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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
<i>School level</i>		
Primary	5	29.4
Primary and lower secondary	1	5.8
Lower secondary	11	64.7
<i>Gender</i>		
Male	11	64.7
Female	6	35.3
<i>Age</i>		
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
<i>PETE or equivalent ECT (credits)</i>		
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
<i>Years of PE experience</i>		
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 discretionary 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 (Guerrero 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.

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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.
- Graudson, 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*. Gloucester: 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.