxford University Press, n.d., Risk). The dilemma between gain and loss also highlights the concept of safety as holding the meaning of the opposite of risk (M. Boholm, 2017). A person may be considered safe when they are in "the state of being safe and protected from danger or harm" (Oxford University Press, n.d., Safety). Risk and safety are not necessarily mutually exclusive or dichotomous. These concepts are also understood and used in degrees, such as with saying there is more or less risk or that something is more or less safe (Boholm et al., 2016). The Society for Risk Analysis (SRA) defines safe as a condition "without unacceptable risk" (SRA, 2018, p. 7). This suggests that safety does not require an absolute condition without any risk but, rather, borrowing a term from psychometric studies, is a consideration of "how safe is safe enough" (Fischhoff et al., 1978).

How people understand these concepts is clearly important. For example, Teigen (1988, p. 32) described a project in which psychology students were asked to give their opinion of which sports they would characterize as the most risky, and 78% of the students related riskiness to the seriousness of a potential injury rather than the probability of incurring an injury in the first place. The verb "risk" implies that people may "risk something to put something valuable or important in a dangerous situation, in which it could be lost or damaged" (Oxford University Press, n.d., Risk). This aspect of human action is supported by social theory, where risk represents an opportunity or a potential to gain something (Luhmann, 1993), which is why the risk of loss may be endured for the sake of gaining some benefit associated with risk-taking (Zinn, 2019). The concept of danger (M. Boholm, 2017, 2018; Luhmann, 1993) is distinct from the concept of risk in

the sense that it represents risks that are not associated with human action (Giddens, 1990, p. 7, 1991, p. 11) and are more likely to relate to Hansson's (2018) description of natural risks, such as flooding or hurricanes. For many people, this may mean that dangers are imposed on their lives (Giddens, 1999) and are not something of their own choosing.

The verb "risk" is central in this thesis for understanding risk-related practices because it signals a historical shift in thinking about the future from being predetermined by fate or destiny to being controlled by human action (Giddens, 1991). How we think of the future in terms of human agency is vital because agency highlights the understanding of contingency associated with risk (Å. Boholm, 2015; Renn, 2008), where the potential future loss and unwanted situation, or gain, relate to some aspects of deliberate choice or action. Hansson (2018) describes uncertainty as a central dilemma in our knowledge of risk because "when there is a risk, there must be something that is unknown or has an unknown outcome. Therefore, knowledge about risk is knowledge about lack of knowledge" (2. Epistemology). There are references to different variants or sources of uncertainty, where one is related to unexpected situations, described as aleatory uncertainty. These surprises are associated with randomness or chance (Aven, 2013, 2016) and were originally associated with black swans, or what Aven (2013) describes as the "unknown unknowns" (p. 140). Central to our usage is that our past experiences cannot prepare us for these situations (Taleb, 2007).

There might be greater potential for the uncertainty described as epistemic uncertainty, which is associated with a lack of knowledge of the risk and/or a lack of expertise (ignorance) (Hacking, 1975). Here is, at least in theory, potential for reducing epistemic uncertainty by gaining more knowledge if the risk is deemed observable (Renn, 2008). However, the potential certainty is challenged because a problem might be more complex than initially assumed (Lindøe, 2018). Adding complexity to this conceptual landscape are the subjective interpretations of different variants and expressions of uncertainty (Teigen, 1988). Despite the focus on reducing or eliminating uncertainty in risk theory, uncertainty is seen as a pedagogical tool that may foster creativity, change, and innovation and may enable teachers to balance different considerations (e.g., Helsing, 2007). Nevertheless, it seems rather clear that the future cannot be known for certain (Hansson, 2018), illuminating a dilemma in a society that is preoccupied with risk and concerns for physical safety (Beck, 1992; Furedi, 2006; Giddens, 1990, 1991, 1999; Luhmann, 1993; Power, 2004).

1.1.1.2 A Societal and Regulative Concern

Among the grand theories of modernity and social theories concerned with risk is Ulrich Beck's (1992) *Risk Society* thesis, which positions the management of risk and uncertainty at the center of human organization. Despite being paid tremendous amounts of attention, it is also criticized for, as an example, neglecting the uneven distribution of risk (Mythen, 2021). While Furedi (2006) argues that there is an alarming feeling of fear among people today, there are still nuances to the impression: "It seems unlikely that everyone is afraid of everything; fears are undoubtedly distributed unevenly" (Best, 2020, p. 206). Giddens (1991) even claims that everyday life in the Western world might not be more dangerous than in earlier societies and that threats against individuals' lives are less prominent today than in societies before us. Some even argue that a risk society can be seen as a regulatory society in the sense that societal problems and institutional risks are increasingly being approached through regulation (Rothstein et al., 2006). Regulation[1] of risk-seeking compliance can be seen as a distinct approach to risk and separate from risk-based regulation, which is a regulative framework put forth to control risk (Baldwin et al., 2012, p. 281), such as internal controls (Black & Baldwin, 2010). However, today's no-fault culture allocates blame by holding the individual accountable (Douglas, 1992). The risk literature sheds light on a dilemma in regulating risk: the diversity of technical, economic, psychological, and sociocultural approaches to and perspectives of risk (Lupton, 2013; Renn, 2008). These differences in opinion and understanding of how to assess, measure, and interpret risk make the regulation of risk an ambiguous practice and challenging task (Baldwin et al., 2012, p. 93). Researchers further question whether or to what degree the grand theories are transferable to real-life experiences (Zinn & Olofsson, 2019). Also considered is that the context can matter in terms of how people deal with risk issues (Douglas, 1992; Klinke et al., 2021; Renn, 2008). In other words, there might be a gap between grand risk theories and real-life experience. However, the emergence of distinct practices for managing risk (see, e.g., Power, 2004) seems to support the reasoning of a risk society preoccupied with managing risk.

[1] Regulation is described by Selznick (1985) as "the sustained and focused control exercised by a public agency over activities that are valued by the community" (p. 363). See Koop and Lodge (2017) for an analysis of how the concept regulation is conceived in research articles.

1.1.1.3 From Risk Analysis to Risk Management

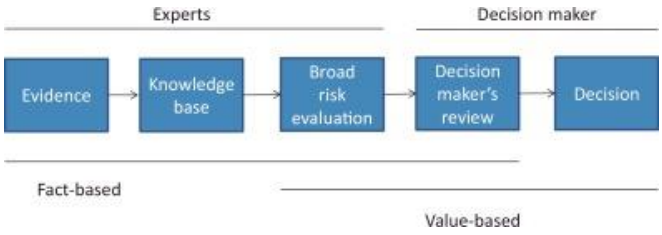
Risk analysis can be seen as a practice that, according to the SRA (2018),

> include[s] risk assessment, risk characterization, risk communication, risk management, and policy relating to risk, in the context of risks of concern to individuals, to public and private sector organizations, and to society at a local, regional, national, or global level. (p. 8)

Risk analysis is presented as a process that contains a vast array of concerns that are commonly divided into two main segments: risk assessment and risk management. A division illuminated by the considerations: facts and values (Hansson, 2010). Based on SRA's (2018) definition, risk management is positioned within a larger framework of risk analysis and encompasses the concerns of a decision-maker. This division in risk analysis and the considerations can be seen in a decision-making model (Figure 1) presented by Aven (2016, p. 3, based on Hansson & Aven, 2014).

Figure 1

Decision-Making Model



Note. The model borrowed from Aven (2016, p. 3) is based on the model developed by Hansson and Aven (2014).

The knowledge base of risk analysis can be generic in the sense that it can apply to the broader area of risk sciences but can also be disciplinal, relating to risk analysis in distinct areas, such as, for example, economics and engineering (Aven, 2016; Hansson & Aven, 2014; Klinke et al., 2021; Renn, 2008). Considering the risk analysis framework of the SRA, the core of risk management is deciding and acting on the activities or measures that are considered appropriate for dealing with the risk in question yet is also based on the information about the risk provided by experts (Aven, 2016; SRA, 2018). Risk management may cross over with risk policy because it involves a broader scope of considerations and is not necessarily based on pure factual evidence, such as in risk

assessment, because “risk management is about balancing different concerns” (Aven, 2016, p. 9). A question that arises in this respect is whether and potentially how teachers’ knowledge intersects or deviates from the facts-based knowledge for assessing risk. However, this understanding of risk management that follows a process of risk assessment is not necessarily identical to definitions found in sports literature, which describe risk management as involving “the overall process of assessing and controlling risks within an organizational setting and includes the subprocesses of risk assessment and risk mitigation” (Fuller & Drawer, 2004, p. 349). In this understanding, the risk manager gains a more all-encompassing position that includes risk assessment. Looking again at the decision-making model (Figure 1), it can incur a practice in which teachers receive risk information about PE from experts on risk assessment.

Risk management can initially seem comprehensible, structured, and descriptive of what a practitioner should be capable of performing. Yet, these frameworks can also be seen as descriptions of established practices in the respective fields or disciplines (Power, 2016; Rothstein et al., 2006; Zinn, 2008), which may not be fully applicable or readily available in schools or for teachers, but can be relevant and/or provide a frame of reference for their risk-related practices. Such definitions and descriptions can be fruitful for understanding teachers’ practices, illuminating a break with organizational- and managerial-oriented risk literature, and underscoring numerous scholars’ advocacy for a turn to the practitioner.

1.1.1.4 From Risk Management to Practitioners’ Risk Work

The conceptual basis for risk and safety-related practices relates to organizational overbuilding from a management point of view. However, there is advocacy for a focus on practice in the risk literature, a “turn to work” (Power, 2016, p. 6). Our knowledge of risk practices can be enhanced from a shift in perspective and by investigating practitioners’ risk work (Brown & Gale, 2018a, 2018b). Reframing risk management as risk work provides new avenues for understanding risk-related practices at the micro-level, especially because there might be a paradox between evidence-based or scientific risk knowledge and real-life interventions (Brown & Gale, 2018a). A conceptual foundation is drawn here from risk and safety to distinct risk practices involving risk analysis and risk management, advocacy for a practitioner-oriented lens, and the practice of safety management as part of the final conceptual step.

1.1.1.5 From Risk Management to Safety Management and Beyond

One reason for furthering this conceptual line comes from the related practice of safety management, which is a subject and scientific discipline concerned with human safety at different societal levels and in various areas (Almklov et al., 2018; Glendon, 2021). Decisions related to risk necessarily involve safety concerns and judgments about the appropriate degree of safety (Aven, 2016). In a paper addressing safety management in education outside the classroom (EOTC), there are indications of a diverse conceptual terrain and a potential conceptualization of discipline-specific practices (Zinc, 2004). There are indications that, rather than risk, a safety lens may prove to be more pertinent in education. According to Zinc (2004),

> the use of the term safety management itself signals a conceptual shift in the area. Risk management has dominated much of the outdoor education literature to date. Perhaps this shift in terminology from risk management to safety management is a recognition that research that has been drawn on in outdoor education, which is primarily from the financial, business and health area (Brown, 1998), does not take into account the complexities and particularities of EOTC and outdoor education. (p. 10)

The concerns of safety management seem to overlap with risk management in many respects. By connecting risk management with safety management within the concept of RSM, this thesis moves forward a certain understanding of teachers' practices: that physical risk is related to concerns of physical harm (physical health) to students in PE classes. Against this conceptual backdrop, the next section seeks to understand the school subject of PE with an emphasis on the Norwegian context.

1.1.2 Physical Education

Using a sociocultural lens, researchers invite seeing PE as construed, a form, an idea, a meme, and a cultural practice that changes over time (see, e.g., Kirk, 2010; Tinning, 2012; Ward & Griggs, 2018). Following Kirk (2010), PE is not a static product. However, PE carries "the idea of the idea" (Kirk, 2010, p. 17), an understanding that helps us make sense of PE, making it possible to draw the contours or shifts in different ways of thinking and rationalizing PE as a school subject. Looking at the emergence of PE in Norway, the need to train young men for the armed forces was a central reason(ing) for introducing PE (gymnastics) as a school program in 1827 (Augestad, 2003). However, it was not until

1936 that PE became a compulsory school subject—for both genders (Augestad, 2003, p. 68). Later, and similar to Sweden, Norwegian PE came into being on inspiration from Ling gymnastics, with a focus on bodily movement and discipline (Augestad, 2003; Quennerstedt et al., 2008). The international PE literature still creates an impression of a global form of PE. "Although there are variations in what stands for physical education across national borders, the form of its survival is remarkably similar across cultures" (Tinning, 2012, p. 116). According to Ward and Griggs (2018), "within the institutional practices of the subject, cycles of reproduction curriculum and pedagogy have proven to be enduring and surprisingly resistant to change" (p. 401). This way of thinking seems to be shared by Norwegian PE researchers. For example, in a doctoral thesis concerning digital technologies and flipped learning, PE is set within a global framework of understanding (Østerlie, 2020, p. 24). The view of "physical education—as sports-techniques" (Kirk, 2010, p. 42) seems to be common in descriptions of the worldwide form of PE (Tinning, 2012; Ward & Griggs, 2018), including PE in the Scandinavian countries of Sweden, Denmark, Norway, and Finland (Annerstedt, 2008). Norwegian PE is no exception to the sports idea, in which sports seem to be more the rule than any contribution to students' learning (Moen et al., 2018; Standal et al., 2020). This might have to do with the practitioners and their backgrounds in sports (Skille & Moen, 2021).

Nonetheless, there is still more to PE than sports, and primary PE in the UK comprises a memeplex[2] of "sport as techniques"; "anyone can teach it"; "busy, happy and good"; and "nowhere important" (Ward & Griggs, 2018, p. 402). This draws a rather pessimistic picture of PE as an educational school subject. According to Kirk (2010, p. 39), PE scholars have been concerned about the future of PE for decades. Despite this, the 2013 UNESCO International Conference of Ministers and Senior Officials Responsible for Physical Education and Sport in Berlin declared that PE "is the most effective means of providing all children and youth with the skills, attitudes, values, knowledge and understanding for lifelong participation in society" (UNESCO, 2013, p. 3).

Shifting the focus from sports, there may be an obesity discourse underpinning the health-based rationale in PE (Kirk, 2006), such that PE has become a way of increasing physical activity to promote children's physical fitness (Kirk, 2018, p. 71;

[2] A complex of cultural ideas. See Ward and Griggs (2018, p. 401).

Tinning, 2012, p. 123). Due to current concerns with physical and mental illnesses, this justification of PE comes forward in the shape of exercise (Green, 2020, p. 27). Changes to the name PE seem to signal this way of thinking. For example, PE was renamed from Sports to Physical Education and Health in Sweden in 1994 (Annerstedt, 2008). However, PE is still the official name in Norway,[3] and according to Annerstedt (2008) health is present in all four Scandinavian countries' curricular syllabi. There are not only dilemmas in relation to the focus on health in PE. In Norway, researchers point to unclear boundaries between PE and a mandate from the Norwegian Parliament of increased physical activity in schools and a need for making these clearer to not undermine PE as an educational subject (Borgen et al., 2021). Zooming out from Scandinavia, this health-based thinking seems pertinent elsewhere, for example, in Australia. The Australian Curriculum, Assessment and Reporting Authority (ACARA) states in the rationale of the Australian F-10 Curriculum for Health and Physical Education,

> In an increasingly complex, sedentary and rapidly changing world it is critical for every young Australian to not only be able to cope with life's challenges but also to flourish as healthy, safe and active citizens in the 21st century. This is a strong investment in the future of the Australian population. (n.d.)

How PE is understood and what PE is can change over time. While PE can come to share ideas or forms globally, researchers still point to the context and that there are meaningful differences in the subject from an international perspective. The assumption that context matters invites paying attention to the different ways PE emerges and is rationalized as a school subject.

1.1.2.1 Context Matters for Physical Education

Following the discussion centering around health and the Scandinavian countries' PE syllabi, while Sweden and Finland may come to emphasize health in their curriculum, it might not be pulled forward with a similar emphasis in Norway and Denmark (Annerstedt, 2008). How health is understood likely influences the ways in which health is taught (Mong & Standal, 2019). The description of PE as a similar and enduring global practice can come from attention to structural dimensions (Larsson & Quennerstedt,

[3] There is an ongoing discussion in Norway regarding the common naming of PE as "gym" (short for gymnastics), in contrast to the official kroppsøving (PE) (see, e.g., Engelsrud et al., 2021).

2016). Taking a closer look at teachers' PE practices can open up a more nuanced lens and understanding of PE. With a nod to health-based reasoning, a dilemma arises: the content of PE does not necessarily reflect the policy set out to govern the teaching of the subject in schools (Kirk, 2018, p. 73). For these reasons, it seems pertinent to take the context into account when investigating policy enactment in PE (Braun et al., 2011). The next section seeks to illuminate some potential gaps between intentions and the PE that becomes realized in schools.

1.1.2.2 Curriculum Model of Understanding Physical Education

In Norway, the National Curriculum for Knowledge Promotion in Primary and Secondary Education and Training 2020 (Ministry of Education and Research [MER], 2017) is the central directive for the teaching and training of all subjects and also where the core curriculum sets the values foundation for teaching practice in schools. This means that Norway is among the countries where PE has an officially defined subject curriculum (Borgen et al., 2021). The PE curriculum describes the core values and mandate and includes standardized learning outcomes for students' education (MER, 2019). Although defined and regulated, the curriculum might not be straightforwardly implemented in teaching practice. The Norwegian researcher Engelsen (2003) reminded us of the gaps between the formulated curriculum and the curriculum that is realized in schools. Goodlad et al.'s (1979) curriculum model involves not only ideological and formally designed dimensions but also how teachers perceive it, which can be different from how they enact it, which, in turn, can be different from the students' experiences. The model illuminates a dilemma because the national curriculum in Norway is positioned as a regulation pursuant to the Norwegian Education Act[4] (MER, 2017). This means that the curriculum is legally binding, and teachers are legally mandated to enact the curriculum in their teaching practice.

Curriculum theory opens the possibility of acknowledging that there can be gaps between intentions and actual practices, and research sheds light on some of the reasons for this gap and how it applies to Norwegian PE. Despite multiple revisions to the former PE curriculum that was established in 2006 (MER, 2015a), there seem to be divergent interpretations and practices among PE teachers in Norway (Arnesen et al., 2013). Some

[4] Act relating to Primary and Secondary Education and Training (1998).

might stem from contradictory learning outcomes (Lyngstad, 2019). However, the current PE curriculum came into effect in August 2020 for year levels 1 to 9, with year levels 10 to 13 following in 2021 and 2022 (Directorate for Education and Training [Udir], 2021). Despite this, the current curriculum might not make a great change for teachers because a critical language analysis of the renewed PE curriculum suggests that the separation of content and action is unclear, which might create difficulties for PE teachers in assessing students' competence (Borgen & Engelsrud, 2020). Interpretational issues do not necessarily end with the curriculum because an official report from the Norwegian government (NOU 2019:23, 2019 [Official Norwegian Report]) describes the Education Act (1998) as comprehensive, fragmented, and complex and states that there is a potential for multiple and divergent interpretations. By investigating teaching practices in schools, it can be possible to discover how practice can come to form PE (Aasland, 2019, p. 9).

1.1.2.3 Teaching Practices

In this way of thinking, teachers' practices can be seen as creating PE in schools. For such reasons, some studies suggest that Norwegian upper secondary PE constitutes vigorous activity (Aasland et al., 2017) and ableness (Aasland et al., 2020). This way of seeing PE also actualizes how teacher training and PETE study programs prepare teachers for being in-service; Norwegian teacher–students seem hesitant to change their assumption that PE is a sports-based subject (Moen & Green, 2014a). There are indications that PETE educators do not necessarily challenge the teacher–students' assumptions about PE in Norway; rather, they confirm the conservative understanding of the subject (Moen & Green, 2014b). Despite the intention of teacher training to support student–teachers in developing critical reflexive capabilities, it seems that educators tend to teach what they were taught (Moen & Green, 2014b, p. 430). PE teachers' professional knowledge is complex (Lyngstad, 2013) and can sometimes be difficult to grasp. How teachers can come to develop their practice and knowledge in-service can be crucial, but this is another area in which research sheds light on a critical situation in education: the marginalization of PE teachers. A recent literature review (Spicer & Robinson, 2021) even suggests that PE teachers' experiences of marginalization and isolation can weaken their ability to cope with negative experiences in practice. This suggests that PETE study programs need to prepare PE teachers for a career in isolation and assist them in developing coping strategies through, for example, partaking in professional learning communities (Spicer & Robinson, 2021).

The conceptualization of RSM and the understanding of school PE are brought together in the next section through an exploration of why RSM can come to be teacher practice in PE.

1.1.3 What Is the Problem?

1.1.3.1 A Safe and Good Learning Environment in Physical Education

Zooming in on Norway, we can find prominent issues in the regulations of Norwegian education. In 2017, the Norwegian Parliament strengthened students' statutory right to a safe and good learning environment in schools by adopting a new section on the duty of activity in the Education Act (1998), paragraph 9-A. It can be read as an increased focus on students' psychosocial health, with increased accountability for those responsible (NOU 2015:2, 2015). This amendment to the act, however, cannot be seen as readdressing students' physical safety with a similar emphasis. However, the internal control regulations[5] relating to systematic health, environmental, and safety activities still address students' physical learning environment (NOU 2015:2, 2015, p. 213). While schools are required to document this line of work, it is still up to their discretion how to conduct it. Looking into the current PE curriculum, there seems to be an increased focus on students' competence in swimming and lifesaving training (MER, 2019). Despite this, an official orientation (circular) with recommendations for swimming and lifesaving training in schools is made obsolete with the renewed curriculum (Udir, 2015). The question arises as to the interpretation of a safe and good learning environment in relation to students' physical safety. The Udir (2020) explains in the official orientation, School Environment Udir-3-2017, that a safe school environment means that students should not be injured and must feel that the school is a safe place to be. Whether this translates into no-fault thinking is uncertain. However, it is still interesting to know the prevalence of student injuries in PE.

1.1.3.2 Injury Prevalence in Physical Education

[5] Regulations pursuant to the Act relating to working environment, working hours and employment protection, etc. [Working Environment Act] (2006).

A report from the Norwegian Institute of Public Health acknowledges that a lack of good data, together with poor quality data regarding physical injuries in Norwegian schools, limits the potential to generate suitable preventive measures (Ohm, 2017). Aside from some media coverage (e.g., Hanssen, 2004; Hole, 2014), there seems to be a paucity of studies that address student injuries in PE in Norway. One contribution of research, however, comes from the field of medicine. Clementsen and Randsborg's (2014) analysis of school-related fracture injuries in children aged 6–16 identified by one hospital over 12 months (2010–2011) showed that 22% were related to PE classes, whereas 32% were related to recess. The fracture rate in PE was less than in normal children's activities and the authors argue that PE is safe for children if PE is performed in known surroundings with qualified supervision. Given that high-risk activities are not included in the subject to any large extent and supervision is not reduced, it seems that an increased number of PE hours in school is a safe and good alternative for increasing children's physical activity (Clementsen & Randsborg, 2014).

International research can potentially provide insight from other contexts. One example is Nelson and colleagues' (2009) study of PE class injuries treated in emergency departments in the United States in the years 1997–2007.[6] Based on a national representative sample of students aged 5–18 years, the authors report an annual average of 36,846 injuries during this period, and middle-school-aged children accounted for 52% of the injuries. Of the injuries where information was available, those on the lower extremities accounted for 22.6%. Of the activities that were being carried out at the time of the injury, six activities constituted 70% of the injuries, and running was the most common cause, with 25.1%. Gymnastics ranked sixth, at 5.4%. An abundance of the injuries was contact-related, involving playing surfaces, equipment, structural elements, and other people. Noncontact injuries comprised 18%. Notably, injuries from contact with another person tripled during the years 1997–2007, suggesting that larger PE classes might be a contributing factor (Nelson et al., 2009). There is reservation in the reading of the results from some studies because the available injury statistics seem to put limitations on their relevance for PE. For example, 20.5% of the head injuries of students enrolled in special education in one school district in the United States,[7] were related to PE and recess

[6] Data from the National Electronic Injury Surveillance System (NEISS).

[7] 1994–1998.

combined (Limbos et al., 2004). To illuminate the potential difference the categories of reporting can make, an analysis based on 1,732 identified injuries in 366 nursery and 289 primary schools in Greece in the years 2001–2003 showed that 9%–12% occurred during PE classes, whereas recess accounted for 55%–67% (Christoforidis & Kambas, 2007).

1.1.3.3 Exposure to Physical Education, Physical Activity, or Physical Inactivity?

In the Netherlands, Bloemers and associates (2012) calculated primary school children's (n = 996) injury rates in terms of their weekly exposure to physical activity. For the injuries sustained in PE classes, the study did not identify any relevant associative risk factors, such as gender (Bloemers et al., 2012, p. 670). Low levels of overall physical activity, however, were associated with a greater risk of injury. Nauta and colleagues' (2015) review of reports of 6- to 12-year-old children's injury incident rates per hour of exposure to physical activity indicated conflicting injury incidence rates in PE. However, the absolute number of injuries was higher in unorganized leisure-time physical activity, suggesting that "children are at an inherent injury risk while participating in physical activities" (Nauta et al., 2015, p. 327). Peltzer and Pengpid's (2015) report from the 2012 Global School-Based Student Health Survey involving 21,699 Malaysian youths 13–17 years old showed that participation in PE classes three or more times a week was associated with overall and fall-related injuries. Hoshi and Inaba (2005) shed light on meteorological conditions in relation to the deaths of Japanese schoolchildren participating in school PE, sports events, and after-school sports clubs.[8] While heat disorders accounted for about 90% of the deaths that occurred during sports club training, heart disease accounted for about 70% of the reported deaths in school PE and sports events. The authors also found that the reported deaths from PE and sports events peaked between 10 a.m. and 11 a.m. While international research might provide some relevant insights, the scarcity of research into injury and accident statistics in Norwegian schooling (Ohm, 2017) limits the knowledge of particulars in the Norwegian context. We do not know if there is a problem with injuries in Norwegian PE or, potentially, the mechanisms or reasons for injuries that students sustain in PE classes. Some potential dilemmas arise in this vacuum.

1.1.3.4 Setting the Tone—A Media-Based Discourse?

[8] 1993–1998.

What is explicated in Norway, however, is mostly media-driven and pulled forward in relation to school and PE-related near-accidents and when students are physically injured. Among the media coverage are legal tort cases related to students' injuries in PE classes where the teachers' practices were found to be negligent by the courts of law (Hanssen, 2004; Hole, 2014). Otherwise, it is not clarified whether the incidents related to PE classes specifically, such as when three students from a lower secondary school flipped in their canoes and had to be rescued in June 2017 (Eriksen & Persson, 2017). A larger group of upper secondary students also flipped in their canoes and had to be rescued in September 2020 (Torgersen et al., 2020). A potential impression may be that schools and PE are unsafe for students and that teachers are not capable of performing PE safely.

1.1.3.5 Are Injuries Predictable, Foreseeable, and Preventable?

In an editorial in *The BMJ* in 2001, editors Davis and Pless stated that the journal would ban the term accident because "accidents are not unpredictable" (p. 1320). The editors went on to say that they "believe that correct and consistent terminology will help improve understanding that injuries of all kinds—in homes, schools and workplaces, vehicles, and medical settings—are usually preventable" (Davis & Pless, 2001, p. 1320). This way of understanding not only positions injury and accident research (e.g., Khanzode et al., 2012) in an odd light, but can mean for PE teachers that some consider the events leading to student injuries to be predictable and preventable. Although the legal mandate seems clear, injuries do happen in PE, and some such injuries are pursued in the legal system. Searches conducted in a Norwegian legal database (*Lovdata*) identified five Norwegian court decisions related to student injuries in PE classes where the teachers' practices were considered negligent. Two of the cases were decided by the Norwegian Supreme Court (Høyesterett [HR]). In the court decision HR-1997-41, commonly known as the trampoline verdict, the legal mandate, and thinking was that the school must ensure that PE is taught under proper conditions so that the risk of students being injured is reduced as much as possible. This particular HR decision is also cited by legal scholars and called upon as an essential case of misconduct under Norwegian tort law. Frøseth and Askeland (2018) set forth foreseeability and expertise as two key aspects of the decision, both of which seem to relate to knowledge of risk. In terms of foreseeability, the authors explain,

> Foreseeability comes into play as a general requisite: how likely is it that this act leads to damage . . . Because [the teacher] failed to act despite the clear indication of the risk embedded in the situation, the court deemed [the teacher's] omission to be negligent. (Frøseth & Askeland, 2018, p. 447)

Related to expectations of professional experience and skills,

> the court put weight on the fact that [the teacher] was an experienced teacher, implying that [the teacher] had special advanced skills that made it easier for [the teacher] to cope with the situation than less experienced gym teachers. Because of the fact that [the teacher] did not react to the risk produced by the dangerous way of jumping somersaults, [the teacher] was deemed to have been negligent. (Frøseth & Askeland, 2018, p. 797)

While legal scholars pay attention, there seems to be a paucity of comments from the PE field related to this or other legal cases. However, the questioning of the negligent verdict in a tort case involving a student's injury from a high jump in PE class is an exception (Ellingsen, 2008). A central question that arises in this respect is whether the risk in PE is indeed foreseeable, as assumed by the Norwegian HR. A related discussion may illustrate the diversity of views on risk and safety that can potentially create a dilemma for teachers.

1.1.3.6 Are Risks and Injuries Healthy for Students?

There is a line of research that sheds light on the detrimental effects of risk-averse policies and practices on children's development and education. Looking at the UK, educational institutions and teaching professionals' risk-aversion and fear of litigation may have led to a preoccupation with safety that restricts children's education (Gill, 2007). In Norway, researchers suggest that early-childhood educators' safety concerns can get to the point of restricting children's risky outdoor play in kindergartens (Sandseter & Sando, 2016). On that note, a former principal of the Norwegian School of Sport Sciences, Gunnar Breivik, created debate in the extension of his argument that injuries are, to some degree, natural and nearly necessary for children's healthy development (Breivik, 2001). The consequence of this position seems clear: educators and stakeholders need to accept risk, and students might sustain injuries from which they gain some health benefits.

The potential problems described in this section actualize how teachers think of and deal with physical risk and safety in PE classes and where research can provide knowledge about teachers' RSM in PE.

1.2 Previous Research and Literature

Searches for relevant research and literature can be conducted for different purposes (Arksey & O'Malley, 2005; Boote & Beile, 2005; Grant & Booth, 2009; Moher et al., 2015), and this section seeks to describe the current knowledge of teachers' RSM in PE and position this thesis within the body of existing literature. Initial and iterative searches for research throughout this study, involving systematized, snowball, and hand searches, informed a broader systematized search that relates to searches pertaining to the use of set key concepts and keywords (Krumsvik & Røkenes, 2016). It is the combined results of these searches that form the basis for the literature presented in the four articles and the synopsis. A university librarian at the Norwegian University of Science and Technology (NTNU) assisted in designing the search, assisting with the inclusion criteria and selection of databases. Keywords that were used in combination with "physical education" included, for example, "risk management" and "risk analysis." Table 1 in Appendix I provides an overview of the search. While the systematic searches were attuned to empirical research, gray literature encompassing, for example, policy documents, opinion pieces, pedagogical literature, and doctoral theses, comprise an important contribution to this thesis because they create a fuller picture of the body of the literature and the current knowledge about teachers' RSM in PE. The searches and discussions with PETE educators in Norway throughout this study suggest that empirical research targeting Norwegian teachers' RSM in PE is lacking. This gap is supported by a reading of the literature listed in a review of research and development in PE in the period 1978–2010 (Jonskås, 2010), a list of Norwegian research targeting PE provided by the Norwegian Nettverk for forskning på kroppsøving og idrettsfag (Network for Research on Physical Education and Sport) (2019, 2020), and the results of a recent literature review of Norwegian research addressing PE in the years 2010–2019 (Løndal et al., 2021). As a result, it is the international literature that seems to offer the bulk of research-based knowledge of teachers' RSM in PE.

1.2.1 Elusive Concept or Practice?

The reading of literature conducive to this study raised a question about the conceptual basis for RSM in PE. Within the literature that ascribed to PE as the defined setting, the concepts relating to RSM varied. None referred to RSM, which is the concept used in this thesis, but some addressed the assessment and management of risk and safety interchangeably (e.g., Park, 2018). Risk management seems to be a more common concept (e.g., Coelho, 2001; Young, 2007). However, the boundaries between those that explicitly addressed, for example, risk management (e.g., Murphy, 2015), injury prevention (e.g., Merrie et al., 2016), and emergency first aid (e.g., Hunt et al., 2016), are not easily drawn due to the intersecting and sometimes overlapping concerns in the literature and their use of background literature. While the content of each practice can be somewhat similar, for example, the use and responsibilities of offering protective equipment to students, an abundance of the injury prevention literature still departs from the research more attuned to RSM in the sense that the focus is typically on topics such as neuromuscular training, physical therapy, nutrition, and sports medicine. While the literature addressing injury prevalence in PE is presented in the background section of this thesis, I chose in the following to bring to the forefront examples from the literature concerned with injury prevention along with an example from school-based outdoor education (OE) research. This was because it could add some insights into the intersecting areas in the research and teachers' potential concerns in practice. The selected OE research also provides an example from a related school subject in the Norwegian context. This selection still has consequences because there is an abundance of studies that are excluded for these purposes and that involve athletics and sports coaching, including concussion research, early-childhood education research, and disaster and violence management, as examples. Research addressing behavior management in PE (e.g., Hovdal et al., 2020) is also excluded. With that in mind, the empirical research involving PE teachers provided some interesting insights into what teachers have expressed regarding the management of risk and safety in PE.

1.2.2 Teacher Practices

Focusing on the research involving teachers and among the paucity of empirical investigations, Young's (2007) study from Canada illuminated several of the problems that are highlighted in the research targeting teachers' RSM in PE. Young's interview

study, which involved 15 secondary school PE teachers, concerned teachers' potential concerns about tort liability[9] in relation to student injuries in PE. First, Young took notice of the teachers' uniformity of thinking, suggesting that they shared a professional culture in this respect. The teachers described a practice in which they consulted established safety guidelines and put particular focus on proactive strategies in terms of planning. The teachers seemed to use several strategies in their practices, whereas risk reduction was a measure in which teachers sought to reduce risk by adapting or modifying physical activities. Alternatively, the teachers also referred to risk avoidance in the sense that they excluded certain physical activities from their teaching, for example, swimming, OE, and gymnastics. Although the teachers claimed that the reasoning behind this practice was their consideration of students' safety and not liability concerns, their referrals to safety standards and guidelines could according to Young (2007) be seen as a form of legal guidance. Nonetheless, tort liability does not seem to have been a barrier to these teachers' practices. Also in Canada, Rothe (2009) brought forward safety guidelines as part of teachers' risk management strategies for enhancing safety and preventing injuries in PE classes. Based on focus group interviews with 60 specialist and generalist PE teachers and school administrators, Rothe (2009) explored participants' thinking and actions around safety guidelines in PE, suggesting that the use is diverse and situational, and the reasons for the uses vary. Some teachers might not use guidelines due to the burden of implementing too many guidelines. Rothe (2009) still argued that safety guidelines in PE ought to remain voluntary and at the teacher's discretion. Although it is not an empirical piece, an interesting contribution to the discussions about safety guidelines is Göpfert et al.'s (2018) review of school sports injury prevention policies (including in PE). According to the authors, "Schools need clear guidance on how to optimise safe and widespread participation in sports" (Göpfert et al., 2018, p. 2). However, their results suggest that schools are provided with limited quality guidance in the form of research-based knowledge underpinning these guidelines. Fitzgerald and Deutsch (2016) go a bit

[9] Tort is described as a wrong or the opposite of right, and through a legal lens, "a tort is an act or omission that gives rise to injury or harm to another and amounts to a civil wrong for which courts impose liability" (Legal Information Institute, n.d.). This definition relates to the English common law system, applicable to, for example, the United States, whereas Canada has a mixed system comprising both English common law and French civil law. The Norwegian law of torts (erstatningsrett) is based on the Scandinavian legal system (Kruse, 1970).

further when they propose that "once guidelines are in place and all staff has been trained, it is important that there are checks incorporated to make sure they are being followed" (p. 2858).

Park's (2018) multi-method study involving five elementary PE teachers in Korea represents a more recent empirical investigation addressing teachers' assessment and management of risk and safety in PE classes. The Korean teachers' practice may add knowledge of teachers' assessments of risk, their use of strategies in practice, and potential barriers restricting their practice in PE. The results suggest that teachers assess the inherent characteristics of physical activities, facilities and spaces, climate (weather), and managerial factors (resources) that may threaten safety in PE classes. Considering these teachers' practices, this involved, for example, planning for safe practice, reconstructing the curriculum, and making students cognizant of safety habits in PE. However, the teachers reported that a lack of knowledge of the students' characteristics was a barrier to their practice. Park (2018), along with Young (2007) and Rothe (2009), also pointed to the dilemmas and worries teachers may have about liability issues. The divergent perspectives of teachers and school management regarding safety can also be barriers to their practices (Park, 2018). The fear of being held accountable seemed to make the Korean teachers hesitant to teach certain activities and, thus, exclude those activities that induce risk in PE (Park, 2018, p. 460). In Canada, teachers excluded gymnastics from their PE classes not only for liability reasons but also because they reported a lack of competence to teach it (D. B. Robinson et al., 2020). A related aspect brought forth in the literature is teachers' education and knowledge concerning RSM.

1.2.3 Teacher Knowledge

Young (2007, p. 232) pointed to a potential lack of formal training focused on risk management for teachers because out of the 15 teachers who participated in his Canadian study, only one had participated in such training. This highlights that while teachers are trained to teach, that does not necessarily mean they have received RSM training. Teachers' knowledge was also the concern in a doctoral thesis addressing risk management in PE (Schaefer, 2008). Schaefer's (2008) analysis of survey data involving 601 teachers in New Mexico, USA, did not, however, identify any statistically significant (probability level of $p < 0.05$) results in the relationship of teachers' reports of student injuries with the teachers' educational backgrounds. Based on a mandate to teach

bicycling safety in PE classes in Florida, USA, areas where teachers lacked knowledge were identified through a survey of physical educators' (n = 142) knowledge of bicycle laws (Connaughton et al., 2012). There is an unclear boundary worth mentioning in this respect because some studies address both sports and PE, which is a reminder of the differing forms of PE in an international context. Concerned with injury prevention in PE, Sniras et al. (2020) investigated Lithuanian teachers' (n = 126) knowledge, with the hypothesis that "physical education teachers lack competencies for sport injuries and their prevention" (p. 894). Their survey results suggested that the teachers' competencies varied depending on their years of pedagogical experience and gender. Taking a wider perspective away from PE, Dahl et al.'s (2016) accident research offers some insights from a related but different school subject in Norway. Based on a survey of 155 teachers in upper secondary OE (friluftsliv) courses, the authors found that "teachers with 60 ECTS [European Credit Transfer and Accumulation System] credits or more in [OE] were less likely to have accidents" (Dahl et al., 2016, p. 231). According to Dahl (2021, p. 117), increasing teachers' formal competence through certifications and compulsory teacher training, among other measures, can potentially enhance the safety of school-based OE in Norway.

Although empirical research explicitly addressing teachers' RSM in PE seems scarce, several scholars, particularly in the United States, use case law or legal cases to establish strategies for risk management in PE. That is, rather than examining RSM from an empirical perspective, these strategies are developed by looking at the legal proceedings of court cases and determining appropriate teacher actions based on the outcomes of those cases.

1.2.4 Teacher Negligence and Liability

There is a whole body of literature devoted to court decisions in which a teacher's practice was scrutinized by courts of law. Cases of teacher negligence and liability are used as a foundation for advising teachers and providing tips for risk management in PE classes. A legal rationale behind risk management as a practice in PE seems pertinent in this line of literature, because "risk management has gained attention as a method to decrease liability and the likelihood of negligence" (Murphy, 2015, p. 33). The US-based literature comprises law reviews and opinion pieces mostly published in the journals *Journal of Physical Education, Recreation and Dance* (JOPERD) and *Strategies*, both related to the

organization Society of Health and Physical Educators (SHAPE America). JOPERD assigned a great deal of the second issue in 1993 to the problems of risk management and litigation because of increased court action in the United States in the 1990s (Conn, 1993). Some of the critical aspects of teachers' practices brought up in light of court decisions were supervision (Merriman, 1993) and instruction (Adams, 1993), that teachers need to establish and enforce rules and regulations (Gaskin, 1993), ensure that equipment is safe and that safety equipment is used (Brown, 1993), and conduct a proper classification of students (understood as ability grouping) (Lehr, 1993), indicating that these are areas where teachers must pay particular attention in their practice. Rauschenbach (1994) positioned improper supervision as the leading reason for claims of teacher negligence in the United States. More recent law reviews have also brought forward the importance of proper supervision (e.g., Sawyer & Gimbert, 2013) and instruction of students (e.g., Sawyer & Gimbert, 2014) for guarding teachers against liability. However, others shed light on the liability immunity granted to teachers for discretionary acts in several US states (Schaefer et al., 2017). Still, others have suggested that teachers can come to experience a dilemma in their practice where their worry about liability can conflict with inclusion and the teaching of students with special needs (McCoy et al., 2017). Considering that most of this literature is based on reviews of court decisions, Gray (1992) went a step further, using former court decisions in a discussion of survey results involving 220 US-based PE teachers' reports of teaching floor hockey. It was suggested that students are not necessarily offered protective equipment, and teachers need to plan classes where students are taught how to avoid injuries in floor hockey to avoid accusations of liability.

Taking this perspective of teachers' potential liability, studies have focused on providing frameworks, templates, and advice to teachers. Gray (1990) argued that the use of written lesson plans can help to prevent injuries and unwanted legal actions in PE. Coelho (2001) provided examples of how to risk profile physical activities as part of teachers' risk management. In a similar vein and referring to the prevention of injuries, Merrie et al. (2016) offered strategies to assist teachers in managing selected problem scenarios in PE classes. Some illuminated risk management as a process in this respect, such as Gray (1991), who presented three forms (documents): one to assess risk, one to generate proper strategies, and a third as a follow-up after teaching PE. Tanis and Hebel (2016) used a survey of 57 PE teachers' experiences with illness, injuries, and the use of

emergency action plans to create a template that included 13 points teachers need to respond to during a crisis, 4 points for after a crisis, and 4 points for a follow-up after the incident. Another example is Murphy's (2015) risk management inventory, designed to measure PE programs' risk management effectiveness, comprising supervision, instruction, emergency, and medical procedures, administrative behaviors, and equipment and facilities. It was proposed that teachers may use the inventory as a checklist for their compliance. Seidler (2006) illuminated how facilities can be a problem for educators, bringing to light critical issues with buffer zones and padding of facilities that can be liability concerns for teachers (Dougherty & Seidler, 2007). A related aspect in the literature distinguished itself by having a primary focus that was not on RSM but the teaching of a physical activity but that nonetheless included a section on safety and/or risk management advice for teachers.

1.2.5 How to Safely Teach Physical Activities

Hernandez and Strickland (2005) point to the importance of using safety standards in dance because "common sports like football and basketball present obvious opportunities for injuries. Less obvious, perhaps, are the hazards inherent in a dance class, which makes guidance in the form of safety standards especially important" (p. 20). Other examples are indoor rock climbing (Mittelstaedt, 1996) and discus bowling (Arroyo & Kozub, 2019). Nachtigal and associates (2016) sought to describe the risks related to softball, assisting in reducing the potential risk and teachers' liability. Concerning concussion research in sports and coaching, White et al. (2018) discussed whether tackling in rugby is appropriate for PE classes and concluded that tackling is an unnecessary risk and even unacceptable for school PE classes. Kim and associates (2020) positioned safety as part of teachers' common content knowledge in the teaching of pickleball. There are also books targeting the management of risk and safety in PE that offer guidelines for the safe teaching of different activities. Among them is Severs et al.'s (2003) book on safety and risk in primary PE in the UK. Chappell (2020) provided a guide for safe practices involving risk assessment and management in upper secondary PE in the UK. There is also a line of literature that suggests certain PE models may incur the need to pay attention to the management of risk in PE. D. W. Robinson (1992) argued for implementing the risk-sport model in response to what he described as the dominant technocratic approach in PE. More recent is the outdoor adventure education (OAE) approach in PE (Williams

& Wainwright, 2016a, 2016b, 2020). Williams and Wainwright (2016b) claimed that the OAE model is the only model for PE that positions risk-taking as an educational tool, and where risk management is a nonnegotiable feature in the model (2020), with implications for teachers' knowledge (2016b). Williams and Wainwright (2020) reminded teachers "It will require them to make informed risk-benefit decisions about the activities they introduce, as well as broadening their understanding of risk to encompass social and emotional as well as physical risk" (p. 225). Changing the spotlight from teachers to students, studies have suggested that the condition of the student body can create risk in PE.

1.2.6 Students at Risk in Physical Education

While students are the focus of injury risk in PE, studies have indicated that specific groups of students may be at higher risk of injury and create concerns for teachers. A relation between the research targeting the prevalence of injuries and injury prevention in PE seems pertinent in this respect. For example, Sollerhed and colleagues (2020) suggested that "the high prevalence of PE injuries appears to have two mechanisms: the renewal of inadequately recovered leisure-time injuries among highly active adolescents, and injuries among fragile inactive adolescents unfamiliar with exercise" (p. 10)[10]. For such reasons, inactive and obese children might be at greater risk of injury in PE because sedentary behavior might not prepare students to move efficiently. A key aspect here is that the risk of injury may be amplified due to students' intrinsic risk factors, such as not having the bodily resilience or physical literacy to avoid injuries. Some of the studies in the literature were, for similar reasons, concerned with the identification of poor mechanics in students and the screening of students' risk of injury by testing their movement competence for minimizing the risk of injury (e.g., Miller et al., 2020) or designing neurological training programs aimed at reducing students' sports injury risk (e.g., Richmond et al., 2016).

With the potential dilemma of inclusion in mind (McCoy et al., 2017), an Australian study suggests that teachers may feel the need for additional support in creating safe and inclusive environments in PE for students with disabilities (Overton et

[10] Based on a survey involving 1,011 adolescent students from Sweden, New Zealand, the United States, and Germany.

al., 2017). Young (2007) took notice that teachers may come to worry about the standard of care required of them in teaching students with special needs. Concerns about the risk and safety of students with disabilities have led some to review how adapted PE textbooks address risk and safety related to selected health conditions (Hughes et al., 2017). How teachers manage this issue in their practice is uncertain, but OE research may provide an example. Due to their inexperience with winter excursions, some students might experience exclusion from such trips in Norwegian upper secondary OE courses (Dahl et al., 2019).

1.2.7 Brief Summary

Every search has its limitations, including the searches conducted for this study. However, based on the literature presented here, there seem to be only a handful of empirical studies involving PE teachers contributing to the current knowledge. A body of work in the literature seems concerned with the development and informing of teachers' practices based on other teachers' potential malpractice. Seemingly creating a legal rationale for teachers' RSM in PE. The research also seems interested in testing teachers' knowledge in relation to student injuries in PE, creating the impression that the research is seeking to identify teachers' lack of knowledge in some respects. Groups of students are also singled out for being at greater risk of injury in PE classes, potentially creating additional concerns for teachers' practice. With a nod to research designs and methods, MMR that targets teachers' RSM in PE seems rather scarce in this body of literature. With what seems to be a lack of Norwegian research targeting teachers' RSM in PE, it is interesting to learn how this practice emerges in the Norwegian context.

1.3 Purpose and Research Problem

The purpose of this study is to generate research-based knowledge of teachers' RSM in PE that can potentially contribute to the development of educational policy, theory, and practice. This study is located within the educational sciences, relating to the larger area of social science studies of risk that seeks to "contribute to a better and more comprehensive understanding of risk in a complex and uncertain world" (Klinke et al., 2021, p. 412).

Based on this purpose, an initial working problem and a group of sub-research questions guided the planning and design of this study. This research took an MMR

approach, and this thesis contains three sub-studies comprising a document analysis (sub-study A), an interview study (sub-study B), and a survey (sub-study C). Research questions can be redesigned during the research process (Plano Clark & Badiee, 2010), and the research problem and sub-research questions in this study were redefined during the research process in dialogue with the results, leading to the final research problem that guides this thesis:

> *How does teachers' risk and safety management in physical education emerge as a professional practice?*

The research problem is explored in four articles comprising the following sub-research questions (RQ):

RQ1: *How are teachers' risk and safety management in physical education constructed in regulative documents?*

RQ2: *How [do] teachers develop their risk and safety management knowledge*?[11]

RQ3: *How do teachers perceive risk and safety management in their physical education teaching*?

(1) *What characterizes teachers' experiences with RSM?*

(2) *How do teachers perceive risk in PE?*

RQ4: *What characterizes teachers' risk and safety management practice in physical education,* and *how do teachers relate their practice to risk and safety management*?

Among the four articles, Articles I and II report on qualitative data, and Articles III and IV are mixed, reporting both qualitative and quantitative data. The results from the three sub-studies are reported in four articles. There is no 1:1 relationship between the sub-studies and the articles; the relationships are visualized in Figure 2. Table 1 provides an overview of the entire study.

[11] Presented as an aim in Article II.

Figure 2

Three Sub-studies and Four Articles in This Research

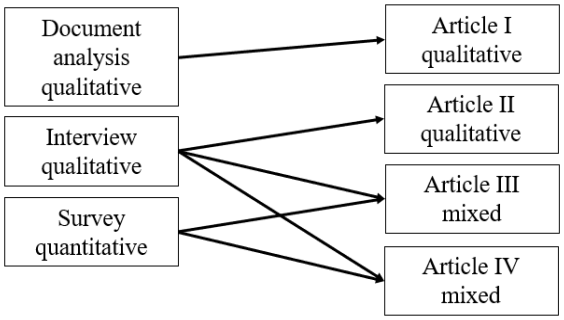


Table 1

Overview of the Study, Including the Four Articles

Study purpose	The purpose of the thesis is to generate research-based knowledge about teacher management of physical risk and safety in physical education that can potentially contribute to the development of educational policy, theory, and practice.			
Research problem	How does teachers' risk and safety management in physical education emerge as a professional practice?			
Research philosophy	Dialectical pluralism			
Study design	Mixed-methods research design: document analysis, interview, survey			
Articles	I	II	III	IV
Article design	Document analysis (qualitative)	Interview (qualitative)	Survey and interview (mixed)	Survey and interview (mixed)
Research question(s)	**RQ 1:** *How are teachers' risk and safety management in physical education constructed in regulative documents*?	**RQ 2:** *How [do] teachers develop their risk and safety management knowledge?* This research question is presented as an aim of the article.	**RQ 3:** *How do teachers perceive risk and safety management in their physical education teaching?* Sub-research questions: *What characterizes teachers' experiences with RSM? How do teachers perceive risk in PE*?	**RQ 4:** *What characterizes teachers' risk and safety management practice in physical education*, and *how do teachers relate their practice to risk and safety management*?
Journal	Journal for Research in Arts and Sports Education	Physical Education and Sport Pedagogy	Education Sciences	Frontiers in Sports and Active Living
Data	Documents	Interview transcripts	Interview transcripts Survey data	Interview transcripts Survey data
Analysis	Critical discourse analysis	Analysis inspired by grounded theory	Analysis inspired by grounded theory Descriptive statistics	Analysis inspired by grounded theory Descriptive statistics

The combined results from these articles are synthesized and discussed in this synopsis.

2 Theoretical Framework

This chapter presents the theoretical framework, which is constructed in an iterative process that includes both preselected theoretical perspectives and the data-driven selection of theory (Evans et al., 2011). The rationale behind this approach is that theory can guide the project while remaining flexible so that the theoretical lenses can enhance understanding of the data. While the complete theoretical framework is plural, the theory of practice comprises the overarching theoretical lens in this thesis. Further, it is not a generic practice theory but, the *theory of practice architectures*, which is an encompassing and holistic theory of professional practice (Kemmis, 2010; Kemmis & Grootenboer, 2008). Kemmis and Grootenboer's (2008) evolving theory is positioned in the sociocultural landscape of practice theory (Kemmis, 2010, 2012; Kemmis et al., 2012, Kemmis et al., 2017; Mahon et al., 2017). This emerging perspective is chosen because it can relate real-life practice with the higher-order concept of practice, creating a link between the articles and between the articles and the synopsis. With this choice, the thesis addresses teachers' RSM in PE as a practice. While teachers' work is theorized in diverse ways, the practice lens not only offers a positioning stance on what teachers' RSM is and what a practice is, but it illuminates the intersection and interdependency between the context and the ways professionals enact practices (Mahon et al., 2017). However, to zoom in on the individual and for enhancing the understanding of teacher knowledge, this thesis puts forward a theoretical framework that begins with the concept of praxis inspired by Greek antiquity and Aristotle (Kemmis & Smith, 2008), and further on with Michael Polanyi's (1983) theory of tacit knowledge, Donald Schön's (1987, 1991, 1992, 1995) theory of reflection, and John Dewey's (1916/2008, 1938a) theory of experience. With this choice of theory, the thesis holds a pragmatic and holistic perspective of knowledge that rejects the dualistic conception of body and mind, empirical and rational knowledge, objective and subjective knowledge, and intellect and emotions (see, e.g., Dewey, 1938a, pp. 388–401; Polanyi, 1983, p. 20; Schön, 1991, p. 49, 1992, p. 121) and invites to exploring RSM knowledge through these perspectives and the integration of these aspects. Against this backdrop, a risk strategy typology developed by Jens Zinn (2008, 2016) is proposed as a synthesis of the varied and combined ways teachers can approach risk and uncertainty in their practice. With the abovementioned choice of practice theory as an overarching theoretical perspective, it means that the theoretical lenses used in Articles I - IV are brought together under the theory of practice architectures in this thesis.

The initial sections of this chapter elaborate on how a practice is understood and how the theory of practice architectures can assist in understanding what professional practice is (ontology). I agree with Crotty (1998) that there is an inherent relationship between ontology and epistemology, given that an epistemological position incorporates assumptions about what knowledge is and, consequently, what humans might gain knowledge about and how knowledge may be generated. In this position, the ontology of professional practice is connected to the epistemology of professional practice.

2.1 The Ontology of Professional Practice

The theory of practice architectures draws on Theodore Schatzki's (2003, 2005) social ontology, where practices are indeed understood as social. This indicates that a practice is not a mere aggregate of individual practitioners' actions and thoughts or determined by larger structures but operates at a site where the individual and structural dimensions meet and interact in a dynamic relationship (Schatzki, 2005). It is the practice that becomes the focus of the analysis because the enactment of the social is through the practice (Mahon et al., 2017, p. 5). Practices can be seen as "organized human activities" (Schatzki, 2005, p. 471), which means that a professional practice gathers around a project with a particular purpose (Kemmis & Grootenboer, 2008; Mahon et al., 2017). By illuminating the ontology of practices, they can be made explicit (Schatzki, 2003, p, 189). However, it is through the practitioners' performance that professional practices emerge (Mahon et al., 2017). This means that gaining insights into a practice requires paying attention to the ways a practice is enacted.

2.1.1 The Enactment of Practice

A professional practice emerges through what practitioners say and think (sayings and thinkings), what they do or intend to do (doings), and their relations with other actors and their context (relatings) (Kemmis & Grotenbooer, 2008). A practice can therefore be described as

> a socially established cooperative human activity involving utterances and forms of understanding (sayings), modes of action (doings), and ways in which people relate to one another and the worlds (relatings) that "hang together" in characteristic ways in a distinctive project. (Mahon et al., 2017, p. 8)

In this thesis, teachers are positioned as the practitioners, which means that teachers' RSM in PE can come to emerge as a professional practice through teachers' enactments. Despite that, the strength and reason for choosing practice theory and this particular theory of practice lie in the invitation to pay attention to the context, because a practice is enmeshed in structural arrangements external to the individual practitioner—the practice architectures (Kemmis & Grootenboer, 2008, p. 37). In other words, a practice resides not only with the practitioners and their sayings, doings, and relatings but is also shaped by context because a "practice is also socially, discursively, culturally and historically formed" (Kemmis, 2010, p. 141).

2.1.2 Practice Architectures

Every practice has its own practice architectures, the structures that condition a practice (Mahon et al., 2017). According to Kemmis and Grootenboer (2008), these are threefold and involve the dimensions of cultural–discursive (language and discourse), material–economic (physical facilities and time-based resources such as time schedules), and social–political (rules, regulations, and relationships). This implies that practices are construed, formed, shaped, enabled, and constrained by the conditions of which the practice is a part. The cultural–discursive arrangements enable the practitioners' use of language and functions as a resource to describe, reason, and rationalize a practice, thereby providing insights into how a practice is culturally and discursively shaped (Kemmis, 2010; Kemmis & Grotenbooer, 2008; Mahon et al., 2017). This means that the knowledge of a practice is prefigured by discourses and comes forward in the language that is used (Kemmis, 2010). What practitioners say or do not say can thus be seen as part of the practice.

The social–political arrangements represent the powerful investments in a practice (Kemmis et al., 2017; Mahon et al., 2017) in terms of the rules, roles, and policy, which come forward in the practitioners' relations to other stakeholders and the context. Bourdieu's (1977, 1979/1995, 1990) concept of doxa can assist in demonstrating how power can generate a certain understanding that can be taken for granted and described as common sense in a practice.[12] A professional group is described as having jurisdiction

[12] Doxa can be understood as beliefs that appear natural and self-evident for those involved (Bourdieu, 1995).

over certain tasks, autonomy in how to conduct these tasks, and the opportunity to use their professional discretion (Abbott, 1988; Freidson, 2001). However, professionals must interpret and enact regulative policies in their practice (Molander et al., 2012). This is where the doughnut metaphor of legal philosopher Ronald Dworkin (1978, p. 28) is offered as a lens for exploring the relationship between regulation and professionals' use of discretion.

Moving on to the material–economic arrangements, these provide physical resources to a practice, involving, for example, equipment and time schedules, and can be seen as arrangements that prefigure the ways a practice is enacted in terms of the practitioners' actions (doings) (Kemmis et al., 2017; Mahon et al., 2017). This involves necessary considerations of what they are not doing in a particular context or, potentially, the ways the practice activities change because of the physical resources that are or are not available to them.

This theory has consequences because changing a practice requires changing the arrangements in which the practice is enmeshed (Kemmis, 2012). The arrangements are not considered static (Kemmis et al., 2017) because they stand in a dialectical relationship with the practices (Mahon et al., 2017, p. 12). The theory has transformative potential, as it may assist in exploring how the specific conditions prefigure a professional practice (Kemmis et al., 2017, p. 243; Mahon et al., 2017, p. 20). However, it is still not that straightforward, because the sub-theory of *ecologies of practices* (Kemmis et al., 2012, p. 34) requires that a practice can be construed as part of several other practices. After all, "practices coexist and are connected with one another in complexes of practices in which each adapts and evolves in relation to the others with local and regional variations" (Kemmis et al., 2012, p. 36).

The first impression might still be that a practice is predetermined by these structures. However, a practice is considered enmeshed, but not anchored, in the arrangements (Kemmis & Grootenboer, 2008; Kemmis et al., 2017; Mahon et al., 2017). This is central to the understanding of practitioner agency and variations in the enactment of practice (Kemmis, 2010). The practitioners' enactment also relies on their personal experiences, intentions, skills, and beliefs, described as the practitioners' "dispositions or habitus" (Kemmis et al., 2017, p. 249). Another strength of the theory, therefore, rests in the potential for opening up the practitioners' dispositions (Kemmis, 2010) and for performing otherwise (Kemmis et al., 2017, p. 249). Nonetheless, practices "may have a

tendency to be reproduced" (Kemmis et al., 2017, p. 247) because a practice is performed in intersubjective spaces bearing on practice traditions. Regarding the social ontology of practice (Schatzki, 2003, 2005), practices unfold in three intersubjective spaces: a semantic space where language is the medium and emerges in practitioners' sayings, a physical space-time brought about by work and activity that emerges in practitioners' doings, and a social space mediated by power, that emerges in practitioners' relatings (Kemmis et al., 2017, p. 253). It is in this threefold space, that the practitioners' enactment of practice and the arrangements that prefigure practice intersect.

A professional practice carves out as distinct in the sense that it not only relates to the practice of an occupational group but also to what is commonly described as a professional way of conducting a practice (Mahon et al., 2017). This means that a professional practice is not only performed by a certain group of people (i.e., teachers), but it also requires the group to perform the practice with a certain quality (Mahon et al., 2017).

2.2 The Epistemology of Professional Practice

The key question arises: What is good practice? The core of a professional practice centers around what practitioners "can come to know" (Mahon et al., 2017, p. 6) because it can be crucial for the quality of their practice. Considering these important questions, this thesis sets out to explore teacher knowledge through the concept of praxis (Kemmis & Smith, 2008), theory of tacit knowledge (Polanyi, 1962, 1983), reflection (Schön, 1987, 1991, 1992, 1995), experience (Dewey 1916/2008, 1938a), and rounds out with a risk strategy typology (Zinn, 2008, 2016). Based on the assumption that professional knowledge is complex, and because it can be difficult to know what acting professionally means (Pitman & Kinsella, 2019, p. 60), the concept of praxis (Kemmis & Smith, 2008) brings to the forefront the moral dimension of professional practice.

2.2.1 Praxis

The thinking behind praxis in this thesis is that "many practice situations demand moral-ethical judgement and creative problem solving, rendering reliance on prescribed procedures or rule-following action inappropriate" (Mahon et al., 2017, p. 14). To understand what praxis means, Kemmis and Smith (2008) refer to three forms of reasoning in professional practice, each guided by a distinct disposition and related to a

certain way of acting. Theoretical reasoning (episteme) aspires to search for truth and is performed through theoria, described as the act of contemplation. Technical reasoning (techne) seeks reason through the true "rules of the craft" (Kemmis & Smith, 2008, p. 15) and comes forward through poiesis, the action of making or producing something to reach a defined goal (Kemmis & Smith, 2008). However, the limitations of technical reasoning (techne) create a need for practical wisdom (phronesis) (Kemmis, 2012, p. 151; Kinsella & Pitman, 2012, p. 163). Practical reasoning (phronesis) attends to a moral agenda and the search for wisdom and prudence. About education,

> phronesis is the kind of reasoning that guides the teacher to think educationally, which means to be committed to the double task of the self-development of each individual learner in her or his own interests and, simultaneously, the development of the good of humankind. (Kemmis & Smith, 2008, p. 16)

This is also where the action praxis is distinct in the sense that it incorporates doing good based on what is proper and wise.[15] A note ought to be placed here that there is an ongoing discussion in the educational literature regarding the meaning of the concept of praxis and in relation to practice (Mahon et al., 2020). While some position praxis as pedagogy (e.g., Arnold & Mundy, 2020) others (Mahon et al., 2020) position praxis as a distinct practice.[16] With the acknowledgment that there is a moral dimension of professional practice, it opens for that RSM can come to center around the practical wisdom that emerges in teachers' actions. There is yet an important social aspect inherent to the theory (Mahon et al., 2020). According to Kemmis and Grotenbooer (2008), "*praxis* development cannot and does not occur in a vacuum" (p. 57). This suggests that teachers' communities of practice can be crucial for enabling praxis in PE. In this way, the theory of practice architectures calls attention to how the social circumstances of teachers' RSM are conducive to praxis. Albeit the critique of techne and poiesis and an emphasis on phronesis and praxis can reduce practice to moral questions (Gilje, 2017, p. 26),

[15] One way of understanding this distinction is that poiesis relates to the craft of making a product, a means with an end kind of action, praxis relates to the activity itself and of doing something with practical wisdom (Kinsella & Pitman, 2012; Parry, 2020).

[16] In the context of education Mahon et al. (2020) define praxis as an "educational practice that is informed, reflective, self-consciously moral and political, and oriented towards making positive educational and societal change" (p. 15).

uncertainty remains a core dilemma in professional practice. With the assumption that practitioners cannot necessarily resolve the uncertainty in their practice, they still have to deal with it (Kemmis, 2012, p. 153). Uncertainty brings to the fore both experience (Kemmis & Smith, 2008, p. 33) and reflection (Mahon et al., 2020) as central categories in the epistemic dimension of praxis.

This is where the thesis turns to the theory of tacit knowledge (Polanyi, 1962, 1983) as it offers a useful theoretical perspective for enhancing understanding of teacher knowledge because it refers to the knowledge that a teacher may develop through experience. At the same time, the perspective sheds light on a potential dilemma for teachers, that this knowledge can be difficult to explicate or explain.

2.2.2 Tacit Knowledge

The core of tacit knowledge can be described as Polanyi (1983) put it, "we can know more than we can tell" (p. 4). While the theory of tacit knowledge shows that knowledge is not necessarily expressed in words or explicated it provides a contrast to the knowledge that can be explained (Eraut, 2000). Albeit this might initially present itself as a dichotomy, for Polanyi (1983), all knowledge comprises tacit dimensions. It was on the particularities' integration into a unity that Polanyi (1962) seemed to have built and advanced his theory of the tacit. For teachers, it might entail that their knowledge may become largely or partially tacit with time and experience, and that they may experience difficulties in expressing their knowledge. With the concept of tacit knowing Polanyi (1962) put at the forefront the embodied and active dimensions of knowledge that are foremost expressed in action. Polanyi (1962) gave several examples of skills, such as bicycling, where the "*performance*" (p. 604) of the skill represents the tacit knowing. Nevertheless, be it the playing of an instrument or the feeling for the ball in play, the tacit knowing lies in the integration and not the explicit inferences of the particularities that make out the "comprehensive whole" (Polanyi, 1962, p. 601). Tacit knowing might at this point appear to be centering around merely internal neurological processes but Polanyi (1962) also referred to mental aspects related to "*understanding*" (p. 604). One example is the tacit knowing of external clues involved in for example face recognition (Polanyi, 1962). Despite that this may initially impel a dualistic way of thinking, Polanyi (1962) made clear that "the two leading types of tacit knowing (the practical and the intellectual), these two are always found combined to some extent, and are sometimes

found combined equally" (p. 604). Thus, the tacit knowing is in the action, where knowledge and action are integrated in practitioners' "intelligent action" (Schön, 1991, p. 50). This suggests that a PE teacher's tacit knowing can come to emerge through for example a teacher's movement relative to the students' actions in a PE hall. Albeit teachers might be aware that they are moving at some level they might not be able to express the particular clues behind their choice to move.

Despite the theory's usefulness for gaining a more complete understanding of teacher knowledge, researchers critiqued the epistemic worth (Fodor, 1968) early on, and the epistemic acknowledgment of tacit knowledge is not necessarily unproblematic. Some are critical believing this theoretical perspective may hinder investigations of actual practice (Schmidt, 2012). With the position that practitioners can come to know more than they can express in words, it can still be necessary to account for tacit knowledge in the extension of professional legitimacy (Toom, 2012). While not all situations require the knowledge to be explained, it is still debated whether it is possible to explicate it (Malik, 2021), either in part or to its full extent. Eraut (2000) takes notice of the potential elusiveness of the theory and the need for clarifying whether tacit knowledge represents "the knowledge which is *not* communicated, or knowledge which *cannot* be communicated" (p. 118). Polanyi's (1962) own words regarding tacit knowing may offer a partial response to this call but also a reminder.

> Tacit knowing can, indeed, be identified with understanding, if understanding is taken to include the kind of practical comprehension which is achieved in the successful performance of a skill. This being allowed for, understanding may be recognized as the faculty, cast aside by a positivistic theory of knowledge, which the theory of tacit knowing acknowledges as *the central act of knowing*. (Polanyi, 1962, p. 605)

This is where the thesis turns to Schön's (1987, 1991, 1992, 1995) theory of reflection with the position that teachers can come to enact and develop their knowledge through reflection. The theory can assist in exploring how tacit knowledge can become verbalized or developed in other ways through reflection.

2.2.3 Reflection and Experience

Before zooming in on Schön's (1987, 1991, 1992, 1995) theory of reflection it must be noted that there are multiple models of reflection that would seem useful for exploring

teachers' reflective practice[18], and among them are for example Dewey's (1938b) theory of inquiry and reflection. Although Dewey's theory of "reflection was meant as an alternative to instrumental ways of thinking" (Fendler, 2003, p. 18), it is exactly criticized for being instrumentalist. While Schön (1992) gave credit to Dewey (1938b) when he developed his theory, there are differences between their reflective models because, for Dewey (1938b), the reflection might suppose a stop-to-think (Hébert, 2015). It seems reasonable that if teachers continuously were to stop and reflect before acting it would most likely impede their teaching. Schön's (1987, 1991, 1992, 1995) intuitive model of reflection brings to the fore a crucial temporal dimension that opens the door for practitioners' reflection can be conducted both during action (reflection-in-action) and following action (reflection-on-action) (Schön, 1991). This means that Schön's (1987, 1991, 1992, 1995) theory of reflection can be seen as a development inspired by Dewey because reflection-in-action does not require a stop-to-think or even the use of words (Schön, 1992). It does not mean that there is no value in deliberate reflection, but reflection-in-action opens for that reflection can be performed amidst the action and take the form of a bodily feeling. Schön (1987, p. 22, 1991, p. 52) draws explicitly on Polanyi's (1983) theory of tacit knowledge in his theory and with a nod to tacit knowing, this view on knowledge proposes that practitioners can be unaware, before or during the performance of the knowing. While knowing-in-action represents the knowledge of expert performance in what Schön (1992) described as "familiar situations" (p. 124), reflection-in-action "is central to the art through which practitioners sometimes cope with the troublesome 'divergent' situations of practice" (Schön, 1991, p. 62). At this point, it is necessary to bring to the fore the message that underpins this theoretical perspective.

> If the model of Technical Rationality is incomplete, in that it fails to account for practical competence in "divergent" situations, so much the worse for the model. Let us search instead for an epistemology of practice implicit in the artistic, intuitive

[18] There are discussions in the literature regarding the concepts of reflection and reflective practice including discussions of Schön's theory. See, for example, Fendler (2003) who applies a critical perspective on "the politics" (p. 21) of teacher reflection and Russell (2013) who critiques the critique of Schön's (1987) theory of reflective practice. Standal and Moe (2013) address reflective practice in PE research.

> processes which some practitioners do bring to situations of uncertainty, instability, uniqueness, and value conflict. (Schön, 1991, p. 49).

In other words, Schön (1991) saw the limitations to technical problem-solving as creating a need for a more encompassing theory of knowledge. Albeit it is possible to question the current relevance of Schön's theory and message, it does not exclude the theory from being relevant today. Relating teachers' RSM with the concept of "*professional artistry*" (Schön, 1987, p. 22), reflection-in-action can be central for the artistry of teachers when dealing with risk and uncertainty in their practice. This implies that practitioners are not necessarily cognizant of the reflection or involve a reflection of the reflection-in-action (Schön, 1992). It implies that teachers' reflections can be intuitive and spontaneous – reminiscent of a form of knowledge that does not derive from prior planning.

Although Polanyi (1962) might have been reluctant towards the possibility of transforming tacit knowing into explicit and codified forms, it might be necessary for teachers to make conscious adjustments that are not limited to the response to clues and to demonstrate their knowledge in some ways (Eraut, 2000; Toom, 2012). Eraut's (2000) discussion of experiential learning in relation to tacit knowledge sheds light on the possibility that teachers' tacit knowledge does not necessarily comprise the better form of knowledge in all situations. On that note and in terms of teachers' conscious development of their practice, Schön (1987, p. 26) suggested that the reflection of tacit knowledge can come to facilitate a continuous process of adjustment. This suggests that reflection-on-action can support practitioners in making changes to forthcoming actions. The reflective practitioner is thus understood as a "researcher in the practice context" (Schön, 1991, p. 68). This way of seeing the professional practitioner relates to what Dewey (1938a, pp. 52-53) described as a disposition or habit of learning from experience. For teachers, it can be a response to the uncertainty and risks they might experience in their practice. Despite this, it seems unlikely that reflection by default leads to change and development. It is not necessarily the case that people benefit equally or arrive at a similar position following the reflection (Fendler, 2003). While Schön (1987, 1991) was clear that the dominant epistemology failed to take account of the complex, diverging, and ethical aspects of professional practice, and even though reflective practice emerges as an informed practice, it is not equally clear how the reflective practitioner relates to the ethical commitment and moral action (Emslie & Watts, 2017). This is also where Dewey's (1916/2008, 1938a) theory of experience can assist in separating those

experiences that may or may not be educative. As Dewey (1938a) contended, "mere activity does not constitute experience" (p. 163). According to Dewey (1916/2008, There are two principles or criteria for an experience to be educative: interaction and continuity (Dewey, 1916/2008, p. 62, 1938a, p. 164).[19] An educative experience can first be seen as an interactional process with the environment (principle of interaction). The practitioners' interpretation of an experience can thus relate to their social and professional communities and their physical environment. An educative experience further involves both active and passive dimensions according to Dewey (1938a) because "when we experience something we act upon it, we do something with it; then we suffer or undergo the consequences" (p. 163). Where to Dewey (1938a), "thinking is the accurate and deliberate instituting of connections between what is done and its consequences" (p. 177) as it connects the past with future experience (principle of continuity). For example, a PE teacher who experiences an accident as a problematic situation can come to reflect upon their practice and seek to develop it for preventing an accident from happening again. Dewey (1916/2008, p. 39) also reminds us that experience can hinder development. For example, a teacher who experiences an accident in PE can also come to restrict student activities in fear of something bad happening in the future. Although the concept of experience is criticized for lacking conceptual differentiation, "Dewey is credited with having emphasised this wholeness in experience" (Hohr, 2012, p. 7). There is still an unresolved issue with the Deweyan experience as the learning from the experience might present itself as universal with this theory. The problems that possibly can lead to an educative experience can be criticized for not accounting for individual interpretations (Schön, 1992, p. 123). What makes out or defines a problematic situation for one teacher does not necessarily interpret as one for another. With principles of continuity and interaction in mind, people may learn different things from a similar incident because they draw on their past experience and interact with their environment. On that note, the thesis turns to Zinn's (2008, 2016) triangular typology of risk strategies. The typology compliments the theoretical framework because it opens for different interpretations and combinations of different strategies, which can create varied practices among teachers.

[19] Educative experiences are applicable to both teachers and students in PE.

2.2.4 A Synthesis of Strategies

Notable for this typology is Zinn's (2008, 2016) questioning of the dominant belief in instrumental–rational strategies for dealing with risk and uncertainty, a position that resonates with Schön's (1991, p. 49) critique of technical rationality. This suggests that the critique potentially holds relevance today and in relation to the concerns of RSM. With the theory of practice architectures in mind, Zinn (2016) states that while the typology seeks to "capture micro-level complexities of people managing competing risks and opportunities in everyday life" (p. 349) it is with the recognition that "social forces" [20] contribute to how people deal with risk and uncertainty. However, the typology is in this thesis put forth for an inclusive approach to how it is possible to deal with risk and uncertainty in PE. It is especially the potential of combining different strategies, in what Zinn (2016) describes as "reasonable" (p. 358), that illuminates the strength of this typology. The triangular typology comprises rational, in-between, and non-rational strategies (Zinn, 2016, updated version) and it is the attempts for direct control of risk that create the basis of rational strategies. However, according to Zinn (2016), rational strategies do not exclude other strategies from being reasonable; they just contain other rationales. The in-between strategies of trust, intuition, and emotions that relate to tacit and experiential knowledge (Zinn, 2016) can complement the rational ways. Albeit it seems useful to examine potential pitfalls of an activity or the organization of a lesson in PE, it can be equally important and reasonable to trust students in an educational setting even though the outcome is uncertain. Belief, hope, and faith are examples of non-rational strategies that can potentially provide contrast in the agenda for gaining control, as they are "characterized by a lack of control" (Zinn, 2016, p. 352). However, as Zinn (2016) declares, a rational approach is not necessarily preferable for dealing with risk and uncertainty in all contexts or situations. There is a possibility that teachers, for example, might not wish to make obsolete or control the risk if it implies that the potential of the learning activity is haltered. This suggests that other or additional strategies might be preferred or combined in a complex practice. A question that permeates this thesis is whether risk and uncertainty are undesirable by default. It is possible that risk-taking (Luhmann, 1993; Zinn, 2019) can offer opportunities that certainty and control cannot. The thesis can be seen to extend the typology at this point, as it is oriented toward dealing

[20] Zinn (2016, p. 349) refers to these social forces as being institutional, structural, and cultural.

with the undesired consequences of risk (Zinn, 2008, 2016). However, there is a limitation to the typology as it does not provide an answer to what exact mix or combination of strategies that makes a practice reasonable. As a potential response to this dilemma, Zinn (2016) makes an argument that this is context-dependent, and that people mix different strategies depending on their available resources. This suggests "researching when and how different strategies are mobilised and how they combine in different ways" (Zinn, 2016, p. 349). Against this backdrop, this thesis invites seeing the typology as a potential synthesis when dealing with risk and uncertainty because knowledge derived from different disciplines is often integrated in a form of practical synthesis in professional practice (Grimen, 2008, p. 71). However, professionals not only combine and make use of knowledge from different disciplines but also draw from different forms of knowledge (Gilje, 2017, p. 21). Inspired by Grimen (2008) and Gilje (2017), the thesis therefore invites seeing Zinn's (2008, 2016) typology as a synthesis by combining risk strategies in practice and then potentially making out a "reasonable practice" (Zinn, 2016, p. 358).

2.2.5 Brief summary

This concludes the theoretical framework that guides the thesis. As a reminder, the thesis' complete theoretical framework is the result of a process involving both preselected theoretical perspectives and data-driven selection of theory. While the framework comprises selected parts of larger theoretical works, I have chosen to present several theoretical perspectives which can illuminate differing dimensions in the data. While this choice can be criticized because it limited the potential of going into depth from a select theoretical perspective, the complete framework is meant to enhance the understanding of teachers' RSM in PE and to capture more of the complexity of teachers' practice. It allowed me to examine how teachers' RSM in PE was constructed by the use of language in select regulative documents (Article I), to understand how teachers can come to develop their RSM knowledge (Article II), to discuss and enhance the understanding of teachers' perceptions of RSM in PE (Article III), and to differentiate between teachers' risk strategies and suggest how they combined them in their practice (Article IV). In this synopsis, it allows me to draw on different theoretical perspectives within an overarching theoretical framework. For these reasons are the different contributions integrated in the discussion of the research problem in this synopsis. However, theory is neither straightforward in practice nor able to capture the complexity of real-life practice. With

this in mind, gathering diverse empirical data about teachers' RSM in PE is crucial for increasing knowledge about this practice. The next chapter presents the methodology and methods used to generate the empirical data for this study.

3 Methodology and Methods

The purpose of this chapter is multifold. First, it seeks to position the research philosophy that underpins this thesis. Second, it seeks to justify the research design and the methods used to answer the research problem. This involves an elaboration of the study's sampling strategy and three samples, the three methods that were used to produce the data for this study, and the analytical frameworks that were employed to analyze each of the data sets. Finally, the chapter concludes with a discussion of the quality of this thesis and the pertinent ethical considerations.

3.1 Research Philosophy

The philosophical underpinning of this thesis encompasses a theory of ontology, which is referred to as the study or theory of existence and reality (Crotty, 1998). An ontological position, therefore, involves certain assumptions and claims about what reality is. This study pertains to a certain way of seeing and thinking about reality, knowledge, and research. With the assumption that teachers' RSM in PE can be better known through different ways of knowing, I position myself in the philosophical metaparadigm dialectical pluralism (DP). I acknowledge that there are plural positions on reality (ontology) and ascribe to a dialectical theory of knowledge (epistemology) (R. B. Johnson, 2017). The implications this DP position has for the thesis will be addressed shortly, but first, Pearce (2015) describes three approaches to research: "(a) striving to be both subjective and relativistic, (b) aiming to be objective and absolutist, or (c) taking an intersubjective, mixed, or perhaps critical realist standpoint" (p. 44). The DP stance takes in a third paradigm positioning, relating to Pearce's (2015) third approach (c), also because DP is described as a metaparadigm and an alternative to the monist stances. This philosophy does not position differing world views against each other, either as mutually exclusive or incommensurable, but rather sees them as complementary for understanding the world. I recognize that the position DP represents, which is not restricted to one stance, can be problematic from a monist philosophical viewpoint because the pluralistic perspective accepts that some may approach research by assuming that there is one reality, while others operate from a perspective of multiple realities (Schoonenboom, 2019). However, critique is in any case anchored in a (philosophical) position (Mitchell, 1982) and indeed, it strengthens the meta-argument that a DP approach can contribute to dialogue between differing views and a more complete understanding of the problem (R.

B. Johnson, 2017). Concerning risk research, I agree with Klinke and associates (2021) that a diverse understanding of risk strengthens the need for pluralist reasoning and for collaboration between views and disciplines to enhance understanding of complex risk problems. Nonetheless, researchers place a reminder that dialectical processes may contain "periods of relative unity and disunity" (Goertzen, 2010, p. 203), and a synthesis may not comprise an equilibrium or agreement but instead conflict or an agreement to disagree (R. B. Johnson, 2017, p. 161).

Moving on to methodology, understood as the theory or study of the assumptions behind research practices (Bryman, 2008), I seek to unpack the reasoning behind and justify the study's design in a methodological discussion. The most apparent implication of the DP position is that it allows for the use of multiple research methods that can be seen as drawing upon differing underlying assumptions of reality and knowledge. The DP orientation can therefore be seen to extend into this study's research design not only because it allows but also creates a need for MMR. In MMR and this study, it is the research problem and questions that drive the methods that are used (Onwuegbuzie & Leech, 2006, p. 478).

To provide a reference for DP that also recognizes pluralism in research, pragmatism is the most common philosophical reference in MMR (R. B. Johnson, 2017). While a pragmatic orientation may pay attention to the consequences of choice and the usefulness of research (Morgan, 2007, 2014), the DP position does not circumvent research philosophy as a central category but shifts the focus to dialogue between positions (R. B. Johnson, 2017). It does not, however, mean to me that it is not possible to make any pragmatic choices while doing research. I understand DP as a position that rests on the rationale that the world is inherently complex and that diverse approaches and data may enhance and complement our understanding of it (Greene, 2008 p. 20; R. B. Johnson, 2017, p. 158). The reasoning is that knowledge of complex problems, and in this study of teachers' RSM in PE, can be better obtained through multiple approaches and perspectives (Greene & Hall, 2010) and enhance the ecological validity of the study (Gehrke, 2018). The MMR approach in this study can be described as a way of thinking that acknowledges and is open to what Greene (2008) described as "multiple approaches and ways of knowing" (p. 20). Educational research is recognized for its complexity (Berliner, 2002), and as a potential response, there is increasing use of MMR in education (Creswell, 2015; Gibson, 2010; R. B. Johnson, 2017). There are also explicit calls for

conducting MMR addressing PE teaching due to the complexity of teaching the subject (König, 2016). A main rationale behind the MMR design of this study rests in the potential for exploring complex phenomena and research fields where current knowledge is scarce (R. B. Johnson, 2017).

3.2 Research Design of the Present Study

This study has an MMR design (Creswell, 2015; Schoonenboom & R. B. Johnson, 2017) and takes a complementary approach to MMR anchored in the DP position (B. Johnson & Christensen, 2012; Schoonenboom & R. B. Johnson, 2017). While Maxwell (2016) argues that the research practice of combining qualitative and quantitative approaches has a long history without being identified as MMR, research conceptualized as MMR can be seen to have flourished following the "paradigm wars" in the 1980s (Gage, 1989). Since then, MMR has gained criticism for what some consider to be incommensurable assumptions of quantitative and qualitative research approaches (Creswell, 2015; Greene & Hall, 2010; R. B. Johnson, 2017; B. Johnson & Christensen, 2012). Albeit this study was not designed with the theory of practice architectures in mind, I agree with Kemmis (2010) that multi-method approaches may be used to study professional practice. However, the MMR design of this study comprises another multidimensional approach, because it "combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration" (R. B. Johnson et al., 2007, p. 123). However, there is confusion and difference in opinion on what separates multi-method methodology and MMR (Anguera et al., 2018; Fetters & Molina-Azorin, 2017a, 2017b). The orientation that underpins this thesis is twofold. With the view that a multi-method study may combine either qualitative or quantitative data, an MMR study combines *both* qualitative and quantitative data (Anguera et al., 2018; Creswell, 2015; Fetters & Molina-Azorin, 2017b). This means that MMR has the advantage of combining the strengths of both quantitative and qualitative data that may complement each other (Greene & Hall, 2010). However, some consider MMR to be one approach within multi-method methodology (Fetters & Molina-Azorin, 2017b). What makes MMR distinct in this view is that MMR is an approach that not only combines the different types of data but *integrates* them. Integration is thus positioned as the core element that characterizes the methodological thinking and makes MMR distinct

(Fetters et al., 2013; Schoonenboom & R. B. Johnson, 2017) and different from (other) multi-method methodology (Fetters & Molina-Azorin, 2017b). The prevailing thinking is that the use of different methods and the integration of different types of data and their results can substitute for some of the weaknesses of selecting a single or multi-method approach (Creswell, 2015). Against this backdrop, this study falls within both orientations to MMR. The purpose of MMR, and the design of this study, is to respond to the research problem by generating and integrating different types of data that provide complementary insights and nuances into the research problem (Greene & Hall, 2010; R. B. Johnson, 2017; Mertens & Hesse-Biber, 2013) which neither qualitative nor quantitative data can offer alone. How Creswell (2015) describes it can make this clearer: the strength of MMR lies in the combination and integration of statistical trends and distribution across topics (quantitative data) with, for example, the personal stories of individuals (qualitative data). Each type of data adds something to what can be described as the integrated whole—and together, they create a synthesis of better understanding than each component could provide on its own (Greene & Hall, 2010; R. B. Johnson, 2017; B. Johnson & Christensen, 2012; Schoonenboom & R. B. Johnson, 2017). The position that the dialogue between the different types of data and perspectives may enhance a synthesis (Greene & Hall, 2010; R. B. Johnson, 2017) agrees with this thesis. However, all approaches have limitations, and an MMR study may not provide sufficient knowledge of a problem, either. Some issues are inherently complex and difficult to grasp with any approach, and different research methods may share some common weaknesses (Brannen & O'Connell, 2015, p. 270). However, before zooming in on how integration is conducted in this study, I will unpack the study's design.

With the discussion of MMR and multi-methods methodology in mind, it is also clear that different orientations within MMR still refer to and give weight to differing aspects of MMR and differing typologies (Creswell, 2015; Fetters et al., 2013; Schoonenboom & R. B. Johnson, 2017; Shannon-Baker, 2015). Schoonenboom and R. B. Johnson (2017) stress the need for constructing designs to fit the study in question and that basic typologies are more often a point of departure and not final. The MMR design in this study is understood to be both a product and a process (Schoonenboom & R. B. Johnson, 2017), which involves the final design (product) comprising principles that were applied during the study (process). Albeit this approach has the strength of being flexible, it poses some questions about the planning and reasons for not using a set typology.

Considering the purpose of the study, the research problem, and the current state of knowledge, the choice was made to not apply a predefined design as a static structure. However, I do acknowledge that this approach did open to uncertainty, and in some ways, it would have been "easier" to rigorously apply a set typology. Some might also consider it a weakness because the choices might seem random or lack a clear direction. However, this design approach came with a clear purpose and direction: this study was designed to investigate a scarcely explored and complex problem in education, which resonates with the reasoning described by Stebbins (2001):

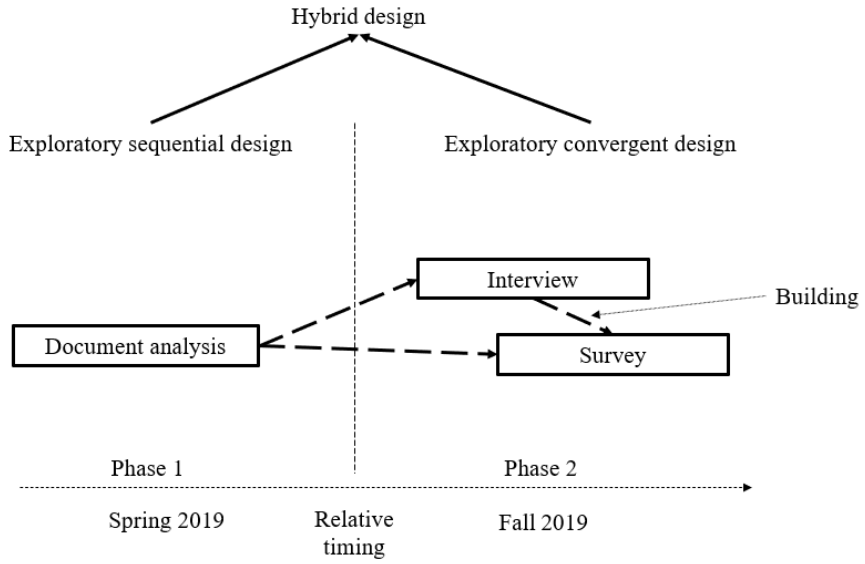
> Researchers explore when they have little or no scientific knowledge about the group, process, activity, or situation they want to examine but nevertheless have reason to believe it contains elements worth discovering. To explore effectively a given phenomenon, they must approach it with two special orientations: flexibility in looking for data and open-mindedness about where to find them. (p. 5)

The emerging needs of the study informed different MMR typologies and characteristics of MMR that could enhance the quality of the study (Creswell, 2015; Fetters et al., 2013; Schoonenboom & Johnson, 2017; Shannon-Baker, 2015). In this sense, the design process was informed and scaffolded by the MMR typology (Hesse-Biber et al., 2015, p. xlv; Schoonenboom & Johnson, 2017).

The final design was constructed with a *partly planned* and *partly emergent* design (Schoonenboom & R. B. Johnson, 2017, p. 122). The design of this study can also be described as *complex,* given that it contains multilevel data involving both regulative documents and teachers, which are integrated in this synopsis for answering the research problem. It can be seen as a *hybrid design* because it involves two design elements (Schoonenboom & R. B. Johnson, 2017), where an *exploratory sequential design* element is combined with an *exploratory convergent design*. The combination of these two design elements in this study is illustrated in Figure 3.

Figure 3

Design of This Study



Note. Relative timing refers to data production.

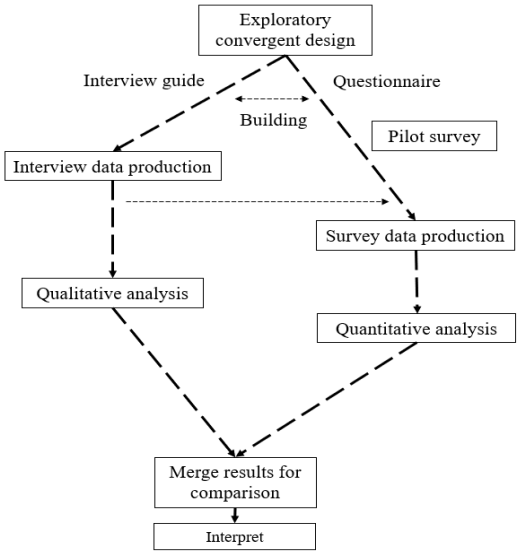
The exploratory sequential design comprises the initial qualitative component (sub-study A), which informs the second design element (sub-studies B and C). In other words, the document analysis (sub-study A) that was carried out to examine regulative documents with a transformative orientation (Mertens, 2007) created the backdrop for the interviews and survey, which were designed to explore teachers' perspectives and self-reports with an interpretive and descriptive orientation (Creswell, 2015; Fetters et al., 2013; Schoonenboom & R. B. Johnson, 2017).

The exploratory convergent design requires some unpacking for clarity. The main advantage of convergent designs is that they allow for exploring the problem from two angles by generating both qualitative and quantitative data. This means that it can generate a more complete understanding of the problem (Creswell, 2015). Because there is an exploratory aspect in the design, it can be seen to depart from the basic typology, but is still conducted in a way that is described as nearly parallel (Fetters et al., 2013; Schoonenboom & Johnson, 2017). The reason for not conducting it completely parallel is to create an integrated building process at the methods level (Schoonenboom & R. B. Johnson, 2017). Briefly, the convergent design's exploratory aspect involves and allows

for the final building of the survey questionnaire to be informed by the interview study. This is also described as an "*interactive* approach" to convergent designs (Fetters et al., 2013, p. 2137). While the building is further elaborated on in section 3.3, in this synopsis, Figure 4 illustrates the integrated and interactive process of this design.

Figure 4

Exploratory Convergent Design of This Study



The combination of two design elements in this doctoral thesis relates to the sub-studies' internal dependency within the overall study design (Schoonenboom & R. B. Johnson, 2017). Their dependency in this study can be explained through the cornerstone of MMR, which is *integration* (Fetters et al., 2013; Schoonenboom & R. B. Johnson, 2017). Notably, in MMR, the mixing is often described as points of integration (Fetters & Molina-Azorin, 2017a, 2017b). There is thus a vast array of potential ways in which integration can be conducted in MMR, and the literature concerned with integration is still evolving (Fetters & Molina-Azorin, 2017a; Fetters et al., 2013). This means that the ways integration was conducted in this study require unpacking. This study relates to integration on multiple levels: at the level of research philosophy through the DP position that acknowledges the mixing of data for understanding the problem; at the design level and the creation of an MMR design; and at the methods level, where integration applies

to the building of the interview guide and questionnaire and in the timing of data generation. While the analysis of each sub-study was conducted independently in this study and did not transform qualitative data to quantitative or the other way around, the next level of integration was conducted at the interpretation and reporting levels through a narrative approach (Fetters et al., 2013; R. B. Johnson, 2017) involving two MMR articles and the current synopsis.

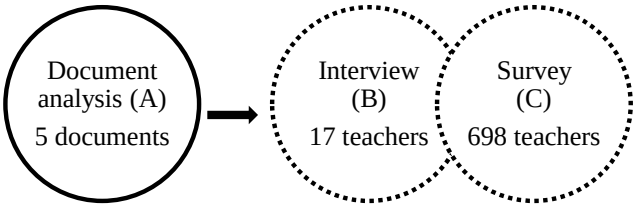
Before moving on to the methods, a last point of the thesis design needs to be addressed, which is this study's qualitative weight. MMR studies are described as qualitative or quantitative dominant, of qualitative or quantitative higher status, or containing a main qualitative or quantitative drive. A key aspect that is put forward in the MMR literature is the position and relative weight of qualitative and quantitative components (R. B. Johnson et al., 2007, p. 124). The common qualitative and quantitative binary is challenged in MMR and by MMR researchers (Sandelowski, 2014). By replacing the binary view with the qualities of a range, it challenges the assumption that research is either qualitative (inductive and value-laden) or quantitative (deductive and value-free) (Pearce, 2015). Rather, it is how the inquiries are conducted that are conducive to the study's results (Sandelowski, 2014, p. 5). Based on such descriptions, this thesis can be seen as being qualitatively dominant because it has more weight in qualitative components through sub-studies A and B, its exploratory approach, and the reporting of results involving two articles containing only qualitative data, along with two MMR articles combining qualitative and quantitative data.

3.3 Sampling and Samples

The sampling strategies and samples of the three sub-studies followed the research problem and can be seen as an extension of the partly planned and partly emergent design. As a brief introduction, there are three samples in this thesis, comprising five regulative policy documents (sub-study A) and two samples of primary and lower secondary PE teachers in Norway (sub-studies B and C). This means that the study integrates data from different theoretical levels (unit of analysis), as in a multilevel design (R. B. Johnson, 2012; Schoonenboom & R. B. Johnson, 2017). Figure 5 provides an overview of the samples.

Figure 5

Study Samples



3.3.1 Sampling and Sample—Regulative Documents

As a study of discourse, the selection, and sample of documents can be seen as part of creating a discourse of teachers' RSM in PE. As Fairclough (1992) noted, the selection not only needs to be informed of what is accessible and relevant for the discourse but also informed by stakeholders on which documents that can be "representative of a certain practice" (p. 227). The inclusion criteria for the sample were official and published regulative documents that address physical risk and safety in Norwegian schools and can be seen as part of the formulated curriculum (Engelsen, 2003; Goodlad et al., 1979). The government and Udir's websites were investigated for references to regulative documents, in addition to Norwegian research and literature addressing educational policy (e.g., Mausethagen, 2015, 2017; MER, 2015b). Conversations with educational scholars and in-service PE teachers were held to gain their perspectives on documents relevant to teachers' RSM in PE. On these grounds, five documents were selected (the titles are translations from Norwegian into English):

1) Education Act (1998)
2) Regulations Pursuant to the Education Act (2006)
3) Curriculum for Physical Education (KRO1-04) (MER, 2015a)
4) Curriculum for Physical Education (KRO01-05) (MER, 2019)
5) Proper Swimming and Rescue Training in Primary and Lower Secondary Education Udir-1-2008 (Udir, 2015)

The analysis is limited to these five documents and otherwise excluded, which means that the preparations and intentions behind these documents, involving, for example, official reports (NOU), were not included in the analysis but were taken into consideration in the context of the selected documents (e.g., NOU 2003:19, 2003). The first phase of the

analysis can also be seen as the selection of texts, as the documents were read to gain an impression of the content, and careful reading created a foundation for selecting passages in the texts that were relevant for further analysis. The selected passages are further described in Article I.

3.3.2 Sampling and Sample—Interviews

One of the central tasks of the research interview is gaining access to potential participants. To gain access and recruit participants for interviews, local school management functioned as so-called door openers (Lindsay, 2010) in this study. Rather than thinking of the management as gatekeepers that stand between the researcher and potential participants (Morris, 2015), the door-opener approach endorses the approval. The school management was contacted by phone and email regarding interviews and informed of the doctoral study. They were asked to forward the information and request that teachers participate. However, there are weaknesses with this strategy that are not easily resolved. Because school management was the first point of contact, the recruitment of teachers for these studies depended on their acceptance and efforts in distributing the recruitment emails. In this way, the recruitment depended on school management agreeing to send the information to teachers, which might or might not have been done for different reasons. There is a potential that teachers who otherwise would have wished to participate in the study did not receive the invitation and some that might have felt pressured to participate This is an issue that illuminates the importance of informed consent which is further addressed in section 3.7.2.

A purposeful sample strategy was applied in selecting teachers for interviews (Patton, 2015). The purpose of this strategy was to recruit participants who could respond to the study's research problem. While teachers' opinions and practices can be different depending on their backgrounds and experiences, the former research on teachers' RSM in PE did not highlight any specific category of teachers. A partly heterogenic criteria approach was thus taken to account for teachers' varied backgrounds, but still related to what Hennink and Kaiser (2022) describe as a homogenous study population. The criteria comprised PE teachers working in public Norwegian schools in primary or lower secondary education, with a nearly equal representation of genders and teachers with varied teaching experience (in years).

The recruitment was pragmatic and convenient in the sense that it was limited to three counties, but because these counties contain both cities and rural areas, as well as smaller and larger schools, they can be seen as characterizing the average Norwegian school environment. Recruitment began in August 2019 and was an ongoing process alongside the interviewing, which was conducted over five weeks from September to October. The sampling used a snowball strategy by contacting management with requests for teachers reflecting the chosen criteria. Management then forwarded to teachers an email that contained information about the interview study and advised potential participants to either reach out to their local management or contact me directly by phone or email if they wanted to participate.

The sample size for this study was informed of recommendations in methodological literature but not predetermined. While saturation and often in the form of theoretical saturation is a common justification for in-depth interview sample sizes (Hennink & Kaiser, 2022), others question this approach (Braun & Clarke, 2021). The sample size in this study is the result of a pragmatic orientation and saturation in the sense that the choice to stop sampling was made when the latter interviews did not generate new data or critical nuances to the teachers' experiences (the teachers described similar experiences), thoughts or opinions. This means that the sample size in this study depends on my judgements and interpretations of the interviews and the topics being discussed. A total of 17 teachers participated in the interview study. Among them, 5 taught in primary schools, 1 in a mixed primary and lower secondary school, and 11 in lower secondary schools. There were 6 female participants and 11 males. The educational backgrounds of PE teachers in Norway can be quite varied, with some taking PETE as a study program as part of their generalist teacher education, others taking the subject teacher training program, and others pursuing sports sciences and thereafter adding one 1 year of teacher training. Some might not have any PE-related credits at all and teach PE based on their generalist teacher education. There was also variation among the participants in this study. Two of the teachers did not have any European credits (ECTS) from PETE or sports-related higher-level study programs, whereas 13 of the participants had 60 or more credits. One teacher had the equivalent of 15 credits, and a second teacher had 30. The participants' backgrounds in terms of years of teaching experience are given in Table 2.

Table 2

Participants' Years of Teaching Experience

Years of teaching experience	1–5	6–10	11–15	16–20	21+
Total (*n* = 17)	1	3	4	3	6

3.3.3 Sampling and Sample—Survey

There are many advantages to survey research, including that it is particularly useful for reaching out to a larger number of respondents (Hartas, 2010a). The sampling in survey research depends on the purpose and can be designed as a randomized selection from a population with the purpose of statistical generalization. However, achieving a representative sample may require a known population (Bryman, 2016). A nonprobabilistic sampling strategy, which is common in educational research (Hartas, 2010b, p. 69; Kleven, 2008, p. 228) was used in this study as a viable option for reaching a larger number of respondents. Albeit it reduces the study's potential external validity in terms of statistical generalizability, this decision was made with the knowledge that the population of PE teachers in Norway being unknown. A purposive sampling method (Hartas, 2010b, p. 69) was conducted with inclusion criteria comprising teachers who were PE teachers in the fall of 2019, working in public primary and lower secondary schools, and inclusive of schools that follow the national curriculum for PE and relevant national regulations. However, the invitation to participate in a survey pilot test was dismissed by several school managers due to teachers' workloads and multiple requests from researchers. The difficulties in recruiting respondents informed the sampling strategy of the main study and the decision to recruit teachers in all 18 counties in Norway as of fall 2019. This means that the sampling strategy was designed to reach the accessible population of PE teachers with these criteria, and not a smaller, designated sample limited to for example three counties.

A list of schools provided by Udir (Directorate for Education and Training) was the basis for the recruitment. The inclusion/exclusion of schools was conducted based on the name of the school and the additional information available from the list. Teachers who worked in schools that followed alternative curricula and regulations were excluded, which means that private, religious, and alternative schools were excluded from being contacted, including those that identified as Montessori, private schools listed as joint-stock companies (AS), schools with religious names, sport-specific schools, and hospital

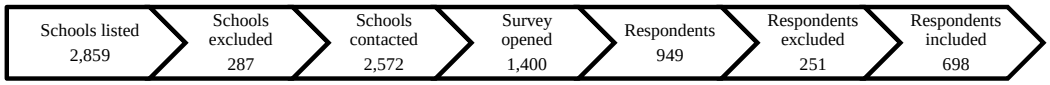
schools. When in doubt, information on the schools was researched on the internet and on the municipalities' web pages. From the initial list of 2,859 schools, the final number of separate schools that were contacted was 2,572, a reduction of 287 schools. Due to the ongoing process of merging municipalities in Norway at the time of recruitment, some schools that were contacted had been merged or closed, and some new schools were not listed. In cases of missing information or other email-related issues, searches were made on the municipalities' web pages or by browsing the internet (e.g., Google) and/or sending a request for additional information to the municipality administration.

As with the interview study, school management was the point of contact for recruiting teachers to participate in the survey. The recruitment email was sent to school management on November 7, 2019, with information about the project and a link to the online survey. There is a weakness inherent in this strategy because it depends on the management's choice to forward the email with information about the survey to the PE teachers at their schools. This means that it is unknown how many teachers received and opened the email with the invitation to participate. Those who gave their negative response were removed from the list of schools that received a reminder that was sent on December 2. Because the reminder generated approximately 70 new responses and a declining number of responses within a week, a decision was made not to send a second reminder. The survey was closed on December 16.

The survey was opened by teachers approximately 1,400 times. As part of the inclusion criteria, the questionnaire had an initial contingency question (see Appendix IV) of whether the respondent taught PE in the fall of 2019, with mutually exclusive values in the replies of yes or no. Teachers were informed in a subtext to check yes if they had not taught PE in the fall of 2019 as an exception. The question was constructed in a way that those who did not mark yes were thanked for their interest and excluded from the remaining survey. The survey generated a total of 949 respondents who checked yes. Among these, 251 were excluded from the analysis for one of two reasons: either they failed to click "finish" on the last page of the survey, which they had been advised would indicate their agreement to participate, or they did not provide any demographics. Thus, the sample group included in the analysis of this study included 698 respondents. Figure 6 shows the stepwise numbers of respondents in the survey.

Figure 6

Recruitment for the Survey, Along With Inclusion and Exclusion Numbers



While the sample of 698 teachers for the survey can be seen as fairly large in a Norwegian context, it does not comprise this population of PE teachers. Based on the number of schools that were contacted (n = 2,859), the sample illuminates the familiar problem with low response rates in survey research (Hartas, 2010a, p. 261). As this sample is not randomized, the survey results are not readily applicable or statistically generalizable to the population of PE teachers in Norway. A higher response rate in this study could have yielded more robust results. Albeit it might be subject to selection biases, it is also important to highlight the strengths of this sample. While some can consider self-selection to be a weakness in survey research, given that teachers with a special interest in RSM in PE would be more likely to respond to the survey, it can also be that this sample of teachers may be the better sample to answer the research question.

The demographics describe a sample of teachers working in all 18 counties in Norway as of fall 2019. They were distributed across primary (49%), lower secondary (34.1%), and mixed primary and lower secondary (16.6%) schools. Female respondents made up 47%, and males, 52%. The teachers' age distributions ranged from 29 years or younger (20.3%) up to age 60 or older (4%), with the largest group being teachers aged 30–39 (31.4%). The sample also comprised teachers with diverse teaching experience in years, including 220 (31.6%) teachers who had taught for 4 years or less and 134 (19.2%) who had taught for 20 years or more. In terms of the respondents' PETE-related education,[21] 25.2% did not have any credits (ECTS), whereas 49.3% had 60 or more.

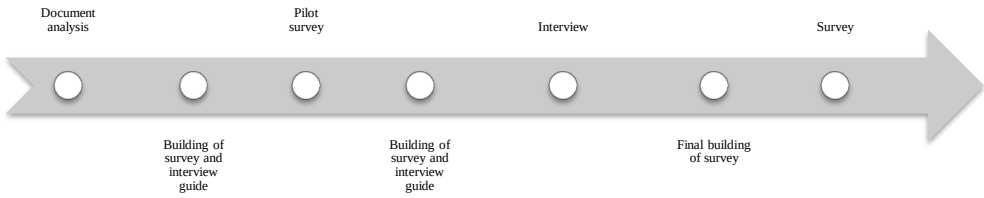
[21] The respondents were asked about their PE-related education, operationalized in the number of PETE credits received and ranked in four values, from 1, meaning no credits, up to 4, which was 60 or more credits. The respondents were also given an alternative open response option captioned "Other relevant education." The alternative category responses were recoded according to the values of 1 through 4. As an example, the respondents' reports on upper secondary education and fitness instruction training were coded as 1 (no credits) whereas bachelor's or master's degrees related to PETE and one year of PE-related practical pedagogical training (PPU) were coded as 4 ($\geq$ 60).

3.4 Data Production

An overview of the timing of data production will be given before going into detail about how the data were produced, because the timing between the sub-studies and how they informed each other is central to the study's inquiries and results (Schoonenboom & R. B. Johnson, 2017). As described in the section on design, the integration at the method level involved a process of building (Fetters et al., 2013) and involving the interview guide and questionnaire. As noted in section 3.2, the exploratory aspect of the convergent design related to how the interviews, which were conducted in September and October 2019, informed the final building of the questionnaire, involving questions, values, and language (Fetters et al., 2013). This building activity and the relative timing of data production are illustrated in Figure 7.

Figure 7

Illustration of Integration at the Methods Level



3.4.1 Document Analysis

As can be seen in Figure 7, the document analysis was the first sub-study conducted for this research. I agree with Bowen (2009) that "documents can provide data on the context within which research participants operate—a case of text providing context" (p. 29). Document analysis can also be the research method for a separate study (Bowen, 2009; W. Robinson, 2010). The document analysis in this study was applicable for both reasons and was designed as a study of the discourse of what is described as the formulated curriculum (Engelsen, 2003; Goodlad et al., 1979). Relating it to practice theory (Kemmis & Grotenbooer, 2008), this thesis sheds light on social–political arrangements in particular by illuminating how teachers' RSM in PE can be prefigured by regulation, and therefore, the regulative policy can both enable and constrain teachers' practices.

Discourse studies comprise a set of analytical methods that can be applied to analyze language use in textual data (Mausethagen, 2017), as well as a wider array of communication forms, such as video and multimedia (Wodak & Meyer, 2016). In this study, the analysis pertained to documents in which text was the central component (Scott, 1990, p. 5). Discourse studies take a clear philosophical stance on language in these texts that entails access to reality that runs through language. In other words, we create representations of reality with the help of language (Jørgensen & Philips, 1999, p. 17). However, among the body of discourse studies, different approaches provide discourses with dissimilar statuses and define them in different ways. An important note here is that there is a profound difference between discourse analysis and CDA (Wodak & Meyer, 2016). This study is shaped by Fairclough's (1992, 2013) CDA methodology, which pertains to the analysis of regulative documents in this study. Considering the discourse studies' perspectives of language and reality, Fairclough (1992, 2013) positions this discourse methodology in critical realism, where discourses are not all-encompassing representations of reality because, to Fairclough (2013), discourses are "semiotic ways of construing *aspects of the world* [emphasis added] (physical, social or mental) which can generally be identified with different positions or perspectives of different groups of social actors" (p. 232) and which may find expression in language use (Fairclough, 2013; Wodak & Meyer, 2016). Fairclough thus describes his approach as dialectical–relational, entailing a perspective on discourses that they both create and are created by social structures (Fairclough, 2013; Wodak & Meyer, 2016). A CDA contains an open and expressed critical agenda that seeks enlightenment (Wodak & Meyer, 2016, p. 8) by analyzing and explaining what Fairclough (2013) refers to as the "social wrong" (p. 235). The critical underlying assumptions that there is a need for a critical approach can be problematized (Breeze, 2011). However, in contrast to several other methodologies, a CDA does not shy away from a normative agenda because it centers around how things are and how they should be (Skrede, 2017, p. 25). By posing questions and illuminating who is in a position to define reality and the truth, Mertens (2007) argued that CDA incurs a transformative ontology and epistemology. The investment in enlightenment entails an assumption that research can illuminate wrongs by critically examining the use of language and positioning discourses in a social context. While adopting this assumption, this potential still depends on the quality of the research. Examining what can be or is

taken for granted can make it possible to disclose the use of power enacted through discourse and expressed in language (Wodak & Meyer, 2016).

3.4.2 Interviews

While the conversation is a common way of communicating, a research interview is a conversational inquiry method where the purpose is to gain insights into a person or groups of people's experiences, opinions, and perspectives (Brinkmann & Kvale, 2018). However, the research interview is not an informal conversation and departs from the normal conversation especially because it has a distinct purpose and is initiated by the interviewer and not the interviewee (Brinkmann & Kvale, 2018). Kemmis (2012) pointed to the importance of gaining a practitioner's perspective, given that practitioners are those who enact a practice. Related to this thinking, interviews were conducted as the second sub-study (see Figure 7) in this research, and they can be seen as exploring the perceived/realized curriculum (Engelsen, 2003; Goodlad et al., 1979). Qualitative interview was selected for this study because it has the potential for exploring the participants' emic perspectives and for participants to talk about their practice, experiences, and perceptions about the research problem (Smith & Sparkes, 2016). An important note here is that the orientation that underpins interviews varies, and while some may position the researcher as a co-producer of the interview data others may position the researcher as an instrument set out to discover data (Brinkmann & Kvale, 2018; Rapley, 2004). I agree with the perspective that an interview is a co-construction, and that the interviewer partakes in producing the data (Brinkmann & Kvale, 2018; Hobson & Townsend, 2010; Rapley, 2004; Smith & Sparkes, 2016). This thinking resonates with that of Smith and Sparkes (2016) and does not reflect or is recognizant of a search for an objective and neutral truth to be discovered by the interviewer. However, it was the teachers' perspectives and the meanings they attached to RSM that were the targets of this study.

Interviews can be described as different types or having different qualities based on their structure. While the structured interview points toward a quantitative orientation, qualitative interviews are commonly described in a range from relatively unstructured to semistructured (Bryman, 2016). Based on an open and exploratory purpose (Brinkmann & Kvale, 2018), semistructured, individual, in-person, in-depth interviews (Gibson, 2010; Hobson & Townsend, 2010) were conducted to explore teachers' perspectives and

generate qualitative data on teachers' RSM in PE. Before zooming in on the study's interview guide and procedure, and to relate this interview study to practice theory, the empirical data are based on interviews with teachers and not data regarding what happens in practice. This means that the data in this study can be understood as what teachers say and think of RSM in PE. However, based on the semistructured design, an interview guide was built around the research problem and the initial research question guiding this interview study.

3.4.2.1 Interview Guide

To conduct semistructured interviews, where the interview is guided by some preplanned topics and select questions but is open for the conversation to evolve (Bryman, 2016; Gibson, 2010; Patton, 2015), an initial draft of an interview guide was the foundation for conversations held with PETE educators at NTNU about relevant topics centering around RSM in PE. The process was informed by the document analysis that was carried out before this study, as well as by prior research and the theory of RSM. Because the interviews were conducted for exploratory purposes and considering the scarcity of empirical research targeting RSM in PE, the guide was built around topics and sub-topics but with very few preplanned questions. This aligns with the semistructured design, which opens for interviews to take additional or new directions that are not thought of beforehand (Brinkmann & Kvale, 2018). While pilot studies can provide opportunities to test the interview guide and train as an interviewer, a pilot study of the interview guide was not conducted in this study. This choice was based on considerations related to the integrated building process and the conversations held with PE teachers concerning the pilot survey that preceded the interviews. A process that lent itself as part of the preparations for the interview guide and interviews. That means that the conversations with respondents to the survey pilot were used as a basis for refining the interview guide and as part of the preparations for the interviews. The final interview guide included six topics (see interview guide in Appendix IV), with openings for the participants to add to the conversation or elaborate on anything. The topics were *background*, *opinions*, *practice*, *societal demands/expectations*, *change/development*, and *competence and training*.

3.4.2.2 Procedure

The interviews can be described as conversations (Brinkmann & Kvale, 2018; Hobson & Townsend, 2010; Smith & Sparkes, 2016) between interviewee and interviewer, which Rapley (2004) describes as "interview-talk" (p. 16). However, it is crucial that participants feel safe and at ease with expressing themselves for generating quality in-depth data (Brinkmann & Kvale, 2018). This suggests that the results from my conversations with the teachers depended on whether I was able to create a safe environment for the teachers to talk freely about their experiences, opinions, and perspectives. Of the 17 interviews in this study, one was conducted at my place of work (NTNU) at the choice of the interviewee, and 16 were held at the teachers' schools in a room arranged for by the teachers or their local management. The interviews were audio-taped with the consent of the participants.

Albeit the encounter between the interviewee and the interviewer comprise a potential for the generation of meaningful data (Rapley, 2004), it is not a guarantee. The results from the interviews in this study relied on both parties' contributions and efforts, at the benevolence of the interviewees. Considering the interactive character of the interviews, my former experiences as a PE teacher opened the possibility of responding and talking with the teachers about PE from the viewpoint of what can be described as a partial insider (Dwyer & Buckle, 2009). This orientation still created a need for researcher reflexivity (Alvesson & Sköldberg, 2018) to restrain the interviews from centering around the researcher's experience rather than the participants (Dwyer & Buckle, 2009). The interviews still generated multiple surprises and what Charmaz (2015) called "jolts of awareness" (p. 1615), prompting further reflection on my preconceptions, and the discovery of new avenues to pursue the problem of this study. This shows the strength of and was possible because, while the interviews centered around preplanned topics, the fairly open interview guide and conversations allowed for interesting leads to be pursued (Gibson, 2010; Patton, 2015).

Interviews can be conducted in an attempt to generate data with both breadth and depth (Hobson & Townsend, 2010). With the research question in mind, I was thus seeking both nuances and details. The technical details, such as the structure of an interview and what is discussed, are important for this potential to be put into practice, but interviews have also been described as a craft (Kvale & Brinkmann, 2009). My limited experience with interviews was an element of uncertainty before the study was

conducted. To be open to the participant experience and because the interviews were to center around something "unknown", the first interviews were characterized by mostly open questions with follow-up questions and less focused questions. The scarcity of research-based knowledge of teachers' RSM in PE prompted fairly open interviews and questions carrying the attempts to explore an area that does not seem to have received much attention in research. However, writing notes after every interview allotted time for reflection on the conversations and the topics that were discussed. This suggests that both the interview guide and I as an interviewer developed during the study. Good and varied questions may be a prerequisite for conducting quality in-depth interviews (Brinkmann & Kvale, 2018). With more interviews completed and with the experience from the former interviews I was perhaps in a better position to follow up with more focused questions (Brinkmann & Kvale, 2018). Researchers still suggest that knowledge that is taken for granted by practitioners can generate epistemological challenges and methodological difficulties (Brown et al., 2019; Eraut, 2000). This aspect can be a contributory reason behind a dilemma that arose in this study, that teachers had initial difficulty explicitly describing their practice. Leads from one interview were brought forward into upcoming interviews with other teachers, and with more insight into the problem, it was for me to ask questions that were more concrete and perhaps easier for the teachers to talk about. Alternatively, by moving back and forth between interview topics, I sought to open a space for the teachers to reflect on these aspects during the conversation. M. Boholm (2018) pointed to the concept of risk as a special challenge for interviews because researchers can make risk associations without these assumptions being apparent to the interviewees. Although it depended on my apprehension of the topic and the conversation, I attempted to address this issue by asking follow-up questions (Brinkmann & Kvale, 2018) and by seeking clarification when the teachers' assumptions were unclear to me.

While the length of interviews may vary according to their purpose, there are limitations to in-depth interviews and these interviews as well. Although the participants were prepared for these interviews to last for approximately an hour which is a common length for qualitative in-depth interviews, they varied in length from 31 to 69 minutes, with the average length being 45 minutes. This came about due to unexpected situations, teachers' schedules, and the real-life dynamism of being a teacher in primary and lower secondary school. In situations where the interviews had to be cut shorter than planned, I

selected some key topics over others, and the conversations and questions were more focused and to the point. That, of course, reduced the opportunities for the teacher to elaborate and my opportunities to follow leads and nuances, which may have reduced the quality of the results. Despite that they might represent some lost opportunities, shorter interviews do not necessarily mean that the data are bad or less useful (Brinkmann & Kvale, 2018).

3.4.3 Survey

The survey was designed as a larger-scale, cross-sectional, online survey comprising a quantitative questionnaire (Hartas, 2010a). A questionnaire can be used to generate quantitative self-reported data (B. Johnson & Christensen, 2012, p. 162), and in this study, it was used to gather teachers' reports of their RSM in PE. A benefit of surveying is that some respondents might feel more at ease expressing themselves in this format. Although the theory behind and the traditional usage of questionnaires might be geared towards collecting neutral and objective data, there is still a range in the theory that underpins the usage (Crotty, 1998; Romm, 2013). I have proposed in section 3.2 that it is possible to challenge and potentially replace the binary (qualitative-quantitative) view of research with qualities on a range (Pearce, 2015). I hold the position that surveys generate data that are less influenced by the researcher and thereby offer results with more distance. However, the surveying to gather neutral and objective data was not applicable here and is further explained in the following.

3.4.3.1 Building the Questionnaire

The building of the questionnaire leaned on Hartas' (2010a, p. 261) list of three main areas of concern for questionnaires: content that responds to the research purpose and research questions; type and format of the items (questions); and the organization and sequence of themes and items. The development of this survey and the building of the questionnaire were attuned to multiple approaches and sources. Creswell (2015, p. 17) pointed to prior research and theory to inform the development of surveys, and this survey's design was informed by the document analysis conducted before this study. Both peer-reviewed research articles and gray literature were searched for relevant content and themes (see, e.g., Murphy, 2015; Park, 2018; Severs et al., 2003). However, the combination of what seems to be a lack of Norwegian studies targeting teachers' RSM in

PE, scarcity of international empirical research, and minimal use of quantitative surveys as a method of exploring this problem, we chose to build this questionnaire from scratch.

In the choice of survey design, there are several possibilities and directions depending on the purpose of the study. The research problem and the making of a survey relevant for the Norwegian context, also because it was the first quantitative survey study targeting RSM in Norwegian PE, were given primacy. Although a focused questionnaire could have opened for indexes and items capturing nuances, the thematic scope of this survey was broad. If the purpose of this study was to measure psychometric constructs, for example, the teachers' risk perceptions, an option would have been to borrow indexes from validated questionnaires. An alternative MMR design such as an exploratory sequential design (Creswell, 2015) could have opened for the construction of indexes based on fully developed categories from the interviews, and for validating these constructs. However, "when your primary goal is to explore the topic, you want to be broad in your questions so that you do not miss an important concept that your research participants feel is relevant" (B. Johnson & Christensen, 2012, p. 165).

Given the purpose of the survey, theory on quantitative investigations and survey design was also part of the preparations to assist with selecting appropriate types of questions, their formats, scales, and values (see, e.g., Hartas, 2010a; Johannesen, 2009; B. Johnson & Christensen, 2012; Ringdal, 2018). Two Norwegian surveys of PE teachers were reviewed for information about relevant demographic items and the design of the questions (Moen et al., 2018; Statistics Norway, 2019). I was assisted by a software expert in constructing the questionnaire in the online survey software Select Survey, which was developed at NTNU. PETE educators were involved through peer dialogue to gain feedback about the appearance and logic of the questionnaire. Their involvement offered additional perspectives and advice in the building process. Despite multiple efforts in constructing this questionnaire, I acknowledge that some weak items are not useful for reporting.[22]

3.4.3.3 Piloting

B. Johnson and Christensen (2012, p. 183) remind us of the importance of a pilot test to enhance the potential for success. According to Hartas (2010a, p. 267), piloting can

[22] Primarily involving follow-up item(s) (13/14) in relation to item 12.

address the content, questioning, sequence, clarity of wording, responses, and timing of a questionnaire. For the scope, a pilot involves a minimum of 5–10 respondents (B. Johnson & Christensen, 2012). Thus, a small-scale pilot survey with a purposive sample (Hartas, 2010b, p. 69) that included both PETE educators and PE teachers (n = 12) was conducted in August 2019 to exercise the planned deployment of the survey, gain knowledge about potential issues, and test the questionnaire. Conversations with the educators who participated in the pilot test led to minor adjustments involving missing or redundant items, how and which questions were asked, and the use of language. Their feedback about the time spent completing the survey was also part of the considerations.

Regarding the piloting of a survey, it is important to know the field, the respondents, and their frame of reference for constructing items that have clear values, are easily understood, and provide meaning to the respondents (Hartas, 2010a). Taking that into consideration, due to difficulties recruiting PE teachers for the pilot test, combined with the status of knowledge in this field of research, a choice was made to alter the design of this study (see section 3.2) to conduct the interviews before the survey so that those results could be used in building the questionnaire. However, with this choice, the potential of using the survey results as a basis for recruiting participants for interviews was given away.

This change of design was crucial to attaining both face validity and content validity. Face validity refers to the appearance of the questionnaire and whether it appears sensible to practitioners and experts in the field. Content validity, according to Koller et al. (2017), "includes several aspects, e.g., the validity and representativeness of the definition of the construct, the clarity of the instructions, linguistic aspects of the items (e.g., content, grammar), representativeness of the item pool, and the adequacy of the response format." (p. 2). For this questionnaire, content validity[23] can be seen in relation to the operationalization of RSM through the pool of questions, language used in the questionnaire, sub-texts with clarification on specific questions, and the question scales and values. Talking with teachers in the interviews enhanced the potential for the

[23] Content validity is described as a prerequisite for construct validity in measuring abstract constructs (see, e.g., Koller et al., 2017; Rossiter, 2008). Researchers still assert that the validity of constructs can differ depending on the maturity of the research field (Brutus et al., 2013) and that single-item measures may be able to capture similar trends as multi-indicator constructs (Hatlevik, 2017).

questionnaire to generate ecologically valid results, taking into consideration the context and situation of PE teachers in Norway.

3.4.3.2 Questions

The questionnaire (available in Appendix IV) was built and structured around four sections: *background*, *experiences and opinions*, *practice*, and *change and development*. Through the survey, I sought to gain quantitative data on teachers' RSM in PE through their responses to mostly closed-ended questions and the information about the sample's distribution across topics. The items (questions) were varied and comprised dichotomous questions, multiple-choice questions, matrix questions, contingency questions, and open-response options, along with a ranking opportunity (Hartas, 2010a).

Seven items on the questionnaire concerned a respondent's *background* (demographics and professional background), including the type of school they worked at and the level of schooling they taught. Under the section *experiences and opinions*, the respondents were asked 10 questions, with one sub-question related to their responses to item 12. The teachers were asked their opinions about RSM in PE (11) and if they had any continuing or further education related to RSM in PE (17). Of the six items concerned with *practice*, three were matrix questions (21–23), one was multiple choice (24), and two questions were designed for open response with a ranking opportunity (25, 26). Under the final theme, *change and development*, the respondents were asked, through a dichotomous question, whether they had made changes to their RSM practice in the past five years (27). Those who replied that they had made changes were asked to give their reasons in a sub-item (28).

The questionnaire aimed to measure different types of variables and values. The most common type of question was categorical–ordinal variables answered on a five- or seven-point Likert-type scale, which is described as a "fully anchored rating scale" (B. Johnson & Christensen, 2012, p. 172), where descriptions are provided for each point of ranking. The values were constructed to fit with the individual questions, such as values related to reporting the degree of any student injury (item 10). While a question may seem neutral (for example: when the respondent are asked to give their opinion on something), the values provided the respondents had a closed set of alternatives which limited their opportunity to respond freely. As I have noted in the introduction to this section (3.4.3) the theory behind the use of questionnaires is varied. Romm (2013) argued that researchers need to reflect on and take responsibility for the potential impact of their

questionnaires and questions. Albeit questions may not be leading in a direction and the values have a neutral middle ground, the values of an item are not value-free because words carry meaning, and the questions and values in this study were also chosen for a reason. I still maintain the thinking that the survey offers results that are less influenced by the researcher and in comparison to the qualitative sub-studies in this thesis.

As a self-report study, the results also depend on the respondents' interpretations and assessments of the questions, the item values, and clarifications presented to them. A point that raises issues with the social desirability of responding (Paulhus, 1991). This means that survey respondents might underreport socially undesirable behavior and opinions and overreport what is socially desirable, thereby generating inaccurate and invalid results. Krumpal (2011) discussed the potential for "sensitive" items and their values to lead to higher non-response rates. However, as Paulhus (1991, p. 19) noted, securing the respondents' anonymity can be the most obvious way of relieving the stress of responding in a socially desirable manner. To strengthen the potential for teachers to feel comfortable and for the survey to elicit their honest responses, the respondents were informed of their rights and that the survey was voluntary. Another related aspect of this strategy was the design of the questions as non-compulsory. A choice that opens for non-response issues (Bryman, 2016) that applied to some later questions in the survey. This was made transparent with the number of responses (*n*) reported on each question included in Articles III and IV.

3.5 Data Analysis

Moving on from the integrated building process (Schoonenboom & R. B. Johnson, 2017) the analysis of data for each sub-study was conducted independently and the data was integrated at the interpretation and reporting level (Creswell, 2015; Fetters et al., 2013). Table 3 summarizes this analytical approach.

Table 3

Overview of the Analytical Approach of Each Sub-study

Sub-study	Preparation	Analysis	Translation	Reporting I	Reporting II
A	Selection of documents Inclusion and exclusion of textual data for analysis	***Critical discourse analysis*** Three analytical levels (Fairclough, 1992, 2013)		Article I	
B	In verbatim transcription of interview material: Deidentify material Import text to NVivo for coding and categorization.	***Analysis inspired by grounded theory*** (Charmaz, 2015; Saldaña, 2016) - in vivo coding - focused coding - categorization		Articles II, III, IV	
C	Import survey data to SPSS 26.0 Import open-response items into Microsoft Office Excel Prepare the material for analysis: - check for identifiable data - delete respondents according to missing data strategy - delete respondents who did not accept by clicking "finish"	***Statistical analysis:*** Descriptive statistics, including frequency, average mean (M), standard deviation (SD), and percentage. Categorization and summary of open-response options of two variables.	Translation of results from Norwegian into English	Articles III, IV	Integration and synthesis of results in the synopsis.

The results from each article are integrated in this synopsis through a contiguous approach and with a summary of the results. In the discussion section of this thesis, the results from each article are integrated through a narrative approach to enhance the discussion and synthesis of the research problem (Fetters et al., 2013).

3.5.1 Abductive Strategy of the Thesis

The analytical strategy used for this thesis is on a range between the principles of induction and deduction, yet it differs in each of the sub-studies. The overall study uses an abductive analytical approach that "alternates between (previous) theory and empirical facts (or clues) whereby both are successively reinterpreted in the light of each other" (Alvesson & Sköldberg, 2018, p. 5). The differences between the sub-studies can be better described by comparing them to each other. First, there is a range in a qualitative study's analytical approach, both in terms of analytical strategy and in the ways the results are interpreted (Brannen, 2005, p. 179). While the document analysis was a qualitative study, the CDA sought to critically examine and explain with the support of theory, which resonates with stepwise induction–deduction. While Fairclough's CDA is described to contain an abductive analytical strategy (Skrede, 2017), this study leans toward a deductive analytical strategy as the theory guided the entire analysis. In contrast, the

interview study, which was also a qualitative study, sought to explore and understand through an inductive-oriented analytical strategy. An important message about this analysis and the reporting of the interview results in Articles II-IV, and in contrast to the CDA, is that the theories that were used to discuss the results in the articles were selected in response to the results of this study, and not before or during the analysis. The potential degree of pure induction is still rightfully questioned by researchers (Alvesson & Sköldberg, 2018), and the inductive orientation in this study can be described as "an open mind but not empty mind" (Holt, 2016, p. 28). Moving forward, the survey was a quantitatively oriented study that used principles of deduction through survey research, but for exploratory purposes (R. B. Johnson, 2017). Some may relate quantitative research approaches to assumptions or theory testing (Kelle, 2015, p. 596), and the survey did involve deductive principles as the items, and their values restricted respondents to mostly predefined responses. However, some may think of survey research as a test of a hypothesis or theory (Kelle, 2015); rather, it sought to explore an underexplored area through the means of gaining teachers' self-reports.

3.5.2 Critical Discourse Analysis

In CDA where the researcher is a central instrument, it is crucial to explicate how it has guided the choice of methodology, use of analytical concepts, and how the choice of theory is part of the analysis. In CDA, critical issues are raised regarding the researcher's position and potential challenges in following the analysis of the results (Breeze, 2011). Also, an analysis can be hidden in some ways in the sense that it is a creative process (Saldaña, 2021). This created a need for systematic and structured analysis and was one of the reasons for selecting Fairclough's version of CDA. Fairclough's (1992, 2013) CDA model contained three analytical levels and a comprehensive framework of analytical strategies. The analytical concepts offered by the methodology are given priority. This means that the methodology provided the analysis with a clear direction which contributed to reducing the researcher bias in the analysis.

To account for the position of discourse as a social practice, this study followed Fairclough's (2013) updated model addressing social events, social practices, and social structures (Fairclough, 2013). The texts were in Fairclough's (2013) second version of CDA, conceptualized as social events, and the first step of the analysis focused on language use. Some researchers criticize CDA for mainly attaining the structural level

and for reducing the analysis of discourse to a discussion of structures (Breeze, 2011). This point illuminates the strength of using Fairclough's (2013) version of CDA because it combines analytical levels and invites attention to the text. Fairclough's (1992, 2013) dialectical–relational approach to CDA invites close empirical investigation of language use by paying "attention to the linguistic features" of the text (Taylor, 2004, p. 435) and combines that with their connection to social structures. Fairclough's comprehensive toolbox still creates a need to select analytical strategies pertinent to the study in question (Skrede, 2017, p. 47). With that in mind, an important point here is that I do not have a background in studying language, and some limitations were placed on the available selection of analytical tools and the CDA in this study.

At the first analytical level, two dimensions were selected from the theory (Fairclough, 1992, 2013; Skrede, 2017) involving modality and vocabulary. While an analysis of grammar or syntax could have provided the study with a deeper textual analysis of the social events (texts), the analysis of modality can assist in understanding how the sender attempts to shape a practice because modality can be seen as the way a message is presented (Skrede, 2017, p. 50). The first phase of analysis was conducted by marking the texts for modal verbs, such as "should" and "must." The next phase involved marking vocabulary associated with risk and safety, but also wording attaching meaning to managing risk and safety. The completed analysis of the language used in policy documents related to risk and safety informed this process (see, e.g., M. Boholm, 2017, 2018). The second step of this analysis involved a comparison of the results from each text with the other texts, where the differences and similarities were emphasized. Where the texts were used as a reference for each other it was possible to gain insight into how the texts converged and diverged in their language use.

The second level of the analytical model comprises an analysis of social practices, which, according to Fairclough (2013), mediates the relationship between social structures and social events (the texts). In this study, the focus was on intertextuality (Fairclough, 2013), which entails examining a text's internal relationships through their explicit and implicit connections. The search for explicit connections was performed by determining whether and how the texts referred to each other. The examination for implicit connections entailed a search for areas that were brought forward as a concern and of subjects brought up in relation to RSM. Whether and how these areas and subjects were shared among the texts, was part of the analysis. This interpretation of implicit

connections was inspired by the literature and former CDA studies (Skrede, 2017) and my experience and knowledge from the PE field. This means that this approach represents one of the possible ways of analyzing the texts' implicit intertextuality.

An analysis of social structures, the third and final level in Fairclough's (2013) dialectical–relational model, sought to analyze the connections between social events (micro) and social structures (macro). Fairclough's (1992, 2013) approach draws an inherent link between the theory of the "*object of research*" and the reasons for conducting a CDA (Fairclough, 2013, p. 234). The use of social theory in CDA has the potential to shed light on structures (see Skrede, 2017, pp. 66–71), and the third level in the analysis is, therefore, first and foremost, a theoretical exercise (Skrede, 2017, p. 66). The third level in this study was operationalized in a discussion of the results from the analysis of social events and practices with the theory of the *object of research*—where the theory of power represents social structures. In this study, the third level drew a connection between the CDA as an analytical method and the theory of power in social fields (Bourdieu, 1979/1995, 1990). As this part of the analysis depends on the selected theory it means that an alternate theory could have opened for a different analysis of the text.

3.5.3 Interview Data Analysis

There are multiple ways in which interview data can be analyzed (Patton, 2015; Saldaña, 2016, 2021), and the analytical strategy in this study responded to the research question and was part of the research design. The purpose here was to conduct an inductive oriented analysis that was sensitive to each teacher's wording and voice and did, therefore, not involve any preselected theoretical perspective. As I have noted about the thesis abductive strategy in section 3.5.1, it can be difficult to defend any analysis as purely inductive given that researchers are informed (Holt, 2016). This did, however, provide reasons for choosing an analytical scheme that could generate results that were anchored in the empirical data in order to answer to the purpose of the study and the research question. In other words, in the analysis I sought to generate results that were firmly anchored in the teachers' experiences and perspectives. Before zooming in on the analytical process involving coding and categorization, the analysis where verbatim transcriptions of the audio recordings were a crucial part, and which would be used for further analysis.

3.5.3.1 Transcription

The analysis in this study was a process that resembles Brinkmann and Kvale's (2018) descriptions and of a process that began during the interviews and continued into transcription. The process of transcribing the recorded interviews into written text was not only an opportunity to become more familiar with the data but also to gain another perspective on the data. In this way, the transcribing process was part of the analysis and lent itself to further interpretation and reflection (Brinkmann & Kvale, 2018). At the same time, there are both losses and gains in transforming data into another medium (Brinkmann & Kvale, 2018). The transcription aimed to have a text as authentic as possible to the conversations for the purpose of analysis. The procedure can be better described as a careful process of writing word by word, marking sounds with letters, and marking for contemporary breaks in the conversations. It is not always easy to know where a sentence ends or begins in a conversation (Brinkmann & Kvale, 2018), which is why the knowledge of the material from the interviews was crucial for the validity of the transcription and the marking of sentences in the transcribed material. Breaks with sounds (e.g., "eh") were marked with letters describing the sounds, and breaks without sound were marked with dots (. . .). On occasions where the words or short passages in the conversations were unclear on the audio recordings, the tape was replayed multiple times until the wording had either become clear or was interpreted in consideration of the topic being discussed. The suggested wording was then marked with clams to signal that it was an interpretation. The combined preparations and initial analysis created a basis for coding the data, which was conducted using NVivo 12 software (QSR International).

3.5.3.2 Coding and Categorization

Saldaña (2016, p. 74) points to the importance of selecting study-appropriate coding methods, and the subsequent analytical strategy was based on the selection of an analytical scheme that could enhance the analysis of data in response to the purpose of the study and the research question. Inspired by GT procedures, and not the attempt to generate new theory (Charmaz & Thornberg, 2021; Kenny & Fourie, 2015), this part of the analysis comprised two cycles of coding, memo writing, and categorization (Charmaz, 2015; Saldaña, 2016, 2021). A note here is that GT has diversified into different lines from the original GT proposed by Glaser and Strauss (1999). This analysis was inspired by Kathy Charmaz's (2015) approach to GT considering the position on interview data as a co-construction. While some researchers are critical of "cherry

picking" a GT methodology (Holt, 2016, p. 27), Charmaz and Thornberg (2021) support the use of GT for other purposes than theory construction, including exploring underexplored areas of research and professional practices. The GT approach shares procedures with other analytical methods such as thematic analysis (Charmaz & Thornberg, 2021) which suggests that GT carries a toolbox that can be used for the broader purpose of qualitative analysis.

The transcription step was therefore followed by an analytical phase comprising coding, memo writing, categorization, and the final writing and reporting of results (Charmaz, 2015; Saldaña, 2016, 2021). According to Saldaña (2021), a code is "a word or a short phrase that symbolically assigns a summative, salient, essence capturing, and/or evocative attribute for a portion of language-based or visual data" (p. 5). The first cycle of coding involved marking for codes that comprised the actual wording used by the teachers, described as in vivo coding (Charmaz, 2015; Saldaña, 2016, 2021) This can be described as a bottom-up, inductive analytical process (Saldaña, 2021). As I have noted in the introduction to this section on interview data analysis, there was no theoretical framework underpinning this analysis and this means that no a priori codes, familiar to deductive coding, were used. The coding was conducted using a line-by-line strategy (Charmaz, 2015), which invites a "nuanced analysis from the start" (Saldaña, 2021, p. 34). This procedure entails assigning a code to nearly every sentence in the transcribed material to signify the core meaning of the sentence, which concluded with 1,422 codes in total. The codes ranged from single words to parts of a sentence, and these codes were the basis for the second cycle of coding involving focused coding (Saldaña, 2016, 2021). The in vivo coding, which generated a great number of codes, created a need for organizing the codes for gaining an overview in the next phase. While it is difficult to foresee the potential results, it is possible that section-oriented coding could have proved useful and eased this process. However, a strength of this detailed way of coding from the bottom-up is that it requires the researcher to take a new and very close look at the data (Charmaz & Thornberg, 2021) and thereof reduce my analytical preconceptions. Nonetheless, the coding still depended on my interpretation of which codes made the most salient with regard to the research question. It is reasonable to say that in qualitative analysis the data is filtered through the analyst's lens (Saldaña, 2021). This means that the codes are elements in my interpretation of the data.

As a preparatory step for the next phase, and for securing that the codes were the most salient in the data, the in vivo codes were compared with the full transcription, which can be seen as a form of recoding (Saldaña, 2021), where some new codes were added and some discarded. The first-phase codes were then clustered into groups containing similarities in relation to the research question. This means that this part of the analysis depended on my interpretation of the similarities. This moved from the first cycle into the second cycle of coding (Saldaña, 2021). The re-reading of the groups of codes and the in vivo codes led to some of the codes being rearranged in different groups. These groups were reviewed and used as the foundation for a selection of codes capturing the essence of these groups (focused codes). While axial coding may rearrange the data around a central category, focused coding has the strength of pursuing central codes in the data without paying too much attention to their relationships or dimensions at this stage (Saldaña, 2016). This means that the 44 focused codes were used to gain a sense of the codes in terms of their empirical properties. While second cycle coding is not necessarily needed in all studies (Saldaña, 2016, 2021), the focused codes served as the basis of an analytical phase in which I sought to generate categories of codes. Categorization, which Saldaña (2021) refers to as a synthesis of codes, is representative of the analytical phase, which seeks to generate meaningful categories. This phase of the analysis was facilitated by analytical memo writing (Charmaz, 2015; Saldaña, 2021), which functioned to express my thinking about the codes, their relations with the tentative categories and their relationship with the research question. Of the 44 focused codes, 12 were brought forward as initial categories in this part of the analysis. This categorization phase, moving from codes to categories, resonates with what Saldaña (2021) described as "awkward" (p. 280) in the sense that I was seeking to "reach beyond" the participants' interpretation and abstract the core elements of the data. This process was facilitated by the writing of text passages where the codes were, as Saldaña (2021, p. 345) describes this process, weaved together into a narrative and where excerpts from the text were pulled put to serve as examples of the categories' properties in the narrative. However, this was not a streamlined process but where I moved between writing, re-reading the data, and questioning my thinking. In this study, peer dialogue with a supervisor and the search for support and contradictions in the data assisted me to ask critical questions about the ongoing interpretations and categorization, clarify my thinking, and reconfiguration of the 12 initial categories in this study. Albeit it is possible to question whether peer

dialogue can enhance the internal validity of a qualitative study, critical questions and discussions can assist in developing the conceptual process and the interpretations (Burke, 2016; Morse, 2015). This was a process that resulted in a generation of 10 subcategories belonging to three overarching major categories: *knowledge*, *perceptions*, and *practice* which are reported in three articles (Articles II-IV). Although the overarching categories and their subcategories were anchored in the empirical data they did not simply emerge but were generated through an extensive analytical process. The result of the analysis, involving the major categories and their subcategories went under further scrutiny in peer-review processes in journals before publication. The inclusion of PE in the names of subcategories was applied to create more substance for potential readers of the articles and therefore resembles thematic headlines. Table 4 gives an example of the coding and categorization process for generating the overarching category of teachers' knowledge (but it is not an exhaustive list of codes or subcategories).

Table 4

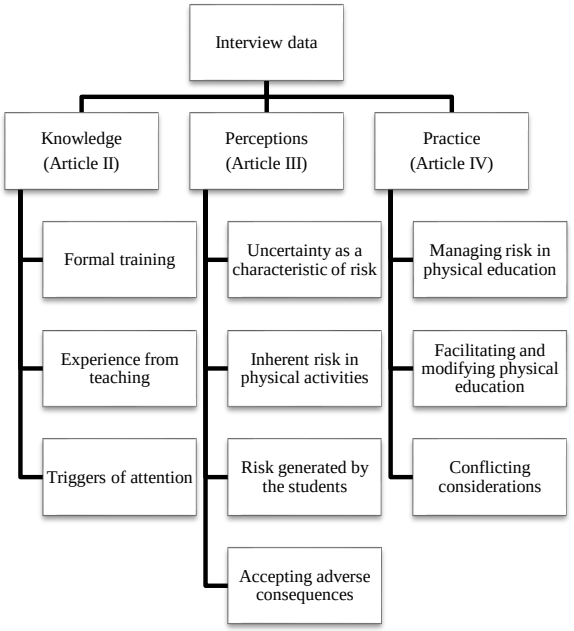
Example of the Analytical Process, From Codes to Categories

In Vivo code	Focused code	Sub-category	Overarching category
Up to each individual teacher	Each individual teacher	Experience from teaching	Knowledge
Run their own race			
Very different within the school			
Depending on the person			
Not a joint thing			
Qualified experiential opinionating			
Experiential base on safety	Experience		
The things you learn			
Lifelong process			
Own experience			

An overview of the overarching categories and their subcategories as they are reported in the articles can be seen in Figure 8.

Figure 8

Map of Overarching Categories and Their Subcategories



Some notes to the analysis and the reporting of results must be considered when reading the interview results. First, while member-checking might be a useful strategy in participatory methodology, the use of member checking for interview data is debated because there are multiple issues with member checking that are not easily solved (Morse, 2015). Some claim it is a strategy derived from a post-positivist stance (Creswell & Miller, 2000). My position is that member checking is anchored in epistemology with a specific purpose related to the research method (Morse, 2015) and therefore not used in this study. Second, the interview results have undergone several transitions involving transcription from speech into text, abstraction involving coding and categorization, and language translation from Norwegian into English. Abstraction makes the differences between the individual teachers' perspectives less apparent, but by presenting nuances in the interview data, this thesis seeks to reflect on some of the differing perspectives of the teachers. Then again, the abstraction also adds a dimension to the data in response to the study's purpose. The language translation of excerpts was conducted to keep the teachers' use of words as exact as possible, but since there is not a 1:1 relationship between the

languages, the semantics (meanings) of the utterances were assured by making slight alterations to the words used.

3.5.4 Survey Data Analysis

This brief section presents how the survey data were prepared for analysis and how the analysis was conducted. The online survey data were downloaded into Statistical Package for the Social Sciences (SPSS) version 26.0 for descriptive statistical analysis of closed-ended questions. The responses to the two open-ended response items (25, 26) were downloaded into Microsoft Excel for categorization and a quantitative summary of the responses.

The descriptive statistical analysis in this study comprised frequency (*n*), mean (*M*), standard deviation (*SD*), and percentage. The thesis, therefore, contains information about the sample's distribution across different questions and summaries. I am aware that there are discussions in the statistics literature regarding the measures of central tendency in different types of variables. However, I agree with Lydersen (2020) that presenting the mean together with distribution can provide a meaningful summary of the results. The use of inferential statistics would have allowed the study to test a hypothesis and make predictions, such as generating information about how the teachers' reports of student injuries were related to for example their educational background or years of teaching experience. Considering the current state of knowledge of teachers' RSM in PE and the MMR design of this study, descriptive statistics was chosen to present the teachers' responses to the survey questions in line with the study's exploratory purpose.

3.6 Quality of the Present Thesis

Any research study needs to address its quality (Collins, 2015; Onwuegbuzie & Johnson, 2006; Schoonenboom & Johnson, 2017). Because this thesis includes both qualitative and quantitative data to answer the research problem, it relates to multiple validities legitimation, which is described as a quality label for MMR (Creswell & Miller, 2000; R. B. Johnson, 2017; Onwuegbuzie & Johnson, 2006; Schoonenboom & Johnson, 2017). The quality of the thesis is thus based on the quality of each component as well as the inferences drawn from combining them in this thesis. However, there are not only different ways of ensuring the quality of research but the conceptualization and acceptance of the concepts ascribing to quality differ and may be inherent in the research

approach (Burke, 2016; Collins, 2015; Creswell & Miller, 2000; Morse, 2015; Onwuegbuzie & Johnson, 2006). While validity is a common concept of quantitative research (Burke, 2016; Lincoln & Guba, 1985; Morse, 2015), some may prefer referring to trustworthiness as the concept of quality in qualitative research and in response to what is described as the dominant quantitative linguae and understanding (Lincoln & Guba, 1985). However, there are quality criteria that are more relevant to this thesis than others. Rather than applying universal criteria, Burke (2016) argued for taking a relativist approach. This resonates with Collins's (2015) strategic approach to judging and selecting the quality criteria that are relevant for the study in question. Despite this component approach, Kleven (2008) argued that validity can be understood as an overarching quality category of the inferences that are drawn from the data, and not the data per se. This means that validity is considered a feature of the inferences drawn from the thesis. Based on this way of thinking about validity, O'Cathain (2010) referred to inference quality in MMR as a result of both the process and the product, and where transparency is sought throughout the study.

Beginning with the *planning and design* which are elaborated in relation to the study's background and purpose, transparency is sought in this thesis by making clear the research philosophy underpinning the thesis and careful elaboration of the study's MMR design in section 3.2. The study's combined inferences are therefore also a result of the MMR design. Regarding the *data production and analysis*, the thesis quality depends on how the research was carried out. A detailed description of the process and how the data production and analysis were conducted in each sub-study are elaborated in sections 3.4 and 3.5 in this synopsis and open for the reader to assess. Concerning the analysis, a presentation of the reasoning behind the analytical choices and how the data were analyzed shows each step of the analysis to the presentation of the results. This further relates to the quality of the *interpretations.* This depends on how the data are interpreted, the inferences drawn from each sub-study's results, the integration of the qualitative and quantitative results in the two articles, and the overall integration in this synopsis. Beginning with the qualitative data, the quality can center around whether the interpretations are trustworthy and believable (Burke, 2016; Morse, 2015). Regarding the CDA (Article I), rather than considering the interpretation of the texts as either correct or incorrect, the elaboration of the CDA methodology, the underlying theoretical lens, and the structure of the analysis was made open in sections 3.4, and 3.5 so the reader is

informed of the critical lens and agenda to help determine the credibility of the interpretations. There is, however, a strength in the sample (see section 3.3.1) because it contains only official documents that are publicly available, and potential readers can gain access to the data and thereby assess my interpretations. Another aspect regarding the quality of the interpretations relates to the interview results and whether they represent the participants' understanding. The extensive use of citations of the teachers' wording in the articles (Articles II-IV) can assist the reader in judging the credibility. Peer-dialogue (Burke, 2016; Morse, 2015), including discussions with supervisors and colleagues, and feedback from peer-reviewers, helped to ask critical questions regarding the reporting of results and my interpretations. There are no inferential statistics reported in this thesis, and the descriptive statistics are straightforward to interpret. However, it can in some senses also open for diverse interpretations. The quality of the quantitative results in this study can also be seen in relation to the inferences drawn from integrating the quantitative and qualitative results in Articles III and IV and this synopsis. A particular strength of this thesis, therefore, rests in its design and that it comprises and integrates these different types of data and results, illuminating both educational policy, teachers' perspectives, and teachers' self-reports. By presenting both converging and diverging results, the thesis seeks transparency to enhance the quality of its inferences. This actualizes the *transferability* of the inferences which measures how pertinent the results of this thesis are to other contexts and situations. This concerns the reach of the thesis' results and its potential external generalization. It is reasonable to think that the inferences drawn from this study are more pertinent to Norwegian policy and the practice context of Norwegian PE teachers as the study was designed to target this group. Kemmis and associates (2017) pointed to the arrangements that prefigure practice and how practices are shaped by time and space. A reading of the context of this study is therefore necessary for considering the transferability of the results. As put forth in section 3.4.3 regarding the survey, the study was not designed for statistical generalization based on a randomized sample and the results are therefore not generalizable to the population of PE teachers in Norway. This means that the transferability of the statistical results rather relates to a judgement of the study's ecological validity (Gehrke, 2018) and whether they may be valid for teachers' practices. There are reasons for the survey to provide meaningful and useful results about teachers' RSM in PE as the building of the questionnaire was based on the results of a survey pilot and interviews with teachers.

Considering the sample of respondents, it comprised PE teachers with diverse background characteristics and teachers who worked in schools across the whole of Norway. While generalizability is not a specific goal for the qualitative sub-studies, transferability can be described as the potential for qualitative results to apply to other areas or subjects (Brinkmann & Kvale, 2018). Regarding the interview study, some aspects resonate with other studies and some that do not (see, e.g., Park, 2018; Young, 2007). This suggests that there might be results from this study that are conducive to other contexts and to the overall PE field, and some that might be conducive to the Norwegian PE context and the differing experience of PE teachers. Regarding the document analysis, the results concern regulative policy that was specific to Norway; however, how regulation and language are used by official bodies and the potential consequences they may have for teachers' practice can pertain to the education field in general. Moving on to the quality of the *reporting*, this relates to the results presented in each of the articles and is further integrated and reported in this synopsis. All four articles included in this thesis have been peer-reviewed and are published in journals listed in the *Norwegian Register for Scientific Journals, Series and Publishers* provided by the National Board of Scholarly Publishing (NPU) and Norwegian Directorate for Higher Education and Skills (HK-dir) (HK-dir, 2021). The fact that the results included in this thesis are based on published research articles can be considered a strength. The ethical aspects of publishing are further elaborated in section 3.7.8.

While transparency is necessary for the reader to assess the quality of this thesis, it is also a crucial ethical dimension. There is an inherent call for ethical and moral inquiry in research by paying attention to potential consequences and taking responsibility for the knowledge generated (National Committee for Research Ethics in the Social Sciences and the Humanities [NESH], 2016).

3.7 Ethical Considerations

NESH provides a framework of principles that illuminate the choices made to secure participants' rights and privileges in a study. In addition to the ethical and moral dimensions, legislation has contributed to highlighting ethical standards and specific legal requirements for research, particularly where personal data is involved. The Research

Ethics Act[24] (2017) sets out ethical norms and moral and legal incentives, and the Personal Data Act[25] (2018) addresses the collection, recording, alignment, storage, and disclosure of personal data. This research handled ethical, moral, and legal obligations in multiple ways. To begin with, the study was approved by the Norwegian Centre for Research Data (NSD) with reference number 789200; their approval letter is attached in Appendix II.

3.7.1 Human Dignity

This project was highly dependent on the benevolence of participants, and thus, respecting their rights and privileges was important. Human dignity is at the forefront of research, and a researcher must respect participants' autonomy, integrity, freedom, and cooperation (NESH, 2016). To ensure these aspects, all participation was done freely, with adherence to legislation and research ethics by securing informed consent from participants.

3.7.2 Consent

For the consent to be valid, it must be voluntary, explicit, and informed (NESH, 2016). This means that the individual who is asked to participate must understand what is involved in their participation, what they are consenting to, and any consequences that may come with participation in the research. In other words, the consent of the participants must be informed by pertinent facts. Furthermore, securing participants' rights also relies on providing them with quality information. The emails sent to recruit participants for this study contained information letters (see Appendix III). A consent form was also attached to the same document for the interviews, and information about the purpose of the form as an agreement to participate was provided. All participants consented and signed the form. Because local school management acted as a middleman, with the requests run through them, they also approved all information before passing it on to teachers. However, there is a potential for this approach to have put pressure on some participants to partake in the study. The interview participants were therefore asked before each interview whether they participated voluntarily, which all participants

[24] Lov om organisering av forskningsetisk arbeid (forskningsetikkloven).

[25] Lov om behandling av personopplysninger (personopplysningsloven).

confirmed. They were also informed about the interview process and what potential consequences the interview might have. Finally, participants were informed that they could withdraw from the study at any time, with no consequences. If and when they chose to withdraw, their material would be deleted. None of the participants withdrew from the interview study.

For the survey, respondents were informed in the information letter that they could withdraw from the study at any point, as long as they were identifiable in the material. The respondents were further informed on the first page of the survey that they consented to participate by clicking "finish" on the last page. None of the respondents to the survey requested deletion of their information.

3.7.3 Confidentiality

Confidentiality, anonymity, and de-identification are essential for securing participant privacy rights (NESH, 2016). For the interviews, the teachers were asked for their approval of the use of a recorder for audiotaping before each interview started, and none of the participants declined. During the process of transcribing the interviews, the participants were de-identified by assigning a number to their data. Any directly identifiable data, such as name, age, and data about their workplace, among others, were removed to make it impossible to re-identify the participant from the material. The audiotape was deleted after the recording was transcribed. The de-identified text material is stored according to the requirements set forth by NSD. As an important step in de-identifying participants, the excerpts used in Articles II-IV were coded based on the interview person number given to each participant (IP1–IP17).

For the survey, once the data were downloaded, the online survey was deleted. All responses were assigned a number in SPSS, and no information or links to the respondents or the computers that were used (e.g., internet protocol [IP] address) were retained. The open response options were examined for information that could potentially identify the respondent, and no such data were found. In reporting on injuries in PE (Article III), given that there were only 16 reports of severe, very severe, and critical injuries, these answer categories were merged to retain the respondents' anonymity.

3.7.4 Respect for Participants

Interviews can be versatile in their relations, and some are more characterized by power asymmetry than others (Bogner & Menz, 2009), which means that being respectful and humble regarding participant situations, limits, and boundaries are necessary (Kvale & Brinkmann, 2009). There is potential in interview situations to put participants in a position where they feel pressured to answer questions or talk about a topic that is difficult for them. In this study, some teachers might have experienced students being gravely injured or, in a worst-case scenario, losing their lives. I attempted to avoid pressuring participants on any themes they were hesitant about or could not answer. None of the participants gave any feedback on any topic that they did not want to discuss or elaborate on. Their accounts of incidents, near-accidents, and even injuries to students in their PE classes suggest that they were comfortable discussing potentially difficult experiences. Bolstering this interpretation, some respondents also shared their knowledge of teachers who had experienced severe injuries to students.

An additional scenario may exist here, where not all participants might be knowledgeable about or follow official regulations and requirements, and some questions in the interviews might put them in a poor light. However, in my experience and opinion, the teachers were honest in the conversations and did not provide an unrealistic picture of their practice. The teachers' talk about a lack of focus on RSM and that some schools did not emphasize or have any structured approach to risk and safety imply that the interviews comprised an honest account of their practice. This survey had only one compulsory question, the initial question of whether they had taught PE in the fall of 2019. Other than that, the respondents were free to answer or not answer any questions, so the respondents did not have to feel compelled to answer any questions they did not wish to.

3.7.5 Axiology

Pluralism is advocated to avoid being "trapped" in one stance (Alvesson & Sköldberg, 2018, p. 375). In this sense, the thesis responds to axiology through its design. As an MMR study, it could potentially meet, reflect, and acknowledge some of the variations within the research field. While this thesis accentuates certain dimensions of the problem, and others are positioned in the background or omitted, it also comprises different types of data and insights that together can potentially contribute to a more nuanced and fuller

picture of this practice. In addition, the thesis holds an ethical premise in providing a varied vocabulary and a range of interpretations of the problem.

3.7.6 Transparency and Reflexivity

Transparency is a central ethical dimension because the knowledge that is presented can potentially contribute to developing politics, theory, and practice; therefore, the presentation of results requires transparency (NESH, 2016). It is important to acknowledge that this study is part of the construction of discourse related to teachers' RSM in PE, potentially contributing to an increased focus on physical risk and safety in PE. Research is also informed by research communities (Mertens & Hesse-Biber, 2013), and for me, as a student researcher, it created a need to gain more knowledge about research philosophy, and to grasp the different paradigms and assumptions within research methods and theories. As this study concerns risk and safety in PE, teachers, and teaching, a process of critical inquiry was necessary not only to make open my assumptions of reality, knowledge, and the different ways in which research is conducted but also my preconceptions of the problem. I recognized that it depended on my ability to design and conduct a study that addressed gaps in research and the needs of the future PE subject. This created a need for investigating how my position potentially influenced the studies, analysis, interpretations, and not to forget, my position on the future PE.

Beginning with motives, there are both professional and personal motives behind this study. I am currently a PETE educator at NTNU and have been a PE and sports teacher in primary and upper secondary education for eight years. While working as a PE teacher I was also a part-time outdoor adventure guide. I have found myself puzzled by the different ways of thinking about risk and safety in these three environments. The difference raised numerous questions about different practices, potential norms and standards, approaches to risk and safety in education, the role of PETE in preparing teacher students for teaching PE, and the role of research. This means that I had a professional and personal interest in pursuing this study, of problems related to risk and safety in PE and PETE, and research a teacher practice. I saw the potential for exploring this problem and contributing to the development of this research field and gaining new knowledge that also could enhance my understanding and practice as a PETE educator.

Moving on to research philosophy and theoretical positioning, the doctoral training in scientific theory and research methods and the design of this study, functioned

as a meta-perspective (Alvesson & Sköldberg, 2018, p. 334; R. B. Johnson, 2012). It opened for critical examination of my thinking and the project description. This process facilitated the recognition that my theory of the problem was attuned to critical theory. This suggests that my background in teaching and former studies informed this position and that my doctoral training was central in the process of acknowledging and understanding my orientation. With the position that an encompassing critical position would have limited this study to the critique of power, the study was in some senses theoretically redesigned from the initial project description. This is in line with the DP orientation (R. B. Johnson, 2017). This entails that it is DP that underpins the choices I have made in conducting this study. It also entails that the inclusion of the CDA was an informed choice. While recognizing that some take a stand against critical research as too value-laden, ideological, and that the researcher is overly invested, I position this distinct critical voice as an important contribution to research and for understanding teachers' practice. However, I saw the need for including other perspectives that could challenge this form of critique and generate a more diverse understanding of the problem. This thinking underpins for example the choice of a detailed bottom-up inspired analysis of the interview data to make open the teacher voice. In addition, through the survey study I did not only seek to involve PE teachers across Norway and for more teachers to be heard in this project, but to provide the study with data that were less influenced by the researcher.

Considering the researcher role and the three different research methods that were used in this study, the study has required different considerations concerning my role and my position. Both my current role and my background raise questions about preconceptions, closeness, and distance to the practice field. Regarding the document analysis, the texts have in some senses the benefit of being non-responsive which means that I could not influence the data in any way. This is different from the analysis where it is possible to say that the researcher is the primary instrument, which required careful considerations regarding my thinking and the choice of CDA. Fairclough's (1992, 2013) CDA methodology (see section 3.5.2) was not only chosen because it provided a structured analytical framework, but also because the methodology has a strong theoretical foundation and concepts that engage and drive the analysis. While some may think of this as a limitation that restricts an open analysis, it has the benefit of reducing the analytical bias of the researcher. The interview study was when I was closest to the

participants and required careful deliberation because of my background as a PE teacher and currently a student researcher and PETE educator. I have described the joint, situational aspect of interviews as a co-construction and as interview-talk (Brinkmann & Kvale, 2018; Hobson & Townsend, 2010; Rapley, 2004; Smith & Sparkes, 2016). Interviews accentuate the important role of the interviewer as a co-producer in all phases of the interview process. Based on descriptions of insider and outsider perspectives in research (Dwyer & Buckle, 2009), there are both strengths and caveats with being what I considered myself, a partial insider and an outsider. Rather than seeing the role as I dichotomy, either as an insider or outsider, I was striving for balancing the researcher role while being open about my former experience as a teacher if this came up in the conversation, and simultaneously keeping the emic perspectives of these teachers in the focus of the study. Ethical considerations and respect for the participants were enmeshed in these considerations. As I have pointed out in section 3.5.3, several questions arose with discoveries and surprises (Charmaz, 2015). While a search for common experiences might limit a researcher's openness to nuances and diverging experiences, not all biases are necessarily bad biases as they might assist in understanding the participants in the interview situation (Dwyer & Buckle, 2009). The study opened avenues for a new understanding of teachers' RSM, and those that departed from my thinking. The awareness of potential analytical bias was a contributory reason behind the choice of conducting a GT-inspired analysis. On the other hand, this choice can also be seen from a different angle because it could have been influenced by my preconceptions from being a former teacher, and where I was now able to promote the teacher voice about RSM. Considering the survey, this balance of the researcher role during data production was less an issue as I was more distant from the respondents. Despite this, the choice of amending the MMR design of this study (see sections 3.2 and 3.4.3) was also made so the survey was built around interviews with teachers and reducing the potential primacy of my knowledge and experience with RSM. I have discussed (see section 3.4.3) that the reference to the objectivity and neutrality of quantitative investigations and data might rely on a specific tradition and scientific orientation (Crotty, 1998). I question this thinking in survey research and especially in this study because of my central role in creating this survey and the items.

3.7.7 Translations From Norwegian Into English

Although transcriptions can be seen as a form of translation as well, the focus here is on how the empirical data and results were translated from Norwegian into English. The languages do not necessarily comprise a 1:1 relationship in wording and meaning. This thesis contains some slight changes to the words presented in comparison to the original wording of a sentence. I have focused on retaining the meaning (semantics) while remaining as close to the original wording as possible. This is also relevant for the reporting of items from the questionnaire, with one example being the teachers' opinions of RSM (item 11), where the value "*svært lite*" (very little) is reported as "of very little importance" (Article III) to ensure the meaning is provided to the reader.

3.7.8 Open Publishing and Availability

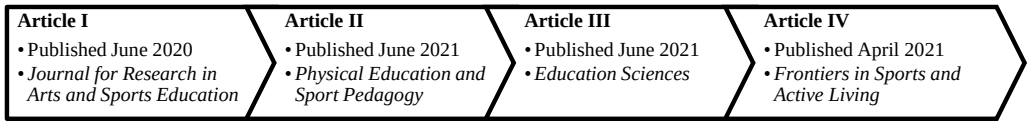
Availability and openness can be seen as ethical responsibilities that involve making the research and results of a study available, free, and open for everyone to read. All four articles in this thesis were published open access, with three being published in journals registered in the Directory of Open Access Journals (DOAJ) and the other indexed by Sherpa Romeo (*Physical Education and Sport Pedagogy*). With a nod to the purpose of this thesis, the articles were all published in English, which may limit their applicability and availability to the Norwegian national PE context. Dissemination of the results to stakeholders in Norway is, therefore, necessary to achieve the purpose of the study.

4 Presentation of Findings

This chapter provides an overview of the main findings from each of the studies discussed in the four articles and also gives a summary of the combined results. Figure 9 provides information about the publication of the articles.

Figure 9

Overview of Publication of the Articles Included in This Thesis



4.1 Article I

"The Reconstruction of Physical Education Teachers: A Critical Discourse Analysis of Regulative Texts," by L. Porsanger, 2020, *Journal for Research in Arts and Sports Education*, (https://doi.org/10.23865/jased.v4.2134).

RQ: *How are teachers' risk and safety management in physical education constructed in regulative documents*?

Article I signifies the commencement of this study and is an investigation targeting the formulated curriculum and part of the arrangements prefiguring teachers' practices. The article presents results from sub-study A, which examined language use in five regulative documents addressing risk and safety in schools and relevant for PE teaching. Designed as document analysis, the study involved analyzing regulative texts through critical discourse methodology (Fairclough, 1992, 2013). The theories of professional discretion (Dworkin, 1978) and power (Bourdieu, 1979/1995, 1990) were used to discuss the results, which suggest that teachers have, to a great extent, discretionary space in creating physically safe learning environments in Norwegian PE. However, an official circular with recommendations for teaching water activities in schools seems to have the potential to make changes to this space and reconstruct teachers' positions in relation to RSM in PE. While that document is an orientation and not a regulation, the language used in the text can create an impression that the recommendations are compulsory for teachers.

Moreover, the circulars' detail in describing how the teaching of water activities is to be conducted safely seems to convey a new approach to teachers' practices in PE. Additional subjects in the text, including an examiner who is responsible for testing teachers' swimming and lifesaving competence and an instructor who can potentially replace teachers for class instruction, suggest that PE teachers' position as the responsible subject is challenged in this text. This study, however, does not provide insights into how teachers interpret or enact regulative policy in their practice. Kemmis (2012) points out the importance of gaining practitioners' perspectives, given that they are the enactors of the practice. Teachers' perspectives and reports of RSM in PE comprise the dominant body of results in this thesis and are reported in Articles II-IV. Seen through the lens of practice theory, this can be understood as part of the teachers' enactments of RSM through what they say and think of RSM. With regard to Article I, Articles II–IV provide insights into the perceived/realized curriculum.

4.2 Article II

"Risk and Safety Management in Physical Education: Teachers' Knowledge," by L. Porsanger, 2021, *Physical Education and Sport Pedagogy*, (https://doi.org/10.1080/17408989.2021.1934663).

RQ: *How do teachers develop their RSM knowledge?*[26]

Article II addresses teachers' RSM knowledge and explores how teachers develop their RSM knowledge, based on interviews with 17 primary and lower secondary PE teachers in Norway. Three subcategories from the interview study are presented in this article: *formal training*, *experience from teaching*, and *triggers of attention*. The theories of tacit knowledge (Polanyi, 1983) and reflection-in-action (Schön, 1987, 1991) were used to discuss the results. The results suggest that teachers do not necessarily pay attention to RSM in PE, which may stem from limited RSM training during PETE. Because there are several potential educational pathways for teaching PE in Norway, it has consequences for teacher RSM training, given that the teachers in this study had varied backgrounds with differentiated degrees of formal RSM training before their in-service period. During their in-service period, teachers are offered first aid and CPR courses, and some might

[26] The RQ is described as an aim in the article.

attend courses related to teaching specific activities, such as outdoor swimming and lifesaving. Some see this as a way to gain proof of their competence, although there are no Norwegian national requirements for licensing or the need to demonstrate proof of competence. However, the teachers did speak of requirements that were locally established. A central finding in this study relates to the teachers' descriptions of their working conditions for PE in these schools. Foremost was a lack of resources, which limited opportunities for continuous professional development for PE (PE-CPD), and opportunities to collaborate and learn from colleagues seemed equally scarce. As a potential result, teachers may have to rely on their individual efforts to develop their RSM knowledge for PE. The teachers in this study talked of a form of bodily knowledge, feelings, and gaze that enabled them to recognize risk signals in PE classes. However, this development might not be conscious, but rather a development over time, suggesting that their knowledge is developed primarily through experiences in PE classes and their own personal participation in sports.

The participants' descriptions indicated that teachers can come to generate a form of tacit RSM knowledge. Among the ways in which teachers can come to consciously develop their knowledge, however, involves injuries to students. These events seem to function as triggers of attention that facilitate teachers to reflect on and talk with other teachers, which potentially leads to changes in their practice. On these grounds, this study suggests that beginner teachers and their students are particularly vulnerable because the teachers do not have teaching experiences that may be crucial for their development of knowledge. Thus, if they have to depend on trial and error for learning, students are placed in a vulnerable position in PE. The results presented in this article shed light on teachers' educational backgrounds and opportunities to develop their knowledge during in-service, their local school environments and working conditions, and the meaning of experience for how they develop their RSM knowledge.

4.3 Article III

"Risk and Safety Management in Physical Education: Teachers' Perceptions", by L. Porsanger and E. B. H. Sandseter, 2021, *Education Sciences*, (https://doi.org/10.3390/educsci11070321)

RQ: *How do teachers perceive risk and safety management in their physical education teaching*?

Q1 *What characterizes teachers' experiences with RSM in PE*?

Q2 *How do teachers perceive risk in PE*?

Article III explores how teachers perceive RSM in their PE teaching. The article has an MMR design and integrates the results from the survey and interviews. The article reports four questions based on the survey of 698 PE teachers in primary and lower secondary schools in Norway: *frequency of injury*, *degree of injury*, *opinion of RSM*, and *risky activities*. The article also reports four subcategories taken from the interviews with 17 primary and lower secondary PE teachers in Norway: *uncertainty as a characteristic of risk*, *inherent risk in physical activities*, *risk generated by the students*, and *accepting adverse consequences*. A theoretical and conceptual framework of the concept of risk (e.g., M. Boholm, 2017, 2018; Luhmann, 1993; Zinn, 2019) was used to discuss the results. The survey and interview results suggested that minor injuries to students are common in Norwegian PE. Of the survey respondents, 90% reported having experiences with minor injuries to students in their PE classes. The interview results also suggest that minor injuries are accepted by teachers as normal and inherent in participation in the physical activities of PE. On the contrary, severe to critical injuries seem to be rare, with 16 reports in total among the survey respondents (n = 698). Despite this, the results from the survey show that nearly 90% of respondents (n = 602) thought that RSM in PE is important or very important.

In the interviews, the teachers spoke of being in control when they were near the students. However, not being in control in PE seems to be a common feeling among these teachers. A central reason for this was uncertainty, which seems to characterize the teachers' thinking about risk because they cannot necessarily know everything that could happen. For these reasons, the interview results suggest that teachers do not necessarily see the relevance of RSM in PE. Despite this, some selected physical activities and sports were called out by the teachers as inherently risky, creating a need for RSM. The interview and survey results converged in the positioning of gymnastics as the riskiest activity in PE. Aside from the activities in PE, the teachers portrayed two student groups as generating risks: wild and competitive boys and students who are less active and unfit. Against this backdrop, this study suggests that teachers accept that students experience minor injuries in PE classes and that teachers to some degree even think of such injuries as healthy for students' development.

4.4 Article IV

"Risk and Safety Management in Physical Education: A Study of Teachers' Practice Perspectives," by L. Porsanger and L. I. Magnussen, 2021, *Frontiers in Sports and Active Living*, (https://doi.org/10.3389/fspor.2021.663676).

RQ: *What characterizes teachers' risk and safety management practice in physical education,* and *how do teachers relate their practice to risk and safety management*?

Article IV explores teachers' perspectives of their RSM practice in PE. The article used an MMR approach, integrating the results from the interviews and survey. The article reports four questions from the survey—*timing of practice*, *content of practice*, *description of practice*, and *exclusion of activities*—and three subcategories from the interviews—*managing risk in physical education*, *facilitating and modifying physical education*, and *conflicting considerations*. A risk strategy typology (Zinn, 2016) was used to discuss the results. The survey respondents' reports of the timing of their practice indicated that teachers' practice of RSM is a process with an emphasis during PE classes. The survey respondents described their practice as being based on teaching experience, along with the use of discretion and common sense. This result seems to diverge from the interview results in this respect because there were indications that teachers think of RSM mostly as a formalized form of practice, involving the use of plans and procedures in relation to the teaching of certain physical activities with higher risk. The survey results can still provide nuance to the interview results in this respect because the development of plans and procedures makes up the content of practice that seems to be the least part (in degrees) of the teachers' practice. The respondents reported that instruction and guidance about activities made up the greatest part (in degrees) of their practice. Despite this approach and based on the physical activities that teachers perceived to be of higher risk, the results from both the interviews and survey suggest that teachers may come to exclude those activities from their classes, with gymnastics being the first to be excluded. The combined results of the survey and interviews suggest that teachers make use of multiple strategies in their practice, from compliance with formal requirements, such as documentation, to facilitating and modifying PE to the students' capabilities, supervision during classes, instruction and guidance of activities, making students aware of potential risks, following up on rules, and separating the genders in PE classes. Against this backdrop, teachers might still be conflicted about whether to reduce or accept risk for the

sake of students' education in PE. Teachers can come to think that risk reduction and students' education are in a dichotomous relationship, which can manifest in their practice.

4.5 Summary of Results

The main results from Articles I-IV are summarized in Table 5.

Table 5

Overview of Main Results from the Four Articles

Article I	Article II	Article III	Article IV
Document analysis	**Interview**	**Survey**	**Survey**
Modality to command	*Formal training*	*Frequency of injuries*	*Timing of practice*
Circular stands out in the use of modal verbs	Spotting of gymnastics in teacher training	79.8% experience injuries rare or less frequent	Integrated into teaching, preparations
	Limited opportunities for PE-CPD		
Vocabulary constructing risk and safety management	Teachers offered first aid and CPR training	*Degree of injury*	*Content of practice*
Safety and proper	Some teachers take courses geared toward teaching a certain physical activity.	90% experience minor injuries	Instruction and guidance of activities, supervision and observation of students, facilitation and adaptation of physical activities to students, follow-up on rules
External intertextuality of the texts	Scarce opportunities for collegial sharing and learning	*Opinion of RSM*	
Education Act, Regulation, and Circular manifested in each other	Poor facilities and equipment	86.3% think RSM is important or very important	
	Student-teacher ratio		*Descriptions of practice*
Internal textuality in subjects of risk and safety management	Teaching load and time pressure restrict planning	*Risky activities*	Discretion and common sense, experience from teaching, based on the activities taught
Supervisor, teacher/instructor, assistant, examiner		Gymnastics, water activities, team sports	
	Experience from teaching		*Exclusion of activities*
Internal textuality in areas of risk and safety management	Personal and private reasoning of RSM	**Interview**	Gymnastics as a whole
Water activities, bicycling, traffic, outdoor education	Teaching experience and sports enable feelings, gaze, position	*Uncertainty as a characteristic of risk*	**Interview**
		Being in control and not being in control	*Managing risk in PE*
An emerging regulative discourse of teachers' risk and safety management	*Triggers of attention*	Diverse and unexpected situations	A formal reasoning for RSM
Control and regulation of teachers	Diversity in attention to RSM among the teachers		Formal requirements: control of facilities and equipment and documentation of injuries
	Some teachers worry about accountability	*Inherent risk in physical activities*	
Regulation and teachers' discretional space	Injuries and close calls generate attention and change.	Certain activities and especially gymnastics	*Facilitating and modifying PE*
Teachers have autonomy in most areas, except when teaching water activities		*Risk generated by the students*	RSM is not seen as relevant for all PE
		Competitive and unfit students	Adapting PE, knowing students, involving students in the thinking, separating genders, exclusion of certain physical activities
The (un)intentional devaluation of physical education teachers		*Accepting adverse consequences*	*Conflicting considerations*
relative to other subjects and RSM		Teachers accept minor injuries to students	Restricting students' education or accepting risk of injury
		Injury severity	

The results in Articles I-IV form the basis for a discussion of the thesis research problem.

5 Discussion

The results of the four articles are brought together in the following discussion in response to the research problem: *How does teachers' risk and safety management in physical education emerge as a professional practice*?

Six main findings from the articles were selected for discussing the research problem: targeting special activities and sports, a varied and complex practice, constrained by uncertainty, enhancing students' education, the tacit dimension, and a reflective practice? With this structure, the discussion of results is assisted by the theoretical framework presented in Chapter 2 and prior studies and literature. The discussion is partly structured by the different theoretical perspectives in order to interpret different dimensions of the results. However, as I have pointed out in section 2.2.5 they should not be seen isolated, and the theories are therefore integrated throughout the discussion to enhance the understanding of the complexity of teachers' practice. By creating a dialogue in the discussion, I seek what R. B. Johnson (2017) described as enhancing the synthesis for a better understanding of the problem. With the theory of practice architectures in mind, the reading of these results comes with the necessary attention to the context of teachers' RSM because the practice architectures prefigure practices (Mahon et al., 2017). However, a reservation applies to the discussion of teachers' enactments in terms of their doings, because the results of this study are based on interviews and the survey and must therefore be read accordingly. The discussion is intended to make open the contributions of the thesis to research and in a summary of key implications and suggestions which concludes this chapter.

5.1 Targeting Special Activities and Sports

Professional practices have a purpose (Kemmis & Grootenboer, 2008; Mahon et al., 2017; Schatzki, 2005) and this section discusses what regulative policy brings about and what teachers talk about concerning RSM in PE as it can illuminate how the practice is understood and known. This section sheds light on the interdependency between the three intersubjective spaces of practice because what is brought about in the semantic and social space seems crucial for the physical time-space and emerges in teachers' enactment.

The results in this study suggest how RSM in PE is understood, both through the concerns of regulative policy (Article I) and through what teachers think of RSM and what RSM means to teachers (Articles II-IV). In the analysis of regulative policy

documents (Article I), this study pays attention to parts of the social–political arrangements and the cultural–discursive conditions of teachers` practice. Article I sheds light on the distinct areas of concern (i.e., water activities, bicycling, traffic, and OE) that are pulled out in the text. This suggests that this policy may enable an understanding of teachers' practice that targets these safety risks in PE and implies that concerns of policy can come to prefigure teachers' RSM. What practitioners say and think (Mahon et al., 2017) can signal what seems relevant for teachers in relation to RSM and potentially how the policy may converge or diverge with teachers' thinking. As with the policy documents, teachers also emphasized certain physical activities in their talk of RSM (Article II and IV). Some of these converged with the regulative policy while others were not brought up in the documents. It seems reasonable to think that teachers' RSM is at least partly prefigured by the activities singled out in the regulative policy (Article I). One of the activities the teachers reported as risky but was not mentioned in the policy documents is gymnastics. This is an activity that teachers seem to think is appropriate and in need of RSM in contrast to other activities they might teach in PE classes (Articles II and IV). However, it is crucial to keep in mind what practitioners do not say, or think of as not relevant, is part of their enactment of this practice. The divide, or what separates the thinking of RSM from their pedagogy-oriented thinking, seems to lie in the activities teachers might modify and adapt to their students as part of their pedagogical approach in PE and contrast those that are considered to include special risk (Articles III and IV). Potentially, this could be related to the sports-based thinking of PE (e.g., Kirk, 2010; Tinning, 2012; Ward & Griggs, 2018), which seems applicable to the Norwegian PE context (Moen & Green, 2014a, 2014b; Moen et al., 2018). This means that it can potentially be the practice traditions (Mahon et al., 2017, p. 12) in PE that prefigure this way of seeing RSM. The results in this study, therefore, suggest that RSM emerges as a practice set out to reduce the greatest safety risks in PE comprising special activities and sports. It also implies that teachers may not think of RSM as part of their greater pedagogical practice.

The survey results show that teachers ranked gymnastics as the riskiest activity in PE, followed by water activities and team sports (Article III). This positioning of gymnastics makes the activity stand out in both the interviews and the survey results (Articles III and IV). The teachers' focus on gymnastics is an interesting finding, given that the curriculum that was active during data production for this study did not position

gymnastics as compulsory content in Norwegian PE (MER, 2015). This raises questions about the reasons behind this thinking. Albeit teachers described their teacher training as mainly bringing about RSM as a practice concerned with sports, it was a special concern in relation to gymnastics (Article II). Based on the results in this study it is plausible that the reasoning of the teachers was at least partly prefigured by the practice from their teacher training (Article II).

The international research suggests that this thinking may have consequences for students` education as teachers might exclude from their PE classes those physical activities perceived as risky. Exclusion is a strategy demonstrated in reports from Korea (Park, 2018) and Canada (D. B. Robinson et al., 2020). A rational strategy (Zinn, 2016) can be a reasonable strategy for teachers if they see these as activities that pose a risk of serious injury (Teigen, 1988). While the teachers' exclusion for risk reasons mostly applies to gymnastics in this study (Article IV), some respondents to the survey also reported excluding outdoor swimming from their PE teaching (Article IV). The exclusion strategy illuminates a potential dilemma with the social–political arrangements and the regulative position of the PE curriculum in Norway (MER, 2017). Given that the PE curriculum comprises compulsory content, there is an implication that some activities cannot be excluded from PE. Considering the renewed PE curriculum, this might include lifesaving training in water outdoors for some teachers (MER, 2019). This implies that exclusion can be rational for risk reasons but is not necessarily educational. What seems critical here is that the results in this study suggest that PE teachers are not necessarily given opportunities to develop their RSM knowledge through formal training (Article II). There are some nuances to the argument because some teachers might be offered courses related to the teaching of certain physical activities (Article II). The teachers who receive training seem to use plans and procedures when they teach that activity (for example; outdoor swimming Article IV). This suggests that formal training is support for teachers' RSM in PE and especially when they teach the proposed risky activities in PE. The regulative design of the curriculum implies that teachers are faced with a crucial dilemma in teaching compulsory content if they are not competent and are not offered opportunities to train for that competence. This result casts the official orientation targeting the teaching of water activities in a particular light because it opens the potential for water activities to be taught by someone other than the teacher, such as a swimming instructor (Article I). An interesting change to the arrangements is that the orientation is no longer in operation

with the renewed PE curriculum (Udir, 2015). It can open or retain a space for strong discretion (Dworkin, 1978). How teachers enact this space or how schools and teachers will potentially deal with the compulsory teaching of lifesaving outdoors if teachers do not feel competent to teach is uncertain based on this study. Rather than seeing this as a loss of position in relation to RSM in PE (Article I), it can also relieve teachers who do not receive training.

This study provides insights into how this practice as other professional practices, are culturally and discursively shaped (Kemmis, 2010; Kemmis & Grotenbooer, 2008; Mahon et al., 2017). The results discussed in this section indicate that the practice arrangements partake in construing what the risks are in PE and thereof what this practice is about and the targets of teachers' RSM (Articles I-IV). The explicit reasoning of RSM, both in policy and among teachers, relates to special activities and sports (Articles I–IV). Their teacher training seems to contribute to this approach (Article II). Teachers' enactment of this practice can therefore come to center around how, and which risks are brought forward in regulative policy (Article I) and in PETE (Article II). This study further suggests that the regulative design of the curriculum combined with varied opportunities for teachers to formally train might promote exclusion as a strategy, and potentially have consequences for students' education in PE. Perhaps most important is that teachers need to be offered opportunities to develop their competence to teach the content stated in the PE curriculum.

Although the results discussed in this section can create an impression that teachers' RSM is rather narrow in scope, this study suggests that teachers' practice is far more comprehensive.

5.2 A Varied and Complex Practice

The dynamic and dialectical dimensions of professional practice (Kemmis & Grootenboer, 2008; Kemmis et al., 2017; Mahon et al., 2017) open for the possibility that teachers' RSM can change over time and vary among teachers. This section discusses the variation and complexity of teachers' RSM in PE.

There is a potential that teachers may think of certain approaches or strategies to be better than others or even elementary for any RSM. However, the practice lens offered here proposes that practitioners' enactments can vary due to their former experiences or beliefs (Kemmis & Grootenboer, 2008; Kemmis et al., 2017; Mahon et al., 2017). The

results in this thesis suggest that while some can come to be very cautious in their practice, others might not pay much attention to risk and safety at all (Articles II and III). A result opening for that teachers' activities with regard to RSM can differ. Despite that the practice architectures might prefigure a certain understanding of this practice, the results in this study also suggest that teachers' practice is varied and comprised of multiple risk-related strategies, ranging from documenting injuries to hoping that an accident will not happen (Articles II - IV). Although the teachers in the interviews had initial difficulty describing their practice; however, during the interviews they came to describe changes to the way they taught over the years without necessarily being consciously aware of making such changes (Articles II and IV). This indicates that the practice is multifaceted and more comprehensive than the initial impression might suggest. The survey results support, complement and provide nuance for the interview results in this respect. Some activities these teachers pursued were compulsory, while others were based on their experience and common sense (Articles I–IV). This is a result that can call into question, for example, mandatory safety guidelines (e.g., Rothe, 2009). The core of teachers' practice seems to be integrated into teaching (Articles II and IV). The survey respondents' report of the content of their practice show slightly different activities used during teaching (reported as the average mean; Article IV). Conversely, more formal activities, for example, the development of plans and systems, seem to be more inconsistent among these teachers (Article IV). The practical synthesis in professional practice (Grimen, 2008; Gilje, 2017), might emerge as a diverse combination of risk strategies (Zinn, 2016) with regard to teachers' RSM in PE. The respondents' thinking about the importance of RSM seems to be less varied than the interview results, with nearly 90% of survey respondents reporting that RSM is important or very important in PE (Article III). However, with Breivik's (2001) experience in mind, it can potentially be difficult for teachers to report that RSM is not important. There is also a possibility that the teachers thinking of RSM can relate to their reports of student injuries in their PE classes because nearly all of the teachers reported injuries (Article III). However, 22.6% of respondents to the survey reported having experienced moderate injuries, and some (n = 16) reported severe to critical injuries (Article III). Nonetheless, these results point to a potential dilemma. In the case that students are injured in PE and there is a variation in the teachers' practices (Articles II-IV), these results pave the way for a discussion of good and bad

practices. Given that teachers' practices vary from one another, there is a potential that some can be better performed than others.

Aven (2016) noted that the management of risk can be ambiguous due to the differing values and preferences involved in risk decisions. Moreover, Mahon et al. (2017) argued that "many practice situations demand moral–ethical judgement and creative problem solving, rendering reliance on prescribed procedures or rule-following action inappropriate" (p. 14). Both these positions imply that some of the variation may stem from teachers' attempts to deal with the specifics of the situation in question. However, it is possible to interpret the variation from another angle because the international literature sheds light on the marginalization and isolation of PE teachers (Spicer & Robinson, 2021). The results from the interviews in this study suggest that these teachers stand mostly on their own in dealing with risk and safety in PE (Articles II-IV). This can challenge the thinking that there is a division between facts and values (Aven, 2016; Hansson, 2010) in this particular practice. While a caution applies to this argument, the study's results suggest that PE teachers in primary and lower secondary schools in Norway are not necessarily offered any formal ways to collaborate and meet as a group (Article II). This raises questions about the potential for creating a shared RSM practice among PE teachers. This means that what the individual teacher considers to be of value, sees as risk, and thinks of as education in PE can be crucial for how teachers enact any RSM.

Not only can practices differ between practitioners, and practices relate to each other, but the architectures can also change (Kemmis et al., 2017, p. 247). A potential reason for change in the arrangements can be the teachers' practices because practices stand in a dialectical relationship with the practice architectures (Mahon et al., 2017). There are indications from this study that teachers' RSM is changing based on both the RSM activities, and the physical activities teachers pursued in PE. Teachers in the interviews told of physical activities that they no longer pursue in PE (Article II) and explicitly prioritized formal requirements involving documentation of injuries and yearly controls of facilities and equipment (Article IV). These interview results seem to converge with the survey respondents' report of the content of their practice involving, for example, documentation of injuries and administration (Article IV). This is reminiscent of the focus on safe facilities emphasized in US case law (e.g., Dougherty & Seidler, 2007) and the statistics used in studies of injuries in PE (e.g., Nelson et al., 2009).

A central question that arises concerning these changes is whether or how this can be traced to other risk practices, inspired by the sub-theory of ecologies of practices (Kemmis et al., 2012). If the context matters in how people think and deal with risk issues (Douglas, 1992; Klinke et al., 2021; Renn, 2008), these Norwegian teachers' ways of thinking and traditions can resonate with other contexts and at different times, but also diverge. This illuminates a potential implication, which is the importance of taking the context into account when considering teachers' RSM and the research targeting teachers' RSM in PE. By looking into international research, it can be possible to compare these results with results from other contexts. While the Canadian teachers in an earlier study (Rothe, 2009) reported safety guidelines and regulations as relevant to their practices, the teachers in this study did not necessarily agree (Article II–IV). Conversely, Korean PE teachers reported more recently that their management and their preferences for safety were somewhat in conflict, restraining their practices (Park, 2018). There are at least two ways of interpreting these changes, either as constraints or enabling a complex practice (Mahon et al., 2017). The changes can be a sign that teachers' RSM is evolving into a complex of practices, in the sense that external risk-related practices are implemented in teachers' practice, possibly creating a complex practice in PE.

It can be useful to explore the changes to be part of securing and showing educational institutions' compliance with acts and regulations. These arrangements can also be in response to the societal context and potentially a culture preoccupied with risk and safety (e.g., Beck, 1992; Furedi, 2006; Giddens, 1999; Power, 2004), where these arrangements can invite and require a wider array of responses from teachers. The official orientation related to the teaching of water activities (Udir, 2015) is proposed to comprise a new approach to teachers' RSM in PE (Article I). It can be an example of prefiguring where regulation is seen as a way of solving societal and institutional problems with risk (Rothstein et al., 2006). However, the lack of research and knowledge of accidents and injuries to students in Norwegian schools (Ohm, 2017) prompts questions about the problem these requirements are set to solve (Article I). It can be that regulation comes about due to a lack of knowledge and call for statistics (Ohm, 2017) in combination with the questioning of professional practices (Pitman & Kinsella, 2019). By relating the changes to how a practice is mediated by power in the social space (Kemmis et al., 2017; Mahon et al., 2017), the language used in the noted orientation can possibly reconstruct PE teachers' positions relative to RSM and relative to the other subjects (Article I). This

study suggests that language use in policy can weaken teachers' discretion (Dworkin, 1978). Considering the concept of doxa (Bourdieu 1977, 1979/1995) teachers may see the likes of the orientation as regulations, not as recommendations, and possibly think of it as common sense (Article I). This is where the interviews and survey (Articles II–IV) provide some empirical insights that can nuance the results presented in Article I. The results indicate that, to a great degree, teachers seem to comply with the requirements in terms of the activities they pursue (Article IV). The recommendations of the orientation also seem to be put into practice in teachers' schools (Articles II and IV). However, teachers seem to be resistant in terms of how they think by relating the changes to the societal and some stakeholders' thinking of safety and teachers' accountability (Articles II–IV). The teachers in this study did not refer to their preferences behind the changes to their practice (Articles II–IV), suggesting that these changes may relate to the arrangements reshaping teachers' practice and not because the teachers were convinced. This can challenge the positioning of RSM regulation as doxa (Bourdieu, 1977, 1979/1995) as proposed in Article I. Teachers' way of thinking can be seen as part of their enactment of this practice and possibly as the contours of practice traditions (Mahon et al., 2017, p. 12). It is possible that the Norwegian practice traditions deviate from the thinking underpinning the regulations (Article I), including the compulsory measures (Article IV), and the safety thinking leading to activities teachers no longer pursue in PE (Article II).

The results discussed in this section illuminate a gap between the official requirements concerning RSM and the teachers' enactments of this practice (Articles I–IV) because teachers' RSM in PE is far more comprehensive and complex than what is formally required of them (Article IV). These results raise questions to the thinking of RSM discussed in section 5.1. The results further suggest that teachers' practices both converge and diverge and therefore open for a discussion of quality practice. However, teachers' RSM is changing with new requirements being implemented. Considering the possibility that the implementation of regulation and formal requirements stems from a lack of knowledge of teachers' practice, it seems necessary to both expand the understanding of this practice and disseminate to stakeholders how teachers' RSM unfolds in PE.

5.3 Constrained by Uncertainty

While uncertainty is portrayed as a central dimension of professional practice (Schön, 1991), it is a condition that practitioners cannot necessarily solve (Kemmis 2012; Kemmis & Smith, 2008). The discussion in this section centers around a potential dilemma that emerges in-between the social expectations, regulation, the potential control of risk and the uncertainty teachers experience in PE.

Giddens' (1991) societal analysis of late modernity suggests that there is an agency thinking behind risk today. This perspective can imply that teachers' RSM in PE is a practice with the purpose of controlling risk. The teachers' descriptions, however, seem to challenge this argument and actualize in particular two aspects of the results: the uncertainty of risk in PE and that teachers can come to accept minor injuries to students (Article III). The experiences of participants in this study indicate that it is not possible to be in complete control of risk in PE (Article III). A result that can relate with the uncertainty described as inherent to professional practice (Kemmis 2012; Schön, 1991). Uncertainty seems to resonate with teachers' feelings of not being in control in PE classes (Article III). One of the responding teachers put it this way:

> If we bring students outside, I am not in control. It means I have control of my students, but I am still not in control. It is just the way it feels, the nature of things . . . I believe it is a natural element in the subject, but as I think of it, it is a source of concern that is always present (IP6). (Article III, p. 8).

Teachers described a potential for diverse and unexpected situations arising in PE classes (Article III), which initially seem to be good reasons for thinking that RSM is important in PE (Article III). However, this study suggests that teachers might not see RSM as a relevant encompassing practice in PE because of uncertainty (Article IV). In the case where teachers do not see RSM as a relevant encompassing practice for PE, it questions the existence of RSM as a practice set out to manage risk.

The risk epistemology can provide some additional insights into teachers' thinking and to these arguments. For example, Hansson (2018) described the future as inherently uncertain. Although it is rather difficult to see the potential for black swans (aleatory uncertainty) in PE in the unthinkable sense described by Taleb (2007), it seems more likely that this kind of uncertainty in PE is more relatable to randomness and chance, applying a less strict interpretation of the concept (Aven, 2016). The concept of epistemic

uncertainty supports the potential to gain more knowledge and reduce uncertainty (Hacking, 1975). Considering the different ways in which it is possible to interpret teachers' experience of not being in control and of the uncertainty inherent in PE, it seems plausible that the teachers' thinking can be illuminated by different concepts of uncertainty and assist in understanding why teachers think RSM is a relevant practice in PE or do not find it relevant.

It is also possible to criticize teachers' way of thinking because it indirectly reduces a teacher's role and ambition to prevent undesired events, aside from the above-mentioned activities and sports. Notably, 90% (n = 630) of the survey respondents reported having experiences with minor injuries to students in their classes (Article III). This way of thinking can be a contributory factor in teachers coming to accept minor injuries to students (Article III). Given that teachers think they are not in control of risk, it seems understandable that they can come to accept that injuries happen, a result that challenges attention to teachers' negligence and liability (e.g., Rothe, 2009; Sawyer & Gimbert, 2013, 2014; Young, 2007). It is also potentially in conflict with Norwegian policy that students are not to sustain any injuries in schools (Udir, 2020). In cases where a student is injured in PE classes (Article III) and the policy translates into a no-fault policy, these teachers do not seem to fulfill their professional mandate. While some teachers reported injuries happening sometimes (18.1%) or often (1.4%), the remaining respondents reported that student injuries were rare or less frequent in PE (Article III). There is also a potential acknowledgment of teachers' successful practices in the case that students are rarely injured in PE (Article III), opening the way to recognize teachers' distinct ways of dealing with risk and safety in PE that are largely succeeding. However, it might require that listening is not reduced to the potential malpractice described in law reviews and the media or to the research of student injuries in PE (Article III). How teachers think of injury and its frequency are crucial in the reading of these results. Nevertheless, as experienced by Breivik (2001), it can be difficult to defend the position that injuries are healthy because they may challenge stakeholders' expectations of student safety. In addition, taking the position that injuries are predictable (Davis & Pless, 2001), this way of thinking may still have consequences for teachers because it means that teachers ought to be able to predict, and therefore prevent, all injuries in PE. Foreseeability, which was highlighted by the Norwegian HR in relation to a PE teacher's misconduct (Frøseth & Askeland, 2018), seems to portray a similar way of thinking. On

these grounds, the uncertainty teachers experience can make their potential acceptance of injuries equally ambiguous.

The results discussed in this section pose questions about the scope, the potential, and limitations of teachers' RSM in PE. They also shed light on an epistemic dilemma, whether teachers' acceptance of minor injuries is a result of the uncertainty inherent in PE, is a result of teachers' RSM, or the traditions and the ways PE is taught. Despite the difficulty of providing a definite answer to this dilemma, the results still suggest that there is a potential in supporting teachers' development of RSM knowledge with the purpose of reducing minor injuries to students. This section also brings forward a need for the broader PE field to discuss what role and position physical risk may play in the future PE considering students' education. How teachers can come to approach this difficult issue is discussed in the next section.

5.4 Enhancing Students' Education

This section discusses the difficult balance teachers experience when enhancing students' education in PE while reducing risk for the sake of students' safety. A key concept in this discussion is praxis which incorporates doing good based on what is proper and wise (Mahon et al., 2020; Kemmis & Smith, 2008).

A question arises with regard to a potential dichotomous assumption where teachers talk of a choice between catering to students' education and reducing the risk of something adverse happening (Article IV). It may be that these teachers see this as a bargain, that they are risking something valuable (Oxford University Press, Risk) to gain something of value (Luhmann, 1993). Teachers seem to be using the proposed non-rational strategy of hoping that an accident will not happen and taking students' happiness into account to enhance students' education in PE (Articles III and IV). This suggests that this practice carries a moral dimension (Mahon et al., 2020; Kemmis & Smith, 2008) for these teachers. The concept praxis (Kemmis & Smith, 2008) can offer an alternative perspective of RSM where teachers are foremost committed to doing good, and where the use of rational risk strategies (Zinn, 2016) might be discarded for the sake of students' education in PE. However, it is possible to question this thinking due to the elusiveness of praxis and not to mention the assumption that students' education conflicts with risk control. While the teachers in the interviews drew a line of acceptable risk at the potential for serious injuries (Article III), they still expressed that minor injuries and incidents can

be accepted and tolerated for the sake of students' education and enjoyment of PE (Article III). It is possible to see the contours of teachers' educational thinking and this acceptance as a guiding disposition to doing good (Kemmis & Smith, 2008). However, it might have consequences for students. Considering the survey reports and the teachers' thinking of injuries in PE (Article III) the study implies that teachers can come to consider students' long-term happiness in PE in a professional practice that accepts risk and minor injuries to the students (Article III). Conversely, if happiness needs to be seen in a long-term way (Kemmis & Smith, 2008, p. 17), it opens up discussion of this practice as part of teachers' attempts to keep students "happy, busy and good" (Ward & Griggs, 2018, p. 402). For example, some teachers can come to be open to particularly skilled students using trampolines in their classes, although they acknowledge the risk involved (Article IV). At this point, it seems useful to consider the varied practices of teachers discussed in section 5.2. This suggests that teachers' practice can vary depending on what they interpret as reasonable considering students' education in PE. Given that praxis is inherently social (Kemmis & Grootenboer, 2008), questions arise as to whether or how this practice is informed by teachers' communities of practice. The PE teachers in the interviews were offered limited opportunities to collaborate with other PE teachers (Article II). It can be that the practical and moral reasoning illuminated by the concept praxis (Mahon et al., 2020; Kemmis & Smith, 2008) can assist teachers in defining what is reasonable in their practice. This means that an opening for collegial dialogue and sharing of knowledge and experiences can be one of the initial ways to facilitate teachers' development of this practice.

The results discussed in this section amplify the need for an open and honest debate about students' education in PE and the role and position of physical risk in PE. There is a possibility that teachers' educational thinking may conflict with a no-fault policy. It is of essence that the discussion of future PE involves considerations of both the individual student and the common good. However, there seem to be good reasons for and a need to establish and secure PE teachers with communities of practice that can assist teachers in defining a reasonable practice that reflects the mandate of PE. Perhaps equally important is what practitioners "can come to know" (Mahon et al., 2017, p. 6) because it can be central to their enactment and the quality of their practice.

5.5 The Tacit Dimension

This section discusses teachers' RSM knowledge. The previous research and literature can provide information about what has evolved and currently counts as valid or represents ideal forms of knowledge in the respective practice (Zinn, 2008). By opening the door to teachers' voice in this respect and the tacit dimensions (Polanyi, 1962, 1983), this study and the following discussion can potentially enhance the understanding of RSM knowledge and thereby contribute to the development of the theory of teachers' RSM in PE.

Looking back into the risk analysis framework (Figure 1), the knowledge associated with risk assessment is described as neutral, scientific, and evidence-based, while risk management is described as involving necessary value considerations (Aven, 2016; Hansson & Aven, 2014). A difference that is described in a distinction between facts and values (Aven, 2016; Hansson, 2010). The teachers' initial descriptions and more formal ways of seeing and describing this practice in the interviews (Article IV) actualize risk as observable, measurable, and potentially manageable (Renn, 2008). It can highlight rational strategies for dealing with risk and uncertainty (Zinn, 2016). Results from the interviews suggest that teachers' orientations toward RSM, based on their initial descriptions of the formal accounts of their practice (Article IV), might relate to this way of thinking, indicating that the model of technical rationality (Schön, 1991) and the reasoning of techne (Kemmis, 2010, p. 159; Kemmis & Smith, 2008, p. 22) stand out in the cultural–discursive arrangements and the theory of this practice. Based on the results of this study, however, teachers do not seem to receive any information from external experts on risk assessment. The related values neutrality in assessing risk (Aven, 2016; Hansson, 2010) might not be readily applicable for teachers' RSM in PE.

An abundance of the literature related to RSM in PE spotlights planning (e.g., Gray, 1990, 1991), safety guidelines (e.g., Fitzgerald & Deutsch, 2016; Rothe, 2009), and risk profiling (Coelho, 2001) for reducing or making risk obsolete. The official orientation addressing the teaching of water activities in schools (Article I) may signal a similar theory of RSM in attempting to reduce risk through a set of predefined approaches and measures emerging in the use of risk procedures and the formal requirements in teachers' practices (Articles II–IV). While the respondents to the survey reported that their practice involved plans and procedures, it also comprised the facilitation and adaptation of activities to the specific student group and supervision, observation, and overview of

students (Article IV). The respondents foremost described their practice as being based on discretion and common sense (Article IV). The teachers in this study reported practices in which a crucial aspect lay in their judgments and actions, in-action (Article IV). This is where the teachers' reports and talk of using discretion and common sense (Articles III and IV) can add to the knowledge of this practice. A result that may challenge a line in the literature on teachers' RMS in PE that raises prescribed procedures, such as an inventory checklist, to comply with what Murphy (2015) describes as an effective risk management program. That can be a sign that the tacit dimension of teachers' RSM is unknown or not fully recognized or validated as RSM knowledge.

This is where Polanyi's (1983) theory of tacit knowledge can assist in shedding light on the tacit dimension of this practice, suggesting that parts of teachers' practice can be hidden because it is not necessarily fully explicable or known. A reminder should be added here that it does not indicate dualistic thinking but, rather, that all knowledge comprises tacit dimensions (Polanyi, 1983), meaning the implication that this practice comprises both explicit and tacit dimensions manifested in teacher practice. Looking back into the interview results, based on these teachers' descriptions, they might develop, with time, a form of bodily RSM knowledge that involves gaze, position, and feelings (Article II) reminiscent of a form of tacit knowing (Polanyi, 1962). The research addressing teacher knowledge in relation to injuries in PE (e.g., Schaefer, 2008; Sniras et al., 2020) may be nuanced and thus complemented by listening to the teacher's voice. The survey respondents also described their practices as being based on experience from teaching (Article IV). Considering the preference for safety guidelines in the RSM literature and even checks of teachers' practice (e.g., Fitzgerald & Deutsch, 2016), this thesis invites acknowledging that there is an experiential and tacit dimension in teachers' RSM in PE, which brings about a potential for exploring professional artistry in this respect (Schön, 1987). On the other hand, it also raises some critical issues because it is possible to question the quality of teachers' tacit knowledge (Eraut, 2000) and because it seems uncertain whether there is a possibility for this form of knowledge to be explained (Polanyi, 1962). Perhaps most essential to the research are the ways knowledge is understood and therefore operationalized because the tacit can be difficult to grasp (Brown et al., 2019; Eraut, 2000) and for example, test statistically. A dilemma that can arise if teachers' RSM is predominantly tacit (Polanyi, 1983), is how to gain insights into the silent knowledge teachers draw upon in their practice. Considering the dialectical

relationship and the potential for practice to inform the practice architectures (Mahon et al., 2017), there can be a need to unpack teachers' knowledge and practice to some extent. The tacit can be problematic with requests for explicating professional practices (Toom, 2012). If not, the dialectical relationship between the arrangements and practices can be more of a one-way relationship for teachers' RSM in PE.

The results discussed in this section indicate that the theory of RSM in the PE literature, and the potential limitations of technical problem-solving in this particular practice, create a need for a more encompassing epistemology of teachers' RSM in PE. The thesis, therefore, suggests an expansion of what seems to be the dominant theory of RSM knowledge in PE but also proposes that there is a need for more research addressing teachers' tacit knowledge. Albeit tacit knowledge may be crucial for teachers' practice, it does not mean that it cannot be questioned. This is an argument that actualizes teachers' reflective practice.

5.6 A Reflective Practice?

This section discusses how teachers' RSM in PE emerges as a reflective practice and as to whether and how the arrangements in which this practice is enmeshed (Kemmis & Grootenboer, 2008; Mahon et al., 2017) are conducive to reflective practice (Schön, 1991). With the position that reflection is central to and for developing professional practice (Schön, 1987, 1991, 1992, 1995), and considering the meaning of educative experiences for development (Dewey, 1916/2008, 1938a), reflection points to a disposition toward continuous development of practice (Schön, 1991).

Teachers participating in the interviews portrayed RSM as a practice that they are not necessarily giving much conscious thought to, seeking to develop, or otherwise come to pay attention to in their PE teaching (Articles II–IV). This not only suggests that the practice is scarce but also questions the preoccupation with risk and safety (e.g., Beck, 1992; Furedi, 2006; Giddens, 1999; Power, 2004) among these teachers. Nonetheless, there are nuances in the results because some teachers might think of risk and safety in PE constantly (Article II). The results indicate that there are aspects of the combined arrangements that can be especially critical for teachers' reflective practice (Articles I–IV). With the theory of practice architectures (Kemmis & Grotenbooer, 2008) in mind, taking both the larger structures and the teachers' local schools into account, teachers might not be provided with the opportunities to reflect, share, and learn from and with

other PE teachers. PE teachers do not seem to be offered the time to formally meet and collaborate (Article II). This can imply that the reflective practice is ignored by the practice architectures. As professional practices are described as intersubjective (Mahon et al., 2017), the results in this study can challenge the social and intersubjective ways (Kemmis & Grotenbooer, 2008: Kemmis et al., 2017; Mahon et al., 2017) this particular practice may develop. Albeit there are reasons for looking at PE teachers' communities of practice, which is brought forward as a central dimension for practitioners to develop praxis (Kemmis & Smith, 2008), it is possible to question the assumption behind and whether the communities of practice hold their merits.

Zooming in on teachers' local school environment, the teachers in the interviews specifically raised what they described as a lack of resources in PE (Article II), some of which relate to time, where a lack of time between classes seems to restrict teachers' opportunities to prepare RSM (Article II). The time-based resources can constrain teachers' planning and preparation of RSM for PE (Article II). How teachers described their local working conditions in the interview can be a key for understanding how these arrangements enable or constrain teachers' development of RSM knowledge (Article II). For example, a limited offering of PE-CPD seems to put limitations on teacher development through formal means (Article II). In terms of the practice relations (Mahon et al., 2017), the interview results suggest that PE does not have a prominent status compared to other school subjects (Article II). The focus and collegial time for collaboration and development are allocated to other subjects, such as math and languages, in these teachers' schools (Article II). A result that resonates with PE teachers' potential loss of status in RSM policy (Article I). This status in terms of practice relations can be restrictive for the thinking in terms of the sharing and learning among PE teachers, potentially leaving this practice to the individual teacher (Article II). The results indicate that beginner teachers are not offered opportunities to learn from other teachers, in-service, and therefore need to create and develop their practice. This point can be seen in relation to PETE because the teachers' talk of their limited formal RSM training in PETE (Article II). While teachers are formally trained as teachers, or even as PE teachers, this does not mean that they receive formal training for RSM (Young, 2007). The beginner teachers' potential lack of RSM training in PETE along with limited teaching experience can be problematic because they might not, initially, act with the knowledge of

experienced teachers. The results of this study suggest that the combination of arrangements can be especially critical for teachers' enactments of RSM in PE.

Considering the results presented here, it can be difficult to defend reflection as a central category in these teachers' RSM in PE. However, this argument might initially seem to put forth a dualistic thinking of reflection. The holistic perspective of knowledge (see e.g., Dewey, 1938a; Polanyi, 1983; Schön, 1991) that rejects the dualistic conception of body and mind, might nuance this impression. This is why it is important to raise how the teachers in the interview study told of how their experiences with sports, teaching, and critical incidents in PE classes enabled a form of knowledge that assisted them in PE classes (Article II). Despite the initial impression that teachers do not reflect upon RSM on-action, it might be useful to listen to Schön (1987), who raised the "*professional artistry"* (p. 22) that suggests reflection-in-action can be a crucial part of teachers' responses to uncertain situations and surprises in teaching. This implies that these teachers' reflective practice might emerge more in their actions rather than as a conscious and deliberate agenda. It is also possible to criticize the position of reflection for performing quality RSM. There are other dimensions that seem crucial for teachers' practice and can add nuance to this reflective argument, given that the teachers in the interview study also talked of the importance of knowing the students to facilitate and modify PE classes (Article IV). This result seems in line with an international context, given that teachers in Korea (Park, 2018) reported that not being knowledgeable about students was a barrier to their management of risk and safety in PE.

Educative experiences (Dewey, 1916/2008, 1938a) and reflection-on-action (Schön, 1991) can facilitate change and development. Reflective practice can, in this sense, come to center on the quality of the teachers' experiences. However, it is important to keep in mind that all experience does not translate into better knowledge or a disposition toward development (Dewey, 1916/2008, 1938a; Schön, 1991). If teachers do not necessarily pay attention to or reflect upon RSM in terms of consciously being aware of developing their knowledge and practice (Article II), it can seem that these teacher's experiences are not necessarily educative in the sense of translating into a disposition toward development (Dewey, 1916/2008, 1938a; Schön, 1991). This can question the quality of teachers' experiential knowledge in relation to RSM. Nonetheless, there are indications from this study that near misses and injuries to students can make out crucial experiences for teachers. With near and actual misses, teachers seem to reflect on their

practice, talk to other teachers, and potentially make changes (Article II). In looking at these events involving physical risk through Dewey's (1916/2008, 1938a) theory of experience, a risk experience with subsequent reflection can potentially facilitate incremental steps toward a reflective practice (Schön, 1991). This means that teachers may have to rely on critical incidents and what is only possible to see as unsuccessful practice for conscious development (Article II), illuminating the body of literature that addresses teachers' negligence and liability (e.g., Sawyer & Gimbert, 2013, 2014). It can question the moral dimension (Kemmis & Smith, 2008) of this practice. The positioning of the near and actual misses where students are injured as educative can be difficult to defend as professional praxis (Kemmis & Smith, 2008) when taking students' well-being into account and because practitioners need to perform their professional practice with a certain quality (Mahon et al., 2017).

The core of this discussion, therefore, relates to the particular arrangements of teachers' reflective practice (Mahon et al., 2017). It seems to be the combination of the different practice arrangements that is most critical and restrictive for teachers' development. Some of which subsumes in teachers' working conditions. At the school level, the results from the interview study suggest that the PE teachers' opportunities for collaboration and tapping into each other's knowledge and practices are scarce (Article II). For these reasons, each teacher's former experiences and thinking of risk and safety in PE (Article III) can be crucial for the actions taken with regard to RSM (Articles II–IV). An important point in this respect is that the individual ways of enacting the practice are not read as individual in this thesis but inherently social, because according to the theory of practice architectures the practice is prefigured as an individual practice, which protrudes in various teachers' enactments. This means that teachers' RSM in PE seems to be prefigured as an individualized and partly private practice (Article II). The results in this study bring to the fore a critical situation: that there is potential for teachers in Norway to be held accountable for the arrangements that prefigure this practice as an individual approach.

Considering the results discussed in this section, the thesis practice lens gains a transformative agenda. It illuminates the need for architectural change because teachers' practice is not only a teacher responsibility. With the assistance of practice theory, the study provides insights into the need for political, school owner, and school management action to support teachers in developing their RSM practice.

5.7 Summary and Key Implications

There seems to be a gap in the knowledge of teachers' RSM in PE and this study contributes to this field with research-based knowledge of regulative policy and of what primary and lower secondary teachers express about RSM in PE. This study, therefore, offers data generated in the Norwegian policy context and how Norwegian teachers enact this practice.

The regulative policy concerning RSM in schools seems to prefigure a certain RSM practice with implications for teachers' enactment (Articles I - IV). There are indications from this study that teachers think of RSM as a practice that mainly caters to the risk problems that are particular to some select sports and activities (Articles II - IV). This study suggests that this thinking might stem from both educational policy and PETE. However, teachers' RSM is changing with new requirements and approaches being implemented (Article II). Although it seems uncertain what problem the changes are set to solve or whether they solve the problem. There seem to be varied opportunities for PE teachers to develop their RSM knowledge through formal training (Article II). This is highlighted in the results in Article II because there are indications that PE has a low status with limited resources being designated for PE. This implies that there is a dilemma in the Norwegian curriculum design where teachers have a mandate to teach compulsory content and at the same time might lack the experience and competence to safely teach. This is a situation that might promote exclusion strategies (Article IV) and potentially a practice that halters students' education in PE. While several papers have highlighted the importance of checklists and compulsory safety guidelines the results in Articles II and IV suggest that experiential knowledge is central to teachers' practice. Teachers seem to develop their RSM knowledge from extensive experience and critical incidents and accidents (Article II). Teachers may create individual and partly private practices in response to these arrangements. However, beginner teachers do not necessarily have the experiential knowledge of their experienced peers (Article II). The inherent uncertainty in PE can be a partial reason why minor student injuries seem to be accepted by PE teachers in this study (Article III). Considering current safety regulations and the teachers' thinking, a no-fault scheme in PE seems unfavorable if the subject is to follow up on its educational mandate (Articles I and III). The varied practices among teachers (Article IV) can have consequences for students' education and their safety. This implies

that teachers can be held accountable for potential shortcomings in their practice. It seems crucial to increase the dialogue, sharing, and collaboration among teachers about what makes this practice reasonable, and the expectations and regulative requirements regarding students' safety in school and PE. There are reasons for addressing the status of PE in schools to potentially enhance PE teachers' opportunities to collaborate, prepare, and develop their RSM practice. It seems necessary to increase the efforts and collaboration between schools, school owners, and PETE to reach all PE teachers.

Methodologically, this study opens the door for combining different types of data and includes the teachers' voices and reports in generating knowledge of this practice. This MMR study illuminates the potential inherent in integrating different types of data to shed light on the variation, divergence, and complexity of this practice. The data do not stand in a 1:1 relationship but rather offer complementary angles to the problem (R. B. Johnson, 2017). An implication of this study, therefore, relates to how the different types of data add nuance and complement and challenge each other. This is not only because it offers data based on policy and teachers, but also because there is a potential to use the divergent results as inspiration for further investigations to understand the reason for their divergence (Greene & Hall, 2010).

On that note, the following sections summarize the thesis' key implications with suggestions for policy, theory, and practice including school and PETE. However, with practice theory in mind, this reading needs to consider the interdependency between these aspects.

5.7.1 Policy

- The analysis in the thesis suggests that RSM-related regulations in PE are opaque, and there should be more transparency. Points that could be improved include regulations and which RSM approaches educational policy actors advise, put forth, and implement in schools.
- This thesis suggests that there needs to be a discussion among educational stakeholders regarding the safety regulations and the future PE considering the aims of the curriculum.
- The thesis indicates that PE teachers in primary and lower secondary education, are not given ample opportunities for the development of RSM. This is the responsibility of the Norwegian Directorate for Education and

Training and school management. It might be fruitful to develop concrete plans for how to provide PE teachers with CPD opportunities for developing their practice.

5.7.2 Theory

- This thesis has explored the opportunities of integrating PE teachers' experiences and perspectives with theory (e.g., tacit knowledge; theory of reflection). This incorporation can enrich the theoretical underpinnings of RSM in PE.
- There seem to be limited studies that have examined the relationship between practice theory (Kemmis & Grootenboer, 2008), RSM, and PE theoretically. This opens up for a deeper understanding of how this practice unfolds in the intersection between the context and the individual. This could be further developed in future studies on PE and RSM.
- Current focal points on PE literature seem limited to rules, regulations, and prescribed procedures. This thesis posits that there is a warrant for the PE field to develop a more encompassing theory of RSM, including for example moral, tacit knowledge, professional artistry, experience. This would broaden our understanding of how complex RSM actually is and of the ways teachers combine risk related strategies in their practice.

5.7.3 Practice

- The findings from the thesis indicate that PE teachers could benefit from more reflection around their own RSM practice. The interviews suggest that teachers have a rather narrow understanding of this practice, and this might be countered through for example more reflective and collegial discussion of RSM.
- Teachers need to participate in an open and honest debate about the risk potential in PE, as this seems to be rarely discussed in schools. Particularly teachers' attitudes toward the acceptance of minor student injuries need to be critically discussed.
- Schools could benefit from more qualitative teacher responses and include them in their response to regulative requirements. The interviews indicate

that the current practice is limited (e.g., documentation and yearly controls) and do not necessarily give an accurate portrayal of the complexity of teachers' practice.

- School management and school owners need to allot more time for PE teachers to develop their RSM practices. This should include an increase in PE teachers' collegiate time and help to establish communicative spaces. The PE teachers in the studies indicate that they are given less time for these communicative spaces, and more priority is given to the other common core subjects (e.g., Norwegian, English, and Maths).
- Schools need to provide beginner teachers with learning opportunities and support from more experienced teachers for developing their RSM in PE. An example of this could be the development of mentorship programs in schools.
- The findings from the thesis indicate that PETE study programs could benefit from expanding their understanding of RSM. Currently, these are discussed by teachers in terms of individual activities, but could be lifted to being understood as part of a more encompassing practice.
- The thesis suggests that PETE study programs could develop more comprehensive courses on RSM for in-service teachers in collaboration with teachers and schools, to aid teachers in their CPD.

6 Concluding Remarks

The purpose of this thesis is to generate research-based knowledge about teacher management of physical risk and safety in PE to potentially contribute to the development of educational policy, theory, and practice. This thesis responded to the research problem: *How does teachers' risk and safety management in physical education emerge as a professional practice?*

This thesis explored the research problem through four articles that answered sub-research questions. Six main findings from the articles were pulled forward in the discussion in this synopsis. The results actualize practice traditions, the architectures, and the interdependency between the intersubjective spaces (Kemmis et al., 2017). The thesis suggests that teachers' RSM in PE emerges as a practice targeting special activities and sports but also as a varied and complex practice. While the teachers seek to enhance students' education in PE they are also constrained by uncertainty. Although the tacit dimension opens for a more comprehensive understanding of teachers' RSM the thesis poses questions as to whether teachers' RSM can be considered to emerge as a reflective practice.

Despite these potential contributions, every study has its limitations. Some of these are discussed in Chapter 3 concerning methodology and methods. The next section sheds additional light on some of the main limitations of this thesis by relating the limitations to each sub-study that was conducted and suggesting potential ways for future research to generate and enhance the current knowledge.

6.1 Limitations

Beginning with CDA, this study can be seen to use a section of Fairclough's (2013) larger analytical framework. An analysis paying more attention to larger societal conditions and changes could have allowed for more insights that could complement the analysis. Perhaps most critical is that this study did not uncover the intentions or processes behind the use of language in the selected documents. However, the central reasoning behind this study rests in the potential for the discourses to be "put into practice" (Fairclough, 2013, p. 89), which is why gaining the teachers' perspectives and reports were crucial for this thesis and as a reference to the results in the CDA. Those aspects provided insights that complement and challenge the results from the CDA and help with gaining a better understanding of how the use of language in these documents was interpreted by teachers.

Considering the interview study, its greatest limitation is that it contained only a single interview with each of the 17 teachers and did not offer data from prolonged engagement with the participants. Considering the emerging practice lens in this thesis, interviews combined with observation could have offered alternative routes and additional knowledge, including teachers' actual doings (Brinkmann & Kvale, 2018; Kemmis et al., 2017; Mahon et al., 2017). As noted earlier, when knowledge is taken for granted by practitioners, it can generate epistemological challenges for research (Brown et al., 2019; Eraut, 2000). Second interviews or recurrent interviews could have opened the opportunity for participants to reflect upon the conversations and the research problem (Smith & Sparkes, 2016). However, the other studies in this thesis provided additional and different types of data that can compensate for some of this weakness and provide nuance to the interview data. However, there are also limitations to the survey study. Perhaps the greatest limitation of the survey study is that it did not contain a randomized sample or use a statistically validated questionnaire. Some may see the lack of inferential statistics as a crucial shortcoming since it does not provide group comparisons or relations between items. This means that there are several untapped potentials from this study. However, distinct combinations and integration of different types of data can be seen as a reason for their position in a study (Brannen, 2005, p. 177) and the particular combination and integration of data in Articles III and IV, as well as in the current synopsis, compensate for some of the survey study's weakness and can be seen as a response to the exploratory purpose of the study at large.

6.2 Moving Forward

The knowledge that is generated in this current thesis emphasizes certain perspectives and arguments and positions others in the background if they were not omitted altogether. First, some voices are not heard, which means that gaining other perspectives, especially those of students, could generate better knowledge of RSM in PE. While teachers in this study referred to their school context in discussions of resources and school environments, investigations at the school level were not included in this study. There is a potential in exploring this contribution to the practice through, for example, case studies of schools, teachers' communities of practice, and the involvement of school management in the investigations, and not to forget how PETE study programs approach RSM.

Thinking of external validation and statistical generalization, there is a potential for including a random sample. The building and testing of a statistically validated questionnaire can create a foundation for studying relations, in addition to longitudinal studies, which can create a potential for causal investigations. A central question relates to investigations of tacit knowledge, because it may require other methods of inquiry and prolonged engagement in the field. To study the teachers' actual behaviors or to tap more into the tacit knowledge and understanding of teachers, the combination of observation and interviews may provide a useful way forward.

Because teachers' RSM practice draws on the particularities of PE and the context involving for example current regulation and curriculum design, there is an opening for a partly shared practice amongst PE teachers internationally and varied practices across contexts. It is necessary to conduct more research and especially comparative research to gain more knowledge of how this practice unfolds and to disseminate to stakeholders how this practice may differ from other contexts and fields.

References List

Aasland, E. (2019). *Konstitueringen av "kroppsøving": En diskursteoretisk studie av undervisningspraksiser i videregående skole* [The constitution of "physical education": A discourse theoretical study of teaching practices in upper secondary education] [Doctoral thesis, OsloMet – storbyuniversitetet]. Nasjonalbiblioteket Digital.

Aasland, E., Walseth, K., & Engelsrud, G. (2017). The changing value of vigorous activity and the paradox of utilising exercise as punishment in physical education. *Physical Education and Sport Pedagogy*, *22*(5), 490–501. https://doi.org/10.1080/17408989.2016.1268590

Aasland, E., Walseth, K., & Engelsrud, G. (2020). The constitution of the "able" and "less able" student in physical education in Norway. *Sport, Education and Society*, *25*(5), 479–492. https://doi.org/10.1080/13573322.2019.1622521

Abbott, A. (1988). *The system of professions: An essay on the division of expert labor*. University of Chicago Press.

Adams, S. H. (1993). Duty to properly instruct. *Journal of Physical Education, Recreation & Dance*, *64*(2), 22–23. https://doi.org/10.1080/07303084.1993.10606696

Almklov, P. G., Antonsen, S., Størkersen, K. V., & Roe, E. (2018). Safer societies. *Safety Science*, *110*, 1–6. https://doi.org/10.1016/j.ssci.2018.03.018

Alvesson, M., & Sköldberg, K. (2018). *Reflexive methodology: New vistas for qualitative research* (3rd ed). Sage Publications Ltd.

Anguera, M. T., Blanco-Villaseñor, A., Losada, J. L., Sánchez-Algarra, P., & Onwuegbuzie, A. J. (2018). Revisiting the difference between mixed methods and multimethods: Is it all in the name? *Quality & Quantity*, *52*(6), 2757–2770. https://doi.org/10.1007/s11135-018-0700-2

Annerstedt, C. (2008). Physical education in Scandinavia with a focus on Sweden: A comparative perspective. *Physical Education and Sport Pedagogy*, *13*(4), 303–318. https://doi.org/10.1080/17408980802353347

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, *8*(1), 19–32. https://doi.org/10.1080/1364557032000119616

Arnesen, T. E., Nilsen, A.-K., & Leirhaug, P. E. (2013). Den læreplanen som ikkje kan tilpassast mi undervisning, finst ikkje. Vurdering og undervisning i kroppsøving etter Kunnskapsløftet [The curriculum that cannot be adapted to my teaching does not exist. Assessment and teaching in physical education after the Knowledge Promotion]. *Tidsskriftet FoU i praksis*, *7*(3), 9–32.

Arnold, J., & Mundy, B. (2020). Praxis pedagogy in teacher education. *Smart Learning Environments*, *7*(1), 1–14. https://doi.org/10.1186/s40561-020-0116-z

Arroyo, R. A., & Kozub, F. M. (2019). Discus bowling: A lead-up activity to teaching field events to elementary-age children. *Journal of Physical Education, Recreation & Dance*, *90*(8), 60–63. https://doi.org/10.1080/07303084.2019.1649564

Augestad, P. (2003). *Skolering av kroppen: Om kunnskap og makt i kroppsøvingsfaget* [Regulation of the body: About knowledge and power in physical education] [Doctoral thesis, Høgskolen i Telemark]. USN Open Archive. http://hdl.handle.net/11250/2590013

Australian Curriculum, Assessment and Reporting Authority (ACARA). (n.d.). *Health and Physical Education* (Version 8.4). https://www.australiancurriculum.edu.au/f-10-curriculum/health-and-physical-education/

Aven, T. (2012). The risk concept—historical and recent development trends. *Reliability Engineering & System Safety*, *99*, 33–44. https://doi.org/10.1016/j.ress.2011.11.006

Aven, T. (2013). Practical implications of the new risk perspectives. *Reliability Engineering & System Safety*, *115*, 136–145. https://doi.org/10.1016/j.ress.2013.02.020

Aven, T. (2016). Risk assessment and risk management: Review of recent advances on their foundation. *European Journal of Operational Research*, *253*(1), 1–13, https://doi.org/10.1016/j.ejor.2015.12.023

Baldwin, R., Cave, M., & Lodge, M. (2012). *Understanding regulation: Theory, strategy, and practice* (2nd ed). Oxford University Press.

Beck, U. (1992). *Risk society: Towards a new modernity*. SAGE Publications, Ltd.

Berliner, D. C. (2002). Comment: Educational research: The hardest science of all. *Educational Researcher*, *31*(8), 18–20. https://doi.org/10.3102/0013189X031008018

Best, J. (2020). Frank Furedi, How fear works: Culture of fear in the twenty-first century. *International Sociology*, *35*(2), 205–208. https://doi.org/10.1177/0268580920906750

Black, J., & Baldwin, R. (2010). Really responsive risk-based regulation. *Law & Policy*, *32*(2), 181–213. https://doi.org/10.1111/j.1467-9930.2010.00318.x

Bloemers, F., Collard, D., Paw, M. C. A., Van Mechelen, W., Twisk, J., & Verhagen, E. (2012). Physical inactivity is a risk factor for physical activity-related injuries in children. *British Journal of Sports Medicine*, *46*(9), 669–674. https://doi.org/10.1136/bjsports-2011-090546

Bogner, A. & Menz, W. (2009). The theory generating expert interview: Epistemological interest, forms of knowledge, interaction. In A. Bogner, A. B. Littig & W. Menz, (Eds.), *Interviewing Experts* (pp. 43-80). Palgrave Macmillan.

Boholm, M. (2012). The semantic distinction between "risk" and "danger": A linguistic analysis. *Risk Analysis*, *32*(2), 281–293. https://doi.org/10.1111/j.1539-6924.2011.01668.x

Boholm, M. (2017). The semantic field of risk. *Safety Science*, *92*, 205–216. https://doi.org/10.1016/j.ssci.2016.10.011

Boholm, M. (2018). Risk association: Towards a linguistically informed framework for analysing risk in discourse. *Journal of Risk Research*, *21*(4), 480–501. https://doi.org/10.1080/13669877.2016.1223158

Boholm, M. (2019). Risk and quantification: A linguistic study. *Risk Analysis*, *39*(6), 1243–1261. https://doi.org/10.1111/risa.13258

Boholm, Å. (2015). Introduction. In Å. Boholm (Ed.), *Anthropology and risk* (pp. 1–29). Routledge. https://doi.org/10.4324/9781315797793

Boholm, M., Möller, N., & Hansson, S. O. (2016). The concepts of risk, safety, and security: Applications in everyday language. *Risk Analysis*, *36(*2), 320–338. https://doi.org/10.1111/risa.12464

Boote, D. N., & Beile, P. (2005). Scholars before researchers: On the centrality of the dissertation literature review in research preparation. *Educational Researcher*, *34*(6), 3–15. https://doi.org/10.3102/0013189X034006003

Borgen, J. S., & Engelsrud, G. (2020). Språkbruk om kroppsøving: Et kritisk blikk på ny læreplan i Fagfornyelsen (LK20) [Language use about physical education: A critical look on the new curriculum in Fagfornyelsen (LK20)]. *Acta Didactica Norden*, *14*(1). https://doi.org/10.5617/adno.8099

Borgen, J. S., Hallås, B. O., Løndal, K., Moen, K. M., & Gjølme, E. G. (2021). Problems created by the (un)clear boundaries between physical education and physical activity health initiatives in schools. *Sport, Education and Society*, *26*(3), 239–252. https://doi.org/10.1080/13573322.2020.1722090

Bourdieu, P. (1977). *Outline of a theory of practice* (R. Nice, Trans.). Cambridge University Press.

Bourdieu, P. (1990). *The logic of practice* (R. Nice, Trans.). Stanford University Press.

Bourdieu, P. (1995). *Distinksjonen: En sosiologisk kritikk av dømmekraften* [Distinction: A social critique of the judgement of taste] (A. Prieur & T. Barth, Trans.). Pax. (Original work published 1979)

Bowen, G. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, *9*(2), 27–40. https://doi.org/10.3316/QRJ0902027

Brannen, J. (2005). Mixing methods: The entry of qualitative and quantitative approaches into the research process. *International Journal of Social Research Methodology*, *8*(3), 173–184. https://doi.org/10.1080/13645570500154642

Brannen, J., & O'Connell, R. (2015). Data analysis I: Overview of data analysis strategies. In S. N. Hesse-Biber & R. B. Johnson (Eds.), *The Oxford handbook of multimethod and mixed methods research inquiry* (Oxford Library of Psychology) (pp. 257–274). Oxford University Press.

Braun, V. & Clarke, V. (2021). To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. *Qualitative Research in Sport, Exercise and Health*, *13*(2), 201-216. https://doi.org/10.1080/2159676X.2019.1704846

Braun, A., Ball, S. J., Maguire, M., & Hoskins, K. (2011). Taking context seriously: Towards explaining policy enactments in the secondary school. *Discourse:*

Studies in the cultural politics of education, *32*(4), 585–596. https://doi.org/10.1080/01596306.2011.601555

Breeze, R. (2011). Critical discourse analysis and its critics. *Pragmatics*, *21*(4), 493–525. https://doi.org/10.1075/prag.21.4.01bre

Breivik, G. (2001). Oppvekst og frihet i et kontrollerende samfunn [Upbringing and freedom in a controlling society]. In E. Jahr (Ed.) *Barn drikker ikke caffè latte - om barn i by* (pp. 209–222). Akribe forlag.

Brinkmann, S., & Kvale, S. (2018). *Doing interviews* (2nd ed.). SAGE Publications Ltd. https://www.doi.org/10.4135/9781529716665

Brown, P., & Gale, N. (2018a). Developing a sociology of risk work in client-facing contexts: An editorial [Editorial]. *Health, Risk & Society*, *20*(1–2), 1–12. https://doi.org/10.1080/13698575.2018.1445072

Brown, P., & Gale, N. (2018b). Theorising risk work: Analysing professionals' lifeworlds and practices. *Professions & Professionalism*, *8*(1), e1988. https://doi.org/10.7577/pp.1988

Brown, P., Moerman, G., & Bröer, C. (2019). Interviews as a means of exploring risk lifeworlds: Excavating the roots of everyday meanings, experiences and practices. In A. Olofsson & J. Zinn (Eds.), *Researching Risk and Uncertainty* (pp. 205–230). Palgrave Macmillan. https://doi.org/10.1007/978-3-319-95852-1_9

Brown, S. C. (1993). Selecting safe equipment—What do we really know? *Journal of Physical Education, Recreation & Dance*, *64*(2), 33–66. https://doi.org/10.1080/07303084.1993.10606701

Brutus, S., Aguinis, H., & Wassmer, U. (2013). Self-reported limitations and future directions in scholarly reports: Analysis and recommendations. *Journal of Management*, *39*(1), 48–75. https://doi.org/10.1177/0149206312455245

Bryman, A. (2008). Of methods and methodology. *Qualitative Research in Organizations and Management*, *3*(2), 159–168. https://doi.org/10.1108/17465640810900568

Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.

Burke, S. (2016). Rethinking "validity" and "trustworthiness" in qualitative inquiry: How might we judge the quality of qualitative research in sport and exercise

sciences? In B. Smith & A. C. Sparkes (Eds.), *Routledge handbook of qualitative research in sport and exercise* (pp. 330–339). Routledge.

Chappell, A. (2020). Safe practice, risk assessment and risk management. In S. Capel, J. Lawrence & J. Cliffe (Eds.), *A practical guide to teaching physical education in the secondary school* (3rd ed., pp. 129–147). Routledge.

Charmaz, K. (2015). Teaching theory construction with initial grounded theory tools. *Qualitative Health Research*, *25*(12), 1610–1622. https://doi.org/10.1177/1049732315613982

Charmaz, K., & Thornberg, R. (2021). The pursuit of quality in grounded theory. *Qualitative Research in Psychology*, *18*(3), 305-327. https://doi.org/10.1080/14780887.2020.1780357

Christoforidis, C., & Kambas, A. (2007). Childhood injuries in Greek school environment. *International Journal of Injury Control and Safety Promotion*, *14*(4), 262–263. https://doi.org/10.1080/17457300701619195

Clementsen, S., & Randsborg, P. H. (2014) Skolerelaterte bruddskader [School related fracture injuries]. *Tidsskriftet Norsk Legeforening*, *134*, 521–524. https://doi.org/10.4045/tidsskr.14.0177

Coelho, J. D. (2001). Risk management in quality physical education programs. *Strategies*, *14*(6), 32–35. https://doi.org/10.1080/08924562.2001.10591509

Collins, K. M. T. (2015). Validity in multimethod and mixed research. In S. Hesse-Biber & R. B. Johnson (Eds.), *The Oxford handbook of multimethod and mixed methods research inquiry* (Oxford Library of Psychology) (pp. 240–256). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199933624.013.17

Conn, J. H. (1993). The litigation connection: Perspectives of risk control for the 1990s. *Journal of Physical Education, Recreation & Dance*, *64*(2), 15–61. https://doi.org/10.1080/07303084.1993.10606692

Connaughton, D. P., Egberts, J. B., Spengler, J. O., Zhang, J. J., & Jin, L. (2012). An analysis of Florida physical educators' knowledge of bicycle laws. *The Physical Educator*, *69*(4), 413–435.

Creswell, J. W. (2015). *A concise introduction to mixed methods research*. SAGE Publications, Ltd.

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory Into Practice, 39*(3), 124–130. https://doi.org/10.1207/s15430421tip3903_2

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. SAGE Publications, Ltd.

Dahl, L. (2021). *Ulykker og sikkerhet i friluftsliv på norsk videregående skole* [Accidents and safety in outdoor education (friluftsliv) in Norwegian upper secondary school "sports programme"] [Doctoral thesis, Norges Idrettshøgskole]. Brage. https://hdl.handle.net/11250/2823552

Dahl, L., Standal, O. F., & Moe, V. F. (2019). Norwegian teachers' safety strategies for *Friluftsliv* excursions: Implications for inclusive education. *Journal of Adventure Education and Outdoor Learning, 19*(3), 256–268. https://doi.org/10.1080/14729679.2018.1525415

Dahl, L., Lynch, P., Moe, V. F., & Aadland, E. (2016). Accidents in Norwegian secondary school *friluftsliv*: Implications for teacher and student competence. *Journal of Adventure Education and Outdoor Learning*, *16*(3), 222–238. https://doi.org/10.1080/14729679.2015.1122542

Davis, R. M., & Pless, B. (2001). BMJ bans "accidents." Accidents are not unpredictable. *BMJ*, *322*(7298), 1320–1321. https://doi.org/10.1136/bmj.322.7298.1320

Dewey, J. (1938a). *Experience and education*. Macmillan.

Dewey, J. (1938b). *Logic: The theory of inquiry*. Holt, Rinehart and Winston.

Dewey, J. (2008). *Democracy and education: An introduction to the philosophy of education.* [Book Jungle]. (Original work published 1916).

Directorate for Education and Training (Udir). (2015). *Forsvarlig svømme- og livredningsopplæring i grunnskoleopplæringen Udir-1-2008* [Proper swimming and rescue training in primary and lower secondary education Udir-1-2008] [Circular]. Regjeringen. https://www.udir.no/regelverkstolkninger/opplaring/Innhold-i-opplaringen/Udir-1-2008-Forsvarlig-svomme--og-livredningsopplaring-i-grunnskoleopplaringen/

Directorate for Education and Training (Udir). (2020). *Skolemiljø Udir-3-2017* [School environment Udir-3-2017] [Circular]. Regjeringen.

https://www.udir.no/regelverkstolkninger/opplaring/Laringsmiljo/skolemiljo-udir-3-2017/

Directorate for Education and Training (Udir). (2021). *Innføring og overgangsordninger for nye læreplaner* [Introduction and transitional arrangements for new curriculums]. Utdanningsdirektoratet. https://www.udir.no/laring-og-trivsel/lareplanverket/fagfornyelsen/innforing-av-nye-lareplaner/

Directorate for Higher Education and Skills (HK-dir). (2021). *Kanalregisteret* [Norwegian Register for Scientific Journals, Series and Publishers]. Register over vitenskapelige publiseringskanaler. https://kanalregister.hkdir.no/publiseringskanaler/Forside

Dougherty, N., & Seidler, T. (2007). Injuries in the buffer zone: A serious risk-management problem. *Journal of Physical Education, Recreation & Dance*, *78*(2), 4–7. https://doi.org/10.1080/07303084.2007.10597963

Douglas, M. (1992). *Risk and blame: Essays in cultural theory*. Routledge.

Dworkin, R. (1978). *Taking rights seriously*. Duckworth.

Dwyer, S. C., & Buckle, J. L. (2009). The space between: On being an insider-outsider in qualitative research. *International Journal of Qualitative Methods*, 54–63. https://doi.org/10.1177/160940690900800105

Education Act. (1998). *Lov om grunnskolen og den vidaregåande opplæringa* [Act relating to primary and secondary education and training] (LOV-1998-07-17-61). Lovdata. https://lovdata.no/dokument/NLE/lov/1998-07-17-61

Edwards-Groves, C., & Gray, D. (2008). Developing praxis and reflective practice in pre-service teacher education: Affordances and constraints reported by prospective teachers. In S. Kemmis & T. J. Smith (Eds.), *Enabling praxis: Challenges for education* (pp. 85–108). Sense Publishers.

Ellingsen, J. (2008). Høydehopp: En høyrisikoaktivitet? [High jump: A high risk activity?] *Kroppsøving*, *58*(1), 18–19.

Emslie, M., & Watts, R. (2017). On technology and the prospects for good practice in the human services. *Social Service Review*, *91*(2), 319–356. https://doi.org/10.1086/692117

Engelsen, B. U. (2003). *Ideer som formet vår skole?: Læreplanen som idébærer - et historisk perspektiv* [Ideas that shaped our school?: The curriculum as a bearer of ideas—a historical perspective]. Gyldendal akademisk.

Engelsrud, G. H., Hallås, B. O., Kjerland, G. Ø., & Sæle, O. O. (2021). *Faget heter Kroppsøving, ikke gym* [The subject is named physical education, not gym]. Forskersonen. https://forskersonen.no/helse-kronikk-meninger/faget-heter-kroppsoving-ikke-gym/1804255

Eraut, M. (2000). Non-formal learning and tacit knowledge in professional work. *The British Journal of Educational Psychology*, *70*, 113–136. https://doi.org/10.1348/000709900158001

Eriksen, M., & Persson, M. (2017). Storaksjon etter at tre elever veltet med kano: Glad det gikk godt [Large operation after three students flipped with a canoe: Glad it went well]. *Ringerikes Blad*. https://www.ringblad.no/nyheter/politilogg/hole/storaksjon-etter-at-tre-elever-veltet-med-kano-glad-det-gikk-godt/s/5-45-405502

Evans, B. C., Coon, D. W., & Ume, E. (2011). Use of theoretical frameworks as a pragmatic guide for mixed methods studies: A methodological necessity? *Journal of Mixed Methods Research*, *5*(4), 276–292. https://doi.org/10.1177/1558689811412972

Fairclough, N. (1992). *Discourse and social change*. Polity Press.

Fairclough, N. (2013). *Critical discourse analysis: The critical study of language* (2nd ed.). Routledge.

Fendler, L. (2003). Teacher reflection in a hall of mirrors: Historical influences and political reverberations. *Educational Researcher*, *32*(3), 16–25. https://doi.org/10.3102/0013189X032003016

Fetters, M. D., & Molina-Azorin, J. F. (2017a). The *Journal of Mixed Methods Research* starts a new decade: The mixed methods research integration trilogy and its dimensions. *Journal of Mixed Methods Research*, *11*(3), 291–307. https://doi.org/10.1177/1558689817714066

Fetters, M. D., & Molina-Azorin, J. F. (2017b). The *Journal of Mixed Methods Research* starts a new decade: Principles for bringing in the new and divesting of the old language of the field. *Journal of Mixed Methods Research*, *11*(1), 3–10. https://doi.org/10.1177/1558689816682092

Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving integration in mixed methods designs—principles and practices. *Health Services Research*, *48*(6), 2134–2156. https://doi.org/10.1111/1475-6773.12117

Fischhoff, B., Slovic, P., Lichtenstein, S., Read, S., & Combs, B. (1978). How safe is safe enough? A psychometric study of attitudes towards technological risks and benefits. *Policy Sciences*, *9*(2), 127–152.

Fitzgerald, A., & Deutsch, J. (2016). Limiting the risk of injury through safety guidelines in a physical education setting. *Journal of Human Sciences*, *13*(2), 2856–2859. https://www.j-humansciences.com/ojs/index.php/IJHS/article/view/3783

Fodor, J. A. (1968). The appeal to tacit knowledge in psychological explanation. *The Journal of Philosophy*, *65*(20), 627–640. https://doi.org/10.2307/2024316

Freidson, E. (2001). *Professionalism: The third logic*. Polity Press.

Frøseth, A. M., & Askeland, B. (2018). Norway. In B. Winiger, E. Karner, & K. Oliphant (Eds.), *Digest of European tort law Vol.3: Essential cases on misconduct* (p. 797). De Gruyter.

Fuller, C., & Drawer, S. (2004). The application of risk management in sport. *Sports Medicine*, *34*(6), 349–356. https://doi.org/10.2165/00007256-200434060-00001

Furedi, F. (2006). *Culture of fear revisited: Risk-taking and the morality of low expectation*. Continuum.

Gage, N. L. (1989). The paradigm wars and their aftermath: A "historical" sketch of research on teaching since 1989. *Educational Researcher*, *18*(7), 4–10. https://doi.org/10.3102/0013189X018007004

Gaskin, L. P. (1993). Establishing, communicating, and enforcing rules and regulations. *Journal of Physical Education, Recreation & Dance*, *64*(2), 26–64. https://doi.org/10.1080/07303084.1993.10606698

Gehrke. P. J. (2018). Ecological validity. In B. B. Frey (Ed.), *The SAGE encyclopedia of educational research, measurement, and evaluation* (pp. 563–565). SAGE Publications, Inc.

Gibson, W. (2010). Qualitative research as a method of inquiry in education. In D. Hartas (Ed.), *Educational research and inquiry: Qualitative and quantitative approaches* (pp. 54–65). Continuum.

Giddens, A. (1990). *The consequences of modernity*. Polity Press.

Giddens, A. (1991). *Modernity and self-identity*. Stanford University Press.

Giddens, A. (1999). Risk and responsibility. *Modern Law Review*, *62*(1), 1–10. https://doi.org/10.1111/1468-2230.00188

Gilje, N. (2017). Profesjonskunnskapens elementære former [Professional knowledge elementary forms]. In S. Mausethagen & J.-C. Smeby (Eds.), *Kvalifisering til profesjonell yrkesutøvelse* (pp. 21-33). Universitetsforlaget.

Gill, T. (2007). *No fear: Growing up in a risk averse society*. Calouste Gulbenkian Foundation.

Glaser, B. G., & Strauss, A. L. (1999). *The discovery of grounded theory: Strategies for qualitative research*. Taylor & Francis Group.

Glendon, I. A. (2021). Safety science directions: The journal. *Safety Science*, *135*. https://doi.org/10.1016/j.ssci.2020.105127

Goertzen, J. R. (2010). Dialectical pluralism: A theoretical conceptualization of pluralism in psychology. *New Ideas in Psychology*, *28*(2), 201–209. https://doi.org/10.1016/j.newideapsych.2009.09.013

Goodlad, J. I., Klein, M. F., & Tye, K. A. (1979). The domains of curriculum and their study. In J. I. Goodlad (Ed.), *Curriculum inquiry* (pp. 43-76). McGraw-Hill.

Göpfert, A., Van Hove, M., Emond, A., & Mytton, J. (2018). Prevention of sports injuries in children at school: A systematic review of policies. *BMJ Open Sport & Exercise Medicine*, *4*(1). https:/doi.org/10.1136/bmjsem-2018-000346

Grant, M. J., & Booth, A. (2009). A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Information and Libraries Journal*, *26*(2), 91–108. https://doi.org/10.1111/j.1471-1842.2009.00848.x

Gray, G. R. (1990). Written lesson plans minimize the risk of injury. *Journal of Physical Education, Recreation & Dance*, *62*, 31–32.

Gray, G. R. (1991). Risk management planning: Conducting a sport risk assessment to enhance program safety. *Journal of Physical Education, Recreation & Dance, 62*(6), 29–32. https://doi.org/10.1080/07303084.1991.10609886

Gray, G. R. (1992). Risk management behaviors related to the teaching of floor hockey in K-12 physical education. *Journal of Legal Aspects of Sport*, *2*(2), 40–45.

Green, K. (2020). Physical education and school sport: Is there a wider social role? In S. Capel & R. Blair (Eds.). *Debates in physical education* (2nd ed., pp. 18–35). Routledge.

Greene, J. (2008). Is mixed methods social inquiry a distinctive methodology? *Journal of Mixed Methods Research*, *2*(1), 7–22. https://doi.org/10.1177/1558689807309969

Greene, J. C., & Hall, J. N. (2010). Dialectics and pragmatism: Being of consequence. In A. Tashakkori & C. Teddlie (Eds.), *SAGE handbook of mixed methods in social & behavioral research* (pp. 119–143). SAGE Publications.

Grimen, H. (2008). Profesjon og kunnskap [Profession and knowledge]. In A. Molander & L. I. Terum (Eds.), *Profesjonsstudier I* (pp. 71-86). Universitetsforlaget.

Hacking, I. (1975). *The emergence of probability: A philosophical study of early ideas about probability, induction and statistical inference*. Cambridge University Press.

Hanssen, I. (2004, 19 October). Skadet i gym'en, får erstatning [Injured in gym, receives compensation]. *Aftenposten*. https://www.aftenposten.no/norge/i/76kX3/skadet-i-gymen-faar-erstatning

Hansson, S. O. (2010). Risk: Objective or subjective, facts or values. *Journal of Risk Research*, *13*(2), 231–238. https://doi.org/10.1080/13669870903126226

Hansson, S. O. (2018). Risk. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy* (Fall 2018 edition). https://plato.stanford.edu/archives/fall2018/entries/risk/

Hansson, S. O., & Aven, T. (2014). Is risk analysis scientific? *Risk Analysis*, *34*(7), 1173–1183. https://doi.org/10.1111/risa.12230

Hartas, D. (2010a). Survey research in education. In D. Hartas (Ed.), *Educational research and inquiry: Qualitative and quantitative approaches* (pp. 257–268). Bloomsbury.

Hartas, D. (2010b). Quantitative research as a method of inquiry in education. In D. Hartas (Ed.), *Educational research and inquiry: Qualitative and quantitative approaches* (pp. 65–81). Bloomsbury.

Hatlevik, I. K. R. (2017). The impact of prospective teachers' perceived competence on subsequent perceptions as schoolteachers. *Teachers and Teaching*, *23*(7), 810–828. https://doi.org/10.1080/13540602.2017.1322056

Hébert, C. (2015). Knowing and/or experiencing: A critical examination of the reflective models of John Dewey and Donald Schön. *Reflective Practice*, *16*(3), 361–371. https://doi.org/10.1080/14623943.2015.1023281

Helsing, D. (2007). Regarding uncertainty in teachers and teaching. *Teaching and Teacher Education*, *23*(8), 1317–1333. https://doi.org/10.1016/j.tate.2006.06.007

Hennink, M., & Kaiser, B. N. (2022). Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Social Science & Medicine*, *292*. https://doi.org/10.1016/j.socscimed.2021.114523.

Hernandez, B. L. M., & Strickland, G. (2005). School health and safety: Standards for dance education and dance in physical education. *Journal of Physical Education, Recreation & Dance*, *76*(4), 20–25. https://doi.org/10.1080/07303084.2005.10608232

Hesse-Biber, S. N., Rodriguez, D., & Frost, N. A. (2015). A qualitatively driven approach to multimethod and mixed methods research. In S. N. Hesse-Biber & R. B. Johnson (Eds.), *The Oxford handbook of multimethod and mixed methods research inquiry* (Oxford Library of Psychology) (pp. 3–20). Oxford University Press.

Hobson, A. J., & Townsend, A. (2010). Interviewing as educational research method(s). In D. Hartas (Ed.), *Educational research and inquiry: Qualitative and quantitative approaches* (pp. 223–235). Bloomsbury.

Hohr, H. (2012). The concept of experience by John Dewey revisited: Conceiving, feeling and "enliving". *Studies in Philosophy and Education*, *32*(1), 25–38. https://doi.org/10.1007/s11217-012-9330-7

Hole, S. (2014, 17 November). *Fryktar lærarane blir redde for å ha gym med elevane* [Fearing that teachers become afraid for having gym with the students]. NRK. https://www.nrk.no/mr/fryktar-laerarane-blir-redde-for-a-ha-gym-med-elevane-1.12048149

Holt, N. L. (2016). Doing grounded theory in sport and exercise. In B. Smith & A. C. Sparkes. (Eds.), *Routledge handbook of qualitative research in sport and exercise* (pp. 24–36). Routledge.

Hoshi, A., & Inaba, Y. (2005). Meteorological conditions and sports deaths at school in Japan, 1993–1998. *International Journal Biometeorology*, *49*, 224–231. https://doi.org/10.1007/s00484-004-0238-y

Hovdal, D. O. G., Larsen, I. B., Haugen, T., & Johansen, B. T. (2020). Understanding disruptive situations in physical education: Teaching style and didactic implications. *European Physical Education Review*. https://doi.org/10.1177/1356336X20960498

Hughes, P. P., Ramos, N., & Mwarumba, N. (2017). Risk and safety in physical education for children with disabilities: Adapted physical education textbook review and primer for teachers. *The Physical Educator*, *74*(1), 104–126. http://dx.doi.org/10.18666/TPE-2017-V74-I1-6441

Hunt, K., Ormond, T., Griffin, L., Maina, M., Jones, C., Goldman, A. S., & McMichael, C. (2016). Practical advice for teachers and coaches: Handling acute athletic injuries. *Journal of Physical Education, Recreation & Dance*, *87*(8), 42–46. https://doi.org/10.1080/07303084.2016.1216484

Johannessen, A. (2009). *Introduksjon til SPSS: Versjon 17* [Introduction to SPSS: Version 17] (4th ed.). Abstrakt forlag.

Johnson, R. B. (2012). Dialectical pluralism and mixed research. *American Behavioral Scientist*, *56*(6), 751–754. https://doi.org/10.1177/0002764212442494

Johnson, R. B. (2017). Dialectical pluralism: A metaparadigm whose time has come. *Journal of Mixed Methods Research*, *11*(2), 156–173. https://doi.org/10.1177/1558689815607692

Johnson, B., & Christensen, L. (2012). Validity of research results in quantitative, qualitative, and mixed research. In B. Johnson & L. Christensen (Eds.), *Educational research: Quantitative, qualitative, and mixed approaches* (4th ed., pp. 243–280). SAGE Publications, Inc.

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, *1*(2), 112–133. https://doi.org/10.1177/1558689806298224

Jonskås, K. (2010). *En kunnskapsoversikt over FOU-arbeid innen kroppsøvingsfaget i Norge fra januar 1978-desember 2010* [A review of research and development-work in PE in Norway from January 1978-December 2010] [Master's thesis]. Norges Idrettshøgskole.

Jørgensen, M. V., & Philips, L. (1999). *Diskursanalyse: Som teori og metode* [Discourse analysis: As theory and method]. Roskilde Universitetsforlag.

Kelle, U. (2015). Mixed methods and the problems of theory building and theory testing in the social sciences. In S. Hesse-Biber & R. B., Johnson (Eds.), *The Oxford handbook of multimethod and mixed methods research inquiry* (Oxford Library of Psychology) (pp. 594–605). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199933624.013.36

Kemmis, S. (2010). What is professional practice? Recognizing and respecting diversity in understandings of practice. In C. Kanes (Ed.), *Elaborating professionalism. Innovation and change in professional education Vol. 5* (pp. 139–165). Springer. https://doi.org/10.1007/978-90-481-2605-7_8

Kemmis, S. (2012). Researching educational praxis: Spectator and participant perspectives. *British Educational Research Journal*, *38*(6), 885–905. https://doi.org/10.1080/01411926.2011.588316

Kemmis, S., & Grootenboer, P. (2008). Situating praxis in practice: Practice architectures and the cultural, social and material conditions for practice. In S. Kemmis & T. J. Smith (Eds.), *Enabling praxis: Challenges for education* (pp. 37–62). Sense Publishers.

Kemmis, S., & Smith, T. J. (2008). Personal praxis—Learning through experience. In S. Kemmis & T. J. Smith (Eds.), *Enabling praxis: Challenges for education* (pp. 15–35). Sense Publishers.

Kemmis S., Wilkinson J., & Edwards-Groves C. (2017). Roads not travelled, roads ahead: How the theory of practice architectures is travelling. In K. Mahon, S. Francisco, & S. Kemmis (Eds.), *Exploring education and professional practice* (pp. 239–256). Springer. https://doi.org/10.1007/978-981-10-2219-7_14

Kemmis, S., Edwards-Groves, C., Wilkinson, J., & Hardy, I. (2012). Ecologies of practices. In P. Hager, A. Lee, & A. Reich (Eds.), *Practice, learning and change: Practice-theory perspectives on professional learning* (pp. 33–49). Springer.

Kenny, M., & Fourie, R. (2015). Contrasting classic, straussian, and constructivist grounded theory: Methodological and philosophical conflicts. *The Qualitative Report*, *20*(8), 1270–1289. https://doi.org/10.46743/2160-3715/2015.2251

Khanzode, V. V., Maiti, J., & Ray, P. K. (2012). Occupational injury and accident research: A comprehensive review. *Safety Science*, *50*(5), 1355–1367. https://doi.org/10.1016/j.ssci.2011.12.015

Kim, I., Oh, D., Kim, M., & Cho, K. (2020). Teaching pickleball with in-depth content knowledge in middle school physical education. *Journal of Physical Education, Recreation & Dance*, *91*(8), 29–38. https://doi.org/10.1080/07303084.2020.1798309

Kinsella, E. A. (2010). The art of reflective practice in health and social care: Reflections on the legacy of Donald Schön. *Reflective Practice*, *11*(4), 565–575. https://doi.org/10.1080/14623943.2010.506260

Kinsella, E. A., & Pitman, A. (2012). Phronesis as professional knowledge: Implications for education and practice. In E. A. Kinsella & A. Pitman (Eds.), *Phronesis as professional knowledge: Wisdom in the professions* (pp. 163–172). Sense Publishers.

Kirk, D. (2006). The 'obesity crisis' and school physical education. *Sport, Education and Society*, *11*(2), 121–133. https://doi.org/10.1080/13573320600640660

Kirk, D. (2010). *Physical education futures*. Routledge.

Kirk, D. (2018). Physical education-as-health promotion: Recent developments and future issues. *Education and Health*, *36*(3).

Kleven, T. A. (2008). Validity and validation in qualitative and quantitative research. *Nordic Studies in Education*, *28*(3), 219–233. https://doi.org/10.18261/ISSN1891-5949-2008-03-05

Klinke, A., Renn, O., & Goble, R. (2021). Prologue: The “brave new world” of social sciences in interdisciplinary risk research. *Risk Analysis*, *41*(3), 407–413. https://doi.org/10.1111/risa.13716

Koller, I., Levenson, M. R., & Glück, J. (2017). What do you think you are measuring? A mixed-methods procedure for assessing the content validity of test items and theory-based scaling. *Frontiers in Psychology*, *8*, 126. https://doi.org/10.3389/fpsyg.2017.00126

Koop, C., & Lodge, M. (2017). What is regulation? An interdisciplinary concept analysis. *Regulation & Governance*, *11*(1), 95–108. https://doi.org/10.1111/rego.12094

König, S. (2016). A plea for mixed methods approaches in research on teaching in physical education. *Sportwissenschaft*, *46*(3), 179–187. https://doi.org/10.1007/s12662-016-0403-6

Krumpal, I. (2011). Determinants of social desirability bias in sensitive surveys: A literature review. *Quality & Quantity*, *47*(4), 2025–2047. https://doi.org/10.1007/s11135-011-9640-9

Krumsvik, R., & Røkenes, F. (2016). Litteraturreview i PhD-avhandlingen [Literature review in the PhD thesis]. In R. Krumsvik (Ed.), *En doktorgradsutdanning i endring: Et fokus på den artikkelbaserte ph.d.-avhandlingen* (pp. 51–91). Fagbokforlaget.

Kruse, A. V. (1970). The Scandinavian law of torts: Theory and practice in the twentieth century. *The American Journal of Comparative Law*, *18*(1), 58–79. https://doi.org/10.2307/839464

Larsson, H., & Quennerstedt, M. (2016). Same, same but different: (Re)understanding the place of context in Physical Education practice. *Recherches & Éducations*, *15*, 69–86. https://doi.org/10.4000/rechercheseducations.3067

Legal Information Institute. (n.d.). *Tort*. Cornell Law School. https://www.law.cornell.edu/wex/tort

Lehr, C. (1993). Proper classification. *Journal of Physical Education, Recreation & Dance*, *64*(2), 24–63. https://doi.org/10.1080/07303084.1993.10606697

Limbos, M. A. P., Ramirez, M., Park, L. S., Peek-Asa, C., & Kraus, J. F. (2004). Injuries to the head among children enrolled in special education. *Archives of Pediatrics & Adolescent Medicine*, *158*(11), 1057-1061. 10.1001/archpedi.158.11.1057

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE Publications, Inc.

Lindsay, G. (2010). Ethical considerations and legal issues in educational research. In D. Hartas (Ed.), *Educational research and inquiry: Qualitative and quantitative approaches (*pp. 110-125). Bloomsbury.

Lindøe, P. H. (2018). *Risiko, tillit og kontroll: Et aktørperspektiv på risikostyring* [Risk, trust and control: An actor perspective on risk management]. Gyldendal.

Løndal, K., Borgen, J. S., Moen, K. M., Hallås, B. O., & Gjølme, E. G. (2021). Forskning for fremtiden? En oversiktsstudie av empirisk forskning på det norske skolefaget kroppsøving i perioden 2010–2019 [Research for the future? A

literature review of empirical research on the Norwegian school subject physical education in years 2010–2019]. *Journal for Research in Arts and Sports Education*, *5*(3). https://doi.org/10.23865/jased.v5.3100

Luhmann, N. (1993). *Risk: A sociological theory*. Walter de Gruyter.

Lupton, D. (2013). Risk and emotion: Towards an alternative theoretical perspective. *Health, Risk & Society*, *15*(8), 634–647. https://doi.org/10.1080/13698575.2013.848847

Lydersen, S. (2020). Hvordan oppsummere ordinale data? [How to summarize ordinal data?] *Tidsskrift for Den Norske Lægeforening*, *140*(12), 1–2.

Lyngstad, I. (2013). *Profesjonell kunnskap i skolens kroppsøvingsfag: Teoretisk og empirisk belysning i et fenomenologisk og praksisrelatert perspektiv* [Professional knowledge in physical education in school. A theoretical and empirical study in a phenomenological and practice-related perspective] [Doctoral thesis, Norges teknisk-naturvitenskapelige universitet]. NTNU Open. http://hdl.handle.net/11250/269826

Lyngstad, I. (2019). Motstridende mål i kroppsøving i Norge—en analyse av læreplanene i faget i perioden 2006 til 2015 [Conflicting learning goals in Norwegian physical education—An analysis of the subject curriculum in years 2006 to 2015]. *Journal for Research in Arts and Sports Education*, *3*(2). https://doi.org/10.23865/jased.v3.1240

Mahon, K., Heikkinen, H. L., Huttunen, R., Boyle, T., & Sjølie, E. (2020). What is educational praxis?. In K. Mahon, C. Edwards-Groves, S. Francisco, M. Kaukko, S. Kemmis, & K. Petrie (Eds), *Pedagogy, education, and praxis in critical times* (pp. 15-38). Springer. https://doi.org/10.1007/978-981-15-6926-5_2

Mahon, K., Kemmis, S., Francisco, S., & Lloyd, A. (2017). Introduction: Practice theory and the theory of practice architectures. In K. Mahon, S. Francisco, & S. Kemmis (Eds.), *Exploring education and professional practice* (pp. 1–30). Springer. https://doi.org/10.1007/978-981-10-2219-7_1

Malik, A. (2021). Tacit knowing: What it is and why it matters. *Episteme*, 1–18. https://doi.org/10.1017/epi.2021.41

Mausethagen, S. (2015). *Læreren i endring?: Om nye forventninger til lærerprofesjonen og lærerarbeidet* [The teacher in change?: About new expectations for the teaching profession and teaching work]. Universitetsforlaget.

Mausethagen, S. (2017). Diskursanalytiske perspektiver i studier av profesjoner og profesjonelt arbeid [Discourse analytical perspectives in studies of professions and professional work]. In S. Mausethagen & J.-C. Smeby (Eds.), *Kvalifisering til profesjonell yrkesutøvelse* (pp. 204-215). Universitetsforlaget.

Maxwell, J. A. (2016). Expanding the history and range of mixed methods research. *Journal of Mixed Methods Research*, *10*(1), 12–27. https://doi.org/10.1177/1558689815571132

McCoy, L., Esslinger, K., & Baghurst, T. (2017). Injury and inclusion: Understanding common legal concerns in physical education. *Strategies*, *30*(5), 3–11. https://doi.org/10.1080/08924562.2017.1344170

Merrie, M. D., Shewmake, C., & Calleja, P. (2016). Injury prevention in physical education: Scenarios and solutions. *Strategies*, *29*(4), 15–18. https://doi.org/10.1080/08924562.2016.1181590

Merriman, J. (1993). Supervision in sport and physical activity. *Journal of Physical Education, Recreation & Dance*, *64*(2), 20–23. https://doi.org/10.1080/07303084.1993.10606695

Mertens, D. M. (2007). Transformative paradigm: Mixed methods and social justice. *Journal of Mixed Methods Research*, *1*(3), 212–225. https://doi.org/10.1177/1558689807302811

Mertens, D. M., & Hesse-Biber, S. (2013). Mixed methods and credibility of evidence in evaluation. *Mixed Methods and Credibility of Evidence in Evaluation*, *2013*(138), 5–13. https://doi.org/10.1002/ev.20053

Miller, M. B., Jimenez-Garcia, J. A., Hong, C. K., & DeMont. R. (2020). Assessing movement competence and screening for injury risk in 8–12-year-old children: Reliability of the Child-Focused Injury Risk Screening Tool (ChildFIRST). *Measurement in Physical Education and Exercise Science*, *24*(3), 205–217. https://doi.org/10.1080/1091367X.2020.1781129

Ministry of Education and Research (MER). (2015a). *Læreplan i kroppsøving* [Curriculum for physical education] (KRO1-04). Established as a regulation.

National Curriculum for Knowledge Promotion in Primary and Secondary Education and Training 2006. https://www.udir.no/kl06/KRO1-04

Ministry of Education and Research (MER). (2015b). *Laws and regulations governing schools*. Regjeringen. https://www.regjeringen.no/en/topics/education/grunnopplaring/artikler/regelverk-for-skolen/id2353805/?expand=factbox2511933

Ministry of Education and Research (MER). (2017). *Overordnet del—verdier og prinsipper for grunnopplæringen* [Core curriculum—values and principles for primary and secondary education]. Established as a regulation by royal resolution September 1, 2017. National Curriculum for Knowledge Promotion in Primary and Secondary Education and Training 2020. https://www.udir.no/lk20/overordnet-del/

Ministry of Education and Research (MER). (2019). *Læreplan i kroppsøving* [Curriculum for physical education] (KRO01-05). Established as a regulation. National Curriculum for Knowledge Promotion in Primary and Secondary Education and Training 2020. https://data.udir.no/kl06/v201906/laereplaner-lk20/KRO01-05.pdf?lang=nno

Mitchell, W. J. T. (1982). "Critical inquiry" and the ideology of pluralism. *Critical Inquiry*, *8*(4), 609–618. http://www.jstor.org/stable/1343189

Mittelstaedt, R. D. (1996). Climbing walls are on the rise: Risk management and vertical adventures. *Journal of Physical Education, Recreation & Dance*, *67*(7), 31–33. https://doi.org/10.1080/07303084.1996.10604816

Moen, K. M., & Green, K. (2014a). Physical education teacher education in Norway: The perceptions of student teachers. *Sport, Education and Society*, *19*(6), 806–823. https://doi.org/10.1080/13573322.2012.719867

Moen, K. M., & Green, K. (2014b). Neither shaking nor stirring: A case study of reflexivity in Norwegian physical education teacher education. *Sport, Education and Society*, *19*(4), 415–434. https://doi.org/10.1080/13573322.2012.670114

Moen, K. M., Westlie K., Bjørke, L., Brattli, V., & Hammer, L. (2018). *Når ambisjon møter tradisjon: En nasjonal kartleggingsstudie av kroppsøvingsfaget i grunnskolen (5.–10. trinn)* [When ambition meets tradition. A national survey-study on physical education (5–10 grade)]. Høgskolen i Innlandet.

Moher, D., Stewart, L., & Shekelle, P. (2015). All in the family: Systematic reviews, rapid reviews, scoping reviews, realist reviews, and more. *Systematic Reviews*, *4*, 183. https://doi.org/10.1186/s13643-015-0163-7

Molander, A., Grimen, H., & Eriksen, E. O. (2012). Professional discretion and accountability in the welfare state. *Journal of Applied Philosophy*, *29*(3), 214–230. https://doi.org/10.1111/j.1468-5930.2012.00564.x

Mong, H. H., & Standal, Ø. F. (2019). Didactics of health in physical education - A review of literature. *Physical Education and Sport Pedagogy*, *24*(5), 506–518. https://doi.org/10.1080/17408989.2019.1631270

Morgan, D. L. (2007). Paradigms lost and pragmatism regained: Methodological implications of combining qualitative and quantitative methods. *Journal of Mixed Methods Research*, *1*(1), 48–76. https://doi.org/10.1177/2345678906292462

Morgan, D. L. (2014). Pragmatism as a paradigm for social research. *Qualitative Inquiry*, *20*(8), 1045–1053. https://doi.org/10.1177/1077800413513733

Morris, A. (2015). *A practical introduction to in-depth interviewing*. SAGE Publications Ltd. https://dx.doi.org/10.4135/9781473921344

Morse, J. M. (2015). Critical analysis of strategies for determining rigor in qualitative inquiry. *Qualitative Health Research*, *25*(9), 1212–1222. https://doi.org/10.1177/1049732315588501

Murphy, K. L. (2015). Assessing risk management: How effective is your program? *Journal of Physical Education, Recreation & Dance*, *86*(3), 32–36. https://doi.org/10.1080/07303084.2014.998392

Mythen, G. (2021). The critical theory of world risk society: A retrospective analysis. *Risk Analysis*, *41*(3), 533–543. https://doi.org/10.1111/risa.13159

Nachtigal, J., Kim, M., Lee, K., Seidler, T., & Stocz, M. (2016). Softball: Nothing soft about it. *Journal of Physical Education, Recreation & Dance*, *87*(9), 36–41. https://doi.org/10.1080/07303084.2016.1226220

National Committee for Research Ethics in the Social Sciences and the Humanities (NESH). (2016). *Guidelines for research ethics in the social sciences, humanities, law and theology*. The Norwegian National Research Ethics Committee. https://www.etikkom.no/en/ethical-guidelines-for-

research/guidelines-for-research-ethics-in-the-social-sciences--humanities-law-and-theology/

Nauta, J., Martin-Diener, E., Martin, B. W., van Mechelen, W., & Verhagen, E. (2015). Injury risk during different physical activity behaviours in children: A systematic review with bias assessment. *Sports Medicine, 45,* 327–336. https://doi.org/10.1007/s40279-014-0289-0

Nelson, N. G., Alhajj, M., Yard, E., Comstock, D., & McKenzie, L. B. (2009). Physical education class injuries treated in emergency departments in the US in 1997–2007. *Pediatrics*, *124*(3), 918–925. https://doi.org/10.1542/peds.2008-3843

Network for Research on Physical Education and Sport. (2019). *Oversikt over vitenskapelig publisert forskning på skolefagene kroppsøving og idrettsfag samt lærerutdanningen rettet mot disse – fra og med 2010: (Oppdatert 21.06. 2019*) [Overview of scientifically published research on physical education and sports education and the teacher education targeting these—as of 2010: (Updated 21.06.2019)]. https://www.facebook.com/groups/1718019558459814

Network for Research on Physical Education and Sport. (2020). *Oversikt over vitenskapelig publisert forskning på skolefagene kroppsøving og idrettsfag, samt lærerutdanningen rettet mot disse – fra og med 2010: (Oppdatert per 20.11.2020)* [Overview of scientifically published research on physical education and sports education and the teacher education targeting these—as of 2010: (Updated per 20.11.2020)]. https://www.facebook.com/groups/1718019558459814

NOU 2003:19. (2003). *Makt og demokrati: Sluttrapport fra makt- og demokratiutredningen* [Power and democracy: Final report from the power and democracy investigation]. Arbeids- og administrasjonsdepartementet. https://www.regjeringen.no/no/dokumenter/nou-2003-019/id118893/?ch=1

NOU 2015: 2. (2015). *Å høre til: Virkemidler for et trygt psykososialt skolemiljø* [To belong: Tools for a safe psychosocial school environment]. Kunnskapsdepartementet. https://www.regjeringen.no/contentassets/35689108b67e43e59f28805e963c3fac/no/pdfs/nou201520150002000dddpdfs.pdf

NOU 2019: 23. (2019). *Ny opplæringslov* [New Education Act]. Kunnskapsdepartementet. https://www.regjeringen.no/no/dokumenter/nou-2019-23/id2682434/?ch=1

O'Cathain, A. (2010). Assessing the quality of mixed methods research: Toward a comprehensive framework. In A. Tashakkori & C. Teddlie (Eds.), *SAGE Handbook of mixed methods in social & behavioral research* (pp. 531–556). SAGE Publications Inc. https://www.doi.org/10.4135/9781506335193

Ohm, E. (2017). *Behov for bedre data om skader og ulykker* [Need for better data on injuries and accidents]. Folkehelseinstituttet. https://www.fhi.no/nettpub/hin/tillegg/datakvalitet-skader/

Onwuegbuzie, A. J., & Johnson, R. B. (2006). The validity issue in mixed research. *Research in the Schools*, *13*(1), 48–63.

Onwuegbuzie, A. J., & Leech, N. L. (2006). Linking research questions to mixed methods data analysis procedures 1. *The Qualitative Report*, *11*(3), 474-498. https://doi.org/10.46743/2160-3715/2006.1663

Overton, H., Wrench, A., & Garrett, R. (2017). Pedagogies for inclusion of junior primary students with disabilities in PE. *Physical Education and Sport Pedagogy*, *22*(4), 414–426. https://doi.org/10.1080/17408989.2016.1176134

Oxford University Press (n.d.). Risk. In *Oxford Learner's Dictionaries*. Retrieved May 20, 2021, from https://www.oxfordlearnersdictionaries.com/definition/english/risk_1

Oxford University Press (n.d.). Safety. In *Oxford Learner's Dictionaries*. Retrieved May 20, 2021, from https://www.oxfordlearnersdictionaries.com/definition/english/safety?q=safety

Park, Y. (2018). How do specialist teachers practice safety lessons? Exploring the aspects of physical education safety lessons in elementary schools. *International Electronic Journal of Elementary Education*, *10*(4), 457–461.

Parry, R. (2020). Episteme and techne. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy* (Fall 2020 Edition). https://plato.stanford.edu/archives/fall2020/entries/episteme-techne/

Patton, M. Q. (2015). *Qualitative research and evaluation methods: Integrating theory and practice*. SAGE Publications.

Paulhus, D. L. (1991). Measurement and control of response bias. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of Personality and Social Psychological Attitudes* (pp. 17–59). Academic Press. https://doi.org/10.1016/B978-0-12-590241-0.50006-X

Pearce, L. D. (2015). Thinking outside the Q boxes: Further motivating a mixed research perspective. In S. Hesse-Biber & R. B. Johnson (Eds.), *The Oxford handbook of multimethod and mixed methods research inquiry* (Oxford Library of Psychology) (pp. 42–56). Oxford University Press.

Peltzer, K., & Pengpid, S. (2015). Unintentional injuries and psychosocial correlates among in-school adolescents in Malaysia. *International Journal of Environmental Research and Public Health*, *12*(11), 14936–14947. https://doi.org/10.3390/ijerph121114936

Personal Data Act. (2018). *Lov om behandling av personopplysninger* [Act relating to the processing of personal data] (LOV-2017-04-28-23). Lovdata. https://lovdata.no/dokument/NL/lov/2018-06-15-38

Pitman, A., & Kinsella, E. A. (2019). A place for phrónêsis in professional practice. In J. Higgs (Ed.), *Practice wisdom: Values and interpretations* (pp. 57–68). Brill. https://doi.org/10.1163/9789004410497_006

Plano Clark, V. L., & Badiee, M. (2010). Research questions in mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), *SAGE handbook of mixed methods in social & behavioral research* (2nd ed., pp. 275–304). SAGE Publications, Inc. https://www.doi.org/10.4135/9781506335193

Polanyi, M. (1962). Tacit knowing: Its bearing on some problems of philosophy. *Reviews of Modern Physics*, *34*(4), 601–616. https://doi.org/10.1103/RevModPhys.34.601

Polanyi, M. (1983). *The tacit dimension*. Peter Smith.

Porsanger, L. (2020). The reconstruction of physical education teachers: A critical discourse analysis of regulative texts. *Journal for Research in Arts and Sports Education*, *4*(1), 76-91. https://doi.org/10.23865/jased.v4.2134

Porsanger, L. (2021). Risk and safety management in physical education: Teachers' knowledge. *Physical Education and Sport Pedagogy*, 1–13. https://doi.org/10.1080/17408989.2021.1934663

Porsanger, L., & Magnussen, L. I. (2021). Risk and safety management in physical education: A study of teachers' practice perspectives. *Frontiers in Sports and Active Living, 3*. https://doi.org/10.3389/fspor.2021.663676

Porsanger, L., & Sandseter, E. B. H. (2021). Risk and safety management in physical education: Teachers' perceptions. *Education Sciences, 11*(7), 321. https://doi.org/10.3390/educsci11070321

Power, M. (2004). *The risk management of everything: Rethinking the politics of uncertainty*. Demos.

Power, M. (2016). Introduction. In M. Power (Ed.), *Riskwork: Essays on the organizational life of risk management* (pp. 1–25). Oxford University Press.

Quennerstedt, M., Öhman, M., & Eriksson, C. (2008). Physical education in Sweden—A national evaluation. *Education-line*, 1–17.

Rapley, T. (2004). Interviews. In C. Seale, G. Gobo, J. F. Gubrium, & D. Silverman, (Eds.), *Qualitative research practice* (pp. 15–33). SAGE Publications.

Rauschenbach, J. (1994). Effective supervision practices. *Journal of Physical Education, Recreation & Dance, 65*(5), 66–68. https://doi.org/10.1080/07303084.1994.10606924

Renn, O. (2008). *Risk governance: Coping with uncertainty in a complex world*. Earthscan.

Research Ethics Act. (2017). *Lov om organisering av forskningsetisk arbeid* [The act concerning the organization of work on ethics and integrity in research] (LOV-2017-04-28-23). Lovdata. https://lovdata.no/dokument/NL/lov/2017-04-28-23?q=forskningsetikkloven

Richmond, S. A., Kang, J, Doyle-Baker, P. K., Nettel-Aguirre, A., Emery, C. A. (2016). A school-based injury prevention program to reduce sport injury risk and improve healthy outcomes in youth: A pilot cluster-randomized controlled trial. *Clinical Journal of Sport Medicine, 26*(4), 291–298. https://doi.org/10.1097/JSM.0000000000000261

Ringdal, K. (2018). *Enhet og mangfold: Samfunnsvitenskapelig forskning og kvantitativ metode* [Unity and diversity: Social science research and quantitative method] (4th ed.). Fagbokforlaget.

Robinson, D. B., Randall, L., & Andrews, E. (2020). Physical education teachers' (lack of) gymnastics instruction: An exploration of a neglected curriculum

requirement. *Curriculum Studies in Health and Physical Education*, *11*(1), 67–82. https://doi.org/10.1080/25742981.2020.1715232

Robinson, D. W. (1992). The risk-sport process: An alternative approach for humanistic physical education. *Quest*, *44*(1), 88–104. https://doi.org/10.1080/00336297.1992.10484043

Robinson, W. (2010). Documentary research. In D. Hartas (Ed.), *Educational research and inquiry: Qualitative and quantitative approaches* (pp. 186-198). Bloomsbury.

Romm, N. R. A. (2013). Employing questionnaires in terms of a constructivist epistemological stance: Reconsidering researchers' involvement in the unfolding of social life. *International Journal of Qualitative Methods*, 652–669. https://doi.org/10.1177/160940691301200136

Rossiter, J. R. (2008). Content validity of measures of abstract constructs in management and organizational research. *British Journal of Management*, *19*(4), 380–388. https://doi.org/10.1111/j.1467-8551.2008.00587.x

Rothe, P. J. (2009). The voluntary use of physical education safety guidelines in schools. *Journal of Physical Education, Recreation & Dance*, *80*(3), 43–49. https://doi.org/10.1080/07303084.2009.10598296

Rothstein, H., Huber, M., & Gaskell, G. (2006). A theory of risk colonization: The spiralling regulatory logics of societal and institutional risk. *Economy and Society*, *35*(1), 91–112. https://doi.org/10.1080/03085140500465865

Russell, T. (2013). Has reflective practice done more harm than good in teacher education? *Phronesis*, *2*, 80-88. https://doi.org/10.7202/1015641ar

Saldaña, J. (2016). *The coding manual for qualitative researchers* (3rd ed.). SAGE Publications Ltd.

Saldaña, J. (2021). *The coding manual for qualitative researchers* (4th ed.). SAGE Publications Ltd.

Sandelowski, M. (2014). Unmixing mixed-methods research. *Research in Nursing & Health*, *37*(1), 3–8. https://doi.org/10.1002/nur.21570

Sandseter, E. B. H., & Sando, O. J. (2016). "We don't allow children to climb trees": How a focus on safety affects Norwegian children's play in early-childhood education and care settings. *American Journal of Play*, *8*(2), 178–200.

Sawyer, T. H., & Gimbert, T. L. (2013). Questionable supervision by physical educators. *Journal of Physical Education, Recreation & Dance*, *84*(8), 13–14, https://doi.org/10.1080/07303084.2013.827072

Sawyer, T. H. & Gimbert, T. L. (2014). Instructional malpractice. *Journal of Physical Education, Recreation & Dance*, *85*(1), 44–46. https://doi.org/10.1080/07303084.2014.855582

Schaefer, G. R. (2008). *A safe physical education classroom: The relationship between teachers' educational background and physical education injuries* (UMI No. 33465882) [Doctoral thesis, University of New Mexico]. ProQuest LLC.

Schaefer, G. R., Francisco, J. D., & Foo, C. E. (2017). Judge, lest ye not be judged. *Journal of Physical Education, Recreation & Dance*, *88*(1), 63–64. https://doi.org/10.1080/07303084.2016.1249772

Schmidt, K. (2012). The trouble with "tacit knowledge". *Computer Supported Cooperative Work*, *21*, 163–225. https://doi.org/10.1007/s10606-012-9160-8

Schatzki, T. R. (2003). A new societist social ontology. *Philosophy of the Social Sciences*, *33*(2), 174–202. https://doi.org/10.1177/0048393103033002002

Schatzki, T. R. (2005). Peripheral vision: The sites of organizations. *Organization Studies*, *26*(3), 465–484. https://doi.org/10.1177/0170840605050876

Schön, D. A. (1987). *Educating the reflective practitioner* (The Jossey-Bass higher education series): *Toward a new design for teaching and learning in the professions*. Jossey-Bass.

Schön, D. A. (1991). *The reflective practitioner: How professionals think in action*. Arena. (Original work published 1983)

Schön, D. A. (1992). The theory of inquiry: Dewey's legacy to education. *Curriculum Inquiry*, *22*(2), 119–139. https://doi.org/10.2307/1180029

Schön, D. A. (1995). *Knowing-in-action*: The new scholarship requires a new epistemology. *Change: The Magazine of Higher Learning*, *27*(6), 27-–34. https://doi.org/10.1080/00091383.1995.10544673

Schoonenboom, J. (2019). A performative paradigm for mixed methods research. *Journal of Mixed Methods Research*, *13*(3), 284–300. https://doi.org/10.1177/1558689817722889

Schoonenboom, J., & Johnson, R. B. (2017). How to construct a mixed methods research design. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, *69*(Suppl 2), 107–131. https://doi.org/10.1007/s11577-017-0454-1

Scott, J. (1990). *A matter of record: Documentary sources in social research*. Polity Press.

Seidler, T. L. (2006). Planning and designing safe facilities. *Journal of Physical Education, Recreation & Dance*, *77*(5), 32–44. https://doi.org/10.1080/07303084.2006.10597875

Selznick, P. (1985). Focusing organizational research on regulation. In R. Noll (Ed.), *Regulatory policy and the social sciences* (pp. 363-367). University of California Press

Severs, J., Whitlam, P., & Woodhouse, J. (2003). *Safety and risk in primary school physical education: A guide for teachers*. Routledge.

Shannon-Baker, P. (2015). Making paradigms meaningful in mixed methods research. *Journal of Mixed Methods Research*, *10*(4), 319–334. https://doi.org/10.1177/1558689815575861

Skille, E. Å., & Moen, K. M. (2021). Kroppsøving og idrett i Norge – overlappende men distinktive felt. *Scandinavian Sport Studies Forum*, *12*, 135–157. https://sportstudies.org/2021/10/06/physical-education-and-sport-in-norway-overlapping-but-distinctive-fields/?fbclid=IwAR0ikd62-TYBUHV2dq7YRIcXhfDdDy6TELzNsgXN-VIbKVchRNRvkHg-v_M

Skrede, J. (2017). *Kritisk diskursanalyse* [Critical discourse analysis]. Cappelen Damm akademisk.

Smith, B., & Sparkes, A. C. (2016). Interviews. In B. Smith & A. C. Sparkes (Eds.), *Routledge handbook of qualitative research in sport and exercise* (pp. 102–123). Routledge.

Sniras, S. A., Uspuriene, A. B. P., & Malinauskas, R. K. (2020). Competencies of physical education teachers for injury prevention. *European Journal of Contemporary Education*, *9*(4), 893–901.

Society for Risk Analysis (SRA). (2018). *Glossary*. https://www.sra.org/wp-content/uploads/2020/04/SRA-Glossary-FINAL.pdf

Sollerhed, A.-C., Horn, A., Culpan, I., & Lynch, J. (2020). Adolescent physical activity-related injuries in school physical education and leisure-time sports. *Journal of International Medical Research*. https://doi.org/10.1177/0300060520954716

Spicer, C., & Robinson, D. B. (2021). Alone in the gym: A review of literature related to physical education teachers and isolation. *Kinesiology Review*, *10*(1), 66–77. https://doi.org/10.1123/kr.2020-0024

Standal, Ø. F., & Moe, V. F. (2013). Reflective practice in physical education and physical education teacher education: A review of the literature since 1995. *Quest*, *65*(2), 220–240. https://doi.org/10.1080/00336297.2013.773530

Standal, Ø. F., Moen, K. M., & Westlie, K. (2020). «Ei mil vid og ein tomme djup»? – ei undersøking av innhald og undervisning i kroppsøving på ungdomstrinnet i Noreg [«A mile wide and an inch deep»?—An investigation of content and teaching in physical education at the lower secondary level in Norway]. *Journal for Research in Arts and Sports Education*, *4*(1). https://doi.org/10.23865/jased.v4.1749

Stebbins, R. A. (2001). *Exploratory research in the social sciences*. SAGE Publications, Inc. https://doi.org/10.4135/9781412984249

Taleb, N. N. (2007). *The black swan: The impact of the highly improbable*. Allen Lane.

Tanis, C. J., & Hebel, S. L. (2016). Emergency action plans in physical education. *Strategies*, *29*(4), 3–7. http://dx.doi.org/10.1080/08924562.2016.1181589

Taylor, S. (2004). Researching educational policy and change in "new times": Using critical discourse analysis. *Journal of Education Policy*, *19*(4), 433–451. https://doi.org/10.1080/0268093042000227483

Taylor-Gooby, P. & Zinn, J. O. (2006). The current significance of risk. In P. Taylor-Gooby & J. O. Zinn. (Eds.), *Risk in social science* (pp. 1–19). Oxford University Press.

Teigen, K. H. (1988). The language of uncertainty. *Acta Psychologica*, *68*(1–3), 27–38. https://doi.org/10.1016/0001-6918(88)90043-1

Tinning, R. (2012). The idea of physical education: A memetic perspective. *Physical Education and Sport Pedagogy*, *17*(2), 115–126. https://doi.org/10.1080/17408989.2011.582488

Toom, A. (2012). Considering the artistry and epistemology of tacit knowledge and knowing. *Educational Theory*, *62*(6), 621–640. https://doi.org/10.1111/edth.12001

Torgersen, H. O., Sjøberg, J., & Audestad, P. (2020, Sept. 16). Skoleelever på kanotur kantret ved Fredrikstad [Students on a canoe trip flipped by Fredrikstad]. *Aftenposten*. https://www.aftenposten.no/norge/i/9Om6zM/skoleelever-paa-kanotur-kantret-ved-fredrikstad

UNESCO. (2013). *Declaration of Berlin*, May 30, 2013. https://unesdoc.unesco.org/ark:/48223/pf0000225617.locale=en

Ward, G., & Griggs, G. (2018). Primary physical education: A memetic perspective. *European Physical Education Review*, *24*(4), 400–417. https://doi.org/10.1177/1356336X16676451

White, A. J., Batten, J., Robinson, S., Anderson, E., Burns, A., Batey, J., Ryan-Stewart, H., & Discombe, R. (2018). Tackling in physical education rugby: An unnecessary risk? *Injury Prevention*, *24*(2), 114–115. https://doi.org/10.1136/injuryprev-2017-042672

Williams, A., & Wainwright, N. (2016a). A new pedagogical model for adventure in the curriculum: Part one—Advocating for the model. *Physical Education and Sport Pedagogy*, *21*(5), 481–500. https://doi.org/10.1080/17408989.2015.1048211

Williams, A., & Wainwright, N. (2016b). A new pedagogical model for adventure in the curriculum: Part two—Outlining the model. *Physical Education and Sport Pedagogy*, *21*(6), 589–602. https://doi.org/10.1080/17408989.2015.1048212

Williams, A., & Wainwright, N. (2020). Re-thinking adventurous activities in physical education: Models-based approaches. *Journal of Adventure Education and Outdoor Learning*, *20*(3), 217–229. https://doi.org/10.1080/14729679.2019.1634599

Wodak, R., & Meyer, M. (2009). *Methods of critical discourse analysis* (3rd ed.). SAGE Publications Ltd.

Working Environment Act. (2005). *Lov om arbeidsmiljø, arbeidstid og stillingsvern mv.* [Act relating to working environment, working hours and employment protection, etc.] (LOV-2005-06-17-62). Lovdata. https://lovdata.no/dokument/NLE/lov/2005-06-17-62

Young, D. C. (2007). Physical education, tort law and risk avoidance. *Education & Law Journal*, *17*(2), 223–243.

Zinn, J. O. (2008). Heading into the unknown: Everyday strategies for managing risk and uncertainty. *Health, Risk & Society*, *10*(5), 439–450. https://doi.org/10.1080/13698570802380891

Zinn, J. O. (2016). "In-between" and other reasonable ways to deal with risk and uncertainty: A review article. *Health, Risk & Society*, *18*(7–8), 348–366. https://doi.org/10.1080/13698575.2016.1269879

Zinn, J. O. (2019). The meaning of risk-taking—Key concepts and dimensions. *Journal of Risk Research*, *22*(1), 1–15. https://doi.org/10.1080/13669877.2017.1351465

Zinn, J. O., & Olofsson, A. (2019). Introduction. In A. Olofsson & J. O. Zinn (Eds.) *Researching risk and uncertainty*. *Critical studies in risk and uncertainty* (pp. 1–28). Palgrave Macmillan. https://doi.org/10.1007/978-3-319-95852-1_1

Zinc, R. (2004). The shifting sands of challenge-by-choice: Does it have a place in safety management in EOTC1? *Journal of Physical Education New Zealand*, *37*(1), 6–16.

Østerlie, O. (2020). *Flipped learning in physical education. A gateway to motivation and (deep) learning* [Doctoral thesis, Norges teknisk-naturvitenskapelige universitet]. NTNU Open. https://hdl.handle.net/11250/2649972

Part II: The Articles

ARTICLE I

Porsanger, L. (2020). The reconstruction of physical education teachers: A critical discourse analysis of regulative texts. *Journal for Research in Arts and Sports Education*, *4*(1), 76-91. https://doi.org/10.23865/jased.v4.2134

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The reconstruction of physical education teachers: A critical discourse analysis of regulative texts

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Abstract
In 2008, the Norwegian Directorate for Education and Training implemented a new circular with directives for water activities in schools and with a call for testing teachers' water competence. This circular seems to align with international school safety policies, where additional regulations and safety guidelines are put into practice in school programs such as physical education. Despite this, studies that have applied a critical discourse perspective on regulative texts in physical education seem scarce. The purpose of this article is to examine how teachers' risk and safety management in physical education is constructed in five regulative documents governing primary and secondary schools in Norway. Norman Fairclough's critical discourse methodology has been applied to conduct a linguistic and contextual analysis of language. The analysis seems to reveal a discourse that challenge teachers' autonomy and position. Because the discourse can appear to be neutral and imperative, it might be taken for granted in the field. The entrancement of a controller in examining teachers' water competence seems to reflect ideals of revision and central control. This article therefore contributes to the understanding of regulative discourses and their power, in education and physical education.

Keywords: *School; risk; profession; ideology; power*

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Introduction

Schools and teachers have a special obligation and mandate to prevent injuries and harm to students but sometimes fail. There are signs of an established practice of enforcing increased regulation following accidents, injuries, and deaths of students in schools. However, there might be good reasons for their implementation, because inadequate risk assessment has been related to the death of students in Australia, for example (Dallat, Salmon, & Goode, 2015). A current range of new requirements has

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subsequently been launched, such as student-teacher ratios and additional teacher qualifications (Barwood, 2018). In England, the drowning deaths of four schoolchildren in 1993, enforced new regulations and safety guidelines on school trips (Ball-King, Watt, & Ball, 2013). The Association for Physical Education (2016) in the UK also promotes common procedures in physical education (PE) to "protect students and [teachers] from potential risks".

In Norway on the other hand, students' safety in PE, has largely remained unaffected by the regulative practice found in the UK and Australia. Thus, teachers have had considerable discretionary space. However, the entrance of a detailed circular addressing water activities in schools seems to incur changes to policy in Norway as well (Norwegian Directorate for Education and Training [Udir], 2015a). This circular is the only official instruction on how to conduct a physical activity in PE, including a call to test teachers' competence.

On that note, the Norwegian Directorate of Health (2019, p. 14) found that 4,3 percent of the reported injuries in 2018, occurred from participation in physical activities and exercise in education. However, one out of what seems to be a scarcity of studies of physical injuries in Norwegian schools, found that 0,6 percent of the registered cases in years 1995–1997, were related to swimming (Schullar & Kopjar, 2000). In contrast, 14,2 percent were related to gymnastics. The same study failed to find any measures with documented preventive effects on injuries in schools. In addition, there does not seem to be any current official report on student injuries related to PE, or statistics that connect drownings to schooling in Norway. Clearly, there are some dilemmas that rise in this landscape.

First, albeit it is possible that Udir has available non-official data, it seems uncertain why directions were imposed on water activities, thus, excluding all other physical activities. Moreover, why an annual test of teachers' water competence is called for, remains unanswered. All things considered, a rationale in ensuring students' safety might seem obvious. However, this article aims to put a critical light on that idea. It is specifically what seems to be ambiguous grounds for implementing the circular, and the "problem" it is set to solve, that emphasize a need for critical investigations.

With that background, studies that have critically examined regulative texts in terms of risk and safety management (RSM) in PE, seems scarce. This article will therefore examine five selected regulative documents targeting teachers' RSM in PE in Norway. Thus, this article conforms to a critical agenda, to reveal hidden power in the regulative policy change, through an examination of the texts (Fairclough, 1992, 2013). The aim is operationalized in the following research question:

> *How are teachers' risk and safety management in physical education constructed in regulative documents?*

The remainder of the article is organized as follows. First, the theoretical underpinnings to position the texts, explain teachers' contexts and the social systems within which they act and operate will be presented. Thereafter, the article's methodology

will be outlined, followed by an analysis and a discussion of the findings in dialogue with social theory. Finally, concluding remarks will be made.

Physical education and RSM

PE in Norway is a mandatory curricular program in primary and secondary education. A national curriculum for PE, promotes various experience and physical activities such as outdoor education and swimming, through a range of competence aims (Udir, 2015b). Thus, due to risk of physical injury, it is fair to claim that managing students' safety is within PE teachers professional mandate. However, from a constructionist perspective, what is perceived as risk as well as the social and cultural acceptance, changes with time (Russell & Babrow, 2011). Today, risk is a central organizing and meaning-making component with special contemporary importance, and some even claim that society has been colonized by the idea (Rothstein, Huber, & Gaskell, 2006). Through processes of juridification, social problems are increasingly being perceived as legal problems (Magnussen & Nilssen, 2013). Thus, risk discourses seem to have created a demand for, and use of, regulatory frameworks and controls to ensure students' safety. As a result, the regulative system and logic has an increasingly dominant position within institutions (NOU 2003:19; Power, 1997, 2004).

The heightened concern for risk also seems to center around the question of "[h]ow safe is safe enough?" (Fischhoff, Slovic, Lichtenstein, Read, & Combs, 1978, p. 1). Safety norms and what is defined as the appropriate state of students' safety (Maurice et al., 2001), will influence how this is dealt with in education (Aven & van Kessenich, 2019). The Courts of Law also construct standards for teachers' duty of care and negligence in PE (Murphy & Beh, 2014; Sawyer, 2011a). Thus, "[t]he idea of risk is bound up with the aspiration to control […] the future" (Giddens, 1999, p. 3) and institutionalized in risk management (Rothstein, 2006).

The attempts to identify, assess, manage and communicate risk and safety, is in this article framed as RSM. The government and Udir are positioned to define hegemonic discourses in the field because they are responsible for governing compulsory education in Norway. Thus, regulative policy texts, such as acts, regulations and circulars will be used to coordinate and communicate their RSM policy (Schmidt, 2008). Noteworthy, the promotion of RSM has also been connected to neoliberal discourses aiming to control teachers and is not necessarily interpreted as a neutral practice (Evans, 2014, p. 549). This is an interesting perspective to the many discussions of mandatory standards and safety guidelines in PE (Benes, 2013; Rothe, 2009; Sawyer, 2011b; Severs, Whitlam, & Woodhouse, 2003).

However, it is not possible to predict how teachers translate regulative RSM policy into their PE practice. Clearly, policy texts are 'contested, interpreted and enacted' by teachers in different ways (Ball, 2017, p. 10). As an example of how they may solve RSM in Norwegian context, outdoor education teachers' safety strategies in upper

secondary education incorporate both inclusion and exclusion of students to deal with risk in their program (Dahl, Standal, & Moe, 2018). Looking internationally, some claim that teachers in the UK fear bringing students on excursions (Rothstein, 2006), while others claim that this fear is exaggerated (Health and Safety Executive, 2011). In Korea, some PE teachers have developed a safety-first policy; they are hesitant to teach activities that entail risk of harm, as liability has become their primary concern (Park, 2018). In Canada, excluding certain activities from the PE program seems to be a legitimate strategy among teachers to avoid risk and injuries (Young, 2007). The teachers nevertheless did not report fear of litigation as decisive for their practices, but moreso reported their general concern for students' safety. As a possible result of contesting discourses, Forest School teachers in the UK have reported tension between their pedagogy and cultural and institutionalized risk aversion (Connolly & Haughton, 2015). How Norwegian PE teachers solve this problem on the other hand, remains unanswered.

Theoretical foundation

The regulative system and the teacher profession

To discuss the relationship between regulation of PE and teachers in this specific context, the article views teachers as a profession (Abbott, 1988; Freidson, 2001). As a profession, they are expected to manage their tasks through special training and knowledge. Teachers have traditionally enjoyed autonomy and the use of discretion is presented as a key to solve their missions. The need for discretion is therefore connected to their status within the field and in their professional knowledge (Boote, 2006, p. 462; Freidson, 2001, p. 35). Therefore, it seems sensible that PE teachers practice and keep up to date on their professional knowledge. This applies to all physical activities in PE and especially those constructed to be of greater risk of physical injury. Clearly, to claim jurisdiction for ensuring students' safety in PE, it must be legitimized through the need for discretion, provided with the necessary trust from relevant stakeholders (Abbott, 1988, p. 40). Trust is an essential component for teachers' autonomy, whereas lack of trust would promote increased external regulation (Molander, Grimen, & Eriksen, 2012). Dworkin's (1978, p. 31) doughnut metaphor is applied to create dialogue between regulation and professional discretion in this article. It will be used to illustrate how a doughnut belt of regulation restricts and controls teachers' discretional space symbolized by open area of the doughnut. Some have described similar practices in terms of external accountability (Molander, Grimen, & Eriksen, 2012).

Dworkin (1978) further separates between weak and strong discretion regarding teachers' perceptions of discretional space. When teachers have a strong sense of discretion, they are not bound by any standards or authority in their considerations and are permitted to use discretion more freely. This is an argument with limitations, however, because discretional space also depends on whether principles and recommended

standards are given the power of rules in the field, such as recommendations in the circular, even when they are not sanctioned by law (Dworkin, 1978, p. 35). Legal texts such as the Norwegian Education Act (1998) however, often require interpretation, and when teachers experience strong discretion, they construct measures based on their professional knowledge. In contrast, a dismissal or devaluation of discretion to manage risk and safety, might promote weak discretion: where teachers feel obliged to select between predefined measures. The belt may play an increasingly important role in governing teachers' RSM in PE due to the practice of implementing additional regulations and standards of practice. As a result, teachers might become amenable to, for example, safety guidelines, standards or recommendations.

Discourse, language, and power

To analyze language in the texts, the article draws on Fairclough's (1992, 2013) critical discourse methodology. Discourses are viewed as social constructions that are created by social structures but also create them in return (Fairclough, 2013, p. 59). In other words, discourses in the texts will seek to both shape and reflect ideas of RSM. This article will therefore seek to provide insight into how RSM is constructed in selected regulative documents.

By creating a dialogue between Fairclough's approach to language and Bourdieu's (1990, 1995) theory of power and dominance in social fields, the article has tools to analyze power relationships and ideologies in the texts with reference to their social context. The texts are promoted from a position with power, and the government and Udir as key regulating actors, "get[] this authority not from a merely factual power of sanctions, but from a power of sanctions recognized as legitimate by citizens" (Habermas, 1987, p. 177). Albeit use of power in itself may be criticized, it might also be necessary. Thus, the reduction of teachers' autonomy and discretional space might be legitimate if they are not taking care of students' safety. However, by viewing the texts as powerful meaning makers, the article will seek to disclose how those in power use language to promote their ideology and reduce alternatives. Thus, it is not power per se, but the ideology hidden in the texts and what consequences that may have, and how it may influence relationships between actors, that is investigated (Skrede, 2017, p. 29). How the regulative texts construct teachers' RSM may contribute to the understanding of how teachers are positioned and how the texts promote and construct power between actors in the field.

Central in this aspect is that dominant discourses and ideas might come forward as neutral (Bourdieu, 1990, 1995). Noteworthy, when the ideology in a text is least visible, it is the most powerful (Fairclough, 2013). Thus, because texts always incorporate a certain ideology, regulative texts that govern PE make teachers accountable to what might be hidden to them. Therefore, dominant ideas and discourses in the texts will be investigated through the concept of doxa representing convictions that seem 'common sense' and natural in the field (Bourdieu, 1995). By examining what is stated, and especially what is unformulated, it is possible to suggest what might

be taken for granted. Thus, doxa contributes to reproduce power relationships and ideology because it might seem unquestionable. Teachers' with a heterodox position, on the other hand, would not share those convictions or find the dominant RSM discourse to be natural in PE. Hence, they might make use of other approaches to RSM and develop alternative discourses.

Although it is not possible to draw a clear line between policy and practice, their construction of RSM has the potential to contribute, change, or uphold dominant power relationships as well as teachers' convictions and practices (Bourdieu, 1995). It is in the meeting between the structures and processes these texts represent, and teachers' agency, that RSM practices in PE are made. Therefore, it is central to deconstruct the texts to open up the ideology that are set to control teachers. It is then, when teachers are aware and may question the dominant discourse, it would be necessary for the governing actor to explicitly state the purpose. Thus, in creating a discursive democracy, where hegemonic discourses are challenged, students' safety might be ensured on open premises. The critical discourse analysis (CDA) therefore becomes a political tool to promote democracy in education (Dewey, 2008; Taylor, 2004).

Material and methods

The study is designed as a qualitative document analysis (Bowen, 2009), in which Fairclough's (1992, 2013) CDA is the applied method. CDA is both a method to treat data and a theoretical approach, which is why Fairclough (2013, p. 234) describes the approach as a methodology. This entails combining a linguistic and a contextual analysis of semiosis. In other words, the documents and texts are considered as elements within a larger system that stand in relation to and contribute to each other. According to Fairclough (2013, p. 132), the CDA model incorporates three related levels of analysis that "includes linguistic description of the language text, interpretation of the relationship between the (productive and interpretative) discursive processes and the text, and explanation of the relationship between the discursive processes and social processes". The following analysis will therefore target three dimensions and is conducted in three steps.

First, to analyze the texts as social events, their use of specific vocabulary related to risk and safety and the use of modality, was emphasized. The second step aims at relating the linguistic findings with social practices. To assess how the texts are mediated by social structures, an examination of their intertextuality will show how they are based and relate to one another (Fairclough, 1992, p. 102). It is the documents' constitutive intertextuality: how conventions are present in the texts without an explicit annunciation, which is given more weight in this analysis. Similarities within the texts represent what Fairclough (1992, p. 104) describes as interdiscursivity, or conventions represented in the different texts. Interdiscursivity is approached by analyzing: 1) how they overlap in their construction of RSM subjects; and 2) how specific areas of RSM are accentuated.

Finally, as the third step, a discussion of the findings with social systems, of which the texts are part and through which they are explained (Fairclough, 2013, p. 74). The documents are therefore viewed as social events embedded in a system.

With this methodology, the analytical method is given priority in guiding the investigation, however, it is with a critical perspective that has an aim to reveal obscure power relationships. Hence, reliability in analysis is attempted by following the steps in Fairclough's (1992, 2013) CDA and being open about concepts and tools used in the analysis. In terms of validity, an objective reading of the texts is not possible as the author partakes in the constructions in a combination with the selected methodology. It enables and restricts what is illuminated and what is delineated from the analysis. Thus, the choice of perspective and theoretical lens, is not neutral but connected to the aim of the article and the author's background. Hence, it is not possible to clarify the intentions of the writers in an analysis of the selected documents (Skrede, 2017, p. 152). Moreover, it is not possible to establish any knowledge of how these texts influence teachers' convictions and practices. However, by shedding light on hegemonic discourses in the texts, the CDA opens a window to explore, and suggest, what might be taken for granted and come forward as neutral. Likewise, it may suggest possible unintentional consequences of discourses in the texts (Skrede, 2017, p. 155).

Selection of documents

This analysis is conducted on five regulative documents governing primary and secondary schools in Norway. Due to a national curriculum renewal effective from August 2020, two curricula for PE were analyzed. The selected documents for analysis are: 1) the Education Act (1998); 2) the Regulations Pursuant to the Education Act (2006); 3) the current Curriculum for Physical Education (KRO1-04) (Udir, 2015b); 4) the forthcoming Curriculum for Physical Education (KRO01-05) (Udir, 2019); and 5) the circular Proper Swimming and Rescue Training in Primary and Lower Secondary Education Udir-1-2008 (Udir, 2015a; my translation). Hereafter, these will be named for brevity: 1) the Act; 2) the Regulation; 3) the current Curriculum; 4) the forthcoming Curriculum; and 5) the Circular.

Albeit, the texts have different warrants and functions, their primarily govern Norwegian education and have an authoritative status in the field. The Ministry of Education and Research (2016), presents the Act (1998) and the Regulation (2006) as key legal texts that give students a statutory right of a safe learning environment. The mandate for both (curriculums/curricula) is to provide learning goals and warrants to the PE program, and is part of a National Curriculum for primary and secondary education and training. Due to their status as regulations, they draw on both pedagogical and legal warrants. Thus, what is stated in the curriculums is legally binding for teachers' compliance. As the only text in this article that is not established as a legal document, the Circular is an interpretation of selected paragraphs in the Act (1998) and the Regulation (2006) and give direction to teachers and schools. It was

selected as it is the single regulative text that target a specific physical activity in the PE program and is a new representation in the field from 2008.

After reading the documents for an overview and to gain an impression of the content, sections from the documents, selected according to relevance to the research question, were pulled for the remaining analysis following the steps of the CDA. A general description of the analyzed texts is in Table 1.

Table 1. Description of the documents.

Document	Description
Act	Effective from 1998. Replaced older version from 1986. Several older versions and eldest from 1969. In total, 44 pages. Structured in chapters by paragraphs. Analysis limited to the general paragraph about students' school environment.
Regulation	Effective from 2006. Replaced older version from 1999. In total, 88 pages. Structured in chapters by paragraphs from the Education Act. The Regulation is a more detailed explanation of the meaning of the text in the Education Act. Analysis limited to chapter 12, letters a, b, c, d, which concerns "[s]afety for students".
Current Curriculum	Effective from 2015. Replaced older version from 2012. Structured in chapters by headings. Analysis limited to text aiming at primary and lower secondary education, which is 9 pages long.
Forthcoming Curriculum	Effective from August 2020. Will replace current version from 2015. Structured in chapters by headings. Analysis limited to text aiming at primary and lower secondary education, which is 8 pages long.
Circular	Effective and new from 2008. New version in 2015. Structured in chapters by number. Analyzed in full and consists of 6 pages.

The texts were read in Norwegian, which the author translated into English. An official translated English version of the current Curriculum supported the author with the translation of the curricula (Udir, 2015c).

Analysis and findings

Linguistic description of the documents as social events

Modality to command

An analysis of modality was chosen because it offers important information regarding the message of the texts (Fairclough, 2013, p. 248). As mentioned, the Act (1998) put forward a statutory right in paragraph 9, letter A-2 stating that "[a]ll pupils attending primary and secondary schools are entitled to a good physical and psychosocial environment conducive to health, well-being and learning". This right is further elaborated in the Regulation (2006), paragraph 12, together with the increased use of modality concerning students' safety. The Circular, addressing water activities only, modality is used to describe how RSM shall or must carried out, demonstrated by a student-teacher ratio and in important areas of knowledge, such as alarm plans

(Udir, 2015a). Albeit, schools have the right to "assess what is proper practice" (Udir, 2015a, p. 1), their freedom of choice is wrapped by modal verbs. The combination of modality, connected to specific ways of doing RSM, might be interpreted as the only correct way in water activities. Teachers also seem to be a factor in RSM, as they are called out and "should … pass a practical swimming test" (Udir, 2015a, p. 4). In the curriculums, modality is mostly used in relation to competence requirements and that students shall learn how to "move […] about safely" in the current Curriculum (Udir, 2015b, p. 5) and "consider safety in outdoor activities" in the forthcoming Curriculum (Udir, 2019, p. 7).

Vocabulary constructing risk and safety management

It is expected that the use of words in these texts is to communicate a specific message and is therefore an element in the analysis. Considering the contemporary focus on risk, the risk concept appears in the Regulation (2006), and the Circular also brings up "risk for accidents" (Udir, 2015a, p. 1). The risk concept is not repeated to any extent in the other texts and might be a sign that the idea of risk, is not prevalent. However, safety is brought up recurrently, incorporated in the general right in the Act (1998) to activity-related safety concerns and competence aims in the curriculums. It may be that the risk discourse is in a process of recontextualizing, or coming forward, as a safety discourse within this field (Fairclough, 2013, p. 76). Thus, the reasons or ideology behind the emphasis on risk or safety might be the same, but they come forward as separate ideas, and are modified to the environment they are implemented.

In the current Curriculum, a pedagogical discourse where challenge and courage is promoted such as in the purpose: "[t]he subject shall provide pupils with physical challenges and the courage to test their own limits during spontaneous and organized activities" (Udir, 2015b, p. 1). Thus, students must be provided with such opportunities, which might entail the risk of injury if absolute safety is not applied. This seems to contrast with the Circular, that claims that "the risk of accidents occurring should be as little as possible," (Udir, 2015a, p. 1). Thus, these texts might be drawing on different discourses. If the safety discourse were to replace or encompass the pedagogical discourse it might create a safety logic where safety concerns trump other considerations. However, it is uncertain whether the forthcoming Curriculum (Udir, 2019) has any signs of such a development. It seems to put less emphasis on activity-related challenges while promoting courage to promote personal and physical ability. For example, when Udir states in the core values that "[t]he subject shall also challenge their courage to test their own limits" (Udir, 2019, p. 2), it seems related to teachers' assessment of students' effort to challenge their physical capacity (Udir, 2019, p. 8) and movements (Udir, 2019, p. 5).

A prominent word that constructs RSM in the texts, is proper. In continuation of the general right in the Act (1998), the Regulation (2006) also includes proper as a foundation to define all RSM in PE; however, none of the curriculums comment on what proper refers to. This is similar to other concepts such as risk and accidents.

Thus, the interpretation and implementation of risk, accident and proper, is left to schools and teachers, as they are not defined nor clarified. This entails a space for discretion, but also uncertainty, as it does not give any clear guidance as to how to apply the term in practice. On the other hand, this policy does not apply for water activities, where proper is elaborated upon in detail in the Circular and entails "issues of safety related to swimming, rescue training and bathing, and what the school owner should do to make this proper" (Udir, 2015a, p. 1).

The Circular also creates a dilemma, stating that "it is the schools which must consider … what is proper practice" in water activities (Udir, 2015a, p. 1). This message is followed by a prospective "threat" when Udir emphasizes "… it will be a decisive point in an eventual compensation case following an accident, whether the student has been properly secured and whether the existing regulations have been followed" (Udir, 2015a, p. 1). Noted, the statement includes the legal sanctions in the proper discourse and might be an attempt to put more power behind their recommendations.

Considering the findings from the linguistic analysis, it is necessary to look at the discursive practices that mediate the use of language in the documents and the social structures.

Intertextuality as a social and mediating practice

External intertextuality of the texts

The Act (1998), Regulation (2006) and Circular (Udir, 2015a), have a clear external manifested intertextuality. The Circular (Udir, 2015a) mentions its relation to the Act (1998) and the current Curriculum (Udir, 2015b). The Regulation (2006) mentions the Act (1998) and references a further detailed explanation in the Circular (Udir, 2015a). A high degree of intertextuality is often a sign of a field that is changing (Skrede, 2017) and social change is often expressed in changes of discursive practices (Fairclough, 1992, p. 8). Because water activities are warranted in the PE curriculums with distinct competence goals, the Circular (Udir, 2015a) may function to bridge the regulative discourse with the pedagogical discourse. Thus, the entry of the Circular (Udir, 2015a) may bring about changes in the discursive order of the field. Noteworthy, none of the curricula clearly state any connection to the other three texts.

Internal textuality in subjects of risk and safety management

There is a general lack of teachers as RSM subjects and it is an indication in to how the texts position teachers. The Act (1998) targets school owners and school management as well as students whom are also defined as having the right to take part in the planning and implementation of their own safety. The Regulation (2006) presents and the Circular (Udir, 2015a) addresses the responsible supervisor as a prominent actor, and not teachers. Further, several new subjects enter the discourse in the Circular, such as the teacher/instructor and the assistant (Udir, 2015a, p. 3).

When teachers are mentioned in the Circular, they are constructed in an alternate position to instructors, such as when they state that "the responsible teacher/instructor must be a good swimmer" (Udir, 2015a, p. 4). The choice to omit the teacher seems even more remarkable, if the alternative were to position the teacher as the only responsible subject in the text. On the other hand, the Circular states that "there shall be at least one teacher present during swimming lessons" (Udir, 2015a, p. 3). This teacher seems to be compelled in the obligatory swimming lessons to meet the requirements of pedagogical competence.

The controller in the role of an examiner is a new subject entering the discourse in the Circular (Udir, 2015a, p. 5). They are the subjects now positioned to, and responsible for, auditing and controlling teachers' water competence annually through a practical swimming and lifesaving test. The relationship between those subjects is also characterized by use of modality connected to the test. The subject, the controller, and the practice of examining teachers represent new features in Norwegian PE, making teachers subordinate actors to a testing regime.

Internal textuality in areas of risk and safety management

The Act (1998) requires safety throughout all of education, without specifically targeting any program or activity. In the Regulation (2006), selected areas are highlighted, such as water activities, traffic, and bicycling. In the Circular, (Udir, 2015a) water activities are the main area of concern and clearly stated. In addition to these areas, the current Curriculum at all year levels, 4, 7 and 10, also incorporate a safety discourse with regards to outdoor education in PE because the main topic "covers competence and skills needed to do things safely in nature" (Udir, 2015b, p. 2) and students shall learn to be "outdoors in a safe and functional manner" (Udir, 2015b, p. 4). In the forthcoming Curriculum, safety concerns are connected to outdoor travel, traffic, and water. For example, in the level 2 year, students shall practice "safe travels in traffic … and by water" (Udir, 2019, p. 5). Due to the supposed versatility of the subject it seems plausible that the safety discourse has colonized some specific areas and is most prominent in water activities.

Having presented results from the linguistic analysis and intertextuality as social and mediating practice, the discussion will create a synthesis of the findings with social theory, as an answer to the third level of CDA.

Discussion

An emerging regulative discourse of teachers' risk and safety management

Looking at international PE policy, it seems plausible that accidents would impose more regulation. This practice seems legitimate if it was shown to be an effective method in preventing or reducing student injuries. However, there are indications that regulation is not implemented because it has shown itself effectual. Noted, the promotion of risk management has been related to neoliberal discourses internationally

(Evans, 2014). As a possible alternative explanation to policy change due to safety, the CDA suggests that the Circular (Udir, 2015a) is a result of a dominant ideology of control. Consequently, regulative texts may be used to promote increased acceptance for audits, centralized power and more regulation of teachers' discretional space.

Thus, what is unformulated might be a sign of doxa in a field. If the regulative discourse with its directive standards becomes doxa, there is a general and significant acceptance of it that becomes common sense. More regulation may be interpreted as a natural practice and seem impossible to challenge. Those who internalize doxa will experience it as neutral and natural and position themselves thereafter.

Considering these five texts, the Circular (Udir, 2015a) seems to stand out positioned to promote change to RSM in water activities. On the other hand, if the policy and its degree of detail only applies to this activity, it would seem to imply a large space for contesting RSM discourses and heterodoxy in PE. Again, heterodoxy might support strong discretion among teachers.

Regulation and teachers' discretional space

In most cases, acts do not specifically and in detail instruct teachers and schools on how to execute or implement regulations. One possible reading of these texts is that RSM in PE is left open for discretion and is part of the doughnut hole available for teachers to assess. On the other hand, controls are enhanced as a measure that will restrict the perceived space for professional discretion. When Udir (2015a) writes in the Circular that practices might be assessed in judicial trials, it seems that they are forwarding this indirect "threat", to put pressure on schools to comply with their directives. This gives a rather remarkable and limited expression of teachers' choice. Following this argument, it is uncertain whether prospective controls and reminders of their external accountability will have the same effect. Most importantly, the threat seems to be a question of reducing the perceived and operated discretional space and not the actual space, since they are not legally obliged to follow the central recommendations. If teachers read the Circular (Udir, 2015a) as part of what Dworkin (1978) describes as the restriction belt or a part of the doughnut hole is not clear. As even when teachers exercise strong discretion, retrospective audits and emphasis on controls might give them the impression that they must make judgements based on weak discretion. As an example, viewing the term proper as a dichotomy, everything outside the dominant definition of proper might be read or interpreted as improper. The discourse representing proper RSM will therefore describe best practices in the field. The regulative discourse may therefore contribute to changing teachers' apprehension of discretional space, limit the use of the space available, or both. This is because when teachers use their discretion to apply Circular (Udir, 2015a) guidelines in water activities, it is in accordance with weak discretion (Dworkin, 1978).

Because the curriculums are characterized by a pedagogical discourse, it might put pressure on teachers as to which discourse to comply with. It would seem natural that teachers with a heterodox position, would choose not to take the swimming test

or follow all of the recommendations. On the other hand, if teachers are not ideologically convinced of the Circular's (Udir, 2015a) methods, the texts may give the impression that have no alternatives due to the character of the regulative discourse.

The (un)intentional devaluation of physical education teachers

The constructions of RSM, and especially in water activities, might create new identities and positions within the field (Bourdieu, 1995; Fairclough, 1992, p. 65). Because, intentionally or not, a new actor in water activities is constructed in using the word, supervisor. It is unclear why teachers are not the main actors, as traditionally they have been responsible for teaching all aspects of PE, including water activities. Noteworthy, outsourcing seems common in PE internationally (Williams & Macdonald, 2015). Such changes may influence the relationships and relative positions of teachers in PE. Thus, putting them in a subordinate position to a controller, and within a testing regime, is a remarkable step and seems to imply new policy in Norway. Thus, the controller is an extension of the ideology that requires teachers to do an annual examination. If this holds ground, it might incur social change and alterations to positions in Norwegian PE.

In this argument also lies the versatility of tools or alternative measures. Consider two other possible approaches: a reminder could have been forwarded, similarly, they could have mandated courses for teachers to stay current; alternatively, implicitly trust teachers and schools to assess whether they need training and/or what kind.

In terms of consequences for teachers, it is only possible to suggest how the Circular (Udir, 2015a) policy may influence teachers' practice. However, due to the legitimized power of these texts, teachers might be compelled to integrate the test of water competence in their professional position, with a disposition to be ready for inspection. This would be a developmental trait in the Norwegian field that emphasizes the need for critical examination and attention.

Teachers' weak positions might also stem from a lack of legitimation, which has led to the loss of jurisdiction (Abbott, 1988). If schools and teachers' capacity and competence to apply responsible RSM measures in PE and especially water activities are questioned, policies that reduce teachers' jurisdiction and discretional space, might be implemented.

Conclusion

The CDA of how teachers' RSM is constructed in five regulative documents reveals an emerging regulative discourse, albeit in selected areas of PE. The article suggests, that the discourse found in and through the Circular (Udir, 2015a), promotes central control of water activities and teachers' competence. The use of language in the texts, promotes obligation and gives an impression of neutrality. The CDA indicates that PE teachers are constructed in a weak position in relation to RSM. What seems to be teachers' loss of jurisdiction in water activities might come from a lack of trust in

teachers' and schools' ability to conduct proper RSM. On the other hand, this might be enforced due to a dominant ideology.

However, more research is needed to examine juridification and regulative texts targeting PE to gain further insight into their construction. Likewise, how these constructions influence teachers' RSM practices is also highly relevant for further research.

Author biography

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Declaration of interest statement

The author reports no conflict of interest.

References

Abbott, A. (1988). *The system of professions: An essay on the division of expert labor*. Chicago: University of Chicago Press.

Association for Physical Education. (2016). *Safe practice in physical education, School Sport & Physical Activity.* Retrieved from http://www.afpe.org.uk/physical-education/safe-practice-in-physical-education-school-sport-physical-activity-2016/

Aven, T. M. & van Kessenich, A. (2019). Teaching children and youths about risk and risk analysis: What are the goals and the risk analytical foundation? *Journal of Risk Research*, 1–14.

Ball, S. J. 2017. *The Education Debate*. Bristol, Chicago: Policy Press.

Ball-King, L., Watt, J. & Ball, D. (2012). The Rise and Fall of a Regulator: Adventure Sports in the United Kingdom. *Risk Analysis*, *33*(1), 15–23.

Barwood, D. (2018). *Outdoor education policy update*. Retrieved from https://www.achperwa.org.au/outdoor-education-policy-update/

Benes, S. S. (2013). Safety in physical education. In A. C., Cory, D. C., Wiley & Centers for Disease Control and Prevention (U.S.) (Eds.), *Encyclopedia of School Health*, (pp. 519–521). Los Angeles: SAGE Publications.

Boote, D. N. (2006). Teachers' professional discretion and the curricula. *Teachers and Teaching: Theory and Practice*, *12*(4), 461–78.

Bourdieu, P. (1990). *The Logic of Practice*. Stanford: Stanford University Press.

Bourdieu, P. (1995). *Distinksjonen: En sosiologisk kritikk av dømmekraften*. Oslo: Pax.

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, *9*(2), 27–40.

Connolly, M. & Haughton, C. (2015). The perception, management and performance of risk amongst Forest School educators, *British Journal of Sociology of Education*, *38*(2), 105–124.

Dahl, L., Standal, Ø. & Moe, V. (2018). Norwegian teachers' safety strategies for Friluftsliv excursions: Implications for inclusive education, *Journal of Adventure Education and Outdoor Learning*, *19*(3), 256–268.

Dallat, C., Salmon, P. M., & Goode, N. (2015). All about the teacher, the rain and the backpack: The lack of a systems approach to risk assessment in school outdoor education programs. *Procedia Manufacturing*, 3, 1157–1164.

Dewey, J. (2008). *Democracy and education: An introduction to the philosophy of education*. Champaign, Ill.: [Book Jungle]. (Original work published 1916).

Dworkin, R. (1978). *Taking rights seriously*. London: Duckworth.

Education Act. (1998). *Lov om grunnskolen og den vidaregåande opplæringa [The Education Act]*. Retrieved from https://lovdata.no/dokument/NL/lov/1998-07-17-61

Evans, J. (2014). Neoliberalism and the future for a socio-educative physical education. *Physical Education and Sport Pedagogy*, *19*(5), 545–558.

Fairclough, N. (1992). *Discourse and social change*. Cambridge: Polity Press.

Fairclough, N. (2013). *Critical discourse analysis: The critical study of language*. New York: Taylor & Francis.

Fischhoff, B., Slovic, P., Lichtenstein, S., Read, S. & Combs, B. (1978). How safe is safe enough? A psychometric study of attitudes towards technological risks and benefits. *Policy Sciences*, *9*(2), 127–152.

Freidson, E. (2001). *Professionalism: The third logic*. Cambridge: Polity Press.

Giddens, A. (1999). Risk and responsibility. *Modern Law Review*, *62*(1), 1–10.

Habermas, J. (1987). *The theory of communicative action: 2 : Lifeworld and system : A critique of functionalist reason* (Vol. 2). Boston: Beacon Press.

Health and Safety Executive. (2011). *School trips and outdoor learning activities: Tackling the health and safety myths.* Retrieved from http://www.hse.gov.uk/services/education/school-trips.pdf

Magnussen, A. M. & Nilssen, E. (2013). Juridification and the construction of social citizenship. *Journal of Law and Society*, *40*(2), 228–248.

Maurice, P., Lavoie, M., Laflamme, L., Svanström, L., Romer, C. & Anderson, R. (2001). Safety and safety promotion: Definitions for operational developments. *Injury Control and Safety Promotion*, *8*(4), 237–240.

Ministry of Education and Research. (2016). *Laws and regulations governing schools.* Retrieved from https://www.regjeringen.no/en/topics/education/school/artikler/regelverk-for-skolen/id2353805/?expand=factbox2511932

Molander, A., Grimen, H., & Eriksen, E. O. (2012). Professional discretion and accountability in the welfare state. *Journal of Applied Philosophy*, *29*(3), 214–230.

Murphy, K. L., & Beh, H. B. (2014). The standard of care and the assumption of risk defense in a negligent injury case in a physical education class. *Journal of Physical Education, Recreation and Dance, 85*(8), 41–43.

Norwegian Directorate for Education and Training. (2015a). *Forsvarlig svømme- og livredningsopplæring i grunnskoleopplæringen Udir-1-2008 [Proper swimming- and rescue training in primary and lower secondary education Udir-1-2008]*. Retrieved from https://www.udir.no/regelverkstolkninger/opplaring/Innhold-i-opplaringen/Udir-1-2008-Forsvarlig-svomme--og-livredningsopplaring-i-grunnskoleopplaringen/

Norwegian Directorate for Education and Training. (2015b). *Læreplan i kroppsøving (KRO1-04) [Curriculum for physical education (KRO1-04)]*. Retrieved from https://www.udir.no/kl06/KRO1-04

Norwegian Directorate for Education and Training. (2015c). *Curriculum for physical education (KRO1-04)*. Retrieved from https://www.udir.no/kl06/KRO1-04?lplang=http://data.udir.no/kl06/eng

Norwegian Directorate for Education and Training. (2019). *Læreplan i kroppsøving (KRO01-05) [Curriculum for physical education (KRO01-05)*. Retrieved from https://www.udir.no/lk20/kro01-05

Norwegian Directorate of Health. (2019). *Personskadedata 2018 [Personal injury data 2018]*. Retrieved from https://www.helsedirektoratet.no/rapporter/personskadedata-arsrapporter/Årsrapport%20personskadedata%202018.pdf/_/attachment/inline/47be1c03-58f1-42e4-b54f-ff4b4a164a7b:ed678317124dbb725fb6016b9cc5b3e0b1d6aa77/Årsrapport%20personskadedata%202018.pdf

NOU 2003:19. (2003). *Makt og demokrati: Sluttrapport fra makt- og demokratiutredningen.* Retrieved from https://www.regjeringen.no/no/dokumenter/nou-2003-019/id118893/?ch=1

Park, Y. (2018). How do specialist teachers practice safety lessons? Exploring the aspects of physical education safety lessons in elementary schools. *International Electronic Journal of Elementary Education*, *10*(4), 457–461.

Power, M. (1997). *The audit society: Rituals of verification*. Oxford: Oxford University Press.

Power, M. (2004). The risk management of everything. *The Journal of Risk Finance*, *5*(3), 58–65.

Regulations Pursuant to the Education Act. (2006). *Forskrift til opplæringslova [The regulations pursuant to the Education Act] (FOR-2006-06-23-724)*. Retrieved from https://lovdata.no/dokument/SF/forskrift/2006-06-23-724?q=forskrift til opplæringsloven

Rothe, P. J. (2009). The voluntary use of physical education safety guidelines in schools. *Journal of Physical Education, Recreation & Dance*, *80*(3), 43–49.

Rothstein, H. (2006). The institutional origins of risk: A new agenda for risk research. *Health, Risk & Society*, *8*(3), 215–221.

Rothstein, H., Huber, M. & Gaskell, G. (2006). A theory of risk colonization: The spiraling regulatory logics of societal and institutional risk. *Economy and Society*, *35*(1), 91–112.

Russell, L. D. & Babrow, A. S. (2011). Risk in the making: Narrative, problematic integration, and the social construction of risk. *Communication Theory*, *21*(3), 239–260.

Sawyer, T. H. (2011a). Is simple negligence enough to prevail? *Journal of Physical Education, Recreation & Dance*, *82*(5), 8–12.

Sawyer, T. H. (2011b). Supervision: A key to safe physical education classes. *Journal of Physical Education, Recreation & Dance*, *82*(6), 9–11.

Schmidt, V. A. (2008). Discursive institutionalism: The explanatory power of ideas and discourse. *Annual Review of Political Science*, *11*(1), 303–326.

Schuller, A. A. & Kopjar, B. (2000). Skader oppstått på skolen hos barn mellom sju og 15 år. *Tidsskrift for Den Norske Legeforening*, *120*(3), 301–305.

Severs, J., Whitlam, P., & Woodhouse, J. (2003). *Safety and risk in primary school physical education: A guide for teachers*. London: Routledge.

Skrede, J. (2017). *Kritisk diskursanalyse.* Oslo: Cappelen Damm Akademisk.

Taylor, S. (2004). Researching educational policy and change in 'new times': Using critical discourse analysis. *Journal of Education Policy*, *19*(4), 433–451.

Williams, B. J., & Macdonald, D. (2015). Explaining outsourcing in health, sport and physical education. *Sport, Education and Society*, *20*(1), 57–72.

Young, D. C. (2007). Physical education, tort law and risk avoidance. *Education & Law Journal*, *17*(2), 223–243.

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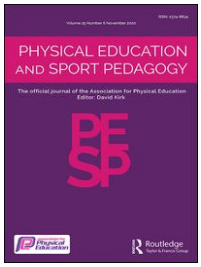

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Risk and safety management in physical education: teachers' knowledge

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ABSTRACT

Background: In school-based physical education (PE) programs, teachers' task to identify, assess, manage and communicate risk and safety and balance these with other pedagogical concerns is complex. Teachers' knowledge is essential in generating quality PE and their specialized knowledge of risk and safety management (RSM) is crucial for creating safe learning environments and educative opportunities for students. However, studies of teachers' RSM knowledge seem scarce and particularly studies including teachers' perspectives.

Purpose: The purpose of this study is to explore how teachers develop their RSM knowledge for PE programs.

Methods: To gain data on teachers' perspectives on RSM semistructured in-depth interviews were used to generate data. The study involves 17 primary and lower secondary PE teachers from Norway. To emphasize the participants' voices for empirical sensitivity In-vivo and focused coding were employed in the analysis. These codes comprised a further basis for the generation of categories representing core meaning in the material.

Findings: The results of this study suggest that teachers' institutional arrangements provide teachers with limited formal RSM training. In PE teacher education (PETE) the preparations of pre-service teachers for the use of RSM approaches might be restricted to selected physical activities according to these teachers. Moreover, due to a lack of resources and training in the teachers' in-service period they seem compelled to develop an individual approach to and knowledge dimension for RSM. The attention teachers give to RSM in PE is consequently widely differing. As their RSM knowledge is individualized and privatized, personal preferences and experiences from teaching are central in developing teachers' RSM knowledge. In this environment however, accountability, close calls and accidents might have a critical function for teachers' conscious development of RSM knowledge.

Conclusions: PE teachers' RSM knowledge development is embedded within an institutional environment where teaching experience is vital. Teachers' RSM knowledge may become tacit and bespoke to the teachings of PE with extensive experience. According to the results presented here, beginner teachers might be in a vulnerable position; lacking formal training and teaching experience to deal with risk and safety concerns in PE programs. This study therefore suggests a need for strengthening and widening RSM training in PETE programs for developing and expanding pre-service teachers' RSM knowledge.

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Although RSM may be a continuous developmental and learning process, in-service PE teachers also seem to a large extent to be left on their own. It seems therefore equally necessary to support teachers' continuous professional development and allocating distinct resources for developing teachers' RSM knowledge in generating quality PE programs.

Introduction

Education policy actors and educational research emphasize the importance of a competent and qualified teaching profession and the necessity of increasing the quality of teaching (European Commission 2015a, 2015b; Gore et al. 2017). In a discussion about quality teaching in school physical education (PE), the complexity and situational character of the program were emphasized (Dyson 2014). In PE, which is characterized by varied and vigorous physical activities, there is always a risk of accidents and physical injuries to students. Teachers' task to identify, assess, manage and communicate risk and safety in PE, framed as risk and safety management (RSM), is a balancing act of multiple concerns. Teachers' RSM knowledge will therefore have an immense influence on students' safety and educative opportunities.

Previous PE research and pedagogical literature on RSM seem to reflect the position of regulation and accountability and the topics center around; the use of teaching standards and guidelines (Severs, Whitlam, and Woodhouse 2003; Rothe 2009); negligence cases and teachers' potentially failed supervision, instruction or other malpractice (Murphy and Beh 2014; Sawyer and Gimbert 2014; Gimbert and Sawyer 2015); and the practical implications of liability and negligence (McCoy, Esslinger, and Baghurst 2017). For teachers, this might induce risk-aversion (Young 2007; Park 2018).

Investigations into how teachers develop their RSM knowledge seem imperative, and the role of physical education teacher education (PETE) in preparing preservice teachers to teach is highlighted in PE research (MacPhail, Tannehill, and Karp 2013). However, how PETE programs incorporate RSM does not seem to have gathered particular attention. Adding to this dilemma, in some countries PETE is noncompulsory for teaching PE and in England for example, PE lessons in initial teacher training have been limited (Harris, Cale, and Musson 2012). As a result, the induction phase might be more important for teachers without PETE experience. Thus, early career support is essential for beginner teachers in their transition to becoming experienced teachers (European Commission 2015a). In some countries on the other hand, there are no compulsory induction systems for teachers, and the percentage of teachers that have been involved in formal induction systems varies (European Commission 2015b, 45). In the US, induction programs that cater to and support the specific needs of beginner teachers, such as classroom management, are advocated (Cardina and James 2018). How RSM in PE is addressed in this phase of beginning teachers' careers is uncertain.

As important as these programs may be for beginner teachers, continuous education and lifelong learning seem to be necessary for teachers in order to manage the complexity of teaching and to improve the quality of the teaching profession (European Commission 2015b; Price and Weatherby 2018). Continuous professional development (CPD) is central to improving practice and stimulating professional growth for experienced teachers (European Commission 2015a, 24). On that note, CPD is often divided into formal, nonformal and informal approaches or modes of learning (European Commission 2015a, 29; Tynjälä and Heikkinen 2011). However, the combination of these approaches seems to enhance both experienced and beginner teachers' knowledge (European Commission 2010; Whipp, Tan, and Yeo 2007). Primarily, teachers' physical education CPD (PE-CPD) has been shown to strengthen students' learning (Elliot and Campbell 2015). What makes an effective PE-CPD programs has also been identified, albeit teacher agency (Armour et al. 2015), and the importance of collaborative professional learning on PE-CPD (Morgan et al. 2018), have been accentuated more recently. Thus, this literature implies that RSM should be a continuous

educational and learning process for teachers and that varied approaches are beneficial for their professional development.

Additionally, CPD may be considered in three dimensions: personal, professional and social (European Commission 2010). To foster teachers' professional knowledge, Schechter (2012) suggests collective learning from successful teaching practices in schools. Thus, knowledge can be shared in a collegial environment. However, collegial cooperation and learning seem scarce among teachers in international studies (Price and Weatherby 2018, 126). How RSM is included in collegiate and professional learning for PE is also uncertain.

Thus, teachers' working environment and conditions influence their opportunities to learn in some respects. However, PE seems to be a low-status and marginalized school program (Gaudreault et al. 2018; Richards et al. 2018). A lack of resources such as teaching load and limited budgets restrict PE-CPD opportunities for teachers (Turner et al. 2017). In addition, PE might be positioned within an environment where teaching already has a low status, such as in Norway, for example (Christophersen, Elstad, and Turmo 2011). Consequently, the marginalization of PE emphasizes the importance of professional learning communities (Beddoes, Prusak, and Hall 2014).

Moreover, to what extent and in which areas of RSM teachers experience autonomy and what influence that may have on their knowledge are relevant questions in this aspect. According to teachers, trust is a key factor in their experience of being valued in society (Price and Weatherby 2018) and is essential for teachers' professional learning (Melville and Hardy 2018). In the PE literature, autonomy seems to be a contributing factor to whether teachers stay in the profession (Whipp and Salin 2018). How trust influences teachers' RSM knowledge, however, seems to be yet another gap in PE research. On the opposite side, trust issues and accountability structures have also reduced or made changes to teacher autonomy (Guerriero and Deligiannidi 2017, 25). Rules and regulations have been connected to the reduction of perceived autonomy among PE teachers as well (Macdonald and Kirk 1996). It seems therefore important that education policy actors, teacher educators and teachers' working environments support the development of PE teachers' RSM knowledge. Given this background and the critical gaps in research on teachers' RSM, this article therefore aims to explore *how teachers develop their RSM knowledge*.

Two theoretical perspectives that might be useful to understand teachers' RSM knowledge, tacit knowledge (Polanyi 1983) and knowledge-in-action (Schön 1983/1995, 1995), are presented in the next section.

RSM as tacit knowledge and knowledge-in-action

The experience of teachers in professional development and knowledge is given weight to accentuate the educative experience of teaching (Dewey 1916/1951). This approach incorporates a subjective dimension and recognizes teachers as social and active agents in the construction of knowledge. Through their profession, teachers have, in theory, a mandate and special education and knowledge to perform their task (Freidson 2001). In PE, that task includes ensuring students' safety. However, teachers' knowledge is complex and seems to have a mixture of forms and functions between the objective and the subjective or the tacit and the explicit and operating on a continuum (Guerriero 2017; Révai and Guerriero 2017). Although the connections among experience, perception and reflection in teachers' knowledge are debated (Hostetler 2016), and some position the reflective teacher in a discourse of the good teacher (Perryman et al. 2017), the theoretical perspectives on knowledge that are presented here may add to what is formally acquired, anchored in systematic scientific research, or characterized by rational and technical ideas (Schön 1983/1995, 30, 1995, 33).

The concept of tacit knowledge derives from the works of Polanyi (1983). The tacit here represents the unspoken or what may be implicit in teachers' RSM and is in contrast to the explicit, i.e. what teachers may be able to abstract and explain. Primarily, because the construction of tacit knowledge is personal and situational, it is often difficult to communicate. Note that all

knowledge may be viewed as on a continuum; tacit knowledge incorporates both theoretical and practical aspects that are fused in the concept of knowing (Polanyi 1983). Here, tacit knowing may contribute to explaining teachers' communication and vocabulary on RSM; they may be doing more than they can express in words, as knowing is embodied by the practitioner teacher.

Two aspects of the development of tacit knowing are highlighted. First, tacit knowing is acquired with training and experience. An in-service teacher with several years of teaching may develop RSM as a tacit type of knowing that is mostly practical, takes place in the moment, and might be observable in movements, for example. Teachers might therefore be 'unable to describe the knowing which [their] action reveals' (Schön 1983/1995, 54). However, there is a possibility to transcend or develop the tacit knowing of experts into words through reflection, visualization and communication (Nyberg and Larsson 2014). To explain this process, in which reflection has a prominent position, this article draws on some of Schön's (1983/1995, 1995) theory on knowledge-in-action (knowing-in-action). Thus, it connects to Polanyi's (1983) concept of knowing, as it is mainly tacit and applied through action. However, reflection is key here in teachers' learning and developmental processes. Changes in teachers' knowing-in-action may be induced by momentary incidents or events that do not fit with their current knowing. Thus, the situation requires attention and awareness, and consequently, reflection-in-action (Schön 1983/1995, 56). For teachers' RSM in PE this may come about as instantaneous assessments of an ongoing situation gearing towards solving immediate issues for example. When a teacher reflects on action, that is, after an incident for example, the conscious and attentive character of the reflection might promote what is to become their new and more explicit type of knowing. Nyberg (2014), for example, suggests that experienced pole vaulters were able to express their knowing with training and practice. Thus, reflective and verbal training may enable the tacit dimension of teachers' RSM to be expressed. Here, it might explain the transitions of the tacit into the more explicit types of RSM. However, reflection is also a socially situated practice (Ovens and Tinning 2009) and the institutional context of these teachers might influence the what, the how and the when of reflection. In meaning that the topics that become relevant for reflection, opportunities for or when reflection is possible, and the characteristics of the situation might inflict on how the reflection unfolds for teachers.

Given these points, the materials and methods of the study are presented next.

Materials and methods

Participants

The participants in this study consisted of 17 primary and lower secondary school teachers from three different counties in Norway. The participants were teaching PE in the fall of 2019 at public primary or lower secondary schools in Norway and had a minimum of 1 year of experience in teaching PE. Table 1 provides an overview of the participants' characteristics.

Data generation

The data for this article were generated from semistructured in-depth interviews (Gibson 2010) and the results depend on the conversations between the participants and the researcher (Hobson and Townsend 2010). The interviews were conducted over a five-week period with the support of an interview guide to allow for open questions, but the categories were predefined by the researcher. The participants' background, experiences, opinions and practice were topics in the conversations, however, an open position with an analytical approach were combined to allow the discovery of unexpected information and information that was perhaps different from the researcher's assumptions. In some cases, the conversations led to what are described as 'jolts of awareness' that opened

Table 1. Participants' characteristics.

	N	%
	17	100
School level		
Primary	5	29.4
Primary and lower secondary	1	5.8
Lower secondary	11	64.7
Gender		
Male	11	64.7
Female	6	35.3
Age		
20–29	1	5.8
30–39	4	23.5
40–49	6	35.3
50–59	5	29.4
60–69	1	5.8
PETE or equivalent ECT (credits)		
0	2	11.7
1–15	1	5.8
16–30	1	5.8
31–45		0
46–60	6	35.3
61+	7	41.1
Years of PE experience		
1–5	1	5.8
6–10	3	17.6
11–15	4	23.5
16–20	3	17.6
21+	6	35.3

avenues to other topics (Charmaz 2015, 1615). The data from each interview were transcribed verbatim by the researcher.

Ethical considerations

The study was approved by the Norwegian Centre for Research Data before any data was produced. The teachers were informed of the project via the local school management who functioned as door-openers (Lindsay 2010). Information was forwarded to their professional email address with information about the research, how a potential conversation would occur, what they would be consenting to and what consequences participation in an interview might have. Those who wished to participate reached out to the researcher by mail or via their local school management, and the date and time were agreed upon by the participants. Of the interviews one was conducted at the researcher's university and the remaining 16 were conducted on their work premises. Before each interview, the participants were again asked whether they participated voluntarily and were informed of the interview process. A consent form was signed if they agreed to participate. Their approval to use a recorder for audio taping was secured. In transcribing the conversations, the researcher deidentified the material by removing directly identifiable data, e.g. name, age, and sufficient additional data, such as the name of the teachers' workplace.

Data analysis

The analysis was inspired by grounded theory to emphasize participant voice and empirical sensitivity (Saldaña 2016, 106). Data were analyzed using NVivo 12 and coded In vivo line-by-line (Charmaz 2015, 1616). The codes from the first analytical phase were compared against the full data and investigated for patterns. In a second cycle of coding including of focused coding, the most significant codes were pulled out to construct initial categories (Saldaña 2016, 240). The

following analytical phase comprised of memo writing, interpretation, writing of short drafts and checking the categories against the full data to secure that they were grounded in the data. The analysis generated three related categories of how teachers develop their RSM knowledge: *formal training*, *experience from teaching* and *triggers of attention*. The excerpts from raw data that are presented in the results were selected because they are representative of the categories. The excerpts were translated from Norwegian into English by the researcher and excerpt codes are based on Interview Person and the participants' number (e.g. IP4).

Results

Through *formal training* teachers seem to gain selective RSM knowledge. Still, teachers seem to gain crucial *experience from teaching* where particular *triggers of attention* have a critical function for teachers to develop their RSM knowledge.

Formal training and selective RSM knowledge

RSM is not portrayed as a central pedagogical, didactical or curricular theme in generalist teacher education or in PETE according to the teachers in this study. An impression is that they did not learn much about it and a participant could not recollect if RSM or risk were subjects in PETE at all. There are multiple educational pathways to teach PE in Norway and this seems to be reflected in the participants' RSM training. RSM have been a recurring sport-specific topic and approach for some of the participants with education geared towards sports. In PETE however, RSM training seems to be an exception to the normal and mainly related to selected sports that might be taught in PE, such as spotting gymnastics. As a result, RSM training in PETE might not cover the teaching of games and play for example. The participants reflect upon the focus on RSM in gymnastics in contrast to their risk experience from teaching PE, because

> most injuries happen in the PE hall with a ball, … but that is based on experience, what may happen to the head [and] neck when you are hit by a moving ball (IP6).

With that background, an investigation of the participants' working conditions and their opportunities for developing RSM knowledge seem pertinent. Primary, the participants claim that a lack of PE allocated resources in primary and lower secondary education is a reason for their failure to formally prepare RSM measures for PE classes. Teachers' teaching loads are specifically brought up as something that might affect their RSM practice in teaching.

> The classes would have been better if I only had more time, and then it is the assessments, how often we are supposed to have those, shorter teaching hours come at a cost of the information that is given […] to the students, thinking about potential dangers and injuries, … , it is stressful, the experience of running from one class to another, subject transitions without recess, bringing cellular phones … (IP6).

In combination with the inherent risk in the program, the lack of resources seems to influence what teachers perceive as feasible and therefore has real-life consequences for students' opportunities.

> I know what is dangerous and not. What you can do and do not, and when [there] should be two [teachers]. You cannot use a vault and similar because there must be two [teachers]. You cannot let 25 students stand in line. Because PE … has not been prioritized. Due to new requirements in reading and writing and mathematics, PE is left in the background (IP2).

There is an extensive list of factors that comprise what the participants claim to be these resources, such as equipment and facilities, opportunities for collegiate collaboration, teaching load and time, personnel in terms of student-teacher ratio and opportunities for PE-CPD which seem to restrict teachers' opportunities to develop their RSM knowledge. Consequently, the data suggests that limited resources restrict both teachers' RSM practice and their development of RSM knowledge.

There are indications that the status of PE gives rise to, or contributes to, these teachers' experiences. There seems to be a preference towards other subject disciplines in these schools, and attention is mostly given to other subject disciplines that are of more importance in their school communities. When there are opportunities for collaboration, academic subjects such as math, Norwegian and English are prioritized. The designated times for teacher cooperation seem to marginalize the PE program, leaving no time to facilitate or discuss RSM. The status of PE might restrict PE teachers opportunities to develop RSM knowledge through partaking in professional learning communities. Some also experience it as a contributing factor to the lack of a professional platform in PE because

> we never have time for that; when there is subject discipline cooperation, I cannot remember the last time, it was about 15 years ago we had a PE meeting with all the year levels (IP15).

As a result, there seem to be limited opportunities for PE-CPD, especially in comparison with other school programs. Albeit there are not any sport-specific licensing requirements for teaching physical activities or sports in PE in Norway, some had taken courses to be 'licensed' to teach selected sports, such as indoor climbing and swimming, in addition to courses geared towards outdoor water competence. There are indications that teachers either do not feel competent to teach the technical aspects of certain activities and acquire this by taking courses, or get 'licensed' to gain proof of competence. In some situations, however, licensing requirements are set forth by school owner and or related to the use of facilities. Moreover, all the teachers noted that they had attended first aid and CPR courses during their in-service period. However, participation in any PE-CPD designated specifically towards RSM seems scarce.

As can be seen from the limitations of formal training or opportunities for collegiate and professional learning presented here, teaching experience is crucial for developing teachers' RSM knowledge.

Experience from teaching and personal RSM knowledge

RSM is portrayed by the participants as an ongoing and active process where experience from practice accumulates and adds into a personal knowledge schema.

> I have learned a lot during the years of my career; with safety, there are things that you might not have thought of, and it might not have been clarified in my education … new things constantly emerge and add up to all the things I need to be aware of. […]It has been a lifelong process, … working as a PE teacher and constantly building upon and adding new things, experience; [I] found out quickly that it was better to use the thin section of the bench for rhythm and dance and the wide section towards the floor because then it will not tip over, small details that you pick up as you go (IP15).

Although the participants found it difficult to describe their RSM knowledge, they talked about embodying experiences, signals, position and gaze. Thus, with time, RSM seems to develop into a form of tacit knowledge. Experience from sports may also enable a form of bodily knowledge that is described as important for teachers to assess risk cues in the program.

> I think it would be challenging to have PE if you are not used to using your body, and being outside, not being used to sports either if you have been a gamer all your life […] yes, I believe so because you know the mechanisms [or] do not know the mechanisms, what might go wrong and what the warning signs are (IP14).

How teachers describe and defend their RSM practice is also important because the material is characterized by a highly personal and, to some extent, private logic.

> There might be teachers that allow the students to jump on a vault, the older students, without having an adult to watch. It is very dependent on the person. It is not a joint thing (IP2).

Moreover, the participants defend and justify their approach as being part of their character or personality.

> I am a kind of teacher who would like to be in control. I start my classes with control. It is probably the kind of person I am … and in my experience we are a bit different. Some [teachers] might continue talking while there is still chatting [among the students], I have never allowed it (IP6).

Parenthood is also mentioned as a criterion for teachers' RSM knowledge.

> I have [number] children so it is about transmitting the parental concern to the students we have at school, because you know it is tough, some injuries might be life-threatening (IP6).

In situations where teachers' RSM is individualized and privatized and lacking a professional platform and community for RSM development, what teachers allow or believe is appropriate in their PE classes might vary. The extent of caution is debated, and a participant's

> impression is that some are terribly cautious [and] a bit overly worried about this, and then you have others who do not really understand that there is something to worry about (IP15).

There are however some incidents which seem to contribute to the conscious and professional development of RSM knowledge.

Triggers of attention and conscious development of RSM knowledge

Albeit trust and autonomy might provide discretional space in this environment, teachers need to develop an individual platform and approach to RSM. As a result, teachers' attention to RSM in PE also varies. The teachers' reports are mixed and bear on a continuum between not being explicitly attentive to RSM in PE, to an awareness that some describe as a conscious element that may not be verbalized, to the other end of the spectrum of full attention or worry. Consequently, RSM might not be something teachers are particularly conscious about.

> When I saw what this was about, I have to say, must be honest that it is not something I have given much thought. What shall I say, the only [time] I am conscious [of it] is when we are having gymnastics, then I think about it a bit, but, what shall I say, no, I just have to be honest that it is not something I am particularly preoccupied with (IP14).

Then again, not paying attention to RSM was also expressed as a dilemma in case of an injury.

> Just imagine if something severe happened, and I had not been more conscious of things that could happen … that I had a student that was paralyzed or something, I would have to live with that for the rest of my life; I would have bitterly regretted that I was not more committed to preventing something like that from happening (IP16).

On the other hand, it might also be of great concern.

> You think of it more or less all the time. When you are with students you do your assessments. Everything from when we are to move from an area, where it is possible to cross the road, to the activity you are about to do (IP4).

Despite individual divides among the teachers, there seem to be two common lines of concern that generate change, attention to RSM, and development of professional RSM knowledge: accountability and injuries to students.

There are indications that the regulatory system with increased regulation and accountability has gained status in the field, which some refer to as American conditions. The participants that feel they must be careful and alert as teachers today might make alterations to their teaching. In contrast to excursions conducted in the past, a participant admits that

> we had not done it like that today, but we did it twenty years ago. There is more focus on safety in schools, and maybe requirements from parents, … , so we have become more careful (IP5).

With accountability RSM might become a concern in PE, and, be one of the reasons behind some teachers' expressed attention to RSM. This concept also came forward in relation to being held personally accountable for incidents in PE classes.

> There is a colleague here that dreads a lot of things, because it has become, it is not the talk of the school [anymore], but you as a PE teacher, it is clear, the episode shows with total clarity what consequences it might have (IP15).

The responsibilities of teaching PE safely might evolve into a personal worry for teachers. Some participants who express concerns knew of teachers who had been sanctioned for injuries to students. An incident with a negligence verdict by the Norwegian Supreme Court was brought up as an example.

> It went all the way up to the top and concluded that the teacher [was negligent], it was a wakeup call regarding the legal accountability that lies in [PE], … you will be legally crucified if something happens, even if you are not in control of it (IP15).

Moreover, there are also strong indications that unanticipated accidents or close calls induce changes to teachers' RSM knowledge.

These changes might not be obvious or occur at a conscious and manifest level. When students are injured, on the other hand, it seems to create a stronger foundation for explicit and conscious development of RSM knowledge.

> I have probably done a lot of [changes], but never thought of it. It is always dependent on what student group you have, how to facilitate. Like gymnastics, you experience, in particular when something happens, it is terrible to say so, but if something happens, you really learn from it and realize that you probably have to make a change. An injury might have to happen before you do, maybe not to a large extent, but you try to learn from your experiences from every PE class and try to facilitate in order to make it better, and safer (IP17).

Close calls and accidents support some sharing among peers and an initial step towards professional knowledge development. Talking about a recent incident, a teacher reflected on his misjudgment and explained that if

> something happens you must make an evaluation by yourself and with your colleagues, to prevent it from happening again (IP10).

Even participants who claim that they are not especially attentive to RSM, portray incidents as learning cases.

> It is not like we bring it up unless something happens, or, when there are 15 [students] in swimming, we need to bring one more [teacher/assistant], because I have heard about such requirements, or it has been [brought up] when equipment might fall [from somewhere it is attached] (IP5).

Thus, these crucial experiences seem to drive teachers' professional development of RSM knowledge in PE. However, this development seems to rely on collegial coffee breaks and peer gatherings.

Discussion

These teachers' accounts of being trusted seem to acknowledge the teacher experience in developing RSM knowledge and teacher autonomy is central in improving teacher quality (Guerriero and Deligiannidi 2017). Trust in teachers' work might foster a type of RSM knowledge that is customized to the complex and situational character of PE programs. This knowledge of an experienced eye for noting cues, the creation of mental schema, and embodied knowledge of danger mechanisms. On the other hand, autonomy in combination with limited RSM training in PETE and the working conditions for CPD presented here, seem to modify or restrict teachers' opportunities to develop their professional RSM knowledge. These results might also be characteristic of a situation where teachers might be unaware of risks in their teaching practice or of the possible measures and societal expectations for RSM. Thus, these conditions might also be a form of control that make teachers accountable for possible deficits of their educational system.

Status is one explanation; the results suggests that teaching PE has a marginalized position within primary and lower secondary education in Norway which seem critical for PE teachers' RSM knowledge. Clearly, there are some dilemmas that unfold in this landscape as the lack of

resources requires teachers to construct their RSM knowledge mostly from personal experience. Their explanations suggest that it is characterized by knowing-in-action and is dominantly tacit and nonverbal (Polanyi 1983; Schön 1983/1995). In this light, teachers might be in a position where they are not able to communicate RSM knowledge with stakeholders. It may become problematic if expectations to RSM require forms or types of knowledge other than the teachers' tacit knowing. The institutional context of these participants does not necessarily provide them with the reflective structures that enable a transition from tacit to intentional learning. Without enabling reflective structures, they seem to construct approaches according to their individual preferences, experiences and associations, potentially creating varied standards of safety that have direct consequences for students in PE. These conditions may not create trust in teachers' specialized knowledge (Freidson 2001).

Professional collegial support seems crucial in developing professional knowledge, which most likely apply to RSM as well. However, the results suggest that teachers must 'reinvent the wheel' in terms of RSM in PE as their in-service phase does not seem to offer knowledge accumulated from peers' experiences. As an example, the participants seem to lack the space for collegial collaboration on PE and RSM. Notably, informal learning is proposed as an important contributor to teachers' professional development (Tynjälä and Heikkinen 2011), and other forms of CPD are also supported as a more current trend in CPD (European Commission 2015b, 12). Whether stakeholders perceive this as a suitable approach for developing RSM knowledge remains uncertain.

Adding to the critical aspect is the reflection-on-action process that is induced by close calls, accidents and injuries to students. It might be that RSM is an area where teachers' collective and professional learning comes from unsuccessful teaching practices rather than from successful practices (Schechter 2012). Thus, it incorporates the sharing of incidents with colleagues and perhaps incremental steps towards professional knowledge. However, when student injuries and close calls are the triggers of reflection-on-action, both by individual teachers and to bring the topic into a professional or collegial context, it might have severe consequences for both students and teachers alike. Hence, this might be the reason that the regulatory environment seems to put a strain on some of the participants. Whether teachers want the responsibility that comes with trust is uncertain. Those who have not experienced external demands or sanctions seem to focus less on RSM and the regulatory environment. However, accountability may in time become a threat to all teachers, as the interview responses seem to describe the making of the unprofessional teacher with regards to RSM and to make them accountable for accidents as well. Moreover, if accidental incidents are lacking in a teacher's experience, their RSM schema may remain tacit and in a state of knowing-in-action. A key issue here for physical educators and policy makers is how to support the transition from teachers' knowing-in-action to knowing-on-action without relying on close calls and accidents. Providing teachers with CPD opportunities is clearly one avenue to pursue for school owners and policy makers.

Another issue relates to limited RSM training in PETE and the transition from preservice into in-service teaching. This study suggests that beginner teachers are not being offered apprenticeships from more experienced teachers and consequently, do not have access to accumulated and tacit knowledge about RSM. This is not in line with recommendations from education policy institutions and research. Thus, they may not have experiential knowledge and might put their students and even themselves at higher risk. This finding seems even more critical as beginner teachers must take on the same responsibilities as experienced teachers (Tynjälä and Heikkinen 2011). The results therefore accentuate the importance of accumulated knowledge about RSM and how to make it available to preservice and novice teachers.

Conclusions

The results in this article develop into a theme for education policy makers, PETE and schools as teachers' institutional environment. PETE seem to give teachers a limited background in RSM, and

their working conditions seem to restrict the development of professional knowledge of RSM for PE. Teachers are thus required to construct their RSM knowledge based on their personal experience in PE. Consequently, their attention to RSM in PE differs. However, in this environment, accountability, close calls and injuries to students seem to be among the factors that induce conscious development, professional collaboration and explicit knowledge acquisition.

The central message in this article is as follows: increased support is required to develop teachers' knowledge into a framework within which RSM judgments are made. However, teachers' RSM knowledge must be valued in their environment in order to be considered legitimate. It is therefore paramount that policy makers do not see this as an opportunity to implement further regulations as less autonomy does not support teachers in making the complex and intricate judgments that are necessary in PE.

There are several pathways for further research that emerge from the results and limitations to this study. First, studies that use larger or other types of samples, seem pertinent to address and analyze whether they apply in larger populations of teachers. Studies that specifically target beginner teachers are also highly relevant. In addition, observations of teachers' RSM practices to investigate the tacit and embodied dimensions of teachers' RSM knowledge may provide new and valuable insights in order to integrate RSM teaching into teacher education and into PE-CPD.

Disclosure statement

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References

Armour, Kathleen, Mikael Quennerstedt, Fiona Chambers, and Kyriaki Makopoulou. 2015. "What is 'Effective' CPD for Contemporary Physical Education Teachers? A Deweyan Framework." *Sport, Education and Society* 22 (7): 799–811.

Beddoes, Zack, Keven A. Prusak, and Amber Hall. 2014. "Overcoming Marginalization of Physical Education in America's Schools with Professional Learning Communities." *Journal of Physical Education, Recreation & Dance* 85 (4): 21–27.

Cardina, Catherine E, and Alisa R. James. 2018. "Targeting Professional Development for Beginning Physical Education Teachers." *Journal of Physical Education, Recreation & Dance* 89 (7): 41–47.

Charmaz, Kathy. 2015. "Teaching Theory Construction with Initial Grounded Theory Tools." *Qualitative Health Research* 25 (12): 1610–1622.

Christophersen, Knut-Andreas, Eyvind Elstad, and Are Turmo. 2011. "The Nature of Social Practice Among School Professionals: Consequences of the Academic Pressure Exerted by Teachers in Their Teaching." *Scandinavian Journal of Educational Research* 55 (6): 639–654.

Dewey, John. [1916]1951. *Democracy and Education*. New York: The Macmillan Company.

Dyson, Ben. 2014. "Quality Physical Education: A Commentary on Effective Physical Education Teaching." *Research Quarterly for Exercise and Sport* 85 (2): 144–152.

Elliot, Dely L, and Theresa Campbell. 2015. "'Really on the Ball': Exploring the Implications of Teachers' PE-CPD Experience." *Sport, Education and Society* 20 (3): 381–397.

European Commission. 2010. *Developing Coherent and System-Wide Induction Programmes for Beginning Teachers: A Handbook for Policymakers*. Brussels: European Commission.

European Commission. 2015a. *Education & Training 2020 – Schools Policy*. Accessed April 12, 2020. https://www.schooleducationgateway.eu/downloads/files/Shaping%20career-long%20perspectives%20on%20teaching.pdf.

European Commission. 2015b. *The Teaching Profession in Europe: Practices, Perceptions, and Policies. Eurydice Report*. Luxembourg: Publications Office of the European Union.

Freidson, Eliot. 2001. *Professionalism: The Third Logic*. Cambridge: Polity Press.

Gaudreault, Karen Lux, K. Richards, R. Andrew, and Amelia Mays Woods. 2018. "Understanding the Perceived Mattering of Physical Education Teachers." *Sport, Education and Society* 23 (6): 578–590.

Gibson, Will. 2010. "Qualitative Research as Method of Inquiry in Education." In *Educational Research and Inquiry: Qualitative and Quantitative Approaches*, edited by Dimitra Hartas, 54–63. London: Continuum.
Gimbert, Tonya L, and Thomas H. Sawyer. 2015. "Proper Supervision: Parachute Activities in Physical Education Class." *Journal of Physical Education, Recreation & Dance* 86 (3): 49.
Gore, Jennifer, Adam Lloyd, Maxwell Smith, Julie Bowe, Hywel Ellis, and David Lubans. 2017. "Effects of Professional Development on the Quality of Teaching: Results from a Randomised Controlled Trial of Quality Teaching Rounds." *Teaching and Teacher Education* 68: 99–113.
Guerriero, Sonia. 2017. "Teachers' Pedagogical Knowledge: What It Is and How It Functions." In *Pedagogical Knowledge and the Changing Nature of the Teaching Profession*, edited by Sonia Guerriero, 99–118. Paris: OECD Publishing.
Guerriero, Sonia, and Karolina Deligiannidi. 2017. "The Teaching Profession and Its Knowledge Base." In *Pedagogical Knowledge and the Changing Nature of the Teaching Profession*, edited by Sonia Guerriero, 19–35. Paris: OECD Publishing.
Harris, Jo, Lorraine Cale, and Hayley Musson. 2012. "The Predicament of Primary Physical Education: A Consequence of 'Insufficient' ITT and 'Ineffective' CPD?" *Physical Education and Sport Pedagogy* 17 (4): 367–381.
Hobson, Andrew, and Andrew Townsend. 2010. "Interviewing as Educational Research Method(s)." In *Educational Research and Inquiry: Qualitative and Quantitative Approaches*, edited by Dimitra Hartas, 223–235. London: Continuum.
Hostetler, Karl D. 2016. "Beyond Reflection: Perception, Virtue, and Teacher Knowledge." *Educational Philosophy and Theory* 48 (2): 179–190.
Lindsay, Geoff. 2010. "Ethical Considerations and Legal Issues in Educational Research." In *Educational Research and Inquiry: Qualitative and Quantitative Approaches*, edited by Dimitra Hartas, 110–125. London: Continuum.
Macdonald, Doune, and David Kirk. 1996. "Private Lives, Public Lives: Surveillance, Identity and Self in the Work of Beginning Physical Education Teachers." *Sport, Education and Society* 1 (1): 59–75.
MacPhail, Ann, Deborah Tannehill, and Grace Goc Karp. 2013. "Preparing Physical Education Preservice Teachers to Design Instructionally Aligned Lessons Through Constructivist Pedagogical Practices." *Teaching and Teacher Education* 33: 100–112.
McCoy, Lauren, Keri Esslinger, and Timothy Baghurst. 2017. "Injury and Inclusion: Understanding Common Legal Concerns in Physical Education." *Strategies* 30 (5): 3–11.
Melville, Wayne, and Ian Hardy. 2018. "Teacher Learning, Accountability and Policy Enactment in Ontario: The Centrality of Trust." *Educational Research for Policy and Practice* 19 (1): 1–17.
Morgan, Kevin, Anna S. Bryant, Lowri C. Edwards, and Emma Mitchell-Williams. 2018. "Transferring Primary Generalists' Positive Classroom Pedagogy to the Physical Education Setting: A Collaborative PE-CPD Process." *Physical Education and Sport Pedagogy* 24 (1): 43–58.
Murphy, Kelle L, and Hazel G. Beh. 2014. "The Standard of Care and the Assumption of Risk Defense in a Negligent Injury Case in a Physical Education Class." *Journal of Physical Education, Recreation & Dance* 85 (8): 41–43.
Nyberg, Gunn. 2014. "Exploring "Knowings" in Human Movement: The Practical Knowledge of Pole-Vaulters." *European Physical Education Review* 20 (1): 72–89.
Nyberg, Gunn, and Håkan Larsson. 2014. "Exploring 'What' to Learn in Physical Education." *Physical Education and Sport Pedagogy* 19 (2): 123–135.
Ovens, Alan, and Richard Tinning. 2009. "Reflection as Situated Practice: A Memory-Work Study of Lived Experience in Teacher Education." *Teaching and Teacher Education* 25 (8): 1125–1131.
Park, Yongnam. 2018. "How Do Specialist Teachers Practice Safety Lessons Exploring the Aspects of Physical Education Safety Lessons in Elementary Schools." *International Electronic Journal of Elementary Education* 10 (4): 457–461.
Perryman, Jane, Stephen J. Ball, Annette Braun, and Meg Maguire. 2017. "Translating Policy: Governmentality and the Reflective Teacher." *Journal of Education Policy* 32 (6): 745–756.
Polanyi, Michael. 1983. *The Tacit Dimension*. Glouchester: Peter Smith.
Price, Heather E., and Kristen Weatherby. 2018. "The Global Teaching Profession: How Treating Teachers as Knowledge Workers Improves the Esteem of the Teaching Profession." *School Effectiveness and School Improvement* 29 (1): 113–149.
Révai, Nóra, and Sonia Guerriero. 2017. "Knowledge Dynamics in the Teaching Profession." In *Pedagogical Knowledge and the Changing Nature of the Teaching Profession*, edited by Sonia Guerriero, 37–71. Paris: OECD Publishing.
Richards, K. Andrew R, Karen Lux Gaudreault, Jenna Starck, and Amelia Mays Woods. 2018. "Physical Education Teachers' Perceptions of Perceived Mattering and Marginalization." *Physical Education and Sport Pedagogy* 23 (4): 445–459.
Rothe, Peter J. 2009. "The Voluntary Use of Physical Education Safety Guidelines in Schools." *Journal of Physical Education, Recreation & Dance* 80 (3): 43–49.
Saldaña, Johnny. 2016. *The Coding Manual for Qualitative Researchers*. London: Sage.

Sawyer, Thomas H., and Tonya L. Gimbert. 2014. "Instructional Malpractice." *Journal of Physical Education, Recreation & Dance* 85 (1): 44–46.
Schechter, Chen. 2012. "Developing Teachers' Collective Learning: Collective Learning from Success as Perceived by Three Echelons in the School System." *International Journal of Educational Research* 56: 60–74.
Schön, Donald A. 1995. "Knowing-in-Action: The New Scholarship Requires a New Epistemology." *Change: The Magazine of Higher Learning* 27 (6): 27–34.
Schön, Donald A. [1983]1995. *The Reflective Practitioner: How Professionals Think in Action*. Aldershot: Arena.
Severs, John, Peter Whitlam, and Jes Woodhouse. 2003. *Safety and Risk in Primary School Physical Education: A Guide for Teachers*. London: Routledge.
Turner, Lindsey, Tyler G. Johnson, Hannah G. Calvert, and Frank J. Chaloupka. 2017. "Stretched Too Thin? The Relationship Between Insufficient Resource Allocation and Physical Education Instructional Time and Assessment Practices." *Teaching and Teacher Education* 68: 210–219.
Tynjälä, Päivi, and Hannu L. T. Heikkinen. 2011. "Beginning Teachers' Transition from Pre-Service Education to Working Life." *Zeitschrift Für Erziehungswissenschaft* 14 (1): 11–33.
Whipp, Peter R., and Kasper Salin. 2018. "Physical Education Teachers in Australia: Why Do They Stay?" *Social Psychology of Education* 21 (4): 897–914.
Whipp, Peter R., Gregory Tan, and Poh Tin Yeo. 2007. "Experienced Physical Education Teachers Reaching Their "Use-by Date"." *Research Quarterly for Exercise and Sport* 78 (5): 487–499.
Young, David C. 2007. "Physical Education, Tort Law and Risk Avoidance." *Education Law Journal* 17 (2): 223–243.

ARTICLE III

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Article

Risk and Safety Management in Physical Education: Teachers' Perceptions

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Abstract: Bodily movement is a central component in students' educational experiences in school-based physical education (PE) programs. PE unavoidably involves physical risk. In some respects, the risk of play, sports and adventure is portrayed as necessary and healthy for children's development. However, concerns about students' safety and teachers' liability might generate risk aversion among teachers. This article explores teachers' perceptions of risk and safety management (RSM) in PE. Designed as a mixed methods study, the data include an online survey questionnaire (n = 698) and semi-structured interviews (n = 17) among primary and lower secondary PE teachers in Norway. A majority of the survey respondents report that their students only experience minor injuries in their PE classes. The interview data coincide with these results and indicate that minor injuries are rather common. While the survey results show that teachers mostly perceive RSM to be important in PE, the interview data suggest that the teachers' perceptions of risk are characterized by uncertainty, which restricts the teachers' control by means of RSM. Teachers also accept risk for enhancing students' educative experiences in PE. Consequently, this study contributes to the knowledge of the complexity of risk and teachers' perceptions of RSM in PE.

Keywords: risk; uncertainty; teacher perceptions; physical education; school

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1. Introduction

Educational experiences involving bodily movement may enhance students' development but might also be detrimental if they result in physical harm. Physical education (PE) programs in schools incorporate both the benefits and negative consequences of physical risk in various forms of physical activity. This is particularly true when the strength of PE programs might lie in teaching practices that embrace discovery and uncertainty [1].

However, some researchers claim that risk-averse policies permeate modern education [2], and that a culture of litigation has led to safety regimes that restrict children's development [3], because, with increased focus on accountability teachers might become risk averse [4].

Quennerstedt [1] furthermore suggests that

> "[f]or an adult, climbing trees might be seen as full of risks and dangers, even though it is good for children to be physically active. However, for a child the same tree climbing involves other motives and reasons for climbing, for example, meaningfulness, freedom, or as a dare. So, why is it that an adult's reasons in terms of risk and the need to protect children are more valid in a discussion about climbing trees or not in an educational context?" [1]. (p. 614)

Nevertheless, there is a general agreement that students should be protected from severe harm and teachers are encouraged to facilitate adventure-based activities with moderate risk [5]. Some curricular models in PE also emphasize adventure and the benefits of challenge for students [6]. It seems imperative to investigate what teachers think about this issue but studies including teachers' perspectives on risk and safety management

(RSM) in PE programs are rather scarce, especially in comparison with early research in childhood education [7].

The literature on RSM in PE is more occupied with risk adversity and pays particular attention to teachers' liability and cases of negligent teaching [8–11]. Other RSM related literature includes recommendations for teachers that are based on identified hazards in PE [12]. Pedagogically oriented literature also touches upon RSM related themes with a focus on how teachers may teach different physical activities and sports safely such as rugby [13] or softball [14]. Plans and procedures, and safety guidelines, seem to be the ways that teachers may manage risk in PE [15–17]. Some even advocate the use of checks and controls systems to secure that PE teachers follow safety guidelines [15]. Consequently, these perspectives of RSM have implications for teachers, indicating that applying these guidelines might improve teachers' RSM and make PE safe(r) for students.

In the outdoor adventure field, a part of the planning process is regarded as a mental rehearsal that enables decisions for safety [18]. However, adaption of plans [18] and ongoing risk assessment are crucial for adventure sports coaches to retain the learning potential for participants [19]. Hence, the dynamic environments of outdoor instructors and coaches require "adaptive expertise" [20] (p. 425). While these studies from the outdoor field recognize the experts and their perspectives for generating knowledge, PE literature on RSM is top-down oriented and focuses less on the practitioners' perspectives and experiences. It is clear that risk managers face dilemmas [21] but there is a scarcity of research-based knowledge of teachers' perceptions of RSM in PE [22].

However, there are some exceptions. A Korean study suggests that elementary school PE teachers and school administrators have diverging perceptions of safety and liability [22]. There are mixed reports among PE teachers in Canada as well. While secondary teachers seem to use risk-averse strategies to secure students' safety and not necessarily due to litigation [23], safety guidelines are also appreciated by teachers due to liability concerns, particularly when teaching gymnastics [24]. A more recent Canadian study suggests that teachers are reluctant to teach gymnastics because they do not feel competent and are concerned for safety issues and liability [25]. Consequently, ambiguity and tension might characterize teachers' perceptions of RSM as they must both control and embrace risk in some respects.

A theoretical and conceptual framework of risk is drawn in the next section to discuss the results and enhance understanding of teachers' perceptions of RSM in PE in this study.

A Theoretical and Conceptual Framework of Risk

This framework draws on social theory on risk, scientific studies of language and theoretical discussions in risk research. These fields are combined in order to shed light on the complexity of risk and teachers' perceptions of RSM. Indeed, risk might unfold in various ways for actors in social life and the ways risk is understood are crucial for how people approach RSM [26–28].

Primarily, the more common concept and understanding of risk is related to adversity and loss of something valuable [29]. It might also be understood as an opportunity to gain something [30]. Albeit risk is defined in several ways the distinction between risk and danger might be useful for understanding risk and RSM [29–33] also in the context of teaching. While risk relates to human action and agency where individuals choose to take risk, dangers are associated with causes that are external and outside of control to humans [31,32]. In other words, a teacher may create risk by incorporating outdoor swimming in the teaching, yet cannot eliminate the dangerous currents in the water.

The distinction between risk-taking and risk-making [21] may be useful for exploring the meaning of generating risk in PE. When someone creates risk for their own good, they are considered to be risk-takers. Risk-making on the other hand applies to situations where the consequences adhere to someone else than the person that generates the risk.

The concept of safety is interwoven with risk because safety is conceptualized as the opposite of risk or as a state where risk is eliminated or reduced [29,30]. This connection

may be understood as a dichotomy or on a continuum: when risk is low, safety is high [30]. However, the degree of safety might be disputed due to uncertainty. When knowledge of risk is weak or unknown, the perception of safety might be diffuse or incorrect, and absolute safety might not be applicable in real life [33]. Risk uncertainty sets limitations for any actors' knowledge about the future and possible scenarios [34]. Uncertainty is a key dilemma in risk knowledge, and clearly demonstrates the limitations to certainty and RSM [34–37]. Equally, what is considered safe or safe enough might depend on the culture in question [26]. Building on this framework and the dimension of risk uncertainty, this article proposes that uncertainty might be educative [1,2] in terms of being a pedagogical approach that may foster development and learning for both teachers and students [38]. Uncertainty might be anchored in teaching pedagogies or by choice of the teacher, and not necessarily related to limitations in risk knowledge or unforeseeable events [34–37]. Opening for educative uncertainty in PE might be a choice of taking pedagogical risk to enhance students' learning.

Given the complexity of risk it is uncertain why the teacher's voice is rarely given space in the research on RSM in PE. In concordance with Young [23], gaining teachers' perspectives on risk and RSM is crucial in generating research-based knowledge for PE. The purpose of this study is to explore teachers' perceptions of RSM in PE which is operationalized in an overarching research question and two sub-research questions:

How do teachers perceive risk and safety management (RSM) in their PE teaching?

Q1 What characterizes teachers' experiences with RSM in PE?

Q2 How do teachers perceive risk in PE?

2. Materials and Methods

The concept of risk incorporates both physical and social dimensions [27] that are understood from a range of ontological and epistemological perspectives. This study is positioned within the social sciences [26–28] with the purpose to explore teachers' perceptions of RSM.

2.1. Design and Procedure

This study applied a mixed methods research approach and a convergent design [39] that included data from both a quantitative questionnaire [40] and qualitative semi-structured in-depth interviews [41]. The data generation for both sub-studies were conducted in the fall of 2019 and the results are integrated by a narrative approach in the discussion [42]. The aim behind the design was to gain insight into trends in the quantitative data and to gain rich in-depth data to generate a more elaborate and nuanced understanding.

The survey was designed as an online questionnaire through *Select Survey* which is an online survey tool designed by the researchers' university. The questionnaire was developed through multiple approaches. Relevant topics were discussed based on the aim of the survey and the researchers' experiences with RSM in PE and from PE teacher education (PETE). The international literature on RSM in PE was investigated for central topics. Former Norwegian surveys targeting PE teachers were also investigated to inform the construction of demographic items and values [43,44]. PETE educators at the researchers' university were invited to comment on the themes and items before a small-scale pilot survey was conducted with PETE educators and PE teachers (n = 12). Follow-up conversations typically related to validity, missing and redundant items, and the time spent completing the survey. Items and wording were further amended following interviews with teachers (n = 17).

The survey comprised four topics; background, experience and opinion, change and development, and practice. In the present article, four questions are analyzed and discussed. The prevalence of injuries in PE classes might contribute to increased focus on RSM and the respondents were therefore asked: *how often are students injured while you are*

teaching? (*frequency of injury*) and with values on a seven-point Likert scale from 1 (never) to 7 (always).

Along with the perceived prevalence of student injuries, how teachers experienced the severity of the injuries when they occurred was interesting to know, since this could influence how dramatically these situations were perceived by the teachers. To gain information on the severity of student injuries, the teachers were asked to categorize the students' injuries, if any, in terms of severity. The respondents were asked: *if you have had students that were injured, what were the degrees of the injuries?* (*degree of injury*). The item comprised five values (from minor to critical) that were inspired by the abbreviated injury scale [45] and each value had an explanatory sub-text.

To gain more knowledge of the perceived importance of RSM the respondents were asked what they thought of RSM: *what are your thoughts about RSM in PE?* (*opinion of RSM*) and with five-values from 1 (of very little importance) to 5 (very important).

Teachers' implementation of the curricula might have constructed reasons for their responses to RSM. Teachers could have different perceptions of the riskiness of the activities they include in their PE teaching, and some activities might have evoked fear, unease and more attention to RSM than others. The respondents were therefore asked: *are there any physical activities or teaching methods in physical education that are riskier than others?* (*risky activities*). The respondents were told in a subtext to rank the physical activities or teaching methods in terms of riskiness from 1 to 3 in three open response options.

The interviews were conducted over a five-week period in the fall of 2019. They were done in-person, audio-taped, and with an average length of 45 min, ranging from 31 to 69 minutes. Interviews were conducted by the first author with the support of an interview guide that included six predefined categories that were background, opinion, societal expectations, change and development, competence and training, and practice. The guide was designed to ask open questions and for the conversations to open avenues to other topics than those that were preplanned [46]. Interesting topics and leads from previous interviews were brought up with participants in the subsequent interviews. All of the 17 interviews were transcribed verbatim throughout the five-week interview period.

2.2. Recruitment and Participants

For both studies, e-mails were sent to school management personnel, who functioned as door-openers. The e-mails requested participants, including a cover letter with detailed information. The cover letter included information about the research, how each study would occur, what the participants would be consenting to and the potential consequences of participation. The letter contained a definition of RSM as risk and safety work with the intent to prevent and manage accidents and physical injury to students in PE.

Regarding the survey, the Norwegian Directorate for Education and Training provided the researchers with a list including 2859 Norwegian primary and lower secondary schools. Based on this list, 2572 public schools were contacted. This resulted in 949 participant teachers in primary and lower secondary education that began answering the survey (n = 949). Among these, 251 respondents were removed from the initial number of respondents. First, those who had not agreed to participate in the study by not checking 'finish' on the last page of the survey were removed (n = 240). The respondents who did not give any demographic data were also removed (n = 11). Within the final sample of 698 respondents, 17 missed one or two demographic item scores but were included in the analysis as they responded to the remaining questions and agreed to participate.

The respondents to the survey worked as PE teachers in primary (49%), lower secondary (34.1%) and mixed (16.6%) schools of both primary and secondary education, from all counties (n = 18) in Norway as of 2019. Among these respondents, 25.2% did not have any university credits from PETE, whereas 49.3% had 60 or more credits. Approximately half of the respondents (49.9%) had worked as PE teachers for 9 years or less, and among these, 117 teachers (16.8%) had two years or less of PE teaching experience. A total of

31 respondents (4.4%) had taught PE for more than 30 years. Table 1 shows the survey respondents' ages and gender.

Table 1. Respondents' ages and gender.

Gender	≤29	30–39	40–49	50–59	≥60	Total
Female	70	97	93	58	10	328
Male	71	119	98	58	18	364
Total	141	216	191	116	28	6 missing

Regarding the interview participants, a purposeful sampling strategy was applied to select participants [47] in which the main goals were to recruit teachers in both primary and lower secondary education, teachers that taught PE in the fall of 2019, to have both male and female participants, a wide range in age group and in teaching experience, and teachers that worked in both rural and urban schools. The participants were selected from three counties in proximity to the researchers' university in Norway for pragmatic reasons. Among the teachers in this study (n = 17) the majority of the participants were male (m = 11, f = 6), 12 (70.5%) were 40 years or older, and they worked in lower secondary (n = 11), primary (n = 5) and mixed schools (n = 1). All participants possessed a postgraduate degree in either generalist teacher education or specialist PE teacher education. Two teachers did not have any PETE background, whereas the remaining had PETE-related credits ranging from 15 credits to the equivalent of a bachelor's degree. All teachers had a minimum of one year of PE teaching experience, whereas 13 teachers (76.4%) had more than 10 years of teaching experience.

2.3. Analysis

The software IBM SPSS 26.0 (Armonk, NY, USA) was used to calculate frequency and percentages of the survey data. The researchers translated the questions and answers from Norwegian into English. In brevity, question (1) *frequency of injury* was reported on a seven-point Likert-type scale (never–always), (2) *degree of injury* and was reported in five values (minor–critical) (3) *opinion of RSM* was an item reported on a five-point Likert-type scale of importance (of very little importance–very important). Question (4) *risky activities* was constructed with three available open responses with the participants being asked to range the riskiest activity or teaching method first. The data related to *risky activities* were therefore categorized with Microsoft Excel by one of the researchers before the categories were crosschecked with the second researcher and thereafter quantified.

The interview analysis was a continuous process that began in the interview situation, followed by transcription of the data, coding and further analytical steps, and was finalized in the writing of results. The aim throughout the analysis was to generate results that were grounded in the data. The first author conducted the first phase of the analysis and the transcribed material was carefully read to gain an overview and then imported into the analytical software tool NVivo 12 (QSR International, Melbourne, Australia). To emphasize the participants' voices and actual wording, the data were coded by using In vivo coding in a line-by-line strategy [46,48]. The next phase of analysis included reading these codes and material to identify patterns. Based on this process, a set of focused codes that represented the core of the material was selected to generate initial categories [46,48]. The following analytical phase consisted of memo-writing, interpretation and discussion among the researchers and initial categories were crosschecked with the interview transcripts to secure that they were anchored in the data. The participants were informed of the study and of ethical information in the cover letter attached to the recruitment e-mail.

2.4. Ethical Considerations

The Norwegian Centre for Research Data (the Norwegian national Data Protection Services) gave their approval to the study before any data were collected and all participants were informed of the project's approval in the cover letter. With regards to the survey, the

respondents were again informed in the introduction to the online questionnaire of the aim of the study, its ethical implications and how they were handled as well as how their answers would be anonymous and how identities were impossible to track. Their informed consent for participation was given when they clicked 'finish', and incomplete forms were excluded from the final data material. The online survey with results were deleted after the results were downloaded to a secure and approved site.

Those who wished to participate in the interview study reached out by mail or via their local school management and the date and time were agreed upon. Of the interviews, 16 were conducted on the teachers' workplace and one was conducted at the researchers' university. Before each interview, the participants were again asked whether they participated voluntarily and were informed of the interview process. A consent form was signed if they agreed to participate. Their approval was secured to use a recorder for audio taping. In transcribing the conversations, the researcher de-identified the material by removing directly identifiable data, e.g., name; age; and sufficient additional data, such as the name of the teachers' workplace. The audio recordings were deleted after transcribing the material.

3. Results

The presentation of results from the survey and interviews is done separately in the following section. The results from the survey include teachers' reports regarding (1) the *frequency of injury*, (2) the *degree of injury*, (3) their *opinion of RSM* and (4) *risky activities.* The interview data comprise four categories included in the results: (1) *uncertainty as a characteristic of risk*, (2) *inherent risk in physical activities,* (3) *risk generated by the students* and (4) *accepting adverse consequences*.

3.1. Results from the Survey

3.1.1. Frequency of Injury

Table 2 shows that very few of the teachers (only 1.4%) perceive that students experience injuries often in their PE classes. None of the respondents report that injuries happen very often or always. On the other hand, there is also a few (3.2%) respondents that report of no injuries to students in their teaching. The results show that the vast majority of respondents perceive that injuries to students happen rarely or very rarely in their PE classes.

Table 2. Teachers' responses on how often students are injured.

Values	Frequency	Percent
Never	22	3.2
Very rarely	333	47.7
Rarely	202	28.9
Sometimes	126	18.1
Often	10	1.4
Missing	5	0.7

3.1.2. Degree of Injury

Table 3 provides an overview of the results on *degree of injury* with the values severe, very severe and critical merged to retain the respondents' anonymity. The percentage is calculated from the total number of respondents to the survey (n = 698). Table 3 shows that the majority of the teachers experience mostly minor injuries in PE classes, and very few experience injuries ranking as severe or critical. On the other hand, quite a few (22.6%) report moderate injuries, indicating that one of every four of these teachers might have had this experience at some point.

Table 3. Teachers' responses to the degree of injury when students have been injured.

Degree of Injury	Description	Frequency	Percent
Minor	Sprain, strain or small open wounds	630	90
Moderate	Simple bone fractures, wounds and cuts less than 10 cm	158	22.6
Severe, very severe and critical	Multiple bone fractures, unconscious more than 15 min, uncertain outcome, or death	16	2.2

3.1.3. Opinion of RSM

Table 4 gives an overview of the results on *opinion of RSM* and the teachers' reports on the perceived importance of RSM in PE. The results show that a vast majority of the respondents (86.3%) think that RSM is important or very important and rather few (4.3%) report that it is of little or very little importance.

Table 4. Teachers' responses to what they think about RSM in PE.

Values	Frequency	Percent
Of very little importance	18	2.6
Of little importance	12	1.7
Neither/nor	64	9.2
Important	388	55.6
Very important	214	30.7
Missing	2	0.3

3.1.4. Risky Activities

In the ranking of risky physical activities or teaching methods, gymnastics has the most reports (38.9%) followed by water activities (34.2%) and team sports (6.7%) in the first rank. These three comprise the majority with nearly 80 percent (79.8%) of the physical activities that teachers perceive to be riskier than others. This pattern of these three activities is repeated in the second open response and rank with 62 percent (62.3%) of the responses. In rank three are, firstly, team sports (25%), followed by winter activities (13.4%) and outdoor education (13.4%). There are only seven reports of teaching methods in total and include inductive teaching and student-led activities. Figure 1 illustrates the teachers' responses to *risky activities*.

3.2. Results from the Interviews

The interview results comprise the four categories: (1) uncertainty as a characteristic of risk, (2) inherent risk in physical activities, (3) risk generated by the students and (4) accepting adverse consequences. The citations from the interview raw data are selected because they are representative of the four categories. The codes (e.g., IP16) are generated by the Interviewee Person and a number.

3.2.1. Uncertainty as a Characteristic of Risk

Teachers in this study claim that the risk of accidents and injuries to students relates to the inherent traits of the PE program. In talking of risk in PE, the reference is other school programs in which the physical risk in PE is perceived to be higher.

> "Especially compared to other school programs, it is the program that is most prone to injuries. It happens relatively often that we have minor injuries—little things and such". (IP16)

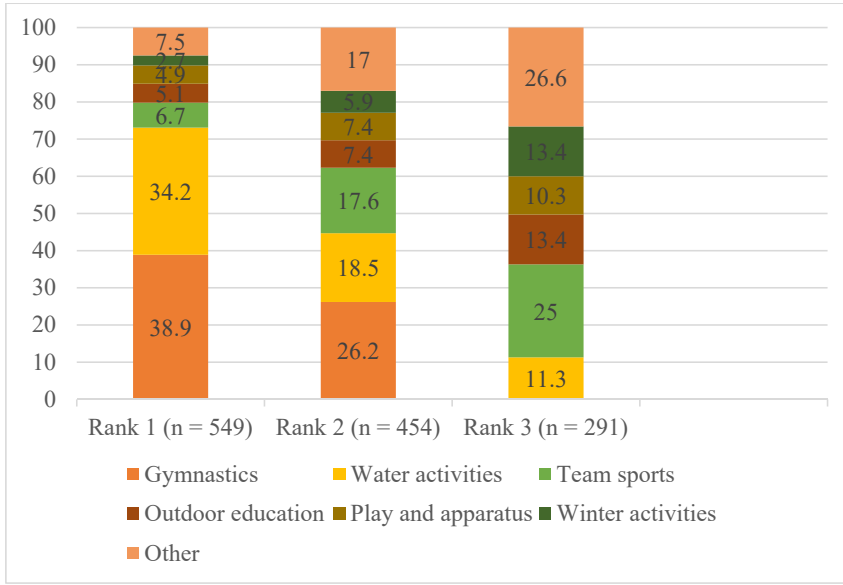

Figure 1. Teachers' ranking of risky activities/teaching methods; percentage within rank.

However, the teachers still do not seem to consider PE as incurring a great risk, and some even claim they do not pay attention to RSM in their teaching. The teachers' experiences of risk are characterized by the dichotomy of being or not being in control. The teachers' lack of control generates an uncomfortable feeling and is clearly a worry in some respects, and a participant claims that:

> "if we bring students outside, I am not in control. It means, I have control of my students, but I am still not in control. It is just the way it feels, the nature of things . . . I believe it is a natural element in the subject, but as I think of it, it is a source of concern that is always present". (IP6)

This feeling of not being in control might relate to how the teachers interpret/enact the curricula, and contextual barriers might create a dilemma for teachers because a lack of supervision might induce both risk and stress. One participant explains that:

> "[s]ome of the problem with organizing physical activities is that we are alone. Often I need to split them in groups and do activities in two halls, for example, and I cannot be in two places at the same time. Still, I choose to organize the activity in a way that makes PE fun, and I want to take advantage of the space, so there is always a risk that something can happen in the other part of the hall. [. . .] I have experienced it before; it is a bit creepy that you are not present right when it happens". (IP16)

The participants experience control when they are present and close to the students; however, when the teachers attempt to be in control, other unforeseen situations might arise. These include a combination or diversity of incidents, mishaps, other causes or outcomes. An impression among the participants is the limitations of RSM due to unpredictable events because:

> "[y]ou can never be a hundred percent assured, but it must mean something, but I believe it is hard, because it happens so fast. It may happen at any time. [. . .] You may plan for this to happen and then something else happens. You are afraid that [the students] will fall outside the mattress when [they] are conducting a high jump, but in the take-off the knee fails. So that is something you cannot plan or do something about". (IP17)

Adding to their perception of uncertainty, the teachers seem to associate certain physical activities with higher risk.

3.2.2. Inherent Risk in Physical Activities

Although games and play are unpredictable, the teachers describe certain physical activities such as climbing, water activities, strength exercises, contact sports and outdoor education as likely to incur risk, and some as even likely to cause severe injury to students. These activities are described as dangerous, evoking a feeling of insecurity and a lack of control. Gymnastics has a clear and prominent position as the physical activity that concerns the teachers the most due to the movements involved. Teachers describe the use of gymnastics equipment such as trampolines or vaults as unsafe and requires extra caution. Teachers also question their competence in teaching gymnastics and a participant argues that:

> "[i]t might be due to me not being [competent] enough, that I am unknowledgeable of, in relation to the trampoline and up in the air I imagine that a lot of things may happen. I do not have complete control of how they come down". (IP9)

There is however a controversy relating to teachers' perceptions of gymnastics and the use of trampolines, as their perceptions do not necessarily relate to their own teaching experiences in which these activities have led to accidents and injuries to students. As this following excerpt indicates, there might be other reasons for the teachers' associations of gymnastics as unsafe.

> "It might be dangerous if you are not there, watching. We got a trampoline a few years ago. I do not use it when I am alone. Because you tell the students to take it easy, but they do not". (IP2)

> "Have there been any accidents?" (Researcher)

> "Not any accidents, no, but we are cautious when using it". (IP2)

Hence, how the students act during PE raises concerns in addition to the physical activities taught.

3.2.3. Risk Generated by the Students

The combination of physical activity and students' characteristics, such as playing soccer with varied degrees of competence among the students, strengthen the potential for accidents in PE. This aspect, according to the interviewees, relates to situations in which the teachers are not in complete control of the students' actions. Teachers seem to associate two student groupings with risk in PE programs. In describing the first group, teachers position them against a frame of reference in which they compare them to students from 'before'. First of all, this group of students lack bodily learning experience and they:

> "are not used to moving as much and then the risk of injury is greater, and I must take that into consideration when I set them into motion". (IP10)

The teachers characterize the students as lacking in motor skills and body control, having limited experience with physical activity and being unfit. The teachers do not consider the more physically active students to be at risk because these students know how to avoid potential risk situations. The second grouping of students that generate risk contrasts with the first group of unfit students due to their roughness. Teachers describe them as wild and competitive and say that some of them break the rules to win and generate risk for the other students. Participants claim that rough boys are especially challenging in relation to girls as there are situations in which girls are run over in class and:

> "some are violent and become violent towards others, and that is scary for someone, especially due to the difference between boys and girls, because the boys are a lot stronger than the girls". (IP11)

Nonetheless, the teachers wish to make use of the available space and so students can have fun, and teachers therefore accept risk in their PE teaching.

3.2.4. Accepting Adverse Consequences

One of the themes that participants mention during the interview is that minor accidents occur in PE and are under the impression that less severe injuries to students are somewhat normal because:

> "[w]e must accept all the injuries that happen within the framework of safe operation, but if we rock climb without a safeguard and somebody falls from four meters, I have not done my job. But in soccer, injuries may happen; in handball, injuries may happen; in basketball, you might get struck by a ball. You must account for that; injuries may happen and [you may] break your nose". (IP10)

Although teachers talk about safety in relation to dangerous physical activities, safety is less a topic among the teachers in relation to those activities in which minor incidents and injuries are more common. Teachers argue that this risk experience is part of the students' learning process and:

> "[a]ccidental mishaps—you just have to accept collisions, a ball in the nose and such things, and I believe it has something to do with the development of youths. You participate and that may lead to something, but most often it is things that you can tolerate. I think it is healthy for their development". (IP11)

Asking teachers about unacceptable risk in PE, the responses are made with reference to the degree or the severity of injuries and in particular neck and permanent damages to students. There are indications that injury severity and not necessarily the frequency of injuries, if they are minor, is the reference or limit for teachers' risk acceptance because:

> "[y]ou might get a stiff neck for the rest of your life or be paralyzed. That is the great fear—those are the things you are really afraid of—to be responsible for a students' paralysis. A broken leg is of course difficult, but you can live with those things". (IP16)

Yet, multiple considerations in PE put the participants in a dilemma where they have to accept risk.

4. Discussion

The results from the survey and interviews are integrated in the following to discuss teachers' perceptions of RSM in PE.

Concerning teachers' experiences, the results suggest that balancing risk and safety concerns within the educational mandate of PE is complex. Teachers are responsible for students' safety and it might be tough for teachers to experience injuries to students. The survey results show that 90% of the respondents report of experiences with minor injuries to students and that only 3.2% claim to have never experienced any injuries to their students. Based on these results minor injuries are rather common in primary and lower secondary Norwegian PE classes. The survey respondents do also report, to a great extent, that RSM is important in PE. This coincides with reports from teachers in a Canadian study [23]. The interviews with teachers might provide some nuances to these results because there are diverging perceptions of RSM among the participants, and that some teachers may not pay particular attention to RSM in PE. If minor injuries that happen are acceptable to teachers, the prevalence of many minor injuries might be a result of not thinking that RSM is important. Another explanation might be that RSM is not a pedagogical or common or explicit theme among teachers and in the teachers' institutional environment [26]. Then again, only 4.3% of the survey respondents think that RSM is of very little or little importance.

The potential for more adverse risk [29] and critical injuries in PE might offer further understanding, and of teachers' opinions of RSM. Severe injuries do mark a line in the interviews and are not acceptable to teachers in the way that minor injuries are. Although the survey results indicate that severe injuries are very rare, the teachers may dread severe to critical injuries. Consequently, injury prevalence might be less important than the risk severity potential, as severe and critical injuries may occur in PE. Alternatively, cases of

negligence and litigation have received attention in literature on RSM in PE; in particular USA [8–11]. Under these circumstances, fear of litigation might permeate the teachers' perceptions of RSM in PE. However, the teachers in the interview study do not seem compelled to impose conditions of absolute safety [30,33] as might be expected from risk aversion [2–4]. The results in Young's [23] Canadian study also question PE teachers' preoccupation with and fear of litigation.

This study also connects teachers' perceptions of RSM in PE to the ways the teachers interpret/enact the curricula. Looking at teachers' perception of risk and the physical activities that are taught, the interview participants are conscious of the potential for adversity but also of the benefits of risk [29,30] in, for example, gymnastics. Albeit the results from the survey show some dispersion in what is perceived as risky activities in PE (see Figure 1), gymnastics, water activities and team sports comprise the main body (79.8%) of those ranked first. Canadian teachers are also reluctant to teach gymnastics [23,25]. Given teachers' focus on certain activities, they might be in a sound position to target the risk that is unique for PE. However, as teaching methods are only reported on seven accounts, it might be an indication that teachers perceive risk as an inherent element of physical activities and not necessarily how PE is taught. Consequently, it might illuminate issues with teachers' risk perception or risk discourse in PE, as risks that are hidden or not included in what the teachers perceive as risky might be disregarded.

The distinction between risk and danger [31,32] might be useful to understand how teachers sometimes might generate and control risk in connection with their decisions and action. Danger, represents the risk that might be present in the program despite of teachers' choices. In the case that some students might actively engage in risk-taking to experience the benefits, other students might be exposed to danger from the same risk. The results indicate that teachers do not necessarily perceive risk agency with regards to the roughness with which some students behave in PE classes. If teachers connect students' roughness to danger [31,32], teachers might be left with less perceived control. Otherwise, if teachers accept roughness in terms of educational risk [1,2,38] it might still create victims in this environment. Whereas boys acting rough might generate risk for themselves, the girls in PE might experience danger in this respect. A critical point is whether teachers' pedagogy in PE programs generates what might be dangers for some students.

The results suggest that there are conflicting considerations between educational risk for students' benefit and potential adverse risk which places the participants in a dilemma. In situations where pedagogical concerns triumph, teachers seem to emphasize the benefits of experience, fun and taking advantage of space. Thus, creating spaces for educative risk-taking [21] on the students' behalf might be a necessary step for teachers to secure students' learning in PE. Teaching pedagogies that embrace uncertainty [1] might function to explain and justify why minor injuries are common in PE. Possibly, a dichotomy exists between students' safety and learning, and teachers might justify risk through the mandate and educational potential of uncertainty [1,2,38]. The results in this study indicate that safety is challenged by teaching pedagogies that require some degree of risk acceptance by teachers. Hence, it might be that teachers' risk acceptance, or aversion in some respects, are social responses to risk in PE programs [26].

An alternative understanding to the pedagogical reasons for uncertainty [38] is risk uncertainty. Because uncertainty might be an inherent trait to risk that is not necessarily reducible due to randomness or chance [34,37]. The teachers talk about not being in control and their descriptions of insecurity and unease characterize some of their experience in PE. On the other hand, it might also relate to teachers' lack of risk knowledge. Nevertheless, risk uncertainty generates additional complexity to RSM and boundaries for teachers to take control of the unforeseen by means of RSM. Research from the outdoor adventure field might provide some support to PE teachers because dynamic environments require "adaptive expertise" [20], flexible plans [18] and ongoing judgement [19], which might be equally relevant for PE teachers as for the outdoor leaders. Albeit uncertainty in teaching is not something new [38], the fundamental uncertainty in risk [34,37] does not seem

to have gained attention in research targeting RSM in PE. Consequently, absolute safety might be impossible to realize in practice [33] and demonstrates the limitations to RSM that teachers touch upon in the interviews. A possible conflict in this environment is the deviation from other fields and the external expectations for students' safety in PE. If risk in PE is perceived to be manageable by stakeholders, and uncertainty only a question of gaining knowledge, and not chance, risk reduction or even elimination would be possible through implementing certain proactive means [15]. If zero harm is the norm established by regulation or policy, teachers need to gain control of all risk in PE to guarantee that students will incur no injuries. Such a situation might not even be possible considering the results offered here. A pertinent question is how teachers can communicate to stakeholders the ways that risk unfolds in PE to gain acceptance regarding the uncertainty.

There are limitations to this study and the survey's statistical data must be read with caution. The population of PE teachers in Norway is unknown and the sample is not randomized. However, the sample is fairly large in a Norwegian context, includes respondents from all counties, and might comprise a group of respondents that can better answer the topic under investigation. The survey results are limited to teachers' interpretations and self-reported assessments, and several biases might exist in the data. The interview data clearly depends on the conversations between the participants and the first author. There are multiple avenues for future research to address these limitations and a potential to build on the results presented here. First, group comparisons and inferential statistics might suggest how teachers' ages, sex, years of PE teaching experience and PETE background might associate with teachers' perceptions of RSM. Given that uncertainty is a characteristic of risk in PE, ways of coping and communicating uncertainty is a prudent avenue for investigations through prolonged engagement. Moreover, if teachers perceive a lack of agency in relation to the rough behavior of students, support for teachers is essential for achieving agency in this respect. Therefore, exploring teachers' RSM knowledge and the ways teachers' perceptions of RSM influence their RSM practices are vital as it may ultimately have an effect on students' education in PE programs. How students perceive risk and RSM in PE is still an avenue for further research.

5. Conclusions

This article explores teachers' perceptions of RSM in PE. Primarily, the survey respondents report that RSM is important in PE even though the results of the survey indicate that the teachers rarely experience their students' having severe injuries. The majority of the survey respondents on the other hand report of experiencing minor injuries to students in their PE teaching. The perception of not being in control is also voiced regarding risk in PE. The results suggest that teachers perceive some physical activities and equipment as inherently risky, some as even dangerous. In some respects, teachers might perceive that risk aversion might restrict the educational purposes of the PE program. The interview material suggests that risk acceptance is the norm and this thinking might be common. A possible explanation for teachers' risk acceptance might be found in educational pedagogy. However, in this environment, accidents happen that might have detrimental consequences for students. Uncertain risk might still restrict teachers' control and absolute safety might not be applicable to PE.

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References

1. Quennerstedt, M. Physical education and the art of teaching: Transformative learning and teaching in physical education and sports pedagogy. *Sport Educ. Soc.* **2019**, *24*, 611–623. [CrossRef]
2. Biesta, G.J.J. *The Beautiful Risk of Education*; Paradigm Publisher: Boulder, CO, USA, 2013.
3. Gill, T. *No Fear: Growing up in a Risk Averse Society*; Calouste Gulbenkian Foundation: London, UK, 2007.
4. Lindqvist, P.; Nordänger, U.K. Better safe than sorry? Risk and educational research. *Educ. Stud.* **2007**, *33*, 15–27. [CrossRef]
5. Martínková, I.; Parry, J. Safe danger—On the experience of challenge, adventure and risk in education. *Sport Ethics Philos.* **2017**, *11*, 75–91. [CrossRef]
6. Williams, A.; Wainwright, N. Re-thinking adventurous activities in physical education: Models-based approaches. *J. Adventure Educ. Outdoor Learn.* **2020**, *20*, 217–229. [CrossRef]
7. Brussoni, M.; Olsen, L.L.; Pike, I.; Sleet, D.A. Risky play and children's safety: Balancing priorities for optimal child development. *Int. J. Environ. Res. Public Health* **2012**, *9*, 3134–3148. [CrossRef] [PubMed]
8. Murphy, K.L.; Beh, H.G. The standard of care and the assumption of risk defense in a negligent injury case in a physical education class. *J. Phys. Educ. Recreat. Dance* **2014**, *85*, 41–43. [CrossRef]
9. Gimbert, T.L.; Sawyer, T.H. Proper supervision: Parachute activities in physical education class. *J. Phys. Educ. Recreat. Dance* **2015**, *86*, 49–50. [CrossRef]
10. McCoy, L.; Esslinger, K.; Baghurst, T. Injury and inclusion: Understanding common legal concerns in physical education. *Strategies* **2017**, *30*, 3–11. [CrossRef]
11. Schaefer, G.; Francisco, J.; Foo, C. Judge, lest ye not be judged. *J. Phys. Educ. Recreat. Dance* **2017**, *88*, 63–64. [CrossRef]
12. Podstawski, R.; Zwolinska, D.; Nowosielska-Swadzba, D. Problems of safety and risk in physical education. *Pedagog. Psychol. Med. Biol. Probl. Phys. Train. Sports* **2015**, *19*, 82–89. [CrossRef]
13. White, A.J.; Batten, J.; Robinson, S.; Anderson, E.; Burns, A.; Batey, J.; Ryan-Stewart, H.; Discombe, R. Tackling in physical education rugby: An unnecessary risk? *Inj. Prev.* **2018**, *24*, 114–115. [CrossRef]
14. Nachtigal, J.; Kim, M.; Lee, K.; Seidler, T.; Stocz, M. Softball: Nothing soft about it. *J. Phys. Educ. Recreat. Dance* **2016**, *87*, 36–41. [CrossRef]
15. Fitzgerald, A.; Deutsch, J. Limiting the risk of injury through safety guidelines in a physical education setting. *J. Hum. Sci.* **2016**, *13*, 2856–2859. [CrossRef]
16. Severs, J.; Whitlam, P.; Woodhouse, J. *Safety and Risk in Primary School Physical Education: A Guide for Teachers*; Routledge: London, UK, 2003.
17. Tanis, C.J.; Hebel, S.L. Emergency action plans in physical education. *Strategies* **2016**, *29*, 3–7. [CrossRef]
18. Boyes, M.; Potter, T.; Andkjaer, S.; Lindner, M. The role of planning in outdoor adventure decision-making. *J. Adventure Educ. Outdoor Learn.* **2019**, *19*, 343–357. [CrossRef]
19. Collins, L.; Collins, D. The foci of in-action professional judgement and decision-making in high-level adventure sports coaching practice. *J. Adventure Educ. Outdoor Learn.* **2017**, *17*, 122–132. [CrossRef]
20. Mees, A.; Sinfield, D.; Collins, D.; Collins, L. Adaptive expertise—A characteristic of expertise in outdoor instructors? *Phys. Educ. Sport Pedagog.* **2020**, *25*, 423–438. [CrossRef]
21. Zinn, J.O. The meaning of risk-taking—Key concepts and dimensions. *J. Risk Res.* **2019**, *22*, 1–15. [CrossRef]
22. Park, Y. How do specialist teachers practice safety lessons? Exploring the aspects of physical education safety lessons in elementary schools. *Int. Electron. J. Elem. Educ.* **2018**, *10*, 457–461. [CrossRef]
23. Young, D. Physical education, tort law and risk avoidance. *Educ. Law J.* **2007**, *17*, 223–243.
24. Rothe, P.J. The voluntary use of physical education safety guidelines in schools. *J. Phys. Educ. Recreat. Dance* **2009**, *80*, 43–49. [CrossRef]
25. Robinson, D.B.; Randall, L.; Andrews, E. Physical education teachers' (lack of) gymnastics instruction: An exploration of a neglected curriculum requirement. *Curric. Stud. Health Phys. Educ.* **2020**, *11*, 67–82. [CrossRef]
26. Douglas, M. *Risk and Blame: Essays in Cultural Theory*; Routledge: London, UK, 1992.
27. Renn, O. *Risk Governance: Coping with Uncertainty in a Complex World (Earthscan Risk in Society Series)*; Earthscan: London, UK, 2008.
28. Lupton, D. *Risk and Sociocultural Theory: New Directions and Perspectives*; Cambridge University Press: Cambridge, UK, 1999.
29. Boholm, M. Risk association: Towards a linguistically informed framework for analysing risk in discourse. *J. Risk Res.* **2018**, *21*, 480–501. [CrossRef]
30. Boholm, M. The semantic field of risk. *Saf. Sci.* **2017**, *92*, 205–216. [CrossRef]
31. Luhmann, N. *Risk: A Sociological Theory*; Aldine de Gruyter: Berlin, Germany, 1993.
32. Boholm, M. The semantic distinction between "risk" and "danger": A linguistic analysis. *Risk Anal.* **2012**, *32*, 281–293. [CrossRef]
33. Boholm, M.; Möller, N.; Hansson, S.O. The concepts of risk, safety, and security: Applications in everyday language. *Risk Anal.* **2016**, *36*, 320–338. [CrossRef]
34. Aven, T.; Renn, O. On risk defined as an event where the outcome is uncertain. *J. Risk Res.* **2009**, *12*, 1–11. [CrossRef]
35. Aven, T.; Renn, O. Response to Professor Eugene Rosa's viewpoint to our paper. *J. Risk Res.* **2010**, *13*, 255–259. [CrossRef]

36. Rosa, E.A. The logical status of risk—To burnish or to dull. *J. Risk Res.* **2010**, *13*, 239–253. [CrossRef]
37. Van Asselt, M.B.A.; Vos, E. The precautionary principle and the uncertainty paradox. *J. Risk Res.* **2006**, *9*, 313–336. [CrossRef]
38. Helsing, D. Regarding uncertainty in teachers and teaching. *Teach. Teach. Educ.* **2007**, *23*, 1317–1333. [CrossRef]
39. Creswell, J. *A Concise Introduction to Mixed Methods Research*; Sage: Thousand Oaks, CA, USA, 2015.
40. Hartas, D. Survey research in education. In *Educational Research and Inquiry: Qualitative and Quantitative Approaches*; Hartas, D., Ed.; Bloomsbury: London, UK, 2010; pp. 257–268.
41. Gibson, W. Qualitative research as method of inquiry in education. In *Educational Research and Inquiry: Qualitative and Quantitative Approaches*; Hartas, D., Ed.; Bloomsbury: London, UK, 2010; pp. 54–63.
42. Fetters, M.; Curry, L.; Creswell, J. Achieving integration in mixed methods designs-principles and practices. *Health Serv. Res.* **2013**, *48*, 2134–2156. [CrossRef] [PubMed]
43. Moen, K.; Westlie, K.; Bjørke, L.; Brattli, V. *Når Ambisjon Møter Tradisjon: En Nasjonal Kartleggingsstudie av Kroppsøvingsfaget i Grunnskolen (5–10 Trinn) [When Ambition Meets Tradition: A National Survey on Primary School PE (5th–10th Year)]*; Høgskolen i Innlandet: Elverum, Norway, 2018. (In Norwegian)
44. Statistics Norway. Lærerkompetanse i grunnskolen. Hovedresultater 2018/2019. Available online: https://www.ssb.no/utdanning/artikler-og-publikasjoner/attachment/391015?ts=16b93d5e508 (accessed on 1 August 2019).
45. Association for the Advancement of Automotive Medicine. *Abbreviated Injury Scale: 2015 Revision*; Association for the Advancement of Automotive Medicine: Chicago, IL, USA, 2018.
46. Charmaz, K. Teaching theory construction with initial grounded theory tools: A reflection on lessons and learning. *Qual. Health Res.* **2015**, *25*, 1610–1622. [CrossRef]
47. Patton, M. *Qualitative Research & Evaluation Methods: Integrating Theory and Practice*; Sage: Los Angeles, CA, USA, 2015.
48. Saldaña, J. *The Coding Manual for Qualitative Researchers*; Sage: London, UK, 2016.

ARTICLE IV

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Risk and Safety Management in Physical Education: A Study of Teachers' Practice Perspectives

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The aim of this article is to explore and understand teachers' risk and safety management (RSM) practices in physical education (PE) programs in Norway. A survey questionnaire and semistructured interviews were therefore used to generate quantitative data on trends from a larger sample of teachers ($n = 698$) and rich in-depth qualitative data concerning teachers' ($n = 17$) practices. By providing the teachers' perspectives, a better understanding of the complexity of RSM in PE may be possible. The results from both the survey and interviews suggest that teachers employ multiple strategies: from safety procedures, complying to compulsory risk measures, to the use of common sense in their RSM practices. The interviewees, on the other hand, initially claim that their RSM practice is quite scarce and, in some respects, not appropriate for PE. They emphasize measures that cater to the students' needs and modification to physical activities in their teaching. However, the interview data suggest that teachers do not primarily conceptualize this part of their practice as RSM but as measures of other pedagogical concerns. Combined, the results from both the survey and the interviews may characterize a RSM practice that relies on teaching experience and the use of discretion. The results in this article both converge and diverge and emphasize the importance of multiple data sources in investigating teachers' RSM practices.

Keywords: risk management, safety, pedagogy, teacher practice, physical education

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INTRODUCTION

The inherent element of bodily movement in school physical education (PE) programs generates a risk for accidents and physical injury to students. The ways teachers practice risk and safety management (RSM) in PE clearly inflict on students' educative opportunities. In the UK, for example, former school safety policies and teachers' fear of liability restricted children's development; educators were therefore given an updated mandate to balance educational risk through risk–benefit assessments and the use of common sense (HM Government, 2010). However, there seems to be a paucity of empirical studies that have investigated how teachers practice RSM in PE programs and, in particular, from the perspective of teachers (Park, 2018). Some related empirical studies investigate how teachers practice RSM in selected sports such as floor hockey (Gray, 1992) or why teachers are hesitant to teach gymnastics (Robinson et al., 2020) while others seem oriented toward teachers' liability concerns in practice (Young, 2007; Rothe, 2009). The current research-based knowledge remains scarce, and this article therefore seeks to explore and understand teachers' RSM practices in PE teaching, and a survey questionnaire and interviews with teachers are conducted to collect data.

Advice and instructions for teachers' practices are based on identified hazards (Podstawski et al., 2015) or scenarios that may evolve in PE classes (Merrie et al., 2016). To prevent student injuries and protect teachers from liability, an additional strand of RSM instructions stems from the analysis of tort law and teaching negligence cases (Murphy and Beh, 2014; Gimbert and Sawyer, 2015; McCoy et al., 2017). Relating to best-practice risk management that is presented in sports (Fuller and Drawer, 2004), the use of safety guidelines and rules seems to be a central strategy for safe teaching practices in PE. Some might adhere to safety principles described in primary school PE literature for example (e.g., Severs et al., 2003). There are, however, some disagreements in the field. While Rothe (2009) suggests that safety guidelines ought to be voluntary for teachers, others point to peer observation, and checks to ensure standards and guidelines are appropriately implemented (Fitzgerald and Deutsch, 2016). Based on these points, the literature seems oriented toward how teachers may reduce, control, or eliminate risk to prevent accidents and injuries through prescribed procedures.

At the same time, PE teachers are also called out to embrace the exploration and uncertainty of transformative teaching practices (Quennerstedt, 2019). Considering the literature on RSM in PE, it seems to contrast the call for transformative pedagogy. Albeit it may be that the pedagogical focus is on learning and not risk (Brown and Fraser, 2009), educational pedagogy may, in some respects, be "romancing risk" and position educators in crucial dilemmas and maybe even to rely on luck, which is indicated in adventure education (Bell, 2017, p. 284). However, there is also worry that in situations where concerns for liability are prominent, professionals might rule out their experience-based expertise and rely on procedures to protect themselves (Zinn, 2016). In outdoor and adventure education, some suggest that rational discourses and methodology surrounding RSM might restrain practitioners' subjective judgements and experience (Zink and Leberman, 2001). It therefore seems plausible that risk aversion in education might restrict students of educative opportunities (Biesta, 2013). In addition, strategies of insurance and assurance may come to prevail teachers' practices if accountability is stressed (Lindqvist et al., 2009). In Norwegian PE, the language in a regulative orientation on how to teach water activities in schools might give an impression of being compulsory and therefore restrict PE teachers' RSM practices to the use of recommendations (Porsanger, 2020). Again, Korean primary school PE teachers' fear of litigation might induce them to exclude certain activities from PE (Park, 2018). However, the primary reason for risk aversion in a Canadian study was reported to be concerns for students' safety and not necessarily litigation (Young, 2007). Upper secondary school teachers in Norway also exclude students from outdoor education excursions due to safety concerns (Dahl et al., 2019).

Teachers, as well as other professions, must deal with dilemmas in their practices, and in PE, they might have to both embrace and reduce risk to generate safe learning environments and educative opportunities for students. In outdoor adventure, the aspects of balance and paradox in risk management is not new (e.g., Collins and Collins, 2013). Martínková and Parry (2017) suggest that educators may employ "Safe Danger" to open adventure experiences to students but not cause severe harm. However, there seems to be a paucity of empirical investigations of how teachers' balance risk in PE. In the UK, there are indications that Forest School educators still experience tension between their pedagogies and societal risk aversion (Connolly and Haughton, 2017). Risk research suggests that different values and perspectives on risk might generate ambiguity (Aven and Renn, 2020). The balance of educational risk might be tricky for teachers due to dilemmas between multiple concerns in their teaching. PE teachers' RSM practices might be comparable to those of other professions with "risk work" characterized by multiple concerns and strategies (Brown and Gale, 2018a,b). The dynamic and complex environments of outdoor instructors seem to require adaptive expertise (Mees et al., 2020), and it seems plausible that the environment of PE teaching might require teachers to be equally flexible. Due to the scarcity of studies that have investigated teachers' RSM practices, this article therefore makes use of a risk strategy typology developed by Zinn (2016) in a discussion of the results: to differentiate between teachers' risk strategies and suggest how they combine them in their practice. A brief account of the typology and how it may be relevant in teaching is presented next.

Combining Risk Strategies in Teaching Physical Education

There is potential to extend the current understanding of RSM practices in PE by conferring Zinn's (2016) risk strategy typology, and in this article, the typology is used to discuss the results. Primarily, the typology differentiates between three types of risk strategy: rational, in-between, and non-rational risk strategies (Zinn, 2016), and it may therefore assist to better understand teachers' different approaches to risk and their rationale. However, risk practices are embedded within a political and cultural environment (Lupton, 2013; Zinn, 2019) and not mere aggregates of individual choice (Douglas, 1992). Another strength of the typology is therefore in the multiple combinations of these strategies to create "reasonable" practices depending on the actors' social context (Zinn, 2016). The Norwegian PE teachers' RSM practices might be customized based on the national curricular requirements and risk policy as well as on local school arrangements.

Rational Strategies

Rational risk strategies derive from an instrumental reasoning of "direct management and control of risk" (Zinn, 2016, p. 351). They might therefore be rational for professions, recognized for their specialized knowledge and technical skills anchored in a scientific and theoretical knowledge base (Freidson, 2001). Assuming that some risks may be predictable and controllable (Renn, 2008), general or abstract principles might be pulled out and applied to address risk and uncertainty in PE. Hence, applying the correct method might be expected to solve the problem in some respects (Schön, 1995). Teachers

Abbreviations: PE, physical education; RSM, risk and safety management.

may deliberately use risk matrices and checklists to assess and determine courses of action in their teaching and might be necessary for teachers to grasp risk in PE because "the transformation of uncertainty into probability enables us to deal with uncertainty as if we had knowledge" (Merkelsen, 2011). There are thus reports on teachers using safety guidelines in their PE teaching for example (Rothe, 2009). However, the degree of potential certainty is contended (Aven and Renn, 2020), and in PE, it might be complicated to calculate or foresee the actions of students or every outcome of sports and play. A dilemma of risk analysis also relates to the ratings of likelihood and consequence, as they might be subject to a high degree of variation and merely subjective guesses (Cox, 2008). Thus, rational strategies might be appropriate for some conditions or elements in PE where causes and outcomes may be accessible for teachers, while other aspects of risk might be overlooked or disregarded. The in-between strategies may therefore complement rational strategies in teachers' RSM practice: addressing other dimensions and concerns with risk in PE.

In-between Strategies

In-between strategies seem to be characteristic of the situational and practical reasoning of professionals' "risk work" (Horlick-Jones, 2005). Drawing on experience, teachers' tacit knowing (Polanyi, 1983) and knowing-in-action (Schön, 1995) might enhance the use of in-between strategies in PE. As a result, there might not be any explicit methods or systems thinking behind teachers' risk judgments in practice but ongoing reasoning and action characteristics of professional discretion (Freidson, 2001). As feelings and affect may guide actors' risk decisions (Lupton, 2013), emotions, intuition, and trust might be just as reasonable in dealing with risk and uncertainty in some respects (Zinn, 2016). Teachers' concerns in PE might generate common RSM practices; for example, the fear of adverse consequences, students' safety (Young, 2007), or liability (Park, 2018) might lead to risk-averse teaching practices in PE. However, in-between and non-rational strategies are often used in combination (Zinn, 2016) and might be crucial for teachers in balancing their RSM practice.

Non-rational Strategies

The use of non-rational strategies relies more on attitude than knowledge (Zinn, 2016), and hope, ideology, and belief might complement the other risk strategies in teachers' practices. However, risk in PE is not necessarily equal to danger but also resonates with an adventure concept and is framed as an opportunity for learning, as uncertainty might generate educative experiences (Quennerstedt, 2019). While the risk strategy typology seems to focus on managing adverse consequences, teachers' non-rational strategies might also draw on the risk benefits of actively engaging with risk to enhance something. Thus, teachers' RSM practices might contain an element of active risk-taking or making (Zinn, 2019) and a more passive acceptance of risk due to lack of means (Zinn, 2016).

However, "the key question pertains to the skills and experience one needs to decide about the appropriate combination of strategies to use in a particular situation" (Zinn, 2016, p. 361). This aspect of practice might be contingent on how teachers' institutional environments support the different approaches to risk. These uses and mixtures of these strategies might therefore depend on both the character of the risk problem (Aven and Renn, 2020) and the conditions of their implementation (Zinn, 2016).

Investigations of PE teachers' RSM practices through their perspectives may increase understanding of PE teachers' risk strategies in practice. This is of vital understanding since it ultimately may have an effect on students' educative and risk experiences in PE. By exploring teachers' RSM practices in PE, this study may contribute to the field of PE practice research by investigating two questions: *what characterizes teachers' risk and safety management practice in physical education,* and *how do teachers relate their practice to risk and safety management?*

MATERIALS AND METHODS

A mixed-methods approach was employed in this study as integration of results is believed to add value and a more thorough understanding of the research questions (Creswell, 2015). The data collection was conducted cross-sectionally in Norwegian schools from September to December 2019 through a survey questionnaire and semistructured interviews with teachers. This aim was to generate quantitative data on trends and in-depth qualitative data on the teachers' RSM practices. The construction of the study's instruments was an interactive process; data from each strand of inquiry were analyzed independently, are presented separately in the results section, and thereafter integrated in a discussion to enhance and nuance the results. All language translations from Norwegian into English are made by the first author.

Survey Questionnaire

Participants—Survey

A list of Norwegian primary and lower secondary schools was provided to the researchers by the Norwegian Directorate of Education and Training. In seeking PE teachers who work in public schools who apply the national curricula and regulations for PE, 2,572 schools were contacted to recruit respondents. From the initial number of 949 ($n = 949$) respondents to the survey, 251 ($n = 251$) were excluded because they had not filled any demographic data or finalized the questionnaire by clicking "finish." The number of respondents included in the analysis was 698 ($n = 698$). As there are no current records of the number of PE teachers in Norwegian schools, additional drop-out statistics are not available. Albeit the sample size is considered to be fairly large ($n = 698$) in a Norwegian PE context, it is not a randomized sample and the results are not generalizable to the population. The respondents still represent all Norwegian counties in 2019 ($n = 18$); they teach in primary (49%), lower secondary (34.1%), and mixed schools including both primary and lower secondary level (16.6%). There is almost an equal gender representation ($m = 364$, $f = 328$) among the respondents. Almost half of the respondents (49.9%) have worked 9 years or less as PE teachers. Beginner teachers comprise 117 respondents (16.8%) who had 2 years or less of PE teaching experience, while 31 respondents (4.4%) had more than 30 years of experience.

TABLE 1 | Content elements given in *content of practice*.

	Sub-elements
1	Control and maintenance of equipment and facilities
2	Mapping of risk and danger
3	Developing plans and systems for preventing injuries and accidents
4	Documentation and administration of injuries and accidents
5	Supervision, observation, and overview of students
6	Instruction and guidance of activities
7	Follow-up on rules and routines
8	Facilitation and adaption of activities to the student group

TABLE 2 | Statements presented in description of practice.

	Statements
1	I mainly use discretion and common sense in this work
2	I mainly use selected method sets in this work
3	The work is mainly based on experiences from teaching
4	The work is mainly based on what I have learned through education and courses
5	The activities I teach determine the way I work
6	The way I work is independent of the activity I teach

Instrument Design and Data Collection—Survey

The survey instrument was designed by the researchers as an online questionnaire using *Select Survey* and multiple steps were taken to develop the instrument according to the study's aim and research questions.

First, former research and academic literature on RSM in PE were conferred to gain insight into current knowledge of RSM practices in the field and RSM advice for PE teachers (see, e.g., Young, 2007; Murphy, 2015). Moreover, former PE-related surveys including Norwegian PE teachers were also investigated to inform the design and selection of demographic items (Moen et al., 2018; Statistics Norway, 2019). Statistical literature was also conferred to inform the design and collection of survey data (see, e.g., Ringdal, 2018). An expert in Select Survey at the first author's university was consulted for assistance in the process of coding in the software and in designing the instrument's user interface. This included the visual representation of the survey, information provided to the respondents at different stages of the survey including the definition of RSM used in this study, and sub-explanations to the questions. Using the initial instrument, a small-scale pilot study was conducted and included both PE teachers and PETE educators ($n = 12$). Conversations with representatives from both educator groups as well as opinions on topics and missing and redundant items and values provided information on the face and content validity of the instrument. Their feedback was used to develop and refine the questions and sub-items, and if the clarifying sub-texts were appropriately understood. In addition, based on their feedback about time spent on completing the survey, the survey scope was further adjusted. These steps were then followed by in-depth semistructured interviews with PE teachers ($n = 17$). Data from this study, including the teachers' wording and the topics that were brought up in the conversations, also helped validate the content and in developing and refining the instrument's questions, sub-items, and values to fit with the Norwegian context. The final survey comprised four main topics: *background*, *experience and opinion*, *change and development*, and *practice* relevant to this study.

In this article, the following four questions from the survey topic *practice* are reported upon: (1) how often is your risk and safety work part of the following?: teaching preparations, integrated in the teaching, and in the follow-up after teaching (*timing of practice*) on a seven-point Likert-type scale with increasing values from 1 (never) to 7 (always); (2) to what degree are the following elements (shown in **Table 1**) part of your risk and safety work in PE? (*content of practice*), with eight sub-elements reported on a seven-point Likert-type scale from 1 (not at all) to 7 (always) including the mid-point 4 (neither/nor); (3) describe your risk and safety work by taking a stand to the statements under (shown in **Table 2**) (*description of practice*), with six statements on a five-point Likert-type scale including the mid-point 3 (neither/nor); and (4) are there any physical activities or teaching methods you exclude from your teaching due to risk for injury and accidents? (*exclusion of activities*), reported on three open response options, whereas the first of the three open response options is presented in this article.

Interviews

Participants—Interviews

The interview data include 17 ($n = 17$) primary and lower secondary teachers from eight public schools of different sizes, situated in both rural and city areas in three counties in Norway. A purposeful sampling strategy (Patton, 2015) was applied to select participants. The main criteria for selection was the target group of the study: teachers who teach PE in primary or lower secondary education in the fall of 2019 and in public schools that follow the Norwegian national curriculum and RSM regulations relevant for PE. To obtain study material from teachers with varied characteristics, a second set of criteria was applied: to seek participation from primary and secondary education, both male and female, and participants with a range of age and teaching experience. As the interviews were to be conducted in-person, a pragmatic approach was taken to select teachers from three counties in proximity to the first author's university/work premises. Among the participants, 11 (64.7%) are male and 6 (35.3%) are female. Five teachers (29.4%) work in primary schools, 11 teachers (64.7%) work in lower secondary schools, and one (5.8%) works in a mixed school. The participants had varied educational backgrounds, from no credits in PE teacher education to bachelor's degrees from PE teacher education or physical activity study programs. The participants' ages and PE teaching experience are shown in **Table 3**.

Instrument Design and Data Collection—Interviews

To gain in-depth data on the participants' perspectives on their RSM practice, the first author conducted semistructured

TABLE 3 | Participants' ages and years of PE teaching experience.

Age	20–29	30–39	40–49	50–59	60–69
Total ($n = 17$)	1	4	6	5	1
Years of PE experience	1–5	6–10	11–15	16–20	21+
Total ($n = 17$)	1	3	4	3	6

interviews with the assistance of an interview guide. Multiple steps were taken to construct the guide according to the research questions and aim of the study. An initial draft was generated based on literature on RSM in PE and the first author's knowledge and experience with RSM. Conversations with PE teacher educators at the first author's university were held about the guide and relevant topics. Conversations with the respondents to the survey pilot study further informed the development and refinement of the guide. The interview guide was designed with main topics, keywords, and some open questions to open for the conversations to evolve and include interesting leads (Gibson, 2010; Patton, 2015). The final guide included six main topics: *background*, *opinion*, *societal expectations*, *change and development, competence and training*, and *practice*. The interviews had a range of 31–69 min and lasted an average of 45 min. All interviews were audiotaped and transcribed verbatim by the first author.

Data Analysis

This article reports on the survey respondents' demographic data and descriptive statistics of four questions related to RSM practice. IMB SPSS software version 26.0 was used to calculate frequency, percentages, means, and standard deviation on (1) *timing of practice*, (2) *content of practice*, and (3) *description of practice*. The data reported on (4) *exclusion of activities* were categorized with the use of Microsoft Excel by the first author before the categories were cross-checked with the second author and then summarized. The survey results presented in this article are the respondents' assessment and reports on these questions.

Concerning the interviews, the analysis was conducted by the first author. The analytical process began in the interviewing phase and notes were written down during the interviews and while transcribing the material. The coding of the interview material was inspired by a grounded theory approach to emphasize the participants' voices and the empirical data (Charmaz, 2015; Saldaña, 2016). The material was therefore coded *in vivo* line by line (Charmaz, 2015) in the software tool Nvivo 12. These first phase codes were then compared against the full material to look for patterns. Based on significance in the material, a set of focused codes (Saldaña, 2016) were selected in the second cycle phase to construct categories. The following analytical process consisted of memo-writing, interpretation, and checking initial categories against the data and the notes. In the final phase of analysis, three categories anchored in the data were generated—(1) *managing risk in physical education*, (2) *facilitating and modifying physical education*, and (3) *conflicting considerations*—and are presented in the *Results* section.

Ethical Considerations

For both the survey and the interviews, school management functioned as door openers (Lindsay, 2010) by forwarding e-mails with our requests for participants to PE teachers at their schools. Both participant groups were informed in a cover letter attached to the e-mails about the aim of the study and with a definition of RSM as risk and safety work with the intent to prevent and manage accidents and physical injury to students in PE. They were further informed of their rights and ethical implications and that approval was granted by the Norwegian Centre for Research Data. The participants in the interview study reached out to the first author by e-mail or via their local school management. The interviews were conducted in-person. One of the interviews was conducted at the first author's university by choice of the interviewee and the remaining 16 were conducted on the work premises of the teachers. The participants were again informed of the study's aim and asked if they had any questions before they signed a consent form and audio taping was approved by each teacher before the interviews began. Directly identifiable data were deleted in transcribing the conversations. With regard to the survey, the respondents were informed of the procedure that they gave their consent by answering the survey and clicking "finish" on the last page. After the responses were downloaded to a secure location, the online survey with the results was deleted. Although the two participant groups in this article are independent of each other, the interview participants may have responded to the survey as it was distributed to their school management as they were among the schools ($n = 2{,}572$) that were contacted by e-mail with information of the study and a link to the survey.

RESULTS

The survey and interview results are presented separately in succeeding sections. These include reports on the four survey questions: (1) *timing of practice*, (2) *content of practice*, (3) *description of practice*, and (4) *exclusion of activities* and three categories from analysis of interviews: (1) *managing risk in physical education*, (2) *facilitating and modifying physical education*, and (3) *conflicting considerations*.

Results From the Survey

Timing of Practice

To explore when, during their work days in relation to teaching PE classes, teachers practice RSM, the respondents were asked how often their risk and safety work is part of the teaching preparations, integrated in the teaching, and in the follow-up of PE classes.

Table 4 shows that the majority of the respondents report that risk and safety work are sometimes or more frequently part of the preparations ($M = 4.6$, $SD = 1.521$). However, only 13.6% report that RSM is always part of the preparations. Then, again, there are also teachers (3.7%) who never include RSM as part of their preparations. A picture of RSM as an integrated practice is drawn as it is reported to be even more frequently integrated in the teaching of PE classes ($M = 4.96$, $SD = 1.444$). There are more respondents who report that RSM is always (18.5%) or very often

TABLE 4 | Teachers' report on how often RSM is part of the preparations, integrated in teaching, and in the follow-up of PE classes (by percent).

	Never	Very rare	Rare	Sometimes	Often	Very often	Always
Preparations ($n = 689$)	3.7	5.6	9.7	28.5	25.1	12.5	13.6
Integrated ($n = 693$)	2.4	3.3	6.3	24.1	29.7	15.0	18.5
Follow-up ($n = 688$)	6.2	12.0	23.8	35.8	12.9	4.7	3.2

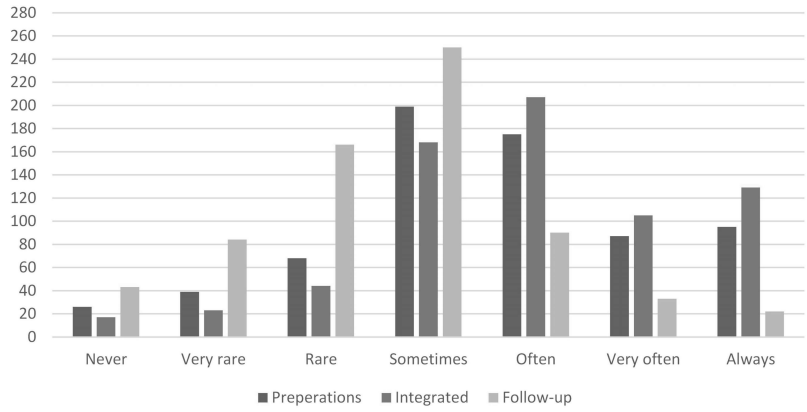

FIGURE 1 | Teachers' reports on the *timing of practice* (by frequency).

(15.0%) integrated in the teaching than in the preparations. The results here, on the other hand, differ for RSM as part of follow-up in teaching PE classes, as fewer respondents report that RSM is often, very often, or always part of the follow-up ($M = 3.65$, $SD = 1.335$). To provide an illustration of teachers' reports on the *timing of practice*, **Figure 1** shows the distribution of teachers' responses.

The results shown in **Figure 1** illustrate the difference in the reported frequency of RSM as part of follow-up compared to preparations and integrated in teaching. Teachers may conduct RSM at different times in relation to teaching, and it might also depend on the content of, their RSM practices.

Content of Practice

To gain insight into what teachers do in terms of the content of teachers' RSM practices, the respondents were asked to what degree eight content sub-elements (shown in **Table 1**) are part of their risk and safety work.

The results shown in **Table 5** suggest that the content of teachers' RSM practice tends toward teaching active content elements including instructing activities ($M = 5.99$, $SD = 0.981$), supervising students ($M = 5.96$, $SD = 1.054$), facilitating activities for the students ($M = 5.84$, $SD = 0.933$), and follow-up on rules ($M = 5.74$, $SD = 1.089$). The elements that are more remote from the active teaching, especially developing plans and systems ($M = 3.68$, $SD = 1.534$), are to a lesser degree reported to be in the content of teachers' RSM practice. To gain a more comprehensive picture of teachers' RSM practices, the respondents were asked to describe their RSM.

TABLE 5 | To what degree are the following elements part of your risk and safety work?

	Mean	*SD*
Control and maintenance of equipment and facilities ($n = 691$)	4.36	1.496
Mapping of risk and danger ($n = 682$)	4.96	1.366
Developing plans and systems for preventing injuries and accidents ($n = 681$)	3.68	1.534
Documentation and administration of injuries and accidents ($n = 685$)	4.61	1.760
Supervision, observation, and overview of students ($n = 694$)	5.96	1.054
Instruction and guidance of activities ($n = 689$)	5.99	0.981
Follow-up on rules and routines ($n = 685$)	5.74	1.089
Facilitation and adaption of activities to the student group ($n = 691$)	5.84	0.933

Description of Practice

When the teachers were asked to describe their risk and safety work by taking a stand on the six statements shown in **Table 2**, the results in **Table 6** show that teachers' use of discretion and common sense is reported to be higher in agreement ($M = 4.51$, $SD = 0.708$) than teachers' use of selected method sets ($M = 3.46$,

TABLE 6 | Describe your risk and safety work by taking a stand on the statements below.

	Mean	*SD*
I mainly use discretion and common sense in this work ($n = 693$)	4.51	0.708
I mainly use selected method sets in this work ($n = 678$)	3.46	1.024
The work is mainly based on experiences from teaching ($n = 689$)	4.34	0.757
The work is mainly based on what I have learned through education and courses ($n = 684$)	3.67	1.106
The activities I teach determine the way I work ($n = 689$)	4.49	0.691
The way I work is independent of the activity I teach ($n = 683$)	2.69	1.365

$SD = 1.024$). In more detail, most respondents (93.1%) slightly or completely agree with the use of discretion and common sense in their RSM. This is interesting compared with the use of selected method sets, where quite a few seem to neither agree nor disagree (36.5%), but there are still quite a few who slightly agree (29.8%). This general picture seems to match teachers' agreement of RSM based on experience ($M = 4.34$, $SD = 0.757$) rather than RSM as learned from education and courses ($M = 3.67$, $SD = 1.106$). Most respondents (88.9%) slightly or completely agree that RSM is based on experience from teaching, and there are more teachers (14.7%) that completely or slightly disagree that their RSM is mainly based on education and courses. In addition, more teachers seem to agree about the activities taught to determine the (RSM) work ($M = 4.49$, $SD = 0.691$) rather than being a more general approach reported as work independent of activities taught ($M = 2.69$, $SD = 1.365$). Regarding the activities taught to determine teachers' RSM, most respondents (91.8%) slightly or completely agree to this statement. However, these reports fairly coincide with (RSM) work as independent of activities taught, as approximately half of the respondents (48%) slightly or completely disagree.

Exclusion of Activities

As the PE literature points to risk aversion and considering that teachers' RSM practices might relate to the physical activities taught in PE classes, the respondents were asked if there were any activities or teaching methods they excluded from their PE teaching due to the risk of injury and accidents. In reporting on the potential activities or teaching methods that teachers excluded from PE, **Table 7** shows the results from the respondents' first response in a rank from 1 to 5 (6).

Table 7 highlights what kind of physical activities are excluded due to risk. The reported excluded activities that are connected to gymnastics as a whole (trampoline, rotations, and gymnastics in general) make up 52.3% of the responses.

Results From the Interviews

The following three categories from the interviews with teachers are presented in the next sections: (1) *managing risk in physical education*, (2) *facilitating and modifying physical education*, and (3) *conflicting considerations*. The excerpts selected serve as examples of category meaning. The codes used in the excerpts (e.g., IP3) are based on Interview Person and a number given to each participant.

TABLE 7 | Teachers' report on exclusion of activities by percent ($n = 238$).

Rank	Activity	Percent
1	Trampoline gymnastics	26.8
2	Gymnastics general	18.0
3 (split)	Rotations gymnastics	7.5
3 (split)	Climbing activities	7.5
4	Contact sports	7.1
5	Outdoor swimming	6.3

Managing Risk in Physical Education

Teachers in this study initially express a general lack of RSM practice, and they are divided in their explicit use of any risk measures and in the attention they give to RSM in PE. However, when they are asked to describe their RSM practices, the participants consistently begin with and bring up water activities and gymnastics where they apply RSM plans or procedures to their teaching practices. This includes, for example, safety principles for spotting jumps on trampolines or organizing lessons in water in a specific manner.

> We took a course [in outdoor swimming], and we think about safety a lot, how we are to conduct it for those who are on land and those who are in the water. We never have groups larger than eight at the same time, we always have two [teachers], one teaches and one watches, there are two more [teachers] on land who guard those [students] on land, and we make boundaries for the area in the water with ropes and on land with cones (IP3).

Hence, the part of the teachers' RSM practice that are drawn on procedures are commonly applied to physical activities that are perceived to be riskier or more dangerous for the participants in this study. However, the teachers still describe limited system approaches for RSM in PE in their teaching and in their schools. Exceptions are made for a few externally mandated requirements in certain areas of PE as they are compelled to file reports following student injuries and partake in an annual safety inspection of equipment, materials, and facilities. The system of controlling and documenting potential deficits might be ceremonial to teachers because

> if [the equipment] is not replaced, it has at least been recorded in a document (IP14).

Against the backdrop of these formalized RSM requirements, field trips, and sporting and recreational events signify a shared customary routine established among the teachers in their schools. They

> talk about it every year, who should walk in front, who should walk behind [the group] and who should carry the emergency kit (IP14).

However, the material suggests that PE teachers worry about the pulverization/shredding of responsibility for these events because of the number of teachers involved and they personally are not necessarily in the lead or in control of what happens. The way teachers perceive or frame RSM in PE is central to the results because an impression is made of RSM as comprising of procedural and formalized measures for risk control. Considering that RSM might be a formal practice to these participants, their practice that are pertinent to other pedagogical concerns might still make an essential contribution to their RSM practice.

Facilitating and Modifying Physical Education

As their framing of RSM might be oriented toward plans and procedures, RSM is portrayed as difficult or even meaningless to implement in PE in some respects. Regarding RSM training, a participant does not seem to find it applicable for PE, and as a result,

> it would be hard to be trained. I do not see what it should have been—gymnastics yes, because then your back and neck are central, but in most other activities the whole body is used, in a different way.… It would have been terribly interesting. I wonder what that course would have been like if let us say you have ball activities, dance or outdoor education (IP17).

As indicated in the above excerpt, the participant includes gymnastics as appropriate for a defined risk strategy while excluding other physical activities to fit the same approach. When the participants are asked to go into more detail about their teaching, they talk about teaching principles and pedagogical and didactical deliberations. Mastery, students succeeding, learning, and having fun in PE classes are given as reasons for adjusting and modifying the program, and not risk.

During the conversations, however, the teachers in this study became more verbal and explicit in connecting this part of their teaching practice to risk concerns. These incorporate adaptations of the curriculum, selecting, and adjusting physical activities and sports to the teachers' preferences and the local context, including modifying the activities taught in the PE program to fit with the students' characteristics. The teachers talk of both the need to reduce risk in some respects and the need to facilitate students' learning. Combining strategies is performed by conducting both risk analysis and modifications to physical activities as indicated by a participant in the next excerpts.

> One must always perform a risk analysis. In natural science, for example, following the principle that if you do an experiment you must do it at the lowest level possible, you do not start with hydrochloric acid if citric acid does the same trick. I think in the same way about PE; you must consider what you want to achieve, and then you must take risk into the whole picture if something can happen (IP1).

> It is not a homogenic group. They are not athletes. There are people of 40 and 100 kilos. It is rare that you see those gatherings [except in PE]. You must always choose physical activities that you can adapt to all (IP1).

The modifications to the program are thus made in accordance with the students' characteristics at an appropriate level of difficulty or variant of physical activities taught. Knowing the students well, therefore, seems to be key for teachers' opportunities to make these adjustments in the programs.

> I see and observe and feel and talk with the students and determine their limits, each single student in a way (IP10).

For teachers to facilitate and adapt their PE classes to the students' characteristics and needs, knowing the students is of utmost importance. Part of the teachers' RSM practice involves the students in risk judgments and makes students responsible for their behavior. A participant also had a strategy of making students feel responsible for what might happen in class by telling them of unsuccessful stories and about the responsibilities of teaching. This includes talking about possible scenarios, what is important for safety in PE and teaching students how to behave toward others. Verbal reminders and addressing students' consciousness and conscience seem to be part of teachers' RSM practices. Establishing rules of conduct is also an appreciated strategy among teachers because students seem to respect the rules when they know of the potential risks involved. Thus, two branches of strategies seem to develop and incorporate teaching students how to be responsible and then make them aware of teachers' responsibilities and the risks involved. Teachers portray this to be part of students' character building and learning in PE and argue that it is part of teachers' mandate and the curriculum. A reference to outdoor education is made to explain the logic.

> As a teacher, I must have enough knowledge about it to teach students to understand that they are also resources, that we have to take active responsibility during outdoor field excursions, be a resource. Students need to be aware that when they go on their own excursions, they have to be the person who would have to save their friend (IP1).

There is also a strategy of protection of girls from a grouping of rough boys which is the reason for separating genders in the data. It is not used as a general or permanent solution among the teachers, but rather,

> in some of the activities, it is a part of the preparations to ask whether they would rather play girls against girls and boys against boys (IP6).

Risk is in one sense dealt with by separation of students, but how cautious boys are considered is not clarified. Rough student groupings might induce teachers to protect other students in PE programs; indeed, there is no addressing of managing the boys' roughness in the data. Regarding dangerous physical activities, however, exclusion seems relevant as a measure.

> You might cut it out [of the PE program] completely, instead of doing it with a safeguard, you exclude things (IP15).

Teachers may therefore eliminate risks by exclusion rather than adapting or modifying the activities taught. This strategy is contended among the teachers due to educative concerns. Although they experience gymnastics to induce risk, some still choose to include it because exclusion might deprive students' development, especially skilled gymnasts. Risk seems therefore to generate conflicting considerations for teachers in PE.

Conflicting Considerations

Teachers may exclude some physical activities, and there is also resistance toward risk-averse strategies among the participants in this study. In choosing among different strategies, it may, in some respects, for these teachers, manifest itself as a choice between restricting students or accepting risk of injury. Although the participant might be aware of the risk involved, other pedagogical concerns seem to triumph.

> Often there is a need for splitting the class into groups and to do activities in two halls, and I cannot be in two places at the same time, but [I] still choose to organize the activity in a way that makes it possible to do different things (IP16).

Teachers seem torn between educational considerations and the potential adverse consequences of risk. The tension is clear for the participant:

> If we want to implement some things, it requires a [particular] organization; the risk lives its own life, and then you are in danger of regretting it bitterly if anything happens (IP16).

The results are further discussed in the next section, and Zinn's (2016) risk strategy typology is applied to distinguish among teachers' strategies and suggest how teachers combine them in their practices.

DISCUSSION

By combining the quantitative and qualitative data and applying the lens of Zinn's (2016) risk strategy typology to teachers' practices, the article seeks to discuss the two research questions: *what characterizes teachers' risk and safety management practice in physical education* and *how do teachers relate their practice to risk and safety management*?

The results in this study suggest that teachers' RSM practices are multifaceted. The interviewees initially describe their RSM practices as quite scarce. This might contrast a former Canadian study (Young, 2007, 230) where teachers claim that risk management is vital in their PE planning and teaching. During the conversations, however, the teachers are more explicit in connecting their adaptations and facilitative measures to RSM. As a result, their RSM practices seem far more comprehensive and the strategies that are embedded into the teaching might make out the greatest contribution in their RSM practices. Based on these results, it is expected that the use of rational risk strategies that explicitly target risk (Zinn, 2016), such as risk matrices or other risk-analytical instruments, might be less prominent in teachers' RSM practices. However, the respondents in the survey report that this type of strategy, such as mapping risk and danger ($M = 4.96$), make a generous part of their practices. Therefore, the survey results seem to diverge from the interview results in some respects and for which might nuance the first impression. On the other hand, developing plans and systems for preventing injuries and accidents ($M = 3.68$) is reported to be the least part of the respondents' RSM practices among the categories presented to them (**Table 5**). This converge with the interviewees' report on a lack of systems approaches in PE. It seems that teachers' RSM practices are selective and that teachers may apply such strategies and not necessarily create systems for risk in PE.

What comprise the most central contributions to teachers' RSM practices, reported in *content of practice* in the survey, are instruction and guidance of activities ($M = 5.99$) and supervision, observation, and overview of students ($M = 5.96$), which may signal strategies that are integrated into teaching. Moreover, when the survey respondents are asked to describe their risk and safety work, they greatly agree that they use discretion and common sense ($M = 4.51$) and that their practices are based on teaching experience ($M = 4.34$) seen in **Table 6**. They agree less to draw on what they have learned through education and courses ($M = 3.67$) and the use of selected method sets ($M = 3.46$). These survey results seem to converge with the interviews: teachers mainly talk about experience and practical know-how in their practice (Polanyi, 1983; Schön, 1995). Hence, looking into teachers' *timing of practice* (**Table 4**), an abundance of the respondents in the survey (87.3%) report that RSM is a practice sometimes or more frequently integrated in teaching, and a great deal (79.7%) report that RSM is sometimes or more frequently part of their teaching preparations. This may therefore characterize teachers' RSM practices as flexible and with reactive measures being slightly more prominent. The results here might signify that ongoing judgment and action during teaching is vital for teachers.

Then, again, exclusion might be a common risk strategy in PE as teachers in this study do exclude physical activities due to risk. The activities that were mentioned in the survey (**Table 7**) and in the interviews are converging. Still, as more than 50% of the responses relate to gymnastics, it seems to be a limited practice. However, risk practices are embedded within institutional and cultural environments (Douglas, 1992; Lupton, 2013). In Park's (2018) Korean study, specialist PE teachers report that they are hesitant to teach physical activities that are accident-prone due to safety policies. Among the interviewees in this study, policy is not given as a primary reason for exclusion of physical activities, but it more so relates to safety concerns such as in Canada (Young, 2007). Hence, it might be that teachers' interpretations of PE and the curriculum promote exclusion as a risk strategy in Norway.

How teachers relate their practice to RSM is therefore central to the investigations and the results in this article. One potential explanation to the interviewees' initial descriptions of RSM as scarce might be found in their framing of RSM and the rationales behind different strategies (Zinn, 2016). The material indicates that RSM is framed by the interviewees as a formal and

explicit risk practice. Prescribed plans and procedures for dealing with risk are thus central and seem to draw on an instrumental risk management logic (Zinn, 2016). In consequence, these teachers do not necessarily conceptualize some of the RSM content described in the survey as RSM but rather measures of other pedagogical concerns. Considering the adaptations and modifications teachers make to program activities, they may correspond to in-between risk strategies (Zinn, 2016) with an essential function in PE: it might be the part of teachers' RSM practices that cater to uncertain risk (Renn, 2008; Aven and Renn, 2020). These measures might make a fluid transition between in-between and rational strategies in PE. The use of rational strategies, as a consequence of being more abstract approaches (Zinn, 2016), might fit with the measurable and controllable dimensions of risk (Renn, 2008), and for some teachers, it is limited to injury reporting and annual inspections of facilities. An interpretation can be that this relates to accountability and school safety policy such as in Korea (Park, 2018), as reporting may relieve the participants' or schools' risk-related liability. An issue that may arise with some of these strategies, however, similar to insurance and assurance, is that they do not necessarily deal with the risk of injury but the potential negative outcome—to maintain trust among stakeholders and give an impression that students' safety is secured (Lindqvist et al., 2009). It may also suggest that their explicit risk practice might include a rationale of risk control that is not necessarily applicable to all areas of PE. Although it may be beneficial in documenting default equipment or accidents that have happened, these strategies might not fit areas of uncertainty or pedagogical concerns of teaching. In outdoor adventure, it is the complex and flexible character of the work that is highlighted in research (Collins and Collins, 2013; Mees et al., 2020). Against this backdrop, the case of compulsory safety guidelines seems questionable. While imposing peer controls and making teachers accountable for applying procedures and guidelines might be beneficial in some situations (Fitzgerald and Deutsch, 2016), it may also restrict teachers' RSM practices to a practice that includes mainly rational strategies. This may be problematic as risk models and procedures might give a false impression of safety in some respects—albeit rational, they might also be questionable (Cox, 2008).

In teaching physical activities that entail a potential for severe injury such as swimming and gymnastics, teachers make use of preplanned procedures that seem to correspond to rational strategies (Zinn, 2016). Although teachers also relate their use of safety guidelines to liability internationally, the target activities and risk-severity reasons in this study seem to match international reports from PE (Young, 2007; Rothe, 2009; Park, 2018). Considering safety procedures that are applied to, for example, outdoor swimming, the knowledge basis for these procedures, however, suggests that formal training is important for teachers to gain knowledge of and to include rational strategies in their RSM practices and potentially manage severe risk in PE. Teacher education and teachers' professional learning opportunities might therefore have an important function in complimenting teachers' use of in-between strategies in their RSM practice.

The participants in the interview study also talk about exclusion in relation to something they dread that resonates with emotions as an in-between strategy to deal with risk (Lupton, 2013; Zinn, 2016). It might be further understood as teachers enact the precautionary principle and attempts to eliminate unnecessary risk (van Asselt and Vos, 2006; Zinn, 2016). Nonetheless, there is a potential for inclusion of risky activities if they are vital for students' development as both the results from the survey and the interviews suggest that there is space for teachers to develop their formal practices and implement rational strategies to a greater degree. It is therefore important to support teachers in developing RSM strategies for the activities they find challenging, especially if they are compulsory curricular activities. The curricular framework for PE in Norway and teachers' interpretation and performance of PE might be apparent in teachers' RSM concerns in practice. Their concerns about gymnastics, for example, might suggest that teachers identify the activity as a central component in PE. Enforcing activities in which teachers are not competent is a policy and management responsibility. Considering that teachers apply plans and procedures to some risky activities, exclusion might be a reasonable strategy given a lack of rational means and in contrast to passive risk acceptance (Zinn, 2016). Professional self-regulation and teachers adjusting their practices by not including activities in which they are not familiar and competent may compliment a reasonable RSM practice (Zinn, 2016). On the other hand, exclusion practices might be problematic if students are included. One example might be illustrated by student management. An impression is made that the interviewees might deal with the risk that is generated by rough boys by physically separating the girls. Another Norwegian study from 2019 also suggests that outdoor education teachers exclude some students from excursions as a safety strategy (Dahl et al., 2019).

Teachers' RSM practices might include a willful lack of risk control anchored in their pedagogy. However, educative uncertainty practices in PE (Quennerstedt, 2019) might create value ambiguity (Aven and Renn, 2020) among teachers. In an environment that promotes uncertainty, it might be difficult for teachers to induce an all-safety-first teaching practice if it deprives students of learning opportunities. A controversy therefore seems to arise in relation to teachers' inaction to engage in rough behavior in this study and whether this relates to passive or active risk acceptance (Zinn, 2016, 2019). A question remains for teachers: Do they have the means to manage the rough group, or do they accept the behavior due to pedagogical or other preferences? A potential explanation might be that risk-reducing measures may affect other pedagogical aspects of the program. In controlling activities when teaching gymnastics, for example, teachers may single out the individual performers in a negative way. The alternatives for teachers might be to either generate or accept risk to enhance student learning or reduce or otherwise eliminate risk and students' opportunities. With this purpose, risk generation or acceptance might include a non-rational strategy of "wishful thinking" or hope in that an accident will not happen (Zinn, 2016).

In teachers' institutionally framed mandate of school safety, however, it might not be appropriate for teachers to rely on

hope, as societal norms and rationales for risk strategies are culturally, institutionally and situationally dependent (Douglas, 1992; Lupton, 2013; Zinn, 2019). Conflict of understanding may lead to teachers excluding activities such as in Korea (Park, 2018). It may be troublesome that some teachers apply caution and even exclude certain physical activities, while others might embrace risk. Different practices and norms among teachers may cause tension and divergence in the field of practice in Norway. However, tension in professionals' work with risk seems to be common (Brown and Gale, 2018b). The practice also depends on school policy: if stakeholders support a risk–benefit balance, there must be an equal acceptance that accidents may happen. These Norwegian teachers' institutional environment, however, seems to open for a mixture of strategies (Zinn, 2016, 350). When teachers experience conflicting considerations on the other hand, the curricular framework and safety regulations might not align, which is clearly of relevance when practicing and policing RSM in PE.

CONCLUSIONS

Based on the reports from the survey and interviews with teachers, the results suggest that teachers apply and combine multiple strategies with differing risk rationales. Albeit the interviewees may employ preplanned procedures, the results therefrom still indicate that the use of these strategies is limited. However, the survey results suggest otherwise and therefore diverge in some respects. The survey respondents report that plans and procedures and mapping of risk and danger, for example, to be generous contributions in their RSM practices. Central in the results from both the survey and interviews are the predominance of discretion and activity-based measures in teachers' RSM practice. Albeit teachers make modifications and facilitate the program for students, the interview participants do not necessarily conceptualize this part of their practice as RSM. Overall, measures that initially meant to cater to other pedagogical concerns seem to be vital contributions in teachers' RSM practices. However, conflicting considerations might create tension. While teachers' pedagogies may influence teachers to accept risk for educative reasons, safety concerns might influence teachers to exclude certain physical activities from PE.

The aim of this article was to explore and understand teachers' RSM practices through investigating two research questions: *what characterizes teachers' risk and safety management practice in physical education* and *how do teachers relate their practice to risk and safety management*? The multiplicity of concerns and use or combination of risk strategies in teachers' RSM practices presented in this article seem to constitute a complex endeavor. The ways teachers seem to combine different strands of strategy in dealing with risk in addition to other pedagogical considerations in PE might both deviate from and nuance the promotion of what seems to be rational risk strategies in the PE literature on RSM. It more so seems to be a flexible balancing act that resonates with RSM of other professions (Horlick-Jones, 2005; Collins and Collins, 2013; Brown and Gale, 2018a,b; Mees et al., 2020), which shows the importance of gaining teachers' perspectives on practice. The results also suggest that combining quantitative and qualitative data is fruitful to gain knowledge of the complex character and nuance teachers' RSM practices. The data in this study might enhance the current state of knowledge and contribute to PE practice research. Overall, this may create a stronger foundation for developing RSM practice, theory, and policy in the field of PE.

The research that is undertaken is still with limitations and there are multiple avenues for further research to generate knowledge of teachers' RSM practices in PE. As this study is conducted in a Norwegian PE framework, there might be both similarities and potential differences between teachers' RSM concerns of practices in an international context. It is necessary to consider the Norwegian context of PE including the national curriculum and teachers' performance of the curricula. Although the study provides data from both interviews with teachers and survey results on teachers' RSM practices, observation studies may complement, and add to teachers' practice perspectives. To what extent it is possible to prevent incidents, accidents, and injuries while securing students' educative opportunities if teachers made changes to their RSM practices remains uncertain. In addition, giving voice to the students' perspectives on RSM in PE and teachers' practices are relevant for developing RSM but also theory grounded in the students' perspectives. Thus, how teachers may develop their RSM practices to deal with risk and uncertainty in PE seems relevant for intervention studies. Shedding light on teachers' institutional environments and how they influence their RSM practices in PE seems equally relevant, as risk practices are not constructed or performed in vacuum.

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because the data cannot be shared for privacy restrictions. Requests to access the datasets should be directed to lise.porsanger@ntnu.no.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Norwegian Centre for Research Data. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

LP designed the study, performed the data collection, analyzed the data, and wrote the manuscript. LM contributed to the design, to the analysis of the survey results, and to the writing of the manuscript. All authors contributed to the article and approved the submitted version.

REFERENCES

Aven, T., and Renn, O. (2020). Some foundational issues related to risk governance and different types of risks. *J. Risk Res.* 23, 1121–1134. doi: 10.1080/13669877.2019.1569099

Bell, M. (2017). The romance of risk: adventure's incorporation in risk society. *J. Adv Educ. Outd Lear.* 17, 280–293. doi: 10.1080/14729679.2016.1263802

Biesta, G. (2013). *The Beautiful Risk of Education*. Boulder, CO: Paradigm Publishing.

Brown, M., and Fraser, D. (2009). Re-evaluating risk and exploring educational alternatives. *J. Adv. Educ. Outd. Learn.* 9, 61–77. doi: 10.1080/14729670902789529

Brown, P., and Gale, N. (2018a). Developing a sociology of risk work in client-facing contexts: an editorial. *Health Risk Soc.* 20, 1–12. doi: 10.1080/13698575.2018.1445072

Brown, P., and Gale, N. (2018b). Theorising risk work: analysing professionals' lifeworlds and practices. *Prof. Prof.* 8:e1988. doi: 10.7577/pp.1988

Charmaz, K. (2015). Teaching theory construction with initial grounded theory tools: a reflection on lessons and learning. *Qual. Health Res.* 25, 1610–1622. doi: 10.1177/1049732315613982

Collins, L., and Collins, D. (2013). Decision making and risk management in adventure sports coaching. *Quest* 65, 72–82. doi: 10.1080/00336297.2012.727373

Connolly, M., and Haughton, C. (2017). The perception, management and performance of risk amongst forest school educators. *Br. J. Sociol. Educ.* 38, 105–124. doi: 10.1080/01425692.2015.1073098

Cox, L. A. (2008). What's wrong with risk matrices? *Risk Anal.* 28, 497–512. doi: 10.1111/j.1539-6924.2008.01030.x

Creswell, J. W. (2015). *A Concise Introduction to Mixed Methods Research*. Thousand Oaks, CA: SAGE Publications.

Dahl, L., Standal, O. F., and Moe, V. F. (2019). Norwegian teachers' safety strategies for friluftsliv excursions: implications for inclusive education. *J. Adv. Educ. Outd Learn.* 19, 256–268. doi: 10.1080/14729679.2018.1525415

Douglas, M. (1992). *Risk and Blame: Essays in Cultural Theory*. London, UK: Routledge.

Fitzgerald, A., and Deutsch, J. (2016). Limiting the risk of injury through safety guidelines in a physical education setting. *J. Hum. Sci.* 13, 2856–2859. doi: 10.14687/jhs.v13i2.3783

Freidson, E. (2001). *Professionalism: The Third Logic*. Cambridge, UK: Polity Press.

Fuller, C., and Drawer, S. (2004). The application of risk management in sport. *Sports Med.* 34, 349–356. doi: 10.2165/00007256-200434060-00001

Gibson, W. (2010). "Qualitative research as method of inquiry in education," in *Educational Research and Inquiry: Qualitative and Quantitative Approaches*, ed. D. Hartas (London, UK: Continuum), 54–63.

Gimbert, T. L., and Sawyer, T. H. (2015). Proper supervision: parachute activities in physical education class. *J. Phys. Educ. Recreat. Dance* 86, 49–50. doi: 10.1080/07303084.2015.998551

Gray, G. R. (1992). Risk management behaviors related to the teaching of floor hockey in K-12 physical education. *J. Legal Aspects Sport* 2, 40–45. doi: 10.1123/jlas,0.2.2.40

HM Government (2010). *Common Sense, Common Safety. Cabinet office*. Available online at: https://www.gov.uk/government/publications/common-sense-common-safety-a-report-by-lord-young-of-graffham [Accessed June 13, 2020].

Horlick-Jones, T. (2005). Informal logics of risk: contingency and modes of practical reasoning. *J. Risk Res.* 8, 253–272. doi: 10.1080/1366987042000270735

Lindqvist, P., Nordänger, U. K., and Landahl, J. (2009). Insurance and assurance: teachers' strategies in the regimes of risk and audit. *Eur. Educ. Res. J.* 8, 508–519. doi: 10.2304/eerj.2009.8.4.508

Lindsay, G. (2010). "Ethical considerations and legal issues in educational research," in *Educational Research and Inquiry: Qualitative and Quantitative Approaches*, ed D. Hartas (London, UK: Continuum), 110–125.

Lupton, D. (2013). Risk and emotion: towards an alternative theoretical perspective. *Health Risk Soc.* 15, 634–647. doi: 10.1080/13698575.2013.848847

Martínková, I., and Parry, J. (2017). Safe danger – on the experience of challenge, adventure and risk in education. *Sport Ethics Philos.* 11, 75–91. doi: 10.1080/17511321.2017.1292308

McCoy, L., Esslinger, K., and Baghurst, T. (2017). Injury and inclusion: understanding common legal concerns in physical education. *Strategies* 30, 3–11. doi: 10.1080/08924562.2017.1344170

Mees, A., Sinfield, D., Collins, D., and Collins, L. (2020). Adaptive expertise – a characteristic of expertise in outdoor instructors? *Phys Educ. Sport Ped.* 25, 423–438. doi: 10.1080/17408989.2020.1727870

Merkelsen, H. (2011). The constitutive element of probabilistic agency in risk: a semantic analysis of risk, danger, chance, and hazard. *J. Risk Res.* 14, 881–897. doi: 10.1080/13669877.2011.571781

Merrie, M. D., Shewmake, C., and Calleja, P. (2016). Injury prevention in physical education: scenarios and solutions. *Strategies* 29, 15–18. doi: 10.1080/08924562.2016.1181590

Moen, K. M., Westlie, K., Bjørke, L., and Brattli, V. H. (2018). *Når Ambisjon Møter Tradisjon: En Nasjonal Kartleggingsstudie av Kroppsøvingsfaget i Grunnskolen (5.-10. Trinn) [When Ambition Meets Tradition: A National Survey on Primary School PE (5th-10th Year)]*. Hamar: Høgskolen i Innlandet.

Murphy, K. L. (2015). Assessing risk management: how effective is your program? *J. Phys. Educ. Recreat. Dance* 86, 32–36. doi: 10.1080/07303084.2014.998392

Murphy, K. L., and Beh, H. G. (2014). The standard of care and the assumption of risk defense in a negligent injury case in a physical education class. *J. Phys. Educ. Recreat. Dance* 85, 41-43. doi: 10.1080/07303084.2014.946836

Park, Y. (2018). How do specialist teachers practice safety lessons exploring the aspects of physical education safety lessons in elementary schools. *Int. Electron. J. Elem. Educ.* 10, 457–461. doi: 10.26822/iejee.2018438136

Patton, M. (2015). *Qualitative Research and Evaluation Methods: Integrating Theory and Practice*. Los Angeles, CA: Sage.

Podstawski, R., Zwolinska, D., and Nowosielska-Swadzba, D. (2015). Problems of safety and risk in physical education. *Pedagog. Psychol. Med. Biol. Probl. Phys. Train. Sports* 19, 82–89. doi: 10.15561/18189172.2015.1013

Polanyi, M. (1983). *The Tacit Dimension*. London, UK: Peter Smith.

Porsanger, L. (2020). The reconstruction of physical education teachers: a critical discourse analysis of regulative texts. *J. Res. Arts Sports Educ.* 4, 76–91. doi: 10.23865/jased.v4.2134

Quennerstedt, M. (2019). Physical education and the art of teaching: transformative learning and teaching in physical education and sports pedagogy. *Sport Educ. Soc.* 24, 611–623. doi: 10.1080/13573322.2019.1574731

Renn, O. (2008). *Risk Governance: Coping with Uncertainty in a Complex World (Earthscan Risk in Society Series)*. London, UK: Earthscan.

Ringdal, K. (2018). *Enhet Og Mangfold: Samfunnsvitenskapelig Forskning Og Kvantitativ Metode*. Bergen: Fagbokforlaget.

Robinson, D. B., Randall, L., and Andrews, E. (2020). Physical education teachers' (lack of) gymnastics instruction: an exploration of a neglected curriculum requirement. *Curr. Stud. Health Phys. Educ.* 11, 67–82. doi: 10.1080/25742981.2020.1715232

Rothe, P. J. (2009). The voluntary use of physical education safety guidelines in schools. *J. Phys. Educ. Recreat. Dance* 80, 43–49. doi: 10.1080/07303084.2009.10598296

Saldaña, J. (2016). *The Coding Manual for Qualitative Researchers*. Thousand Oaks, CA: Sage.

Schön, D. A. (1995). *The Reflective Practitioner: How Professionals Think in Action*. Bury St Edmunds, UK: Arena.

Severs, J., Whitlam, P., and Woodhouse, J. (2003). *Safety and Risk in Primary School Physical Education: A Guide for Teachers*. London, UK: Routledge.

Statistics Norway (2019). *Lærerkompetanse i Grunnskolen. Hovedresultater 2018/2019 [Teacher Competence in Primary and Lower Secondary Education. Main Results 2018/2019]*. Available online at: https://www.ssb.no/utdanning/artikler-og-publikasjoner/_attachment/391015?_ts=16b93d5e508 (accessed August 1, 2019).

van Asselt, M. B. A., and Vos, E. (2006). The precautionary principle and the uncertainty paradox. *J. Risk Res.* 9, 313–336. doi: 10.1080/13669870500175063

Young, D. C. (2007). Physical education, tort law and risk avoidance. *Educ. Law J.* 17, 223–243.

Zink, R., and Leberman, S. (2001). Risking a debate – redefining risk and risk management: a New Zealand case study. *J. Exper Educ.* 24, 1, 50–57. doi: 10.1177/105382590102400110

Zinn, J. O. (2016). 'In-between' and other reasonable ways to deal with risk and uncertainty: a review article. *Health Risk Soc.* 18, 348–366. doi: 10.1080/13698575.2016.1269879

Zinn, J. O. (2019). The meaning of risk-taking – key concepts and dimensions. *J. Risk Res.* 22, 1–15. doi: 10.1080/13669877.2017.1351465

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Appendices

APPENDIX I

Tables

Table 1

Broad Search Details

Date	January 22, 2021
Key words searched, including Boolean operators	((“physical education” OR “PE” OR “gym* class*”) AND (“risk management” OR “safety management” OR “risk and safety management” OR “safety risk management” OR “safe* strategies” OR “safety guidelines” OR “safe learning environment*” OR “risk work” OR “risk policy” OR “safe* policy” OR “risk regulation” OR “safe* regulation” OR “risk pedagogy” OR “safe* pedagogy” OR “adventure risk management” OR “risk assessment” OR “risk analysis” OR “risk identification” OR “risk evaluation” OR “risk communication” OR “risk governance” OR “risk interpretation” OR “risk perception” OR “injury prevention” OR “injury report*” OR “accident prevention” OR “accident causation” OR “accident report*” OR “accident analysis” OR “risk benefit” OR “risk-benefit”))
Databases	ERIC (ProQuest) Education source (EBSCO) SPORTDiscus (EBSCO) Web of Science (Ovid)
Type of text	Peer-reviewed, as identified by the search engines
Language	English
Years	From 1990 to January 22, 2021
Hits	ERIC, 82 Education source, 410 SPORTDiscus, 803 Web of Science, 548 **Total 1,843**

APPENDIX II

NSD approval letter

NSD NORSK SENTER FOR FORSKNINGSDATA

NSD sin vurdering

Prosjekttittel

Læreres risiko- og sikkerhetsarbeid i kroppsøving

Referansenummer

789200

Registrert

04.07.2019 av Lise Porsanger - lise.porsanger@ntnu.no

Behandlingsansvarlig institusjon

Norges teknisk-naturvitenskapelige universitet / Fakultet for samfunns- og utdanningsvitenskap (SU) / Institutt for lærerutdanning

Prosjektansvarlig (vitenskapelig ansatt/veileder eller stipendiat)

Lise Porsanger, lise.porsanger@ntnu.no, tlf: 45502078

Type prosjekt

Forskerprosjekt

Prosjektperiode

02.09.2019 - 31.12.2021

Status

21.08.2019 - Vurdert

Vurdering (2)

21.08.2019 - Vurdert

NSD har vurdert endringen registrert 21.08.2019.

Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg den 21.08.2019. Behandlingen kan fortsette.

OPPFØLGING AV PROSJEKTET
NSD vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.
Lykke til med prosjektet!

Kontaktperson hos NSD: Karin Lillevold
Tlf. Personverntjenester: 55 58 21 17 (tast 1)

01.08.2019 - Vurdert

Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg den 01.08.2019, samt i meldingsdialogen mellom innmelder og NSD. Behandlingen kan starte.

MELD VESENTLIGE ENDRINGER
Dersom det skjer vesentlige endringer i behandlingen av personopplysninger, kan det være nødvendig å melde dette til NSD ved å oppdatere meldeskjemaet. Før du melder inn en endring, oppfordrer vi deg til å lese om hvilke type endringer det er nødvendig å melde:

https://nsd.no/personvernombud/meld_prosjekt/meld_endringer.html

Du må vente på svar fra NSD før endringen gjennomføres.

TYPE OPPLYSNINGER OG VARIGHET
Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til 31.12.2021.

LOVLIG GRUNNLAG
Prosjektet vil innhente samtykke fra de registrerte til behandlingen av personopplysninger. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 og 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse som kan dokumenteres, og som den registrerte kan trekke tilbake. Lovlig grunnlag for behandlingen vil dermed være den registrertes samtykke, jf. personvernforordningen art. 6 nr. 1 bokstav a.

PERSONVERNPRINSIPPER
NSD vurderer at den planlagte behandlingen av personopplysninger vil følge prinsippene i personvernforordningen om:

- lovlighet, rettferdighet og åpenhet (art. 5.1 a), ved at de registrerte får tilfredsstillende informasjon om og samtykker til behandlingen
- formålsbegrensning (art. 5.1 b), ved at personopplysninger samles inn for spesifikke, uttrykkelig angitte og berettigede formål, og ikke behandles til nye, uforenlige formål
- dataminimering (art. 5.1 c), ved at det kun behandles opplysninger som er adekvate, relevante og nødvendige for formålet med prosjektet
- lagringsbegrensning (art. 5.1 e), ved at personopplysningene ikke lagres lengre enn nødvendig for å oppfylle formålet

DE REGISTRERTES RETTIGHETER
Så lenge de registrerte kan identifiseres i datamaterialet vil de ha følgende rettigheter: åpenhet (art. 12), informasjon (art. 13), innsyn (art. 15), retting (art. 16), sletting (art. 17), begrensning (art. 18), underretning (art. 19), dataportabilitet (art. 20).

NSD vurderer at informasjonen om behandlingen som de registrerte vil motta oppfyller lovens krav til form og innhold, jf. art. 12.1 og art. 13.

Vi minner om at hvis en registrert tar kontakt om sine rettigheter, har behandlingsansvarlig institusjon plikt til å svare innen en måned.

FØLG DIN INSTITUSJONS RETNINGSLINJER

NSD legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32).

Select Survey er databehandler i prosjektet. NSD legger til grunn at behandlingen oppfyller kravene til bruk av databehandler, jf. art 28 og 29.

For å forsikre dere om at kravene oppfylles, må dere følge interne retningslinjer og/eller rådføre dere med behandlingsansvarlig institusjon.

OPPFØLGING AV PROSJEKTET
NSD vil følge opp underveis (hvert annet år) og ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet/pågår i tråd med den behandlingen som er dokumentert.

Lykke til med prosjektet!

Kontaktperson hos NSD: Karin Lillevold
Tlf. Personverntjenester: 55 58 21 17 (tast 1)

APPENDIX III

Information letter including consent form interview and information letter survey

Vil du delta i forskningsprosjektet

" Læreres risiko- og sikkerhetsarbeid i kroppsøving"

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å undersøke læreres arbeid med, oppfatninger og meninger om, og erfaringer med risiko- og sikkerhetsarbeid i faget kroppsøving. Risiko- og sikkerhetsarbeid er i dette prosjektet definert som: arbeid med hensikt å forebygge ulykker og fysisk skade. I dette skrivet gir vil gi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål
Undersøkelsen er en del av et doktorgradsstudium finansiert av NTNU.
Prosjektet har til hensikt å gi innsikt i læreres risiko- og sikkerhetsarbeid i faget kroppsøving. Det synes som om at det finnes lite forskning i Norge som berører tematikken og på den måten vet vi lite om hva lærere gjør, hvordan de opplever dette arbeidet og hvilke meninger de har om det.

Med det som utgangspunkt er det ett forskningsspørsmål som skal besvares ved bruk av intervju:

Hvordan opplever og gir lærere mening til risiko- og sikkerhetsarbeid i kroppsøving?

Hvem er ansvarlig for forskningsprosjektet?
Institutt for lærerutdanning (ILU) ved NTNU er ansvarlig for prosjektet.

Hvorfor får du spørsmål om å delta?
Målgruppen for prosjektet er lærere som jobber i grunnskolen og underviser i faget kroppsøving. Både dere som har kroppsøvingsfaglig bakgrunn og dere som ikke har det.

Utvalget av lærere til intervju vil gjøres strategisk med ønske om å få lærere fra ulike skoler og fylker samt med en variert erfaring og bakgrunn. Antall lærere valgt ut for intervju vil være mellom 10-20.

Hva innebærer det for deg å delta?
Hvis du velger å delta videre i prosjektet, innebærer det følgende:

- At du blir intervjuet. Det vil bli foretatt en-til-en-intervju. Intervjuene vil bli tatt opp på bånd. Tidsrammen per intervju er på ca. 60 minutter

For å være sikker på at jeg får med alt som sies, ønsker jeg å bruke lydopptaker. Lydopptaket vil bli overført til PC og avskrevet/transkribert av meg, anonymt. Navnet ditt vil ikke tas opp på bånd. Når materialet er avskrevet vil lydopptaket slettes.

Jeg ser ingen risiko ved å delta i forskningsprosjektet verken på kort eller lang sikt. Utover den tiden det tar å delta i intervju er det ikke forbundet noen belastning for deg.

Det er frivillig å delta
Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykke tilbake

uten å oppgi noen grunn. Alle opplysninger om deg vil da bli anonymisert. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Dersom du ønsker å trekke deg kan du ta kontakte meg på telefon 45502078 eller på e-post lise.porsanger@ntnu.no.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

- Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.
- Det er kun forskningsansvarlig og to veiledere som vil ha tilgang til de opplysninger som samles inn.
- Forskningsmaterialet lagres på passordbeskyttede datamaskiner.
- Ditt navn vil kun stå på samtykkeerklæringen.
- Ditt navn og dine kontaktopplysninger om deg vil bli erstattet med en kode som lagres på en navneliste adskilt fra øvrige data. Det betyr at dine opplysninger er avidentifisert.
- Det er kun prosjektleder og veiledere som har adgang til navnelisten og som kan finne tilbake til den enkelte.
- Når det legges frem resultater fra forskningsprosjektet, vil du vil ikke kunne gjenkjennes i publikasjon.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?
Prosjektet skal etter planen avsluttes 31. desember 2021. Ved prosjektslutt vil alle personopplysninger slettes og datamaterialet vil anonymiseres. Anonymiseringen innebærer at alle data som gjør det mulig å identifisere deg slettes. Samtykkeskjemaer makuleres. Anonymisert materiale vil lagres på en passordbeskyttet datamaskin.

Dine rettigheter
Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg,
- å få rettet personopplysninger om deg,
- få slettet personopplysninger om deg,
- få utlevert en kopi av dine personopplysninger (dataportabilitet), og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?
Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra NTNU har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?
Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- NTNU ved doktorgradskandidat Lise Porsanger 45502078/lise.porsanger@ntnu.no eller veileder Ellen Beate Sandseter.
- Vårt personvernombud: Thomas Helgesen.
- NSD – Norsk senter for forskningsdata AS, på epost (personverntjenester@nsd.no) eller telefon: 55 58 21 17.

Med vennlig hilsen

Lise Porsanger
Prosjektansvarlig

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet *Læreres risiko- og sikkerhetsarbeid i kroppsøving*, og har fått anledning til å stille spørsmål. Jeg samtykker til:

- ☐ å delta i intervju

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet, ca. 31. desember 2021.

(Signert av prosjektdeltaker, dato)

Vil du delta i forskningsprosjektet

" Læreres risiko- og sikkerhetsarbeid i kroppsøving"

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å undersøke læreres arbeid med, oppfatninger og meninger om, og erfaringer med risiko- og sikkerhetsarbeid i faget kroppsøving. Risiko- og sikkerhetsarbeid er i denne undersøkelsen definert som: arbeid med hensikt å forebygge og håndtere ulykker og fysisk skade hos elever i forbindelse med undervisning i faget kroppsøving. I dette skrivet gir vil gi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål
Undersøkelsen er en del av et doktorgradsstudium finansiert av NTNU.
Prosjektet har til hensikt å gi innsikt i læreres risiko- og sikkerhetsarbeid i faget kroppsøving. Det synes som om at det finnes lite forskning i Norge som berører tematikken og på den måten vet vi lite om hva lærere gjør, hvordan de opplever dette arbeidet og hvilke meninger de har om det.

Med det som utgangspunkt er det ett forskningsspørsmål som skal besvares ved bruk av spørreskjema:

Hvilke praksiser og meninger dominerer i læreres risiko- og sikkerhetsarbeid i kroppsøving?

Hvem er ansvarlig for forskningsprosjektet?
Institutt for lærerutdanning (ILU) ved NTNU er ansvarlig for prosjektet.

Hvorfor får du spørsmål om å delta?
Målgruppen for prosjektet er lærere som jobber i grunnskolen og underviser i faget kroppsøving. Både dere som har kroppsøvingsfaglig bakgrunn og dere som ikke har det.

Utvalget er norske grunnskoler. Rektor på skolene vil kontaktes og bes sende spørreskjema til lærere som underviser i kroppsøving på disse skolene. Antall lærere vil variere ut fra størrelsen på de ulike skolene.

Hva innebærer det for deg å delta?
Hvis du velger å delta i prosjektet, innebærer det at du fyller ut et spørreskjema. Det vil ta deg ca. 10 minutter. Spørreskjemaet inneholder spørsmål om dine meninger om og hvordan du arbeider med risiko- og sikkerhet i faget kroppsøving. Dine svar fra spørreskjemaet blir registrert elektronisk.

Jeg ser ingen risiko ved å delta i forskningsprosjektet verken på kort eller lang sikt. Utover den tiden det tar å svare på spørreskjemaet er det ikke forbundet noen belastning for deg.

Det er frivillig å delta
Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du trekke ditt samtykke så lenge du kan identifiseres i datamaterialet og uten å oppgi noen grunn. Alle opplysninger om deg vil da bli anonymisert. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Dersom du ønsker å trekke deg kan du ta kontakte meg på telefon 45502078 eller på e-post lise.porsanger@ntnu.no.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

- Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.
- Det er kun forskningsansvarlig og to veiledere som vil ha tilgang til de opplysninger som samles inn.
- Forskningsmaterialet lagres på passordbeskyttede datamaskiner.
- Kontaktopplysninger om deg vil bli erstattet med en kode som lagres på en liste adskilt fra øvrige data. Det betyr at dine opplysninger er avidentifisert.
- Det er kun prosjektleder og veiledere som har adgang til listen og som kan finne tilbake til den enkelte.
- Når det legges frem resultater fra forskningsprosjektet, vil du vil ikke kunne gjenkjennes i publikasjon.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?
Prosjektet skal etter planen avsluttes 31. desember 2021. Ved prosjektslutt vil alle personopplysninger slettes og datamaterialet vil anonymiseres. Anonymiseringen innebærer at alle data som gjør det mulig å identifisere deg slettes. Anonymisert materiale vil lagres på en passordbeskyttet datamaskin.

Dine rettigheter
Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg,
- å få rettet personopplysninger om deg,
- få slettet personopplysninger om deg,
- få utlevert en kopi av dine personopplysninger (dataportabilitet), og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?
Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra NTNU har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?
Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- NTNU ved doktorgradskandidat Lise Porsanger på telefon: 45502078/epost: lise.porsanger@ntnu.no eller veileder Ellen Beate Sandseter.
- Vårt personvernombud: Thomas Helgesen
- NSD – Norsk senter for forskningsdata AS, på epost personverntjenester@nsd.no eller telefon: 55 58 21 17.

Med vennlig hilsen

Lise Porsanger
Prosjektansvarlig

APPENDIX IV

Interview guide and survey (converted online version)

Intervjuguide

Tema

«Læreres risiko- og sikkerhetsarbeid i kroppsøving»

Problemstilling

Hvordan opplever og gir lærere mening til risiko- og sikkerhetsarbeid i kroppsøving?

Form

Dybdeintervju/en-til-en-intervju. Tidsrammen per intervju er på ca. 60 minutter.

---

1. Rammesetting

- Uformell samtale 2-5 minutter
- Informasjon om prosjektet og problemstillingen
  - Bakgrunn og formål for samtalen
  - Forklar hva intervjuet skal brukes til
  - Avklar spørsmålet rundt anonymitet og taushetsplikt
  - Spør om respondentene har noen spørsmål eller om noe er uklart
  - Informer om lydopptaket, sikre at samtykke er gitt
  - **Start lydopptak**

2. Undertema for intervju

Bakgrunn

Interesse og kjennskap til problemstillingen/tema

Meninger

Betydningen av arbeidet

Risiko i kroppsøving?

Hvordan kommer arbeidet til uttrykk i undervisningen/hva gjør du?

Praksis og prosess

Aktiviteter

Metoder (ros etc.)

Hvilke rammefaktorer opplever du? (muligheter/begrensninger)

Hvorfor disse/den metoden

Noe du savner? Skulle ønske annerledes?

Hvilke krav/forventninger opplever du i følge med risiko- og sikkerhetsarbeid i faget?

Samfunn

Lover/regler/standarder

Organisasjoner som har betydning?

Interessenter? Kolleger/lokal ledelse/Foreldre/elever

Samsvar mellom egne meninger og forventninger fra interessenter?

Endring/utvikling av arbeidet

Endring i praksis?

Erfaringer og opplevelser

Hva bidrar til opplevd endring/utvikling?

Outsourcing?

Opplevd kompetanse og kursing

Samsvar mellom kompetanse og krav/forventninger?

Utdanning

Ny kompetanse og eventuelt hvordan?

Avrunding/oppsummering og avklaring

Noe informanten ønsker å legge til?

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Informasjon om spørreundersøkelsen.

Dette er informasjon til deg som deltar i forskningsprosjektet med formal å undersøke læreres arbeid med, meninger om og erfaringer med risiko- og sikkerhetsarbeid i faget kroppsøving.
Ytterligere informasjon om prosjektet og dine rettigheter er vedlagt i eposten som er sendt til deg.

Risiko- og sikkerhetsarbeid er i denne undersøkelsen definert som: arbeid med hensikt a forebygge og handtere ulykker og fysisk skade hos elever i forbindelse med undervisning i faget kroppsøving. I undersøkelsen vii begrepet risiko- og sikkerhetsarbeid brukes. Med det som utgangspunkt er det ett forskningsspørsmål som skal besvares ved bruk av dette spørreskjema:

Hvilke praksiser og meninger dominerer i læreres risiko- og sikkerhetsarbeid i kroppsøving?

Dette spørreskjema vii ta om lag 10 minutter a besvare. Vennligst besvar alle spørsmålene i en økt. Bryter du av underveis, vii du ikke kunne komme tilbake til dine svar. Du samtykker i a delta i undersøkelsen ved a svare på spørsmålene og sende dem inn ved a klikke på «Ferdig» på siste side.

1. Underviser du i kroppsøving?
Kryss også ja om du normalt underviser i faget og som et unntak ikke skal undervise i faget skoleåret 2019-20 20. *
NB: Dette spørsmålet må besvares, fordi svaret er avgjørende for hvilken side i skjemaet du vii bli sendt til

0 Ja O Nei

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2. Kjønn

0 Kvinne
0 Mann

3. Alder

0 29 år eller yngre
0 30-39
0 40-49
0 50-59
0 60 år eller eldre

4. I hvilket fylke arbeider du i nå?

0 Østfold	0 Akershus	0 Hedmark
O Oppland	0 Oslo	0 Buskerud
0 Vestfold	0 Telemark	0 Aust-Agder
0 Vest-Agder	0 Rogaland	0 Hordaland
0 Sogn og Fjordane	0 Møre og Romsdal	0 Trøndelag
0 Nordland	0 Troms	0 Finnmark

5. Hvor mange ar har du arbeidet som kropps0vingsl rer?
Inkluder alle ar der du har jobbet i minst ett semester. Gi et anslag hvis du ikke kjenner det nøyaktige antallet

0 0-2
0 3-4
0 5-9
0 10-14
0 15-19
0 20-24
0 25-29
0 30+

6. Hvor mange studiepoeng har du i kropps0ving?
Ett vekttall tilsvarer tre studiepoeng. Ett studieår tilsvarer 60 studiepoeng/20 vekttall.

0 Ingen utdanning i kropps0ving
0 1-29
0 30-59
0 60+
0 Annen relevant utdanning, spesifiser:

7. Hvilket skoleslag underviser du i?

0 Barneskole (1-7 trinn)

0 Ungdomsskole (8-10 trinn)
0 Barne- og ungdomsskole (1-10 trinn)

8. Hvilket trinn underviser du i hovedsak på?

0 Småskoletrinnet (1-4 trinn)
0 Mellomtrinnet (5-7 trinn)
0 Ungdomstrinnet (8-10 trinn)
0 Kombinasjon av ulike trinn

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Dine erfaringer og meninger

9. Hvor ofte skjer det at elever skader seg i din undervisning?

Aldri	Svært sjelden	Sjelden	Av og til	Ofte	Svært ofte	Alltid
0	0	0	0	0	0	0

10. Hvis du har hatt elever som har skadet seg, hvilken alvorlighetsgrad har disse skadene hatt? Gradene er kategorisert ut fra skaders trussel mot livet. Her kan du krysse av p flere grader.

- ☐ Liten; som forstuelser, forstrekking og mindre åpne sar
- ☐ Moderat; som enkle brudd og sar/kutt mindre enn 10 cm
- ☐ Alvorlig; som flere eller apne brudd og kutt større enn 10 cm
- ☐ Meget alvorlig; som alvorlig blødning eller bevisstløs mer enn 15 minutter
- ☐ Kritisk eller dødelig, som bevisstløs mer enn 24 timer med usikker utgang eller død

11. Hva mener du om risiko- og sikkerhetsarbeid i kroppsøving?
Risiko- og sikkerhetsarbeid er her forstått som arbeid med hensikt forebygge og håndtere ulykker og fysisk skade hos elever i forbindelse med undervisning i faget kropps0ving.

Svært lite viktig	Lite viktig	Verken /eller	Viktig	Svært viktig
0	0	0	0	0

12. Utforer du risiko- og sikkerhetsarbeid som en del av ditt arbeid som kroppsøvingslærer?

- 0 Ja
- ○ Nei

13. Hvis ja, hvorfor utfører du risiko- og sikkerhetsarbeid i kroppsøving?

	Helt uenig	Litt uenig	Verken /eller	Litt enig	Helt enig
For å forebygge at elevene skader seg	○	○	○	○	○
Jeg gjør det av omsorg for elevene	○	○	○	○	○
Jeg har et etisk ansvar som kroppsøvingslærer å forebygge skader og ulykker	○	○	○	○	○
Jeg anser det som en sentral arbeidsoppgave i kroppsøving	○	○	○	○	○
Fordi det kreves av den lokale ledelsen (som rektor og inspektør)	○	○	○	○	○
Det er lovpålagt å gjøre det	○	○	○	○	○

Fagnettverket anbefaler det	○	○	○	○	○
Foreldre forventer at jeg gjør det	○	○	○	○	○
Jeg gjør det fordi kolleger gjør det	○	○	○	○	○
For å unngå merarbeid i forbindelse med skader og ulykker	○	○	○	○	○
Jeg er bekymret for konsekvenser for meg hvis en elev skulle skade seg	○	○	○	○	○

14. Hvis nei, hvorfor utfører du ikke risiko- og sikkerhetsarbeid i kroppsøving?

	Helt uenig	Litt uenig	Verken /eller	Litt enig	Helt enig
Jeg har ikke tenkt over det	○	○	○	○	○
Skader og ulykker i kroppsøving er ikke noe jeg kan gjøre noe med	○	○	○	○	○
Skader og ulykker er naturlig i kroppsøving	○	○	○	○	○
Jeg har ikke kompetanse til å gjøre det	○	○	○	○	○
Jeg har ikke tid til å gjøre det	○	○	○	○	○
Jeg anser det ikke som en del av mine arbeidsoppgaver	○	○	○	○	○
Ingen andre kolleger gjør det	○	○	○	○	○
Den lokale ledelsen krever det ikke av meg	○	○	○	○	○
Det er ikke lovpålagt å gjøre det	○	○	○	○	○

15. Settes det av tid og ressurser til risiko- og sikkerhetsarbeid i kroppsøving på din skole?

- ○ Ja
- ○ Nei

16. Hvordan er din kompetanse i risiko- og sikkerhetsarbeid i kroppsøving?

Svært dårlig	Dårlig	Verken /eller	God	Svært god
0	0	0	0	0

17. Har du tatt etter- eller videreutdanning i risiko- og sikkerhetsarbeid som måtene under?Her kan du krysse av på flere grader.

- ☐ Har ikke tatt etter- eller videreutdanning
- ☐ Sertifiseringer (våttkort, brattkort o.l.)
- ☐ Generelle pedagogiske fag
- ☐ Kurs spesielt rettet mot sikkerhet og helse (HMS-kurs o.l.)
- ☐ Fagdidaktiske kurs
- ☐ Førstehjelpskurs

☐ Kurs i HLR eller bruk av hjertestarter ☐ Svømme- og livredningskurs

○ Annet:

18. Leier din skole inn eksterne for å undervise i aktiviteter der dere ikke har tilstrekkelig kompetanse for å ivareta sikkerheten til elevene?

Eksterne kan for eksempel være trenere, instruktører, vakter osv.

○ Ja
○ Nei

19. Opplever du press fra andre til å arbeide med risiko- og sikkerhet i kroppsøving?

○ Ja
0 Nei

20. Forholder du deg til innholdet i disse tekstene i ditt risiko- og sikkerhetsarbeid i kroppsøving?

	Ja	Nei
Opplæringsloven	0	0
Forskrift til opplæringsloven	0	0
Arbeidsmiljoloven	0	0
Internkontrollforskriften	0	0
Læreplanen i kroppsøving	0	0
Rundskriv om forsvarlig svømme- og livredningsopplæring i grunnskoleopplæringen	0	0
Folkehelseloven	0	0
Forskrift om miljørettet helsevern i barnehager og skoler	0	0

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Praksis

21. Hvor ofte er ditt risiko- og sikkerhetsarbeid en del av disse under:

	Aldri	Svært sjelden	Sjelden	Av ag til	Ofte	Svært ofte	Alltid
Forarbeidet til undervisningen	0	0	0	0	0	0	0
Integrert i undervisningen	0	0	0	0	0	0	0
Etterarbeidet etter undervisning	0	0	0	0	0	0	0

22. I hvilken grad er følgende elementer en del av ditt risiko- og sikkerhetsarbeid i kroppsøving?

	Ikke i det hele tatt	I svært liten grad	I liten grad	Verken /eller	I star grad	I svært star grad	Alltid
Kontroll og vedlikehold av utstyr og læringsareal	0	0	0	0	0	0	0
Tilsyn, observasjon og oversikt over elever	0	0	0	0	0	0	0
Instruksjon og veiledning av aktiviteter	0	0	0	0	0	0	0
Oppfølging av regler og rutiner	0	0	0	0	0	0	0
Tilrettelegging og tilpasning av aktiviteter til elevgruppen	0	0	0	0	0	0	0
Kartlegging av risiko og farer	0	0	0	0	0	0	0
Utvikling av planer og systemer for forebygging av skader og ulykker	0	0	0	0	0	0	0
Dokumentasjon og administrasjon av skader og ulykker	0	0	0	0	0	0	0

23. Beskriv ditt risiko- og sikkerhetsarbeid ved a ta stilling til utsagnene under.
Angi hvor enig eller uenig du er i utsagnene.

	Helt uenig	Litt uenig	Verken /eller	Litt enig	Helt enig
Jeg bruker start sett skjønn og sunn fornuft i dette arbeidet	0	0	0	0	0
Arbeidet er i hovedsak basert på erfaringer jeg har gjort meg i undervisning	0	0	0	0	0
Aktiviteten jeg underviser avgjør maten jeg arbeider på	0	0	0	0	0
Jeg bruker start sett bestemte metodesett i dette arbeidet	0	0	0	0	0
Arbeidet er i hovedsak basert på det jeg har lært gjennom utdanning og kurser	0	0	0	0	0
Maten jeg arbeider på er uavhengig aktiviteten jeg underviser	0	0	0	0	0

24. Samarbeider du med disse om risiko- og sikkerhetsarbeid i kroppsøving?
Her kan du krysse av på flere.

- ☐ Nei, dette arbeidet gjør jeg alene
- ☐ Pedagogisk personale
- ☐ Elever
- ☐ Andre, vennligst spesifiser;
- ☐ Lokal ledelse (som rektor eller inspektør)
- ☐ Driftsavdeling (som vaktmester)

25. Er det noen aktiviteter eller undervisningsmåter i kroppsøving som er mer risikofylte enn andre?
Nevn den aktiviteten eller undervisningsmåten en du mener er mest risikofylt som nr. 1, den som er nest mest risikofylt som nr.2 osv.

1:
2:
3:

26. Er det noen aktiviteter eller undervisningsmåter du utelukker fra din undervisning på grunn av risiko for skade og ulykker?

1:
2:
3:

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Endring og utvikling

27. Har du endret maten du jobber på i ditt risiko- og sikkerhetsarbeid de siste fem årene?

0 Ja O Nei

28. Hvis ja, kan du med noen få ord si hva som kjennetegner den nye måten du jobber på?

29. Hvis ja, hva var årsaken til at du endret måten du jobber på?

- ☐ Nestenuhell
- ☐ Elevskade
- ☐ Ny kompetanse
- ☐ Innspill fra kolleger
- ☐ Lokal ledelse påla oss endringen (som rektor, inspektør)
- ☐ Krav fra kommunen
- ☐ Krav fra utdanningsdirektoratet

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Du samtykker til å delta i spørreundersøkelsen ved å trykke ferdig

Ferdig

Tusen takk for at du ønsket å delta i undersøkelsen

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