Kjersti Werge-Olsen

Satisfaction with life in adolescents:
The role of potential health promoting factors

ARTICLE I: Investigation of the relation between satisfaction with life, leisure time physical activity and self-esteem among adolescents

ARTICLE II: Leisure time physical activity can promote satisfaction with life in Norwegian adolescents: A relation partly mediated by self-esteem

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Inspiration for this thesis came from my bachelor background in studying Sports Science, and my general interest in the positive impact physical activity can have in the society and our lives. When I started my masters in Health Science, I wanted to bring to good use the knowledge and experiences I had build up in the sports field, and further put this into good use in the health context. I was further inspired to work more towards mental health during my summer job at the district psychiatric center in my hometown. They had, in my opinion, a very important focus towards getting the patients to be active and exercise regularly in order to do something useful during the day and get out of a negative state of mind. This opened my eyes to more of the positive effects physical activity can have on both those struggling with mental health problems and the general population. During my bachelor's degree, many subjects also emphasized the importance of promoting physical activity in children and adolescents while growing up. This is an important and easy way to create positive habits that can last for a lifetime. These inspirations were summed up, and resulted in this master's thesis.

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SUMMARY

The present master's thesis comprises an investigation of the biopsychosocial health model and the broaden-and-build theory of positive emotions for use within a health promoting context in an adolescent sample. It also comprises an investigation of leisure time physical activity and self-esteem as potential promotive factors of satisfaction with life. The thesis further investigates the relationship between satisfaction with life, leisure time physical activity, and self-esteem in adolescents. Thorough description and conceptualization of all measurements are provided, in addition to a conceptualization of the adolescent maturation period. Empirical evidence suggests that there are several relationships among the three constructs and that they influence one another. Physical activity, life satisfaction, and self-esteem might influence one another both directly and indirectly through other outcomes. The theoretical relationships also propose that positive emotions or personal resourced, resilience, and flourishing promoted through positive emotions can influence both participating in leisure time physical activity and level of life satisfaction and self-esteem in adolescents because all aspects in life mutually influence one other.

Results showed that a higher frequency of leisure time physical activity was positively associated with both increments in life satisfaction and self-esteem among the adolescents in the survey. Increased self-esteem was also positively associated with increments in life satisfaction levels. Adolescent boys reported higher mean levels of life satisfaction and self-esteem than their female counterparts, whereas younger adolescents reported higher life satisfaction levels than the older adolescents. An indirect effect test based on a bootstrap macro showed a significant indirect effect between leisure time physical activity and satisfaction with life, and showed also that this relationship was partly mediated by self-esteem. Girls and younger adolescents scored higher on the outcome variable life satisfaction than did their contrary peers when all initial constructs in the model were controlled for.

NORSK SAMMENDRAG

Mastergradsoppgaven omfatter en undersøkelse av hvorvidt den biopsykososiale helsemodellen og broaden-and-build teorien om positive emosjoner kan brukes for å undersøke helsefremmende kontekster for en ungdomspopulasjon. Den omfatter også en undersøkelse av fysisk aktivitet i fritiden og selvfølelse som potensielle helsefremmende faktorer i relasjon til tilfredshet med livet. Avhandlingen undersøker videre relasjonene mellom tilfredshet med livet, fysisk aktivitet i fritiden og selvfølelse hos ungdommer. En grundig beskrivelse og konseptualisering av alle målene er fremstilt, i tillegg til konseptualisering av ungdomsperioden. Empiriske funn antyder at de tre begrepene er relatert til og påvirker hverandre. Fysisk aktivitet kan fremme tilfredshet med livet og økt selvfølelse, og økt selvfølelse kan fremme økt tilfredshet med livet hos ungdommene både direkte og indirekte gjennom andre utfallsvariabler. De teoretiske sammenhengene foreslår også at positive emosjoner eller personlige ressurser, motstandsdyktighet (resiliens) og et blomstrende liv (flourishing) fremmet gjennom positive emosjoner kan påvirke både deltagelse i fritidsaktiviteter som fysisk aktivitet, tilfredshet med livet og selvfølelses nivået hos ungdommer på grunn av at alle aspekter ved livet påvirker hverandre gjensidig.

Resultatene viste at en høyere frekvens av deltagelse i fysisk aktivitet i fritiden var positivt assosiert med både økninger i livs tilfredshet og i selvfølelsen hos ungdommene i undersøkelsen. Økt selvfølelse var også positivt assosiert med økninger i nivået av tilfredshet med livet. De mannlige ungdommene rapporterte høyere gjennomsnittsnivå av tilfredshet med livet og selvfølelse enn jentene, mens de yngre ungdommene rapporterte høyere tilfredshet enn de eldre. En test av indirekte effekt basert på en bootstrap makro viste en signifikant indirekte effekt mellom fysisk aktivitet i fritiden og tilfredshet med livet, og at denne sammenhengen ble delvis mediert av selvfølelse. De kvinnelige og yngre ungdommene oppnådde en høyere skår på utfallsvariabelen, tilfredshet med livet, enn de mannlige og eldre ungdommene når alle de andre variablene i modellen var kontrollert for.

CONTENTS

MAIN INTRODUCTION

This master's thesis is divided into two connected, scientific articles. The overall aim of this thesis was to investigate whether leisure time physical activity can act as a potential promoter of higher satisfaction in the lives of adolescents. Adolescence is a period of rapid and numerous changes, as well as a period for development of healthy or risky behaviors and habits; therefore health promotion is especially important for this age group. The influence of self-esteem is also investigated due to the fact that self-esteem is normally lower for adolescents than for children and adults. It is a large part of an adolescents' self-understanding and plays a causal role in determining different life outcomes.

Article I is a theoretical article containing the theoretical and empirical foundation for the second article. The overall aim was to propose a theoretical framework through two theories: the biopsychosocial health model and the broaden-and- build theory of positive emotions, since this is lacking in this area of adolescent health promotion. It also contains a description of the adolescent transitional period and describes how the changes and challenges can influence our health and well-being. Further, conceptualizations and definitions of the empirical concepts of satisfaction with life, leisure time physical activity and self-esteem are reviewed in addition to a review of the empirical work of each of these constructs. The second aim of Article I was to investigate the empirical framework of the relation between the respective constructs, with particular focus toward how physical activity and self-esteem influence satisfaction with life levels in adolescents. This is further discussed in relation to the theories in order to establish the directional or possible causal link between the three constructs.

Article II is the empirical article. It contains a brief review of the content in Article I in addition to the quantitative statistical analyses. The aims of this article were to investigate the level of and relations between life satisfaction, leisure time physical activity and self-esteem in Norwegian adolescents. Further on, the "Living on the Edge" survey, participants, procedure and measurements is thoroughly described. The main aim was to investigate whether self-esteem mediates the relation between leisure time physical activity and satisfaction with life. The results contain descriptive and correlation analyses provided for all of the study variables in addition to an indirect mediation analyses conducted with the use of a bootstrap macro. This provides an updated empirical link between satisfaction with life, leisure time physical activity and self-esteem among Norwegian adolescents in addition to gender and age differences. The indirect effect test provides a possible total and direct effect

between physical activity and satisfaction with life that needs to be further investigated, validated and causally tested. The test also provides information regarding self-esteem as a potential mediator in the relation between physical activity and satisfaction with life.

The method used for Article I's empirical and theoretical foundation was a literature search. The databases used were mainly PubMed, SPORTDiscuss and Science Direct (Elsevier). The "snowball" method was further used to detect other, similar articles listed in the respected articles' reference list. Search words used were mainly "satisfaction with life," "physical activity," "self-esteem" and "adolescent". Additionally, the words "life satisfaction," "Diener," "Diener's satisfaction with life scale," "well-being," "Rosenberg," "Rosenberg's self-esteem scale," "adolescence," "broaden-and-build" and "biopsychosocial" were used. The NTNU university library was also used to detect books by the use of the same search words.

The method used for Article II's empirical tests was SPSS version 16.0 in addition to the bootstrap macro downloaded from www.afhayes.com. Both articles were written and referenced using the style guidelines described in the Publication Manual of the American Psychological Association (APA, 6th Edition) and written with a possible publication in the *Journal of Mental Health and Physical Activity* or a similar publication in mind.

Article I

Investigation of the relation between satisfaction with life, leisure time physical activity and self-esteem among adolescents

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Abstract: The overall aim of this article was to propose the biopsychosocial health model and the broaden-and-build theory of positive emotions as a conceptual framework for the relation between leisure time physical activity, satisfaction with life and self-esteem. Further, the adolescent period, satisfaction with life, leisure time physical activity and self-esteem are defined and conceptualized. The second aim was to review empirical evidence on these constructs and investigate relations between them in adolescents. In the discussion, the investigation attempts to examine in what ways satisfaction with life, leisure time physical activity and self-esteem are related. Further, the study strives to show how physical activity and self-esteem can act as a potential promoter of a higher level of life satisfaction during adolescence. The theoretical foundation is also postulated as an explanation for the link between the promotive factors and life satisfaction. Finally, an indirect effect between leisure time physical activity and satisfaction with life is suggested, possibly mediated by the effect of self-esteem.

Key words: Adolescence, satisfaction with life, physical activity, self-esteem, health promotion, biopsychosocial health model, broaden-and-build theory of positive emotions

INTRODUCTION

The term adolescence means to "grow up" or "grow into maturity," and represents the transition from childhood through adolescence and into adulthood (Lerner & Steinberg, 2009; Ozer & Irwin, 2009). Of all life periods, except childhood, the second decade of life is the one most marked by a multitude of potentially tumultuous changes (Williams, Holmbeck, & Greenly, 2002). Adolescence involves puberty with rapid bodily, psychological and hormonal changes and challenges, and later adolescence which involves more social, cognitional, emotional and psychological changes in the process of becoming an adult (Steinberg, 2008; Susman & Dorn, 2009). Even though this period is necessary for adult development, the speed and magnitude of these changes and challenges may overtax the capacity of many young people to cope and potentially result in negative experiences and health problems (Byrne, Davenport & Mazanov, 2007). Important areas for research, therefore, include positive factors that prevent negative experiences and bad health, and facilitating factors that promote health and well-being (Côté, 2009; Kuhn, 2009; Lerner & Steinberg, 2009).

The adolescent developmental period has long been relatively neglected in respect to both mental and physical health interventions and outcomes, partly because most adolescents are healthy assessed by traditional medical indicators (Ozer & Irwin, 2009) and have low morbidity and mortality rates (Williams et al., 2002). Most adolescents report positive levels of overall life satisfaction (Diener, 1996; Huebner, Drane & Valois, 2000a, OECD, 2012), flourishing lives or moderate mental health (normal) (Keyes, 2006). However, a noteworthy number nevertheless report low levels of lives satisfaction or even life dissatisfaction (Huebner et al., 2000a), and the number of mental health disorders, substance use, physical inactivity, poor eating habits and threats to physical health due to risk behavior and stress is unacceptably high (Compas & Reeslund, 2009; Grant et al., 2003; Ozer & Irwin, 2009). The promotion and encouragement of protective factors such as an active and healthy lifestyle is therefore crucial in this life stage (Steptoe & Butler, 1996; Valois, Zullig, Huebner & Drane, 2004), both to ensure health and well-being in the present, and to mitigate the likelihood of negative health and social outcomes later in life (Bernat & Resnick, 2006).

Satisfaction with life is associated with a number of positive and negative outcomes in adolescents (Gilman, 2001; Gilman & Huebner, 2006; Lagerberg, 2005; Proctor, Linley & Maltby, 2010; Suldo & Huebner, 2006). A high level of life satisfaction is associated with higher adaptive functioning (Gilman & Huebner, 2006; Suldo & Huebner, 2006), higher self-esteem (Diener & Diener, 2009; Harter, 1999), physical attractiveness (Neto, 1993), high self-

concept (Gilman & Huebner, 1997), positive feelings (Cohn, Fredrickson, Brown, Mikels & Conway, 2009; Fredrickson, Cohn, Coffey, Pek & Finkel, 2008), less emotional and behavioral problems (Suldo & Huebner, 2006) and self-mastery (Rosenfield, 1992). It is likely that these relations are reciprocal, thus investigation and promotion of these factors are important in order to facilitate health and well-being among adolescents.

Even though most adolescents are healthy (Ozer & Irwin, 2009), a substantial number of adolescents do not engaging in any form of physical activity (Valois et al., 2004, WHO, 2012b). There is a consistent negative relation between sedentary lifestyles and mental health, facilitating the positive effects and benefits from physical activity (Biddle & Asare, 2011; Penedo and Dahn, 2005; Sagatun et al., 2007). Physical activity can indirectly improve and promote well-being and life satisfaction in adolescents, by avoiding disease and premature death, as well as directly by enhancing mental well-being (Fox, 1999), improving self-esteem (Biddle & Asare, 2011; Calfas & Taylor, 1994) and reducing depressive symptoms (Rothon et al., 2010). During youth and school years, many adolescents establish enduring health habits, behaviors and strategies important for health and well-being, which are projected into adulthood (Byrne et al., 2007; MacKey & Duran, 2007; Ozer & Irwin, 2009; Santrock, 2008; Williams et al., 2002). Promotion of life satisfaction and general health through physical activity should therefore be initiated and promoted during the adolescent period in order to maintain a healthy life span (Williams et al., 2002).

Self-esteem is an important predictor of satisfaction with life (Biddle & Asare, 2011; Diener & Diener, 2009; Fox, 2000), and a large part of adolescents' self-understanding (Räty, Larsson, Söderfeldt, & Larsson, 2005). The level of self-esteem plays a causal role in determining different life outcomes (Baumeister, Campbell, Krueger & Vohs, 2003; Boden, Fergusson & Horwood, 2008) where higher self-esteem leads to more life satisfaction (Diener & Diener, 2009; Fox, 2000). However, adolescent's self-esteem fluctuates more than that of children and adults due to the transition challenges (Côté, 2009; Robins, Trzesniewski, Tracy, Potter & Gosling, 2002). One's mental health condition is strongly associated with level of well-being and self-esteem in all age groups, making these two factors important predictors for maintaining mental health (Fox, Boutcher, Faulkner & Biddle, 2000). Physical activity can also be an arena for improvement in self-esteem among adolescents (Biddle and Asare, 2011; Calfas and Taylor, 1994; Ekeland et al., 2005; Fox, 1999, 2000; Lagerberg, 2005; Parfitt & Eston, 2005) and is predictive of less health damaging behavior (Kirkcaldy et al., 2002).

The focus of this article is directed toward establishing a theoretical explanation that

can describe why there is a positive relation between leisure time physical activity, self-esteem and satisfaction with life. Due to the existing lack of focus towards adolescents (Biddle & Asare, 2011; Kirkcaldy et al., 2002; Penedo & Dahn, 2005), attention will be directed toward the determinants and correlates of individual differences in life satisfaction and positive mental health outcomes among this cohort (Gilman & Huebner, 2003). Little research attention has been given to the tripartite relation between satisfaction with life, leisure time physical activity and the relation to self-esteem, especially important for adolescent development and well-being (Diener and Diener, 2009).

The aims in this article are thus (1) to form a theoretical platform that can describe the positive relation between satisfaction with life, physical activity and self-esteem in adolescents and (2) to investigate the empirical relationship between physical activity, satisfaction with life and self-esteem in order to examine how and why these constructs are related, and whether physical activity together with self-esteem can potentially promote more life satisfaction among adolescents.

THEORETHICAL AND EMPIRICAL BACKGROUND

The biopsychosocial health model

The biopsychosocial health model, first published by Engel in 1977 (Adler, 2009; Borrell-Carrió, Suchman & Epstein, 2004; Earle, Lloyd, Sidell & Spurr, 2007), developed as a reaction to the biomedical model's dualistic view of human health lacking focus toward mental health (Espnes & Smedslund, 2009; Falkum, 2008; McLaren, 1998). This model is holistic and contrary to the biomedical model in that health and illness development is influenced by political, economical, social, biological, psychological, cultural, spiritual and environmental factors in the society (Earle et al., 2007). The model is both a practical clinical guide in its way of focusing on the subjective experience as an essential contributor to health and disease, and also a philosophy in understanding that disease and illness are affected by multiple levels (Borrell-Carrió et al., 2004). The biopsychosocial model focuses on identifying causes of illness and disease, and therefore offers a preventive perspective (Espnes & Smedslund, 2009; White, 2007). However, in recent years, the biopsychosocial focus has shifted toward health promotion work by seeking positive factors, determinants and resources in the individual that can promote and preserve health in all populations throughout the entire life span (Espnes & Smedslund, 2009).

An illustration of the model's health focus is seen in the third International Conference on Health Promotion where "Health itself should be seen as a resource and essential prerequisite of human life and social development rather than the ultimate aim of life. It is not a fixed end-point, a 'product' we can acquire, but rather something ever changing, always in the process of becoming" (WHO, 1991). Resources important for resilience and promotion of health are, among other factors, well-being, courage, satisfaction with life, hope, perseverance, optimism, flow and happiness (Seligman & Csikszentmihalyi, 2000). This perspective provides the individual with the opportunity, responsibility and control to change one's behavior in a health promotion direction (Espnes & Smedslund, 2009).

The biopsychosocial model is relevant in this article due to its health promotion focus, its focus on health and well-being as a sum of all influences caused by ourselves and our surroundings, and the individual's responsibility for forming and maintaining healthy habits, behaviors and strategies. The model is especially important during adolescents' complex developmental changes. The model can also be a framework for prevention and intervention strategies targeting adolescents (Williams et al., 2002). However, the model does not explain

why we can expect a relation between well-being and physical activity in ways other than that all components in life are potential promoters or preventers of health.

Broaden-and-build theory of positive emotions

The broaden-and-build theory of positive emotions provides a further explanation as to why we can expect a relation between physical activity and life satisfaction. It suggests that positive emotions lead to six elements of optimal functioning by (1) broadening attention and thinking, (2) undoing lingering negative emotional arousal, (3) building consequential personal resources, (4) fueling psychological resilience, (5) triggering upward spirals toward greater well-being also long-term, and (6) seeding human flourishing (Fredrickson, 2001, 2004). Emotions can be defined as "a subset of affective phenomena distinguished as brief, multi-component response systems initiated by those changes in current circumstances that are appraised, either consciously or unconsciously, to be personally significant." (Garland et al., 2010, p 849) These six elements will now be further examined in the following sections.

First, positive emotions broaden our thought-action repertoires. This results in flexible thinking, personal growth, psychological adaption and a wider range of behaviors, percepts, ideas, attention and creativity (Cohn et al., 2009; Fredrickson, 1998, 2000, 2001, 2003, 2004; Fredrickson et al., 2008; Fredrickson & Losada, 2005; Garland et al., 2010). Positive emotions do not necessarily alter a specific action, but instead change our cognition, which can lead to changes in actions and behaviors (Fredrickson, 1998). In addition, positive emotions promote exploration, interest and curiosity, creating learning opportunities to confirm or correct initial expectations (Fredrickson & Losada, 2005). Interest generates a desire to investigate, become involved, and have new experiences, which generates more interest and broadened action (Fredrickson, 1998). Positive emotions can thus build more accurate cognitive maps of what is positive and negative in the environment, becoming a lasting personal knowledge resource (Fredrickson, 1998, 2004; Fredrickson & Losada, 2005).

Second, positive emotions can undo the lingering effect of negative emotions by altering or dismantling action preparations or by broadening perspectives on negative emotions (Fredrickson, 2001, 2004). This is partly because of the unpredictable characteristics of positive states due to the broadened thought-action repertoires (Fredrickson & Losada, 2005). Positive emotions lead to states of mind and modes of behavior that can prepare an individual for later hard times, help build enduring useful and protective resources, and create a buffer against depression (Fredrickson, 2001, 2003, 2004). For positive emotions to function

most efficiently, they must be stimulated indirectly through finding positive meaning (Fredrickson, 2000, 2003, 2004).

Third, over time, positive emotions can help build, discover, increase or produce personal resources such as mindfulness, knowledge, optimism, resilience, social closeness, life satisfaction and even physical health (Fredrickson, 1998, 2000, 2001, 2004; Fredrickson et al, 2008; Fredrickson & Losada, 2005; Garland et al., 2010). Resources can be defined as "objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions or energies." (Hobfoll, 1989, p 516) When faced with stress, minimizing the loss of resources comes in focus, but when not confronted with stress, the focus is directed toward developing resources in order to prevent future losses (Hobfoll, 1989, 2001). Cognitive, psychological, social, intellectual and physical recourses achieved through upward shifts in positive emotions can have enduring effects (Cohn et al., 2009; Fredrickson, 2001, 2003; Fredrickson et al, 2008; Fredrickson & Losada, 2005; Garland et al., 2010; Tugade & Fredrickson, 2004) and help individuals to cope with negative emotional experiences (Tugade & Fredrickson, 2004).

Psychological resilience is the forth element, and it is often a product of positive emotions, experiences or increments in resources. Resilience is defined as "the positive adaption within the context of high-risk or adversity." (Lerner, Phelps, Forman & Bowers, 2009, p 534) This quality is of particular importance to improvements in health and well-being because it makes individuals "bounce back" effectively after negative events and adapt flexibly to inevitable crises due to positive individual and/or environmental factors (Compas & Reeslund, 2009; Fredrickson, 2004; Fredrickson & Losada, 2005; Tugade & Fredrickson, 2004; Williams et al., 2002).

Fifth, people who regularly feel positive emotions are lifted on "upward spirals" of growth, thriving and persistent well-being (Fredrickson, 2001, 2003) because positive emotions and broadened thinking mutually enhance one another (Fredrickson, 2001, 2003). Positive, upward spirals can lead to optimal functioning, enhanced well-being, more resources, life satisfaction, enhanced social openness and resilience. Negative, downward spirals are self-perpetuating and damaging cycles triggered by negative emotions (Fredrickson, 2001, 2004; Fredrickson & Losada, 2005; Garland et al., 2010). Pleasurable positive emotions can have a long-lasting effect on our functioning, even though they are temporary or unintended, leading to enhancements in well-being and life satisfaction levels (Cohn et al., 2009; Fredrickson, 2001, 2004; Fredrickson et al, 2008; Garland et al., 2010;

Gorgievski, Halbesleben & Bakker, 2011).

Sixth, the optimal goal for mental health, positive emotions and positive functioning is a flourishing life, conceptualized as the presence of mental health, where mental health is measured in positive terms rather than solely the absence of illness (Keyes, 2002, 2003, 2005, 2006). Flourishing is "to live within an optimal range of human functioning, one that connotes goodness, generativity, growth, and resilience." (Fredrickson & Losada, 2005; p 678) Flourishing is characterized by happiness, life satisfaction and resources, generated through the broadened thought-action repertoires (Fredrickson & Losada, 2005). The opposite of flourishing is not solely pathology, but also languishing defined as "a disorder intermediate along the mental health continuum experienced by people who describe their lives as 'hollow' or 'empty'." (Fredrickson & Losada, 2005; p 678) Languishing has been found to be associated with perceived poorer health and activity limitations (Keyes, 2002).

Further on, a person's affective structure, general well-being and level of flourishing can be represented and predicted by the positivity ratio (Diener, 2000; Fredrickson & Losada, 2005; Garland et al., 2010), i.e., the proportionality of one's positive and negative emotions over time. The average human experience is mildly positive, meaning that humans have a positive offset (Diener & Diener, 1996; Garland et al., 2010). Without this, we would be unmotivated to engage with our environments (Fredrickson, 2001, 2004). Humans also have a negative bias, which makes bad emotions count heavier than positive emotions. Optimal functioning is therefore dependent on positive emotions outnumbering the negative ones, normally with a tipping point ratio at three to one (Fredrickson & Losada, 2005; Garland et al., 2010). Over this point, people can experience the broaden-and-build effect of positive emotions strong enough to initiate flourishing mental health and well-being (Fredrickson, 2004; Fredrickson & Losada, 2005). However, there is an upper limit; too much positivity can create problems, appropriate negativity can play an important role in flourishing and positivity must be both genuine and suitable (ibid.).

In sum, positive emotions broaden thought-action repertoires that lead to increments in well-being and personal resources. Well-being and resources accrue in positive spirals leading to enhanced resilience, more well-being and perhaps a flourishing life. This theory can be used as a conceptual frame for the empirical evidence which will be assessed more thoroughly in the next sections.

The adolescent period

In all societies, adolescence is a time for growing up, moving from immaturity of childhood into maturity of adulthood, and of preparations for the future (Steinberg, 2008). The word "adolescence" derives from the Latin word *adolescere*, meaning "to grow into maturity." (Lerner & Steinberg, 2009) Age defining this period is difficult, due to the fact that it changes from society to society. Generally speaking, the period has been lengthened considerably in the previous century (from 13-18) because young people mature earlier physically and because many delay the entrance to work and married life until they are in their mid-20s (Steinberg, 2008). The adolescent period is therefore often defined as starting at around age 10 and ending at around 20-24 (Lerner & Steinberg, 2009; Ozer & Irwin, 2009). Adolescence incorporates puberty, a period of rapid bodily, physical, psychological, hormonal and social changes and challenges, and later adolescence with considerable changes in cognitive, social, emotional and psychological aspects (Susman & Dorn, 2009).

During adolescence many new experiences, challenges and choices are encountered (Kuhn, 2009). Most adolescents build strengths during this period (Seligman, 2002); however, the speed and magnitude of these changes may overtax the capacity of many young to cope and result in negative experiences (Byrne et al., 2007). Positive or negative experiences and coping or lack of coping can directly affect adolescents' health or impact through the mediation of health risk behavior (Byrne et al., 2007; Grant et al., 2003; Rice, 1999). Choices, values, behaviors and attitudes may also be influenced by the identity formation and the development of the self during adolescent (Côté, 2009). Due to the numbers of changes and challenges during the adolescent years, it is obvious that adolescents are a vulnerable group connected to a variety of different health outcomes important in research (Côté, 2009; Kuhn, 2009; Lerner & Steinberg, 2009; Susman & Dorn, 2009). Adolescents have for a long period been relatively neglected in respect to both mental and physical health interventions and outcomes because of low morbidity and mortality rates (Williams et al., 2002). Even though most adolescents are healthily assessed by traditional medical indicators, the number of mental health disorders and the amount of physical inactivity, substance use, poor eating habits and risk behavior increase during this period (Compas & Reeslund, 2009; Grant et al., 2003; Ozer & Irwin, 2009), which has consequences for the general health and well-being level in the present and in the future (Fox et al., 2000). A combined focus toward reducing risk behavior and enhancing the protective factors will likely affect both problem and positive behavior, and in sum, promote better outcomes for adolescents (Catalano, Hawkins, Berglund,

Pollard & Arthur, 2002).

Perspectives on adolescent development have emerged throughout the years (Lerner & Steinberg, 2009) from Hall's "storm and stress" conceptualization (Santrock, 2008). Instead of treating adolescence as a standardized period where development occurs in phases according to age, like the stage theorist Erikson or Piaget, adolescent's development must be conceptualized as unique. Even though all adolescents mature biologically, psychologically, emotionally and cognitively, how, when and the way in which these aspects influence the individual varies. This has contributed to an interest in how individual differences affect different outcomes in life and the developmental path of each adolescent (Santrock, 2008; Steinberg, 2008). Positive youth development is an appropriate perspective in this article, where the negative view of adolescents as "problems to be managed" is replaced with the more positive view of "resources to be developed." (Lerner et al., 2009) This focus promotes that individual strengths, a supporting and promoting context and the relation between the two, can help build active, decision making adolescents who can make good and healthy choices and preferences for themselves and enhance their own well-being (Seligman, 2002).

Promotion of individual strengths is of particular importance because positive or negative health habits, behaviors and strategies important for health and well-being are established during adolescence (Byrne et al., 2007; MacKey & Duran, 2007; Ozer & Irwin, 2009; Santrock, 2008; Valois et al., 2004; Williams et al., 2002). Protective factors such as an active and healthy lifestyle must be promoted and encouraged during this life stage (Steptoe & Butler, 1996; Valois et al., 2004), since this can mitigate the likelihood of negative health and social outcomes in the present and later in life (Bernat & Resnick, 2006), and can advance well-being into adulthood (MacKey & Duran, 2007; Ozer & Irwin, 2009; Santrock, 2008; Steptoe & Butler, 1996; Valois et al., 2004). In addition, most predominant causes of mortality and morbidity develop during adolescence, indicating that health-focused interventions must be tailored and directed toward this cohort both to improve and optimize health in adolescents in general, but also to treat unique adolescent health problems and reduce risk behavior to prevent long-term problems (Williams et al., 2002).

Conceptualization of satisfaction with life

Subjective well-being (SWB) has been an area of interest in research during the past decades, especially in adults but also for adolescents because of its influence on functioning (Huebner et al., 2000b). SWB is defined as "a person's evaluative reactions to his or her life," (Diener & Diener, 2009, p. 71) and has three clear hallmarks: it is subjective, it includes positive measures, not just absence of negative factors, and it is a global assessment of all aspects in human life (Diener, 1984). SWB is the individual's perceptions and evaluations of one's life in terms of affective states, satisfaction with life, psychological and social functioning, and measures the presence of positive functioning (Keyes, 2002). Well-being and mental health are seen as more than the absence of disease and is inflicted by individually determined variables (Valois et al., 2004; Seligman & Csikszentmihalyi, 2000).

SWB can be divided into three relatively independent, yet interrelated factors; positive and negative affect, and the cognitive component of life satisfaction (Diener 2000; Neto, 1993; Pavot et al., 1991; Terry & Huebner, 1995). The interrelationship among these three components can be clarified through a distinction between life satisfaction as a "background" appraisal system and affect as "on-line" appraisals of daily events along with emotions and behavior (Huebner et al., 2000b, p. 55). Life satisfaction influences cognition and is associated with emotional and coping resources (ibid.). Life satisfaction is defined as "a global assessment of a person's quality of life according to his/her chosen criteria." (Shin & Johnson, 1978, p. 478) This judgment is based upon a comparison of one's circumstances with some standards that each individual has set for him or herself. Satisfaction is based on internal values and judgments, not external criteria judged to be important by others (Diener, 1984; Neto, 1993; Valois et al., 2004). Still, our own judgments and standards are inflicted by inter-individual standards and information about other people's lives through social comparisons (Diener, 1994; Schwartz & Strack, 1999).

Overall life satisfaction is not exclusively shaped by one domain at the expense of others, but is an overall judgment where several domains have a mutual influence (Gilman, 2001). Different domains may have differing importance for each person and may change as a result of changes in one's life situation or life experiences; therefore, judgments of satisfaction with life may be especially difficult in adolescents (Côté, 2009; Diener, 1994). This also displays why it is important to investigate an overall evaluation instead of summing all areas of importance (Diener et al., 1985).

The most common measure of global life satisfaction is the Satisfaction with Life

Scale (SWLS) (Diener et al., 1985). The purpose of the scale is to look into overall life satisfaction as a cognitive-judgmental process instead of investigating different specific areas (Neto, 1993, Terry and Huebner, 1995). Affective and emotional responses are excluded because they are sensitive to contextual influences and may change on a daily basis (Schwarts & Strack, 1999). The one-dimensional scale is brief, yet offers a high validity, and is appropriate for use within a wide range of age groups including adolescents (Diener et al., 1985; Gadermann, Schonert-Reichl & Zumbo, 2009). The measurement has some level of continuity (Huebner et al., 2000a; b), and is the most consistent and stable part of SWB. It is thus not a trait nor a state, like emotions in many cases can be (Diener, 1984), and therefore more suitable for use as a key indicator of subjective well-being (Diener & Diener, 1996).

Most adolescents report positive levels of overall life satisfaction (Diener & Diener 2009; Huebner et al., 2000a), positive self-image and optimism about their future (Santrock, 2008), and well-being increases during the last years of adolescence (Robins et al., 2002; Santrock, 2008). Norway is one of the highest-ranked countries in terms of life satisfaction (LPI, 2011; UN, 2005), where 84 % of the population has reported being satisfied (OECD, 2012). This is of importance because satisfied people have more desirable qualities and behavior (Staw, Sutton & Pelled, 1994), are more active (Fredrickson, 2001), can endure more negative emotions (Cohn et al., 2009; Garland et al., 2010; Tugade & Fredrickson, 2004), are more sociable and productive (Diener, 2000), are less likely to experience stress and illness (Garland et al., 2010) and are more likely to be flourishers (Keyes, 2002, 2005). Life satisfaction therefore predicts desirable outcomes in many domains (Cohn et al., 2009; Gilman & Huebner, 2006; Proctor et al., 2010; Suldo & Huebner, 2006). However, a noteworthy number of adolescents are nevertheless reporting low life satisfaction or life dissatisfaction (Huebner et al., 2000a; Valois et al., 2004). Dissatisfaction with life has been found to be linked with depression (Headey, Kelley & Wearing, 1993; Keyes, 2002; Lewinsohn, Redner & Seeley, 1991), anxiety (Fox, 1999; Huebner & Alderman, 1993), negative interaction with peers (Valois, Zullig, Huebner & Drane, 2001; Yanos, Rosenfield & Horwitz, 2001), abuse of chemicals (Zullig, Valois, Huebner, Oeltmann & Drane, 2001), shyness, loneliness (Neto, 1993), and low self-esteem (Baumeister et al., 2003; Harter, 1999). Therefore, it is important to promote higher life satisfaction in adolescents.

Boys were predicted to report significantly higher levels of life satisfaction than girls (Diener & Diener 2009; Huebner et al., 2000a), as found by some researchers (Neto, 1993; Steptoe & Butler, 1996). However, many studies also found no gender differences in life

satisfaction levels (Ferguson, Kasser & Jahng, 2010; Lalive & Stutzer, 2010, Rodríguez, Látková & Sun, 2007; Schnohr, Kristensen, Prescott & Scharling, 2005).

Potential promotive factors of satisfaction with life in adolescents

To fully understand variation in satisfaction with life among adolescents, it is important to consider potential promotive health and well-being factors. This section will focus on leisure time physical activity and self-esteem, which have shown to be positive behavioral and personal resources for adolescents' health and well-being. Attributes or activities we participate in influence how satisfied we are with our lives, and this positive impact on adolescents' health must be investigated in addition to risk factors (Williams et al., 2002). The principal concern will be directed toward the positive role of physical activities in relation to life satisfaction and self-esteem, and the relation between self-esteem and life satisfaction.

Leisure time physical activity

It is now globally accepted that physical activity is an important element of healthy living (WHO, 1995), mostly caused by the worldwide epidemic in terms of obesity and sedentary lifestyles (Penedo & Dahn, 2005; Williams et al., 2002). Physical activity has gained attention for its contribution to life quality alongside an array of mental and physical health benefits (Gerber & Pühse, 2009; Penedo & Dahn, 2005; Rothon et al., 2010; Schnohr et al., 2005; Valois et al., 2004). Documented benefits from engaging in leisure time physical activity for well-being include, among others, improved mood, enhanced self-perception and self-esteem, positive perceived health, personal adjustment and lower levels of mental health problems (Biddle & Asare, 2011; Fox, 1999; Gerber & Pühse, 2008; Kirkcaldy et al., 2002; Sagatun et al., 2007; Valois et al., 2004). More physically active people are often younger, slimmer, smoke less, and have higher socio-economic status than their sedentary counterparts (Schnohr et al., 2005). The philosopher Thoreau wrote that "happiness comes from activity," and the idea is that involvement in activities causes greater happiness (Diener, 1984, p 522). All population divisions can benefit from exercise, because it offers substantial potential alone or as an adjunct to better mental well-being (Fox et al., 2000; Kirkcaldy et al., 2002). In the present article, physical activity is defined as "an umbrella term describing any bodily movement produced by the skeletal muscles resulting in energy expenditure." (Caspersen, Powell & Christenson, 1985, p 126; Fox et al., 2000; p 8; Ramírez-Marrero, Smith, Sherman

& Kirby, 2005, p 363; WHO, 2012a) The term “activities” is a broad and vague concept which can apply to everything from social contact, structured participation in organizations to unstructured physical activity, and participation is influenced by health factors (Diener, 1984).

Although children and adolescents are more active than adults, activity levels are often reduced below recommended levels (30-60 min a day, Public Health Department, 2011; WHO, 2012a) during this period, and few adolescents engage in sufficient physical activity (CDC, 2008 a, b; 2010; Ianotti et al., 2009; Ozer & Irwin, 2009; Santrock, 2008; Valois et al., 2004; WHO, 2012b; Williams et al., 2002). Only one-third of adolescents in Europe reported getting the recommended levels (WHO, 2012b). The greatest reduction is seen among adolescent girls (Iannotti et al., 2009; Rothon et al., 2010; Vilhjalmsson & Kristjansdottir, 2003; WHO, 2012b), especially in competitive sports (Kirkcaldy et al., 2002). The health consequences of a poor diet and physical inactivity are immediate and long term, but may not have noticeable outcomes until adulthood (Ozer & Irwin, 2009; Williams et al., 2002). Interventions in exercise and dietary habits may have more successful long-term outcomes when initiated during adolescence (Williams et al., 2002). With all the advantages of being physically active in mind (e.g. Biddle & Asare, 2011; Sagatun et al., 2007; Schnohr et al., 2005; Valois et al., 2004), dropouts or sedentary lifestyles is a dangerous trend that needs to be addressed.

Several studies in recent decades have focused on the relation between physical activity and well-being reflected in factors such as life satisfaction. Participation in physical activity can enhance well-being and contribute to a higher level of life satisfaction in adolescents (Fernandez-Ballesteros, Zamarrón & Ruíz, 2001; Iannotti et al., 2009; Kirkcaldy et al., 2002; Melin, Fugl-Meyer & Fugl-Meyer, 2003; Valois et al., 2004; Vilhjalmsson & Thorlindsson, 1992). Higher frequency of physical activity has been shown to have a greater impact on life satisfaction (Biddle & Asare, 2011; Ströhle et al., 2007) and on the reduction of negative outcomes (Dunn, Trivedi & O’Neal, 2001; Rothon et al., 2010; Sagatun et al., 2007; Schnohr et al., 2004). To the contrary, sedentary adolescents reported more dissatisfaction with their lives (Schnohr et al., 2005; Valois et al., 2004), and a reduction in physical activity level is associated with lower life satisfaction (Shnohr et al., 2005). Some researchers found that physical activity can promote greater life satisfaction among boys than girls (Valois et al., 2004); other found no gender difference (Schnohr et al., 2005; Steptoe & Butler, 1996). However, the relation is not influenced by age differences (Allison, 2005).

Four key psychosocial explanations are suggested for the relation between leisure time physical activity and mental health and well-being (Rothon et al., 2010). The first explanation is that physical activity can function as a *distraction*. It is stated that the "time out" physical activity can provide, creates an enhanced mood, more important for well-being than the physiological and biochemical mechanisms. This is supported by research showing that exercise can result in psychological benefits (Bartholomew, Morrison & Ciccolo, 2005; Simon, Powell & Swann, 2004). Stated simply, "exercise makes you feel good" (Fox, 1999, p 413). This is also displayed through more energy and better immediate feelings after a workout (Deci & Ryan, 2008; Ferron, Narring & Cauderay, 1999; Taylor, Sallis & Needle, 1985). The second explanation hypothesizes that completing a task leads to *mastery experience*, which can lead to improved mood or flow (Andreassen & Wadel, 1989; Csikszentmihaiyi, 1975; 2000; Rothon et al., 2010; Yeung, 1996). Research shows that sports or physical activity is a good arena to learn mastery skills, which can be brought into other fields in life (Wasserman & Durkee, 2009). The third explanation is related to *social interaction*. Physical activity can have an indirect effect on mood through increasing opportunities to socially interact with peers (Rothon et al., 2010). This is supported empirically (Allison, 2005; Fox, 1999; Hammerlin, 2005; Sabo, Miller, Melnick, Farrell & Barnes, 2005; Sagatun et al., 2007). The fourth and last explanation is physical activity's ability to improve mood through *self-esteem* improvements (Rothon et al., 2010), also supported empirically (Biddle & Asare, 2011; Ekeland et al., 2005; Kirkcaldy et al., 2002; Lagerberg, 2005; Parfitt & Eston, 2005). In sum, these four explanations provide an understanding of how physical activity can increase well-being. This also explains that mastery experiences, social interaction and improved mood in turn can lead to improvements in both well-being and self-esteem.

Self-esteem

Adolescence is thought to be a critical time for the development of self-esteem (Boden et al., 2008). Self-esteem is a large part of adolescents' self-understanding (Räty et al., 2005) and the level of self-esteem plays a causal role in determining different life outcomes (Baumeister et al., 2003; Boden et al., 2008). Self-worth, global self-esteem, self-image, global self-concept, etc. are all concepts within the same category of aspects, dealing with feelings toward oneself and one's life (Leung & Leung, 1992). They all underlie the umbrella term "self-perception", which can be defined as "all types of self-referring statements about the self ranging from those that have specific content to those that express general feelings." (Fox et al., 2000, p. 8) Rosenberg (1965) defined self-esteem as an individual's set of thoughts and feelings about his/her own worth and importance. Self-esteem is a subjective self-evaluation based on the awareness of good possessed by the self, and shows how positive or negative an individual values oneself, avoiding specific domains (Fox et al., 2000; Martín-Albo, Núñez, Navarro & Grijalvo, 2007; Santrock, 2008). The content is dictated both by the individual, the culture and the context in which we operate. However, the criteria base for a person's self-esteem is ultimately set by the individual (Fox, 2000).

Rosenberg (1965) considers self-esteem to be one component of the self-concept, making the two concepts overlap (Martín-Albo et al., 2007). The self-concept often consists of a domain-specific evaluation (Martín-Albo et al., 2007; Santrock, 2008; Shavelson, Hubner & Stanton, 1976), but can be examined as a general concept representing the individual's overall estimation of the self (Leung & Leung, 1992). Self-esteem can also be seen as the evaluative component of the self-concept (Côté, 2009; Ekeland, Heian & Hagen, 2005; Shavelson et al., 1976), were global measures of self-esteem can give accurate assessments of an adolescent's sense of competence in different domains that produce the self-concept (Côté, 2009). However, this assumption is dubious due to the fact that adolescents do not necessarily summarize their self-esteem across different domains, and that each domain may have different importance for each person, and shift from day to day (ibid.). Therefore, self-esteem is a more dynamic construct in adolescence, depending on one's successes and expectations (Baldwin & Hoffmann, 2002). Specific and global self-esteem have different consequences in that the global construct is more related to well-being, and the specific more relevant to specific behaviors (Robins, Hendin & Trzesniewski, 2001; Rosenberg et al., 1995).

The most extensively used measurement to assess global self-esteem or global self-construct is Rosenberg's Self-Esteem Scale (RSES), which uses ten items (Rosenberg, 1965;

1989). The scale is elaborated from a phenomenological conception of self-esteem, and therefore captures the subjects' global perception of self worth (Martín-Albo et al., 2007). Several studies have investigated the factor structure in the RSES, showing a clear one-dimensional structure. RSES has been found to be a reliable and valid measure suitable for use among children and adolescents (Fox, 2000; Gray-Little, Williams & Hancock, 1997; Hagborg, 1993; Martín-Albo et al., 2007; Orth, Robins, Trzesniewski, Maes & Schmitt, 2009; Robins et al., 2001; Schmitt & Allik, 2005).

Self-esteem and life satisfaction are related in that they both represent global evaluations where a person judges oneself (Diener & Diener, 2009; Fox, 2000; Huebner et al., 1999; Eikeland, Heian & Hagen, 2005; Santrock, 2008), showing the relatedness of the constructs and also the participant's ability to differentiate between them. Correlations have been found among adolescents (Biddle & Asare, 2011; Dew & Huebner, 1994) and children (Parfitt & Eston, 2005; Terry & Huebner, 1995). High self-esteem is one of the strongest predictors of subjective well-being (Diener, 1984; Diener & Diener, 2009). Self-esteem leads to greater happiness (Baumeister et al., 2003), can lead to more life satisfaction and can predict healthier behavior such as involvement in physical activity (Fox, 2000). Contradictorily, low self esteem is associated with lower life satisfaction (Boden et al., 2008), a risk of depression (Harter, 1993; Orth et al., 2009), a prediction of poorer mental and physical health projected into adulthood (Boden et al., 2008; Trzesniewsi et al., 2006), and antisocial behavior (Donnellan, Trzesniewski, Robins, Moffitt & Caspi, 2005). Noteworthily, a person can display high self-esteem, yet report low satisfaction with life and vice versa (Terry & Huebner, 1995).

The level of self-esteem decreases during adolescence, especially for girls (Impett, Sorsoli, Schooler & Henson, 2008; Martín-Albo et al., 2007; Räty et al., 2005; Robins & Trzesniewski, 2005), with high school students showing the lowest scores (Côté, 2009; Robins et al., 2002; Santrock, 2008). Self-esteem levels among girls decline dramatically from the age of 13, while boys experience this drop at around 15 years (Baldwin & Hoffmann, 2002). Both genders experience increases in self-esteem levels during late adolescence (Erol & Orth, 2011), decreasing the gender gap (Galambos, Barker & Krhn, 2006), but girls maintain persistently lower levels than boys (Baldwin & Hoffmann, 2002). Lower levels of self-esteem in adolescents can be a result of a more conflicting self-concept (Côté, 2009; Santrock, 2008), increased self-consciousness (Baldwin & Hoffmann, 2002), more behavior problems (Martín-Albo et al., 2007; Räty et al., 2005), pubertal timing (Impett

et al., 2008), physical appearance (Santrock, 2008) and body satisfaction level (Harter, 1999). Risk behavior decreases from the age of 18 (Robins et al., 2002; Santrock, 2008) promoting the importance of building self-esteem in younger people, enabling them to make healthy choices (Williams et al., 2002). Improvements in self-esteem are therefore an important area for well-being and health promotion, and in protection against health problems.

Physical activity has a commonly known association with the development and/or improvements of self-esteem levels in adolescents (Biddle & Asare, 2011; Kirkcaldy et al., 2002; Parfitt & Eston, 2005), at least in the short term (Biddle & Asare, 2011; Ekeland et al., 2005), which in turn has an effect on mental health and well-being (Fox, 2000; Kirkcaldy et al., 2002; Neto, 1993; Steptoe & Butler, 1996). Both boys and girls were found to experience positive improvements in self-esteem from participating in physical activity (Parfitt & Eston, 2005), where adolescents who are low in self-esteem can benefit more (Boyd & Hrycaiko, 1997). It is also interesting to investigate the inverse relation, where self-esteem can influence participation in physical activity, healthy habits or the confidence in one's abilities to complete physical activity tasks successfully, e.g. climbing stairs instead of taking an elevator, visiting a training center, following through with a training program etc. (Fox, 2000).

DISCUSSION

The first aim of this article was to constitute an appropriate theoretical foundation for the understanding of adolescent's leisure time physical activity habits and their level of satisfaction with life and self-esteem. Further on, the second aim was to demonstrate an empirical base that supports the relation between the constructs and to clarify factors that affect life satisfaction in a positive manner. Focus was directed toward knowledge about how physical activity and self-esteem can act as promotive factors for adolescents.

Theoretical discussion

The biopsychosocial model provides an understanding that health and well-being are much more than the absence of illness and mental health problems. When health and well-being are influenced by all aspects in and around human life (Earle et al., 2007), this emphasizes the importance of having healthy surroundings influencing the adolescents to make healthy choices and avoid risk behavior (Seligman, 2002; Williams et al., 2002). Leisure time physical activity can be such an arena where a positive health habit of being active is promoted, but also an arena to teach adolescents about social interaction, how to feel good in your own body, how to treat peers, and how to portray what a good role model is. This theory also indicates that by promoting some aspects of our health and/or our context, such as enhancing self-esteem or participating more in physical activities, we can simultaneously enhance other areas.

The broaden-and-build theory continues the overall focus of the biopsychosocial model toward promoting that mental health and well-being measured in positive terms can facilitate resilience, flourishing, life satisfaction and happiness (Keyes, 2002, 2003, 2005, 2006). This theory encourages and suggests the need to develop methods that can cultivate individuals and communities to frequently experience positive emotions in order to achieve positive effects (Fredrickson, 2003, 2004). Positive emotions must be stimulated indirectly by finding positive meaning in one's current circumstances or everyday life (Fredrickson, 2000, 2003, 2004). However, the relation between positive meaning and emotions is reciprocal; positive meaning triggers positive emotions, but positive emotions also increase the likelihood of finding positive meaning in subsequent events through broadened thought-action repertoires (Fredrickson, 2000, 2001). Physical activity can be an arena to facilitate positive emotions by regularly finding positive meaning within daily ups and downs, e.g. exercising with a friend, achieving a goal, solving a problem, experiencing well-being, life satisfaction or

improved health. Positive meaning can thus be the leverage point for accessing growth and resilience that positive emotions can foster (Fredrickson, 2000, 2003, 2004).

Physical activity can be joyful; it can build and lead to long-term physical, intellectual, psychological and social resources, and help build lasting feelings of well-being (Fredrickson, 2003). This can be transferred to more positive thinking or actions in other areas and circumstances in life (Fredrickson, 1998; Fredrickson & Losada, 2005). If physical activity promotes positive emotions or meaning, it can lead to an increased interest and curiosity to carry on that activity. This will in turn confirm the expectation and the cognitive map portraying that physical activity promotes good feelings and is a positive influence on one's health (Fredrickson & Losada, 2005). Physical activity can facilitate positive emotions and/or life satisfaction, either physically or mentally, which in turn can grow in positive spirals resulting in more personal resources, and therefore more well-being, resilience and satisfaction with life (Fredrickson, 1998, 2000, 2001, 2004; Fredrickson et al, 2008; Garland et al., 2010). Life satisfaction continues the circle through facilitating more positive emotions, resources, optimal performance, improved physical health, etc. and a further interest in involvement in physical activity (Fredrickson, 2003; Gorgievski et al., 2011).

When faced with stress, people strive to minimize the loss of resources, but when not confronted with stress, the development of resources comes in focus in order to prevent future losses. However, resources are not merely a buffer against potentially harmful effects; the search for gaining and increasing resources also has an intrinsic value and a motivational effect directing toward actions and contexts that will provide more positive emotions (Hobfoll, 1989, 2001). The way we interpret events in our lives can also determine whether a gain or loss of resources is the outcome of the encounter. More positive emotions and a higher level of life satisfaction, as a cognitive appraisal system (Diener 2000; Huebner et al., 2000b), can enable individuals to cope effectively in stressful circumstances without negative consequences and buffer against negative emotions or behaviors (Huebner et al., 2000b). Positive emotions can also reduce the number of days with health or activity limitations (Keyes, 2002, 2005), making positivity and life satisfaction predictors of participation in leisure time physical activity in addition to the inversed relation.

The broaden-and-build theory, attached to physical activity's relation to satisfaction with life, attempts to focus on the importance of promoting positive emotions in order to ensure continuing life satisfaction, favorable mental health, thriving and flourishing (Seligman & Csikszentmihalyi, 2000; Fredrickson, 2003). It is noteworthy that this theory has

been mostly investigated for adults in working or structured environments. The impact and validation of this theory on an adolescent sample and in leisure time needs further investigation.

How positive emotions can facilitate satisfaction with life in adolescents

Where traditional psychological perspectives suggest that positive emotions signal or mark well-being, the broaden-and-build theory proposes that well-being and life satisfaction is also produced by positive emotions (Diener, 2000; Fredrickson, 2001, 2004). The relation between positive emotions and life satisfaction is thus reciprocal. Increments in personal resources or resilience, due to more positive emotions, are found to predict increased life satisfaction (Cohn et al., 2009; Fredrickson 2000, 2001; Fredrickson et al., 2008; Garland et al., 2010; Keyes, 2002). Increased life satisfaction, in turn, influences the way we interpret events and the context in a more positive manner (Diener, 1994; Schwartz & Strack, 1999), leading to more positive emotions. Thus, both life satisfaction and positive emotions are important to promote in order to obtain more of each other and a flourishing adolescent life. Life satisfaction and positive emotions can be facilitated through participating in physical activity or enhancing self-esteem levels; this will be further discussed under the next heading.

The broaden-and-build theory is particularly suitable as a framework for adolescents, because positive emotions and well-being are important aspects to maintain during the maturation period (Steinberg, 2008). Changes and challenges met during this phase can result in stress and negative experiences (Byrne et al., 2007). Both positive emotions and life satisfaction are thus important to promote, because they provide positive effects in both positive and negative situations (Cohn et al., 2009). This occurs by broadening thought-action repertoires allowing one to see also the positive in negative situations, creating smaller consequences for dissatisfying and painful events (Garland et al., 2010). Positive adolescents become more satisfied with their lives, not only because they feel better and experience more positive emotions, but also because they develop more resources to live their lives well within the problematic context of adolescence (Cohn et al., 2009). Global life satisfaction can rise when one experiences positive emotions and use the resources these emotions build to meet choices, challenges and opportunities in life (ibid.).

Protective and preventive factors, such as physical activity, are important to focuses of attention in an adolescent cohort, because the onset of many mental health problems often begins during this phase (Ozer & Irwin, 2009). However, a focus toward preventing mental

illness in the hope to promote better mental health will not necessarily result in more mentally healthy individuals due to the fact that these two outcomes belong to separate continua (Keyes, 2002). A focus toward seeking factors that can facilitate positive emotions and personal resources is thus more important to investigate than the causes of illness and health problems in order to improve and increase well-being, life satisfaction and the mental and physical health status in the population. This will in turn have indirect, positive effects on the negative health outcomes of reduced life satisfaction and prevent mental health problems in adolescents (Catalano et al., 2002).

The role of leisure time physical activity and self-esteem in relation to adolescents' life satisfaction

Many studies have found a relation between physical activity and life satisfaction (Biddle & Asare, 2011; Iannotti et al., 2009; Kirkcaldy et al., 2002; Penedo & Dahn, 2005; Valois et al., 2004; Zulling et al., 2004), and the impact that physical activity has on adolescent's subjective well-being and satisfaction with life is indisputably positive (Biddle & Asare, 2011; Calfas & Taylor, 1994). Longitudinal effects produced through changes from a sedentary lifestyle to a more physically active leisure time are associated with higher life satisfaction (Shnohr et al., 2005) and vice versa (Valois et al., 2004). Apart from this, results regarding whether physical activity in adolescence can predict increased level of satisfaction with life is almost non-existent due to causal defects. The relation is likely to be reciprocal in either a positive or negative direction. For instance, those experiencing life satisfaction or positive emotions might be more likely to participate in physical activities than groups experiencing problems (Fox, 2000). However, it is relatively unclear whether well-being precedes, follows, or can operate independently of exercise, or if it is confounded by factors that are not controlled for (Lagerberg, 2005; Parfitt & Eston, 2005). Nevertheless, these empirical findings strengthen the hypothesized causal coherence between life satisfaction and physical activity. It is further shown that some level of activity has a better impact on well-being than a completely sedentary lifestyle, but the dose-response relation needed is quite unclear (Dunn et al., 2001; Rothon et al., 2010; Sagatun et al., 2007; Shnohr et al., 2005; Ströhle et al., 2007).

According to the broaden-and-build theory, physical activity can produce positive emotions, resources, improved mental health and increased life satisfaction. On the contrary, life satisfaction and positive emotions can also prompt involvement in physical activity as

mentioned. Reasons for this reciprocal relation can be found in the psychosocial explanations described in the physical activity chapter (Rothon et al., 2010). Improvements in adolescent's level of life satisfaction and/or self-esteem can be caused indirectly by physical activity, because the activity includes aspects that are positive for one's mental health and well-being (Rodríguez et al., 2007). Mental health is influenced by a number of agents, often not easily identified or affected by the individual (Lagerberg, 2005); therefore, all positive influence is advantageous to mental health. The psychosocial explanations state that physical activity can function as a distraction, improve mood and feelings, lead to mastery, social interaction and increase self-esteem (Rothon et al., 2010). A study showed that the direct impact of physical activity on life satisfaction only predicted 1% of the total satisfaction level, whereas satisfaction of social needs predicted the most (Rodríguez et al., 2007). This can indicate that social interaction, a sense of belonging and good feelings, has a great impact on life satisfaction (Diener & Diener, 2009), and that this can be facilitated through physical activity. It also calls attention to the fact that physical activity can lead to more improvements in mental health if important needs of that particular adolescent are taken into account, in addition to a focus toward fun and strengthening of social bonds between peers (Lagerberg, 2005).

Physical activity can lead to improved mood, positive feelings and more energy, according to the psychosocial explanations (Rothon et al., 2010). This also connects physical activity to the broaden-and-build theory, where well-being, increased life satisfaction and improved health is the relations outcome. The discussion above is thus supported in that physical activity may indirectly lead to improvements in the level of life satisfaction or self-esteem, caused by its impact on many mental health aspects. The multiple causes and creators of mental health and life satisfaction level support a biopsychosocial perspective in that health is complexly formed, changed and influenced by all individual and contextual factors (e.g. Earle et al., 2007; Falkum, 2008). This is especially prominent during adolescent development, which is complex, dynamic and challenging (Williams et al., 2002).

The transition challenges cause adolescents to have a generally lower and more fluctuating self-esteem (Côté, 2009; Impett et al., 2008; Martín-Albo et al., 2007; Räty et al., 2005; Robins et al., 2002; Robins & Trzesniewski, 2005). Increased self-consciousness (Baldwin & Hoffmann, 2002) and physical appearance is of particular importance to self-esteem level during the adolescent years (Santrock, 2008). Since self-esteem is defined as thoughts, feelings and self-evaluations of goods and positive or negative evaluations of the

self (Fox et al., 2000; Martín-Albo et al., 2007; Rosenberg, 1965; Santrock, 2008), the connection to positive emotions and the broaden-and-build theory is quite obvious. Thus, self-esteem can in fact be measured after the same principals as the theory's positivity ratio (Diener, 2000; Fredrickson & Losada, 2005; Garland et al., 2010). Many positive thoughts and feelings about one self, and an overall evaluation that one has a positive value, can outnumber the negative thoughts everyone has from time to time and result in a positive self-esteem. The experience of positive emotions through activities or mastery can in turn increase this evaluation, leading to enhanced self-esteem. Higher self-esteem then increases the opportunity to experience more positive emotions, which can influence life satisfaction level. This can be one reason why self-esteem is the best predictor of life satisfaction and a key indicator of positive mental well-being (Biddle & Asare, 2011; Diener, 1984; Diener & Diener, 2009; Fox, 2000; Neto, 1993). Another reason can be that people must have self-esteem in order to feel and realize what it is to be satisfied with life, or in order to change a dissatisfying life (Diener, 1984, Fox, 2000). A third reason for this correlation can be that high self-esteem can make adolescents think less about what other people think about them, and therefore more objectively assess their own life satisfaction. Since life satisfaction can change over time caused by changes in one's life situation or life experiences (Côté, 2009; Diener, 1994), it is important to promote a high and stable self-esteem in order for life satisfaction to change for the better and not for the worse.

Self-esteem and physical activity can be related reciprocally and in multiple ways. First, adolescents involved in sports or exercise generally have higher self-esteem than their non-active peers (Fox, 2000). This can be due to the psychosocial explanations (Rothon et al., 2010) where active adolescents have an opportunity to modify their body shape, interact with peers, distract attention away from bad thoughts and feelings and/or experience mastery (Biddle & Asare, 2011; Eikeland et al., 2005; Kirkcaldy et al., 2002; Lagerberg, 2005; Parfitt & Eston, 2005). Physical activity can thus directly lead to improved self-esteem. Secondly, physical activity can lead to improved self-esteem through physical activity's relation to improved mental and physical health (e.g. Gerber & Pühse, 2009; Penedo & Dahn, 2005). This relation is indirect because improved health through physical activity is strongly connected to well-being and self-esteem level (Fox et al., 2000). Third and to the contrary, higher self-esteem influences adolescents' lifestyle, health behavior and level of participation in leisure activities positively (Fox, 2000). More involvement in physical activity, predicts less health damaging behavior (Kirkcaldy et al., 2002), indicating a biopsychosocial relation

between different aspects of life during adolescence. When self-esteem level predicts healthy behavior, and healthy behavior decreases the chance of risk behavior, the chained relation between physical activity and self-esteem leads to both reduced risk and promotes health, and further increases in self-esteem level. However, also in this relation, the causality is unclear; it is difficult to determine whether self-esteem level is the determinant or the outcome of the relation with physical activity (ibid.).

A great deal of self-esteem research in adolescents consists of a negative approach with a focus toward obesity problems and factors that can cause a negative self-image (Franklin, Denyer, Steinbeck, Caterson & Hill, 2006; French, Story & Perry, 1995; Strauss, 2000). Even though empirical evidence shows lower self-esteem levels in obese adolescents, and activity interventions may appear to improve their self-esteem (French et al., 1995; Strauss, 2000), weight loss or improvements in fitness are not necessary to increase self-esteem (Fox, 2000). The subjective perception of one's own health and positive feelings induced through exercise can be sufficient to foster a better self-esteem, as suggested by both the broaden-and-build theory and the psychosocial explanations. Nevertheless, those experiencing most gains from exercise participation, such as overweight persons, those in poor physical condition and those with low self-esteem, might be more likely to experience greater self-esteem improvements (ibid.).

On the basis of the aspects discussed in this article, it is possible to draw some lines between life satisfaction, leisure time physical activity and self-esteem, both in terms of causality and in terms of indirect effect. Thus, it is hypothesized that physical activity can promote satisfaction with life through improvements in self-esteem in addition to the direct effect between activity and satisfaction level. One reason for this hypothesis is the ability to obtain mastery skills through physical activity, which are transferrable to other fields in life (Wasserman & Durkee, 2009). This may directly lead to greater self-esteem and belief in own abilities. Mastery is also a good, objective way of judging one's abilities, and can lead to a more correct assessment of life satisfaction. When mastery leads to improved mood and self-esteem, it is likely that this will have a positive, indirect influence on life satisfaction level (Csikszentmihaiyi, 2000; Rothon et al., 2010; Yeung, 1996).

A second reason for an indirect effect is the positive emotions physical activity can encourage suggested by the broaden-and-build theory (Fredrickson, 1998) and the psychosocial explanations (Rothon et al., 2010). Physical activity can build personal resources through positive emotions and can produce positive, indirect changes in life satisfaction, self-

esteem and resilience levels (Cohn et al., 2009). Further on, it is statistically shown in adults that physical activity promotes self-esteem, positive emotions and/or resources, and that emotions mediate the relation to increased life satisfaction (Elavsky et al., 2005). These emotions or resources can be the triggering factor that helps physically active adolescents to live a successful and satisfying life (Fredrickson et al., 2008). Positive emotions can also lead to a more positive assessment of the self (Rosenberg, 1965), more resources and a greater belief in one's own abilities to accomplish things in life (Fox, 2000), therefore leading to a higher level of life satisfaction. A third reason is that physical activity can be a social activity which can lead to positive emotions or lead to positive social comparisons with peers. This can lead to improved self-esteem if the activity is supportive and characterized by pleasure and enjoyment (Lagerberg, 2005), which in turn can lead to increased life satisfaction.

In sum, most of the indirect relations between leisure time physical activity, life satisfaction and self-esteem are hypothetical and experimental but may be essential in health and well-being promotive work directed toward adolescents. Therefore, these relations needs to be further addressed and empirically investigated. Also noteworthy is that physical activity offers numerous positive effects on health and well-being regardless of the relation that is investigated. It is likely that at least some of the effects have a positive, indirect influence on life satisfaction. However, it is relatively unknown whether a special type of activity or if all recreational activities are suitable to promote life satisfaction and self-esteem.

CONCLUSION AND SUGGESTIONS FOR FUTURE STUDIES

The first aim of this article was to provide a possible theoretical framework for the relation between life satisfaction, leisure time physical activity and self-esteem among adolescents. The biopsychosocial model can help direct focus toward health and well-being promotion with the understanding that illness is not merely the contrast to health, but that health and well-being can always be promoted into something even better. It also emphasizes that health and life satisfaction cannot be measured separately, but rather should be evaluated as an overall construct dependent on and influenced by multiple individual and contextual factors. Therefore, all of these factors must be taken into consideration in order to optimize the adolescent's life satisfaction level.

The broaden-and-build theory offers important contributions to health promotion work; for instance, positive emotions can lead to lasting well-being, more resources, resilience, flourishing, optimal mental health, and last, but not least, undo the lingering effect of negative emotions that we all experience from time to time. Positive emotions can directly increase well-being and life satisfaction, or indirectly as a result of more resources. Positive emotions can also influence self-esteem into a more positive evaluation due to its impact on the positivity ratio. Positive emotions can be achieved as a result of participating in enjoyable physical activities, or inspiring an interest to participate at a greater level. All of these relations can be somehow connected to positive emotions, leading the theory to be an explanation for the possible relation between the three constructs. However, there is a need to explore and validate the theoretical conclusions suggested in this article empirically to clarify whether physical activity promotes positive emotions and increased self-esteem, which in turn can be mediators in the relation between physical activity and satisfaction with life.

The second aim in this article was to summarize empirical findings in the relation between satisfaction with life, leisure time physical activity and self-esteem in adolescents, and examine how they are related. Empirical evidence demonstrates that physical activity can promote life satisfaction and self-esteem in addition to positive outcomes and increments in factors such as general well-being, physical and mental health. It has also been shown that self-esteem is an essential predictor of life satisfaction, making this an important variable to include in analyses concerning physical activity and life satisfaction. This article hence reveals a possible indirect relation between physical activity and life satisfaction, possibly mediated by self-esteem or positive emotions. The reason for this is that physical activity can increase both life satisfaction and self-esteem, and that self-esteem can enhance satisfaction

with life. Positive emotions can also produce increments in both life satisfaction and self-esteem, and can be caused by activities. The main suggestion this article proposes is, first, to investigate the causal link between the three constructs and how positive emotions or resources influence this relation. Second, investigate the possible indirect effect between physical activity and life satisfaction and whether self-esteem mediates this relationship.

Further on, the promotion of physically active adolescents is indisputably an important area of research concerning health promoting and risk prevention. No negative effects of physical activity have been reported (Calfas and Taylor, 1994; Eikeland et al., 2005), and there is a consistent negative relation between sedentary lifestyles and physical and mental health problems, promoting the many positive effects and benefits that can be achieved through physical activity (Biddle & Asare, 2011; Sagatun et al., 2007). In order to promote the nation's mental health, improving health and flourishing individuals must be of equal importance as prevention and treatment of illness and poor mental health (Keyes, 2002). However, the number of articles, reviews and studies focusing on the ability of physical activities to reduce problem behavior, depression, anxiety, life dissatisfaction or mental illness is mounting. Why are so many researchers focusing on the small part of the population who experience mental health problems, instead of focusing on and learning from those who live happy, satisfying and flourishing lives? (Keyes, 2002)

An additional suggestion this article proposes to authors of further studies, is a change in focus toward investigating what is positive and promotive within people, their lives and their environment. The focus must be directed toward clarifying why some adolescents do well from a health perspective, even though risk factors are present, instead of identifying why poor health and negative health outcomes occur (Williams et al., 2002). There is also a need for more research on physical activity as a possible promotive factor with positive outcomes in adolescents, and to establish what types of activities and the dose-response effects will have the most impact on this relation, since neither the intensity, duration, frequency or activity type best suited to facilitate satisfaction with life is made clear (Dunn et al., 2001; Rothon et al., 2010; Sagatun et al., 2007; Shnohr et al., 2005; Ströhle et al., 2007). A focus on promoting better well-being and life satisfaction, and generating more positive emotions is indisputably an important domain for future research on these relations, especially among adolescents.

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Article II

Leisure time physical activity can promote satisfaction with life in Norwegian adolescents: A relation partly mediated by self-esteem

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Abstract: Although both leisure time physical activities and self-esteem are thought to be important promoters of life satisfaction in adolescents, rarely have studies examined these variables simultaneously. Further, no empirical studies have conducted a direct statistical test of the hypothesized indirect relation between physical activity and life satisfaction, in addition to the mediating role of self-esteem among adolescents. *Method:* This article analyzes a Norwegian cross-sectional sample (N = 1289) of 14-19-year-old adolescents. *Results:* Preliminary analyses showed that the adolescents generally had high mean life satisfaction and self-esteem levels and that the physical activity frequency was high. Adolescent boys were generally more satisfied with their lives and had higher self-esteem than girls. Younger adolescents were slightly more satisfied with their lives compared to those who were older. Correlations showed that increases in physical activity frequency were associated with a higher level of life satisfaction and self-esteem, and higher self-esteem was associated with a higher level of satisfaction with life. Bootstrap analyses revealed that physical activity was indirectly related to life satisfaction, partly mediated by self-esteem. The main hypothesis was therefore supported. *Discussion:* The significance and importance of these findings is discussed, as are the limitations, strengths and implications of the study. *Conclusion:* Leisure time physical activity can promote life satisfaction in adolescents, and this relationship is partly mediated by self-esteem.

Key words: Adolescents, satisfaction with life, physical activity, self-esteem, mediation, biopsychosocial health model, broaden-and-build theory of positive emotions

INTRODUCTION

The adolescent transition from childhood into young adulthood is complex and multidimensional, involving changes in many different aspects of an individual's life (Côté, 2009; Byrne, Davenport & Mazanov, 2007; Kuhn, 2009; Lerner & Steinberg, 2009; Susman & Dorn, 2009). While the transition is inevitable for sound development and most adolescents strengthen during this period (Seligman, 2002), the speed and magnitude of these changes may overtax the capacity of many young people to cope and may result in negative experiences. Therefore, adolescents must develop a range of mechanisms in order to obtain optimal function (Byrne et al., 2007). Even though most adolescents are healthy, assessed by traditional medical indicators, the number of mental health disorders, amount of physical inactivity, substance use, poor eating habits and risk behavior was shown to increase during this period (Compas & Reeslund, 2009; Grant et al., 2003; Ozer & Irwin, 2009), which has consequences for one's general health and well-being in the present and future (Fox, Boutcher, Faulkner & Biddle, 2000; Rice, 1999). Positive health behavior and activity habits are some of the protective and promotive factors that need to be developed during this period to protect and prevent risk behavior, facilitate positive adaption in the presence of risk and promote well-being in adulthood (Bernat & Resnick, 2006; Compas & Reeslund, 2009; MacKey & Duran, 2007; Ozer & Irwin, 2009; Santrock, 2008; Valois, Zullig, Huebner & Drane, 2004). The focus of the present study is adolescents from 14-19 years of age, who represent early, middle and late adolescence (Steinberg, 2008). The latter has been relatively neglected in former research, but needs to be highlighted (Williams, Holmbeck & Greenley, 2002).

The theoretical foundation for the present article is first, the biopsychosocial model, which provides an understanding of health as comprising all physical, psychological, environmental, social, political and spiritual aspects in life. Health is more than the absence of disease, positively amplifying factors that may promote better health and well-being (Adler, 2009; Borrell-Carrió, Suchman & Epstein, 2004; Earle, Lloyd, Sidell & Spurr, 2007; Espnes & Smedslund, 2009; Falkum, 2008; McLaren, 1998; Seligman & Csikszentmihalyi, 2000). Second, the broaden-and-build theory of positive emotions (Fredrickson, 1998, 2001) states that various positive emotions (such as joy, interest, contentment) broaden and build thought-action repertoires by expanding one's range of cognition and behavior. This broadened mindset results in induced personal resources and resilience in physical, mental, intellectual and social manners that will enhance well-being and life satisfaction and advance flourishing

in enduring upwards spirals (Cohn et al., 2009; Fredrickson, 2000, 2003, 2004; Fredrickson et al., 2008; Fredrickson & Losada, 2005; Garland et al., 2010; Tugade & Fredrickson, 2004). Satisfied people can also endure more negative emotions then their less resourceful and resilient counterparts (Cohn et al., 2009; Fredrickson, 2001; Garland et al., 2010; Tugade & Fredrickson, 2004). This reciprocal association and spiral effect lead life satisfaction and well-being to be both facilitators of protective factors and enhancers of promotive factors.

Satisfaction with life is the cognitive component of subjective well-being (Diener, 2000; Neto, 1993; Pavot, Diener, Colvin & Sandvik, 1991; Terry & Huebner, 1995), and is defined as "a global assessment of a person's quality of life according to his/her chosen criteria." (Shin & Johnson, 1978, p. 478) Life satisfaction is based on internal values and judgments, not external criteria judged to be important by others (Diener, 1984; Neto, 1993; Pavot et al., 1991; Valois et al., 2004). Life satisfaction is an overall judgment where several domains have mutual influence (Diener, Emmons, Larson, & Griffin, 1985; Gilman, 2001); it can change from day to day (Côté, 2009) and from person to person (Day & Jankey, 1996; Diener, 1994; Schwarts & Strack, 1999). However, it is the most consistent and stable part of subjective well-being, and shows some level of continuity (Huebner, Funk & Gilman, 2000).

Positive levels of life satisfaction and well-being are widespread in countries throughout the world (Diener & Diener 2009; Huebner, Drane &Valois, 2000, OECD, 2012) and Norway is one of the highest-ranked countries in terms of life satisfaction and well-being (LPI, 2011; OECD, 2012; UN, 2005). A multitude of empirical evidence shows that higher level of life satisfaction has an important relation to and promotes better mental and physical health (Biddle & Asare, 2011; Gilman & Huebner, 2006; Penedo & Dahn, 2005; Proctor, Linley & Maltby, 2010; Staw, Sutton & Pelled, 1994; Suldo & Huebner, 2006; Valois et al., 2004; Zulling et al., 2004). This makes life satisfaction an important health promoting aspect, especially in adolescence, when most of our health habits and behaviors develop (Byrne et al., 2007; MacKey & Duran, 2007; Ozer & Irwin, 2009; Santrock, 2008; Valois et al., 2004). Unfortunately, a noteworthy number of adolescents report low levels of life satisfaction or even dissatisfaction with life (Huebner et al., 2000a; Valois et al., 2004), possibly caused by the multidimensional changes during adolescence. However, levels are expected to rise after the age of 18 (Robins, Trzesniewski, Tracy, Potter & Gosling, 2002; Santrock, 2008). Adolescent boys were predicted to report significantly higher satisfaction with life levels than girls (Diener & Diener 2009; Huebner et al., 2000a), statistically shown by some researchers (Neto, 1993; Steptoe & Butler, 1996). However, many studies also found no gender

differences (Ferguson, Kasser & Jahng, 2010; Lalive & Stutzer, 2010, Rodríguez, Látková & Sun, 2007; Schnohr, Kristensen, Prescott & Scharling, 2005).

A long list of research supports the empirical assumption that leisure time physical activity improves life satisfaction (Fernandez-Ballesteros, Zamarrón & Ruíz, 2001; Iannotti et al., 2009; Kirkcaldy, Shephard & Siefen, 2002; Melin, Fugl-Meyer & Fugl-Meyer, 2003; Penedo & Dahn, 2005; Valois et al., 2004). Physical activity is defined in this article as "an umbrella term describing any bodily movement produced by the skeletal muscles resulting in energy expenditure." (Caspersen, Powell & Christenson, 1985, p 126; Fox et al., 2000; p 8; Ramírez-Marrero, Smith, Sherman & Kirby, 2005, p 363, WHO, 2012a) Physical activity can directly and indirectly improve life satisfaction by promoting healthy living and health benefits and by avoiding disease and premature death (Allison et al., 2005; Fox et al., 2000; WHO, 1995). It can also serve as a protective factor, diminishing health risks and vulnerability factors (Compas & Reeslund, 2009; Williams et al., 2002). Positive emotions that increase well-being can prompt interest or involvement in activities (Fredrickson, 2001). Therefore, the association between physical activity and life satisfaction may be reciprocal.

Most research on the effects of physical activity among adolescents focuses on the possibility of avoiding mental health problems (Allison et al., 2005; Biddle, Fox & Boutcher, 2000; Dunn, Trivedi & O'Neal, 2001; Moksnes, Moljord, Espnes & Byrne, 2010; Rothon et al., 2010; Schnohr, 2005; Stathopoulou, Powers, Berry, Smits & Otto, 2006; Valois et al., 2004). Physical activity can, in addition, be associated with enhanced mental well-being (Fox, 1999), where greater amounts of physical activity lead to more life satisfaction (Biddle & Asare, 2011; Dunn et al., 2001: Parfitt & Eston, 2005; Rodríguez et al., 2007; Rothon et al., 2010; Sagatun et al., 2007; Schnohr et al., 2004; Ströhle et al., 2007). Longitudinal studies show that enhancements in activity levels during adolescence lead to more life satisfaction projected into adulthood (Shnohr et al., 2005; Valois et al., 2004). Contrarily, a reduction in physical activity can lead to more dissatisfaction with life (Kaplan, Lazarus, Cohen & Leu, 1991; Shnohr et al., 2005; Valois et al., 2004). Unfortunately, a substantial number of adolescents do not engage in any form of physical activity (Valois et al., 2004). Only one-third of European adolescents report exercising at the recommended levels (WHO, 2012b), and boys are more active than girls (Vilhjalmsson & Kristjansdottir, 2003). This makes many adolescents in general, and girls, in particular, unable to achieve health benefits from physical activity.

Self-esteem is a large part of adolescents' self-understanding (Räty, Larsson,

Söderfeldt, & Larsson, 2005) and individual levels play a causal role in determining different life outcomes (Baumeister, Campbell, Krueger & Vohs, 2003; Boden, Fergusson & Horwood, 2008). Self-esteem is defined as an individual's set of thoughts and feelings about his/her own worth and importance (Rosenberg, 1965), based on the awareness of goods possessed by the self, showing how positive or negative an individual values oneself (Fox et al., 2000; Martín-Albo, Núñez, Navarro & Grijalvo, 2007; Santrock, 2008; Sonstroem, 1998). Life satisfaction and self-esteem are related (Kirkcaldy et al., 2002; Leung & Leung, 1992; Martín-Albo et al., 2007), where higher self-esteem predicts more life satisfaction (Biddle & Asare, 2011; Diener & Diener, 2009; Judge, 2009) and healthier behavior (Fox, 1999). The relation between satisfaction with life and self-esteem is not influenced by gender (Diener & Diener, 2009).

The level of self-esteem decreases dramatically during adolescence (Côté, 2009; Robins et al., 2002; Santrock, 2008), especially among girls (Impett, Sorsoli, Schooler & Henson, 2008; Martín-Albo et al., 2007; Räty et al., 2005; Robins & Trzesniewski, 2005). Girls normally experience a self-esteem decline after the age of 13, while boys do not experience this drop until the age of 15 (Baldwin & Hoffmann, 2002). Both genders experience increases in self-esteem during late adolescence (Baldwin & Hoffmann, 2002; Erol & Orth, 2011), decreasing the gender gap (Galambos, Barker & Krhn, 2006), but girls maintain persistently lower levels than boys (Baldwin & Hoffmann, 2002). Lower self-esteem in adolescents can be a result of a more conflicting self-concept (Côté, 2009; Santrock, 2008), increase in self-consciousness (Baldwin & Hoffmann, 2002), more behavioral problems (Martín-Albo et al., 2007; Räty et al., 2005), pubertal timing (Impett et al., 2008), physical appearance (Santrock, 2008) and body satisfaction levels (Harter, 1999). Since self-esteem and physical appearance are some of the most predictive aspects of satisfaction with life (Biddle & Asare, 2011; Diener, 1984; Fox, 2000; Neto, 1993), it is important to promote these among adolescents. Fortunately, it has been shown that physical activity can be an arena for improvement in self-esteem level among adolescents (Biddle and Asare, 2011; Boyd & Hrycaiko, 1997; Calfas and Taylor, 1994; Ekeland et al., 2005; Fox, 1999, 2000; Kirkcaldy et al., 2002; Lagerberg, 2005; Parfitt & Eston, 2005).

Researchers state the need for further knowledge and focus on physical activity as a possible protective factor with positive outcomes in adolescence (Rothon et al., 2010; Sagatun et al., 2007). No negative effects of physical activity have been reported, and there is a consistent negative relation between sedentary lifestyles and health (Biddle & Asare, 2011; Calfas & Taylor, 1994; Eikeland, Heian & Hagen, 2005; Sagatun et al., 2007); facilitating the

positive and beneficial effects physical activities can have on life satisfaction and self-esteem. Studies on this matter have promoted a means of upgrading life satisfaction by promoting positive emotions through enhanced self-esteem, improved mood states, reduced anxiety, resilience to stress, improved sleep (Fox, 1999) and flourishing lives (Keyes, 2002).

To the author's knowledge, few empirical articles have been published regarding the relation between satisfaction with life, leisure time physical activity and self-esteem. One article found that physical exercise was significantly related to well-being, alongside self-image in adolescents (Kirkcaldy et al., 2002). Another stated that the promotion of self-esteem, produced through exercise, can lead to positive changes in well-being (Fox, 2000). Further on, to the author's knowledge, no research has been conducted to investigate whether self-esteem mediates the relation between physical activity and life satisfaction in adolescents, although some studies have tested self-esteem as a mediator in this relation in adults (Elavsky et al., 2005; Rejeski & Mihalko, 2001).

The purpose of this article is to examine how and why leisure time physical activity and self-esteem can lead some adolescents to have higher levels of life satisfaction than others. Additionally, this study will gather information that could benefit the vast majority of adolescents and those with lower life satisfaction levels (Rodríguez et al., 2007).
On the basis of this empirical foundation, the initial aims of this article are to:

(1) Investigate adolescents' levels of satisfaction with life, physical activity and self-esteem, in addition to gender and age differences on these constructs.

(2) Investigate the association between physical activity and satisfaction with life.

(3) Investigate the association between physical activity and self-esteem.

(4) Investigate the association between self-esteem and satisfaction with life.

Finally, the primary aim was to:

(5) Investigate if self-esteem mediates the association between physical activity and satisfaction with life.

METHODS

Participants

The data material for these analyses was extracted from the present survey "Living on the Edge". This is a cross-sectional survey among adolescents from five rural districts and from twelve different schools in Sør-Trøndelag, Norway. "Living on the Edge" has been conducted three times - in 1996, 2001 and 2006. This data collection was conducted during the fall of 2011, and it is the fourth cohort sample. The material was written in the Norwegian language and explored a great number of physical activity and health related questions including stress, satisfaction with life, self-esteem, health behavior, mental and physical health, etc. A total of 1,924 students were invited to participate. Of this number, 1,289 completed questionnaires were returned, giving an overall response rate of 67% (864 from lower secondary school and 443 from upper secondary school). Missing responses were mainly due to noncooperation of classes or students being absent when the questionnaire was administered. In the present study the data analysis was undertaken for 654 girls (50.9 %) and 630 boys (49.1 %) (missing = 5) showing an equal proportion of both genders. Only participants aged from 14-19 years were included in this analysis (31 excluded) due to the most common definition of the adolescent period (Steinberg, 2008). The mean age for the whole sample was 16 years (*SD* = 1.6) where two-thirds of the sample were 17 or younger. The t-test showed that the mean age for both boys (*SD* = 1.6), and girls was 16 years (*SD* = 1.6) (not sig., p = .755) showing no significant age difference.

Procedure

The survey was collected in accordance with the guidelines of the data inspectorate, and was authorized by the Norwegian Social Science Data Service (NSD) and Regional Committees for Medical Research Ethics (REK). Permission was given from the principal and the schools after approving the survey's content. The schools were contacted, and asked to communicate this request to the students. Parents of students under 16 had to sign a consent form and return it to the school. Passive consent from the participants aged 16 or older was found to be sufficient because no sensitive data was collected. All students in the current school were invited. If the school was in agreement, an information letter along with the questionnaire was sent to them. Also the parents and students got this letter with information about the purpose of the survey, their anonymity, non-tractability and confidentiality.

Students could at any time withdraw from further participation in the survey without consequences. They were, however, told that withdrawal from the survey after the collection was finished was problematic because of the anonymity. Questionnaire administration was completed in whole class groups during one school session of 45 minutes, assisted by teachers. Ethically, adolescents are seen as potentially vulnerable groups requiring protection. Therefore, the schools were offered to have an assistant from the project present, but none of them believed this to be necessary. However, school nurses and a person connected to the project were made available for students if they had questions or needed someone with whom to consult after answering the questionnaire.

Measurements

Satisfaction with Life (SWLS) was measured as a multi-item, single factor measure of global life satisfaction (Diener, 1984). Extensive validation showed good internal consistency and temporal reliability, and that the scale was suited for use within a wide range of age groups including adolescents (Diener, 1984; Diener, Emmons, Larsen & Griffin, 1985; Gadermann, Schonert-Reichl & Zumbo, 2009; Greenspoon & Saklofske, 1997; Leung & Leung, 1992; Neto, 1993; Pavot et al., 1991). The five items were measured on a 7-point Likert scale, ranging from 1 (*not appropriate*) to 7 (*totally appropriate*). For the present study, sum scores were calculated ranging from 5; minimal satisfaction with life, to 35; very high satisfaction with life (Pavot et al., 1991), consistent with instrument recommendations (Diener et al., 1985). The questions were framed for example in the following way: "So far I have gotten the important things I want in life." PCA analyses showed a clear one-dimensional structure also in the Norwegian sample. All items had factor loadings over 0.7; KMO showing 0.86, $p < 0.001$. The internal consistency (Chronbach's α coefficient) was acceptable ($\alpha = .87$), comparable with alpha reliabilities obtained in other studies (Cohn, Fredrickson, Brown, Mikels & Conway, 2009; Diener et al., 1985; Fredrickson et al., 2008; Rodrígues, Látkova & Sun, 2008). This factor explained 66.5% of the total variance, similar to previous studies (Pavot et al., 1991).

Physical activity was measured by the use of a single-item: "During the last four weeks, how many days a week have you participated in sports or physical activity so hard that you had high respiratory frequency, sweated, or had an increased heart rate for 20 minutes?" This item is restricted in time frame, making the participants able to be more specific about their activity level in the near present. The question had five response categories: *never*,

rarely, about one day a week, 2-3 days a week and *4-7 days a week*. Self-report instruments and methods are currently the most frequently validated and reliable method of physical activity assessments among children and adolescents (Corder, Ekelund, Steele, Wareham & Brage, 2008; Kohl, Fulton, & Caspersen, 2000), and a number of previous studies have measured frequency of physical activity by one single item (Allison et al., 2005; Booth et al., 2001; Corder et al., 2008; Gerber & Pühse, 2008, 2009; Iwai et al., 2001; Kohl et al., 2000; Moksnes et al., 2010; Rothon et al., 2010; Strachan et al., 2009).

Self-esteem was measured by the use of Rosenberg's Self-Esteem Scale (RSES) (Rosenberg, 1965; 1989). This is by far the most widely used self-report scale (Martín-Albo et al., 2007; Robins et al., 2001). It is highly reliable and validated and suitable for use among children and adolescents (Fox, 2000; Gray-Little et al., 1997; Hagborg, 1993; Martín-Albo et al., 2007; Robins et al., 2001). The RSES scale consists of 10 items with positive or negative content, measured on a 4-point Likert scale ranging from 1 (*strongly disagree)* to 4 (*strongly agree*). The five negatively loaded items were reversed so that a higher value on all the items indicated a higher self-esteem. Questions were formulated, for example in the following way: "I am able to do things as well as most other people," "At times, I think I am no good at all" and "On the whole I am satisfied with myself." For the present study, sum scores were calculated ranging from 4; very low self-esteem, to 40; very high self-esteem. Several studies have investigated the factor structure in the RSES, showing a clear one-dimensional structure (Gray-Little et al., 1997; Martín-Albo et al., 2007; Moksnes et al., 2010; Orth, Robins, Trzesniewski, Maes & Schmitt, 2009; Robins et al., 2001). Results from the PCA analyses showed two clusters of dimensions with eigenvalue over 1, dividing the items perfectly into one positive and one negative factor with equally strong factor loadings. This indicated that these 10 items load in different factors, representing two different parts of the concept, making the questions not fit into one common index. However, the internal consistency was acceptable (Cronbach's $\alpha = .89$), and because of former validation, all initial items were included and computed into an index. Previous studies have reported Cronbach's alpha reliabilities ranging from .72 to .88 (Gray-Little et al., 1997; Moksnes et al., 2010) and from .88 to .90 (Robins et al., 2001).

Demographics included questions about gender and age. Gender was dichotomized with the codes 0 = girl and 1 = boy. The age item was originally typed in as month and year of birth. This was recoded into an age item, and those over 19 years were excluded from the analyses. Other socio-demographic variables were not included in this questionnaire.

Statistical analysis

All statistical analyses were computed using SPSS, version 16.0 (SPSS Inc., Chicago, IL). The missing percentage varies between the relevant items and indexes. The active sample size was therefore between n = 961 to 1284. The analyses used in this article consisted of two steps. First, descriptive statistics, including means and standard deviations were calculated for all continuous variables in the study. Independent-samples t-test was conducted to investigate whether there were any gender differences in the test variables. Correlation coefficients were obtained between each study variable where a significance level of 5% and 95% confidence intervals were presented. Principal component analysis (PCA) was the extraction method conducted on the measurement scales of satisfaction with life and self-esteem by the use of an oblique rotation on the two constructs, allowing the items to correlate based on former validations. Prior to the PCA analyses, suitability of the data was tested by requiring Kaiser-Meyer-Olkin (KMO) values of or above .60 and the statistical significance by use of Bartlett's Test of Sphericity. Cronbach's alpha coefficients were examined to decide internal consistency, factorability and reliability of the scales. No items from the initial scales were removed. Criteria for sample exclusion were adolescents older than 19 years and persons filling in nonsense responses or particular irregularities in internal consistency.

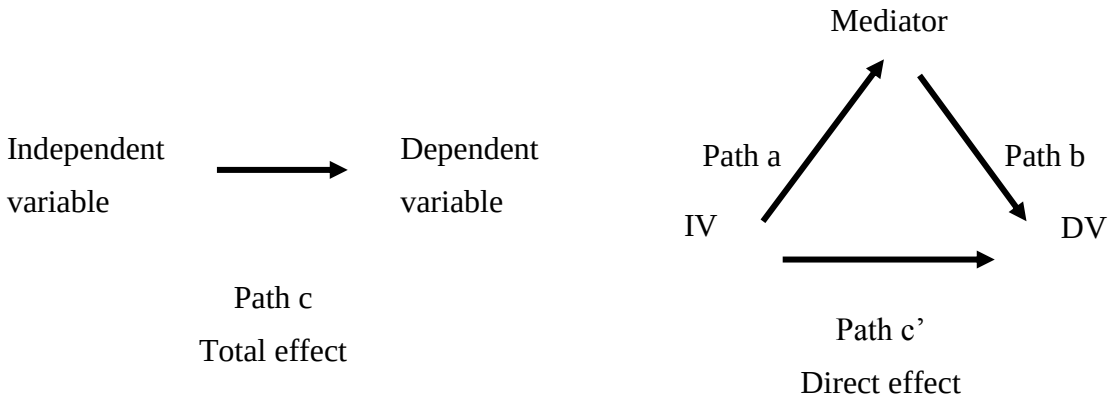
Second, tests of indirect effects through bootstrap analyses were conducted to directly test the significance of an indirect effect of a proposed cause on an outcome through a proposed mediation model (Preacher & Hayes, 2004, 2008). Mediation refers to the covariate relationships between three variables: an independent variable (IV), a potential mediating variable (M) and a dependent variable (DV) (MacKinnon, Lockwood, Hoffman, West & Sheets, 2002). The mediator functions as a third variable, which represents the generative mechanism through which the independent variable is able to influence the dependent variable (Baron & Kenny, 1986; Wu & Zumbo, 2008) or the process that produces the effect (Preacher & Hayes, 2004). In other words, to test the indirect effect is to test whether the mediating variable accounts for a significant amount of the shared variance between IV and DV. Mediation can be a causal model if it refers to a theoretical hypothesis that explains why and how changes in one variable result in changes in another (Wu & Zumbo, 2008).

As illustrated in Figure 1, two causal chain paths are involved in predicting the outcome: first, the direct effect of IV on DV (path c'), and second, the impact of the mediator (path b) in which IV is working through (path a) (Baron & Kenny, 1986). According to Baron and Kenny (1986), several tests of links in the causal chain must be met for a variable to

function as a mediator. First, that variation in IV significantly accounts for the variation in the mediator (path *a*); second, that variation in the mediator significantly accounts for the variation in DV (path *b*); and third, a significant relation no longer exists between IV and DV (path *c*') when paths *a* and *b* are controlled for. However, complete mediation rarely occurs in social phenomena, due to the fact that they have multiple causes and influences. Baron and Kenny (1986) state that it is more realistic to seek mediators that significantly decrease path *c'* rather than to eliminate the relation, called partial mediation (Preacher & Hayes, 2004).

Figure 1

The total effect of the independent variable on the dependent variable to the left, and the direct effect in a simple mediation model to the right (Based on Preacher & Heyes, 2004, 2008).



Hayes (2009) argues against Baron and Kenny's causal steps, and MacKinnon et al. (2002) found that these steps were among the least effective strategies for testing mediation due to low statistical power. The causal step approach does not statistically test the indirect effect, but it is rather inferred logically through testing a chain of hypotheses (Hayes, 2009; MacKinnon et al., 2002). Therefore, statistical tests of an indirect effect were performed by the use of an SPSS macro on bootstrapping proposed by Preacher and Hayes (2008). Bootstrapping is based on a non-parametric procedure, and thus not sensitive to data that is not normally distributed and/or has a small sample size. The procedure is based on re-sampling by taking a large number of samples from the data, where indirect effects (*ab*) are calculated for each sample. It formally tests the significance of the indirect effect by directly testing the distribution of *ab*, constructing confidence intervals (CI) for the indirect effect thousands of times, and simultaneously provides relevant information to assess mediation (Preacher & Hayes, 2004, 2008). The procedure is based on 95% CI; if this is obtained and the distance between the upper and lower CI does not include zero, an indirect effect is

significant at $p < 0.05$. Bootstrapping further adjusts all paths to the potential influence of covariates not proposed to be mediators in the model. The hypothesized indirect effect of leisure time physical activity (IV) through self-esteem (M) on satisfaction with life (DV) was tested. Gender and age are covariates in this test, and are controlled for in all effect analyses.

It is noteworthy that there is a distinct difference between a mediation effect and an indirect effect. The distinction of greatest importance is that a total effect (path *c*) has to exist initially to test for mediation and to classify the type of mediation (Preacher & Hayes, 2004; Zhao, Lynch Jr. & Chen, 2010), whereas no such assumption is claimed for an indirect effect (Preacher & Hayes, 2004). The total effect is tested for in the preliminary analyses. No statistical claims were followed to proceed with the bootstrapping analyses.

RESULTS

Descriptive analyses

Table 1 shows descriptive statistics on the continuous dependent variables of satisfaction with life, leisure time physical activity, self-esteem and gender. The first aim was to study the level of life satisfaction, physical activity and self-esteem among the adolescents in addition to gender and age differences. Results show relatively high mean satisfaction with life scores among adolescents. The mean level of physical activity shows that a great share of the participants are centered on the higher activity frequencies, where 70.9% of the participants have reported scores at the two highest categories. This sample also showed relatively high self-esteem scores. However, the standard deviation on life satisfaction and self-esteem show some level of dispersion in the sample. T-tests on gender show that boys have, on an average, significantly higher mean satisfaction with life and self-esteem levels than their female counterparts. Physical activity showed no significant gender difference. Age difference was investigated in the correlation matrix (Table 2), and the results showed that age only correlated significantly with satisfaction with life, whereas the younger adolescents reported slightly higher life satisfaction levels [$r = -.085$, $p < .01$].

Table 1
Mean, standard deviation values and mean gender differences among study variables (N = 951-1259)

	M (*SD*)	Girls (*SD*)	Boys (*SD*)	T-value
Satisfaction with life	23.1 (*6.2*)	22.3 (*6.1*)	24.0 (*6.3*)	-4.399***
Leisure time physical activity	3.9 (*1*)	3.9 (*1*)	3.9 (*1.1*)	-.708
Self-esteem	29.0 (*5.7*)	27.4 (*5.6*)	31.0 (*5.3*)	-10.600***

Note: *** = $p < .001$

Satisfaction with life, physical activity and self-esteem

A Pearson product-moment correlation coefficient was computed to assess the association between physical activity and satisfaction with life, the association between physical activity and self-esteem, and the association between self-esteem and satisfaction with life. Results showed a moderate to strong correlation between the independent variable physical activity and the dependent variable satisfaction with life [$r = .233$, $p < .01$]. Physical activity also correlated significantly with the potential mediator self-esteem [$r = .161$, $p < .01$]. The correlation matrix showed that self-esteem had the strongest relation with life satisfaction [$r = .656$, $p < .01$]. All of these correlations are positive, meaning that increases in frequencies of physical activity and increases in self-esteem correlated with increases in life satisfaction, and that increases in activity were associated to increments in self-esteem.

Table 2
Inter-correlations among study variables

	1	*2*	*3*	*4*
1: Satisfaction with life	1			
2: Leisure time physical activity	.233**	1		
3: Self-esteem	.656**	.161**	1	
4: Age	-.085**	.027	.002	1

Note: N = 1048-1062

Table shows Pearson correlations (2-tailed)

** = $p < .01$

Bootstrap analyses

In accordance with the main aim, self-esteem was tested as a potential mediator on the relation between physical activity and satisfaction with life. The percentile and bias corrected and accelerated confidence intervals, shown in Table 3, showed that physical activity has a significant indirect effect on satisfaction with life, and that the path through self-esteem is significant because zero is not in the 95% CI. The relation between the independent variable and the mediator (path *a*), as well as the effect of the mediator on the dependent variable (path *b*), was examined in terms of unstandardized path coefficients. The results showed that higher frequency of physical activity was associated with higher self-esteem [B = 0.95, p <.001]. Higher levels of self-esteem were also associated with higher level of life satisfaction [B = 0.72, p < .001]. The third and fourth aims were therefore also supported through the bootstrap analyses. In addition, all effect results were controlled for the covariates gender and age.

Covariate results from the bootstrap test showed that girls were significantly more satisfied with their lives [B = -0.88, p < .01] than boys, controlled for the other variables in the model. The results also showed that younger adolescents were significantly more satisfied with their lives [B = -0.38, p < .001] than older adolescents, controlled for the other variables.

In order to test for mediation and to classify type of mediation, a significant total effect between leisure time physical activity and life satisfaction should be examined. Physical activity was shown to have a significant total (path *c*) and direct effect (path *c'*), shown in Table 3. The significant total and direct effect both had the same sign where the total effect [B = 1.56, p < .001] and the direct effect [B = 0.87, p < .001] were positive. Therefore, according to the schemas presented by Mathieu and Taylor (2006) and Zhao et al. (2010), this significant indirect effect can be classified as a partial or complimentary mediation.

The results presented also fulfill all causal steps proposed by Baron and Kenny (1986) in that the paths *ab* are significant, and that path *c'* (direct effect) is significantly smaller than path *c* (total effect). In sum, these results show that physical activity potentially causes the outcome in satisfaction with life level, partially meditated by the level of self-esteem.

Table 3

Results from bootstrapping analyses of the effect of Leisure time physical activity on Satisfaction with life through Self-Esteem (N = 919, missing listwise)

IV	M	DV	Total effect (path c) (c = c' +ab	Direct effect (path c') (c' = c – ab)	Bootstrapping Indirect effects[a] Percentile 95% CI		BCa 95% CI	
					Lower	Upper	Lower	Upper
Leisure time physical activity	Self-esteem	Satisfaction with life	1.5559***	0.8723***	0.4181	0.9459	0.4181	0.9461

Note. Based on 5,000 bootstrap samples.

All values are based on unstandardized path coefficients.

BCa: bias corrected and accelerated for scewnes in the sample.

[a] If zero is not in the 95 % CI, the indirect effect is significant at $p < 0.05$ (two-tailed).

All models include control of the covariates gender and age.

Adjusted $R^2 = .47 = 47\%$

DISCUSSION

The amount of research on the relation between leisure time physical activity and subjective well-being is expanding, but studies on the association between physical activity and life satisfaction are scarcer. More surprising is the lack of focus toward an adolescent sample. It is further surprising that so many studies lack a focus toward how self-esteem influences this relation, because how adolescents value themselves can be an important predictor, promoter and contributor to life satisfaction (Baumeister et al., 2003; Biddle & Asare, 2011; Boden et al., 2008; Diener & Diener, 2009). This article sought to examine the potential promotive effect leisure time physical activity can have on satisfaction with life and self-esteem in adolescents, because self-esteem may be varying (Côté, 2009; Impett et al., 2008; Robins et al., 2002; Santrock, 2008) and life satisfaction can be lower during this phase (Huebner et al., 2000a). This article was also aimed at investigating the potential positive impact self-esteem can have on the level of life satisfaction. The main aim was to test whether self-esteem mediates the relation between physical activity and satisfaction with life.

Several important findings emerged from this study. First, and in accordance with the first initial aim, investigation of the adolescent's satisfaction with life, physical activity and self-esteem levels were conducted. The results showed that the adolescents had high mean life satisfaction levels, consistent with previous studies (Diener & Diener, 1996; Diener & Diener 2009; Huebner et al., 2000; LPI, 20011; OECD, 2012; UN, 2005). Mean tendencies in Norway therefore somehow contradict the fact that a noteworthy number of adolescents have low levels of life satisfaction or life dissatisfaction (Huebner et al., 2000a; Valois et al., 2004). However, analyses of individual levels may show different results. The results further show that the mean adolescent is frequently active in leisure time physical activity, obtaining approximate recommended levels (Public Health Department, 2011; WHO, 2012b), enough to experience some of the positive effects physical activity can promote (Biddle & Asare, 2011; Kirkcaldy et al., 2002; Melin et al., 2003; Parfitt & Eston, 2005; Penedo & Dahn, 2005; Rodríguez et al., 2007; Rothon et al., 2010; Sagatun et al., 2007; Schnohr et al., 2004; Ströhle et al., 2007; Valois et al., 2004). Adolescents also showed relatively high mean self-esteem levels, contrary to research showing that self-esteem declines dramatically during adolescence (Côté, 2009; Impett et al., 2008; Robins et al., 2002; Santrock, 2008).

The second part of the first aim was to investigate gender (Table 1) and age (Table 2) differences. T-test results showed that adolescent boys were significantly more satisfied with life than their female counterparts. This result is not in consensus with a number of studies

reporting no gender differences (Ferguson et al., 2010; Lalive & Stutzer, 2010, Rodríguez, Látková & Sun, 2007; Schnohr et al., 2005). Results insinuate that younger adolescents have slightly higher satisfaction with life levels, which is not in agreement with previous research (Robins et al., 2002; Santrock, 2008). Age related to the other variables does not correlate significantly, showing no age difference between levels of physical activity or self-esteem as found in previous research (Baldwin & Hoffmann, 2002; Côté, 2009; Robins et al., 2002). Whether activity levels drop during adolescence is thus not supported here (Santrock, 2008; Valois et al., 2004). The results showed no significant gender difference in physical activity frequency, contrary to previous literature reporting higher frequencies among boys (Vilhjalmsson & Kristjansdottir, 2003; WHO, 2012b). Results further showed that boys reported considerably higher mean self-esteem levels than girls, consistent with empirical evidence (Impett et al., 2008; Martín-Albo et al., 2007; Räty et al., 2005; Robins & Trzesniewski, 2005).

The small and non-significant gender and age differences in the sample can be explained by the characteristics of the adolescent period all participants are going through. This sample merely consists of adolescents, who as a group may hold some similarities in terms of transitional challenges and lifestyle choices. This can result in relatively equal, and therefore non-significant, physical activity and self-esteem levels across the age span, and no gender differences in physical activity frequency. However, by comparing adolescents to other age groups in the society, the constructs may show significantly differing age and gender results.

Explanations for why girls and adolescents in general may report lower levels of life satisfaction and self-esteem than the remaining population can also be caused by the character of the adolescent transition. This period is complex and challenging, which may lead to problems or negative experiences (Byrne et al., 2007) influencing one's assessments and evaluations (Martín-Albo et al., 2007; Santrock, 2008). Adolescence is also a critical time for self-esteem development (Boden et al., 2008), but development may be difficult when the adolescent's self-concept is conflicting (Côté, 2009; Santrock, 2008), self-consciousness (Baldwin & Hoffmann, 2002) and attention to physical appearance increase (Santrock, 2008), and when pubertal challenges are present (Impett et al., 2008). An objective judgment of one's own good and value is therefore harder during this period, especially for girls who normally have lower self-esteem. This can make self-reports turn out more negatively. Identity formation and the development of the self during adolescence can also influence our

choices, behavior and attitudes (Côté, 2009). Level of self-esteem and how positive one's evaluations are can therefore affect involvement in physical activities and other arenas that can influence the level of life satisfaction positively. Higher or more positive self-esteem can therefore be a crucial factor to promote in adolescents.

The second to fourth initial aims were to investigate the association between the three main constructs. Results showed that frequency of leisure time physical activity is positively associated with life satisfaction levels. Others support this relation (Fernandez-Ballesteros et al., 2001; Kirkcaldy et al., 2002; Melin et al., 2003; Penedo & Dahn, 2005) in addition to longitudinal effects (Shnohr et al., 2005; Valois et al., 2004). Explanations for this can be found in the broaden-and-build theory, where physical activity produce positive emotions, or in a psychosocial explanation where physical activity can lead to social interaction with peers or results in mastery, which in turn can increase life satisfaction. Results also showed that there was a positive association between frequency of physical activity and level of self-esteem, congruent with other researchers (Biddle and Asare, 2011; Ekeland et al., 2005; Fox, 1999, 2000; Kirkcaldy et al., 2002; Lagerberg, 2005; Parfitt & Eston, 2005), indicating that physical activity can be a good arena for improvements in self-esteem. Higher levels of self-esteem were shown to be positively associated with higher levels of life satisfaction. This was the strongest association in the table, indicating that high self-esteem in fact can be one of the most important predictors of life satisfaction (Biddle & Asare, 2011; Diener & Diener, 2009; Fox, 2000). In sum, all these factors are positively related to each other; however, the causality and direction of influence is still relatively unknown.

The relation between level of life satisfaction and self-esteem can be influenced by other aspects in the adolescent's life, such as the social or cultural context, which were not tested for in these analyses. Some studies show that in more collectivistic cultures, self-esteem plays a minor part in how satisfied we are with our lives (Karasawa et al., 2011; Kitayama et al., 1997; Markus & Kitayama, 2010). This sample consists of adolescents from rural districts in Norway. Individualism and promotion of the self may not be as pronounced as in larger cities. Collectivism may also lead to a greater sense of belonging in the community, resulting in higher life satisfaction. This aspect is not supported by Diener and Diener (2009), who found that Norway was generally individualistic, but it promotes the importance of having a biopsychosocial, overall view on factors that can influence health and well-being levels (Earle et al., 2007; Espnes & Smedslund, 2009; Falkum, 2008).

Finally, the primary aim was to investigate whether self-esteem mediates the relation between leisure time physical activity and life satisfaction. Results from the bootstrap analyses revealed several interesting and important findings. First of all, there is a persistent significant total and direct effect between physical activity and life satisfaction in adolescents while controlling for self-esteem levels (only direct effect), gender and age. This is consistent with the correlation results and shows that higher frequency of physical activity can promote greater life satisfaction, a dose-response relation lacking in many studies (Dunn et al., 2001; Rothon et al., 2010; Sagatun et al., 2007; Shnohr et al., 2005; Ströhle et al., 2007). Secondly, a significant association between frequency of physical activity and self-esteem level was found, still controlling for the other variables, leading activity to be a potential arena for self-esteem improvements. This is supported by prior research as referred to above. Thirdly, a significant positive association between level of self-esteem and life satisfaction was found while controlling for the confounders and physical activity. This relation was therefore not affected by gender or age, and was in accordance with the findings of Diener and Diener (2009). The first and second points indicate that frequency of physical activity has an effect on levels of life satisfaction and self-esteem, and the third point indicates that self-esteem also has an effect on life satisfaction; making life satisfaction level dependent on both activity frequency and self-esteem level.

Fourthly, and of great importance, results showed a significant, partial mediation effect by self-esteem on the relation between physical activity and life satisfaction. This suggests that physical activity promotes higher level of self-esteem in the adolescent participants, which in turn can produce the effect of enhanced satisfaction with life. Self-esteem, as a set of thoughts and feelings about oneself and the good and value one has (Fox et al., 2000; Martín-Albo et al., 2007; Rosenberg, 1965; Santrock, 2008) can be heightened by physical activity, because it provides positive emotions as suggested by the broaden-and-build theory. These positive emotions and evaluations may build resources in the adolescent (Cohn et al., 2009; Fredrickson, 1998, 2000, 2001, 2003, 2004; Fredrickson et al., 2008; Fredrickson & Losada, 2005; Garland et al., 2010; Tugade & Fredrickson, 2004), which subsequently results in a life satisfaction increment. The fact that life satisfaction is defined as a global assessment of life quality (Shin & Johnson, 1978, p. 478) supports the theory, because positive emotions are a possible promotive factor. These results also support the biopsychosocial model because the outcome, life satisfaction, is influenced by a number of physical, psychological, social and contextual factors (Espnes & Smedslund, 2009).

The fifth important result emerging from the indirect effect test was that the outcome variable, life satisfaction, was found to be higher among girls and younger adolescents. This does not necessarily mean that age and gender are moderators of this relation, but that girls and younger adolescents reported more life satisfaction while frequency of physical activity and level of self-esteem were controlled for. The age result was in consensus with the correlation result discussed above, and may be a result of the fact that the younger adolescents have not fully started sport specialization or that they have not yet reached the period of self-esteem decline (Baldwin & Hoffmann, 2002). This can influence the activity level of the adolescents, their own evaluations of worth, skills and mastery, and therefore their life satisfaction. The gender result is, however, of great interest. The significantly higher mean levels of life satisfaction among boys from the t-test seem to disappear when physical activity and self-esteem are controlled for in the test. This can indicate that the positive impact that physical activity and self-esteem have on life satisfaction may neutralize or even alienate the gender difference, leading girls to have a higher life satisfaction than peer boys. A reason for this can be that physically active girls may report higher self-esteem levels than their active male counterparts, eliminating the higher self-esteem levels among boys. This gender effect could carry on and impact life satisfaction levels, leaving adolescent girls with a more positive outcome on this indirect relation. Unfortunately, it is impossible to establish where in the indirect effect the higher self-esteem level among boys vanishes. In these results, however, control for physical activity and self-esteem levels results in favor of the adolescent girls.

Finding a statistically significant indirect effect supportive of mediation does not necessarily prove the causal pattern shown in Figure 1. Causality is dependent on the design, and can only be established if the priority of the independent variable and the mediator is clear by (1) manipulating IV before measuring M, (2) measuring IV and allowing enough time for IV to exert before measuring M, or (3) if theory or prior research argues that IV is always causally prior to M (Preacher & Hayes, 2004). Wu and Zumbo (2008) further argue that mediation models are, by nature, causal models because of underlying theories suggesting a directional influence. The analyses presented in this article are more to be understood as explorative mediation models, where prior empirical evidence suggests positive relations between the three constructs, and where self-esteem can act as a third variable influencing the relation (Fox, 2000; Kirkcaldy et al., 2002). The underlying theory also states that there is a relation between all physical, psychological, emotional, social and environmental aspects, all influencing human lives (Adler, 2009; Earle et al., 2007; Espnes & Smedslund, 2009; Falkum,

2008), where positive emotions induced by physical activity can lead to increased life satisfaction and/or self-esteem levels (Fredrickson, 2001, 2003). This foundation can act as a fortifier of the partial mediation effect found in the bootstrap analyses, insinuating a potential causal relationship. However, it is also possible to participate regularly in physical activity, yet report low levels of life satisfaction and self-esteem, and vice versa. The causality of this relation is thus relatively unknown, requesting further longitudinal or theoretical studies.

Strengths and limitations

This study has several strengths that should be addressed. First of all, the survey has a large sample size. Secondly, given the mediation findings by self-esteem on the relation between physical activity and life satisfaction, and that this has not been conducted on an adolescent sample before, the topic has high social and empirical relevance. Thirdly, the high internal consistency of the scales and the data set caused by the manually cleansing process and removal of mistakes from the punching process strengthens the results validity. Fourthly, the survey had a good response rate (67%). And fifthly, good reliability and construct validity is maintained on the constructs of life satisfaction and self-esteem by the use of former validated scales. Physical activity assessed by a single item-measure has also been previously validated (Booth et al., 2001). This is of importance because precise methods of measurement are essential to accurately establish the relation between different outcomes and determine trends (Corder et al., 2008).

However, the study also has several limitations that should be considered. First, no variables measuring positive emotions are included in the analyses, so examination of the appropriateness of the theoretical framework on this relation could not be directly tested. However, it can be assumed that since physical activity promotes increased life satisfaction and self-esteem, there is something about these activities that leads the adolescents toward positive feelings or evaluations. Second, there is always a possibility that other confounding variables not included in the analyses can have an impact on the outcome, leading the adolescents to improved levels of life satisfaction or self-esteem (Rodríguez et al., 2007). The indirect effect test explained 47% of the variance in satisfaction with life. It is therefore presumable to expect that some important confounders are missing in the analyses. Also Zhao et al. (2010) state that complimentary mediation includes a likelihood of one or more omitted mediators in the relation between leisure time physical activity and life satisfaction. Third, no socioeconomic variables are included in the questionnaire. Since this sample consists of

adolescents, the parents' socioeconomic level could have been of interest or influence to the adolescents' health and well-being level. There is now a wide agreement that social differences in income, profession and education have an important impact on people's health (Dahl, Wel & Harsløf, 2010; Elstad, 2000; Nettleton, 2006). This can influence physical activity, overall life satisfaction and self-esteem levels, because the standard of living can affect the conditions in which we form or live our lives. Fourth, results are taken from a cross-sectional survey; causal relations are therefore precluded and associations found can be reciprocal.

Fifth, all findings are based on self-reports. Different measures used to assess life satisfaction, self-esteem and physical activity can produce different results (Diener, 2000). Even though objectively measured life quality and life circumstances are important determinants in individually assessed satisfaction with life, it is the subjective evaluations and interpretations of experiences that are most determinant in perceiving one's life satisfaction (Day & Jankey, 1996), and therefore important to measure. The weak relation between subjective and objective measures of life satisfaction also determines that a subjective measure must be used when subjective information is assessed (Huebner et al., 2000a). Measures of global life satisfaction and self-esteem can further be influenced by biases and situational factors (Diener & Diener, 1996), such as mood or feelings at the response moment. The ordering or wording of the items can also influence the responses (Schwartz & Strack, 1999). People may respond in normative ways judged by what is socially desirable and what we are socialized to be. This may exclude real assessments in the measurements (Diener, 2000; Diener & Diener, 1996). Social comparison is also an aspect that needs to be taken into consideration. Our judgments and standards are influenced by inter-individual standards and information about other people's lives, especially in adolescents who can be particularly affected by what other people think. The qualities we look for in ourselves and others are not stable but change over time. Although we may know with whom one compares him or herself, we can never know the impact of that comparison. These aspects emphasize the importance of measuring life satisfaction and self-esteem by the use of self-reports (Schwartz & Strack, 1999).

Physical activity measured by the use of self-reports is associated with difficulties (Booth et al., 2001; Sagatun, et al., 2007) and has more limited reliability and validity than objective laboratory measures (Arvidsson, Slinde & Hulthèn, 2005; Shephard, 2003). In adolescents and children, the use of self-report measures can be less accurate than with adults,

due to the difficulty to accurately recall relevant details retrospectively (Corder et al., 2008; Kohl et al., 2000). The use of a single-item measure for this variable has to be taken into consideration. The question formulation and previous use of similar items makes it reasonable to assume that the item captures physical activity levels among the adolescents. However, the item only includes frequency measurement due to the fact that sweating or elevated respiratory activity is subjective and does not describe intensity. This may have resulted in higher report rates of leisure time physical activity for unfit adolescents. Duration was not measured beyond 20 minutes. Exploration of frequencies does not provide information about the participant's experience during the activity, which could be interesting to investigate. However, a large number of subjects in the survey commonly reduce problems resulting from imprecise classification and allow demonstration of benefits achieved from physical activity (Shepard, 2003).

Implications for further practice and research

Despite the limitations of this study, it makes some important contributions to the literature. First, it extends the understanding of the importance of strengthening factors that can have a promotional contribution to improved satisfaction with life and health, in addition to providing a protective effect against mental and physical health problems. This is especially relevant considering the global epidemiology of sedentary lifestyles, for adolescents in particular (Penedo & Dahn, 2005), and the increasing number of individuals with mental health problems (Ozer & Irwin, 2009). Second, physical activity was proven to be an important facilitator of satisfaction with life and self-esteem in adolescents. Physical activity can promote life satisfaction both directly and indirectly, and through the mediation of self-esteem. On the basis of the presented data, it can be claimed that physical activity is an important health habit that needs to be preserved throughout the adolescent period and into adulthood in order to maintain and enhance beneficial levels of both life satisfaction and self-esteem. This is an important implication, but physical activity can also result in a wide range of other positive health outcomes. Third, this article provides valuable information about the adolescent cohort. Research on the ability of physical activity to positively to influence life satisfaction and self-esteem has been primarily focused on adults and the elderly (Fernandez-Ballesteros et al., 2001; Melin et al., 2003; Rodríguez, Látková & Sun, 2007; Schnohr et al., 2005).

The results presented in this article encourage further research about physical activity

as a potential promotive factor in relation to improved mental health, well-being and life satisfaction, especially among the adolescent population. The literature is especially lacking longitudinal studies providing causal explanations. This article also emphasizes that other variables could influence the proven indirect effect between physical activity and life satisfaction through self-esteem. Further research should investigate the potential influence of multiple mediators or moderators on this relation.

CONCLUSION

This present study revealed that Norwegian adolescents generally have high levels of satisfaction with life and self-esteem, and participate frequently in leisure time physical activities. The results show that adolescent boys reported higher mean levels of life satisfaction and self-esteem compared to their female counterparts. It also revealed that the younger adolescents were somewhat more satisfied with their lives than the older adolescents. A clear association was found between increasing frequency of leisure time physical activity and higher perceived levels of life satisfaction and self-esteem among adolescents aged 14-19. A clear, significant association was also found between a higher level of self-esteem and higher levels of life satisfaction. Bootstrap analyses revealed a significant indirect effect between physical activity and life satisfaction, and this relation was partly mediated by self-esteem. This suggests that physical activity is related to increased self-esteem, which in turn is related to increased life satisfaction. Through the bootstrap analyses, the outcome variable, life satisfaction, was found to be stronger for girls and younger adolescents.

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Appendix A: "Living on the Edge" Questionnaire

NTNU Samfunnsforskning AS – Senter for idrettsforskning

OPPVEKST I BYGDER – Hovedskjema

Takk for at du vil delta i denne undersøkelsen. Ingen vil få se eller vite hva du har svart.

Les spørsmålene i tur og orden. Det er ingen "riktige" eller "gale" svar. Riktige svar for deg, er det **du** mener.

Prøv å besvare **alle** spørsmålene. **Ikke** bruk for lang tid på noen spørsmål.

Slik gjør du:
I de fleste spørsmålene blir du spurt om å sette et **x** i den ruten som passer best for deg:
Spørsmål: Liker du å svømme? Sett bare et **x**. Ja ☒ Nei ☐

Dersom du endrer mening, skraver ruten du satte krysset i og sett et kryss i neste rute:
Ja ■ Nei ☒

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1. Er du jente eller gutt? Jente ☐ Gutt ☐

2. Hvilken klasse går du i? 8. ☐ 9. ☐ 10. ☐ Vgs. ☐

3. Når er du født? *Skriv inn fødselsdatoen i rutene under; (f.ek Oktober 1997 blir 10 – 97)*

✍ *Min fødselsdato er* ➔ *Måned* ☐ *År* ☐

FRITIDSAKTIVITETER

4. Her er ting som unge mennesker gjør i fritiden. Hvor ofte gjør du disse tingene? E*t **x** for hver linje.*

	Aldri	Sjelden	Omtrent en dag i uka	2 – 3 dager i uka	4 – 7 dager i uka
Spiller musikkinstrument	☐	☐	☐	☐	☐
Bruker datamaskin	☐	☐	☐	☐	☐
Hører på musikk	☐	☐	☐	☐	☐
Leser bøker, magasiner eller aviser	☐	☐	☐	☐	☐
Har venner på besøk	☐	☐	☐	☐	☐
Er hjemme uten å gjøre noe spesielt	☐	☐	☐	☐	☐
Gjør husarbeid eller annet arbeid hjemme	☐	☐	☐	☐	☐
Sitter med familien og snakker om ting	☐	☐	☐	☐	☐
Sammen med venner ute (gate, vei o.l)	☐	☐	☐	☐	☐
Er på besøk hos venner	☐	☐	☐	☐	☐
Spiser "ute" med venner (kafe o.l)	☐	☐	☐	☐	☐
Drar til sentrum for å kikke i butikker	☐	☐	☐	☐	☐
Går på kino, konserter o.l	☐	☐	☐	☐	☐
Drar for å danse (f.eks diskotek)	☐	☐	☐	☐	☐

5. Hvor ofte deltar du i følgende organiserte aktiviteter? *Sett bare et **x** for hver linje.*

	Aldri	Sjelden	Omtrent en dag i uka	2 – 3 dager i uka	4 – 7 dager i uka
Norsk folkehjelp, Røde Kors og lignende	☐	☐	☐	☐	☐
Speider	☐	☐	☐	☐	☐
Kristelig gruppe	☐	☐	☐	☐	☐
Aerobic eller dansegruppe	☐	☐	☐	☐	☐
Musikk, kunst , teater eller dramagruppe	☐	☐	☐	☐	☐
Skole-/Musikkkorps	☐	☐	☐	☐	☐
Fritidsklubb	☐	☐	☐	☐	☐
Politisk parti	☐	☐	☐	☐	☐
Miljøorganisasjon	☐	☐	☐	☐	☐
Idrettslag	☐	☐	☐	☐	☐
Annen klubb/org	☐	☐	☐	☐	☐

OM HVOR DU BOR

6. Her er noe unge mennesker har sagt om sitt hjemsted. Hvor enig er du for ditt hjemsted? *Sett bare et **x** for hver linje.*

	Svært enig	Enig	Uenig	Svært uenig
Det er ikke trygt å gå ut om kvelden	☐	☐	☐	☐
Det er ikke nok å gjøre for unge mennesker	☐	☐	☐	☐
Folk sladrer om alt mulig	☐	☐	☐	☐
Politiet er strenge ovenfor unge mennesker	☐	☐	☐	☐
Unge mennesker drikker for mye	☐	☐	☐	☐
Det er for få møtesteder for unge mennesker	☐	☐	☐	☐
Ungdomsgjenger er et problem her	☐	☐	☐	☐
Det er for lite frihet til å være slik en ønsker	☐	☐	☐	☐
Unge mennesker bruker narkotika	☐	☐	☐	☐
Dårlig tilbud i butikkene	☐	☐	☐	☐
Mobbing og angrep på unge mennesker	☐	☐	☐	☐
Mangler transport for å komme dit du ønsker	☐	☐	☐	☐
Det er et fint sted for barn å vokse opp	☐	☐	☐	☐
Det er ingen ting å gjøre her for unge mennesker	☐	☐	☐	☐
Det vil bli vanskelig å finne en passende jobb her	☐	☐	☐	☐
Det er et fint sted å bo for unge mennesker som meg	☐	☐	☐	☐
Framtiden ser bra ut for unge mennesker som bor her	☐	☐	☐	☐
Det er vanskelig å være seg selv her	☐	☐	☐	☐
Jeg ønsker å bo i dette området i framtiden	☐	☐	☐	☐
Jeg ønsker å flytte bort for noen år, for så å flytte tilbake	☐	☐	☐	☐
Jeg ønsker å flytte herfra, og aldri flytte tilbake	☐	☐	☐	☐

7. Dette har unge mennesker sagt om hva som kreves for å være populær. Hvor enig er du? *Et **x** for hver linje.*

	Svært enig	Enig	Uenig	Svært uenig
Være lik vennene i klær, språk,...	☐	☐	☐	☐
Være vennlig, hjelpsom, gå overens med andre	☐	☐	☐	☐
Være pen/ tiltrekkende/ søt	☐	☐	☐	☐
Være seg selv, være individuell	☐	☐	☐	☐
Være pålitelig, ærlig	☐	☐	☐	☐
Ha god fysikk/kroppsbygning/kroppsfigur	☐	☐	☐	☐
Være moteriktig	☐	☐	☐	☐
Ha sans for humor, være glad og fornøyd	☐	☐	☐	☐

8. Dette har unge mennesker sagt om skolen. Hvor enig er du? *Et **x** for hver linje.*

	Svært enig	Enig	Uenig	Svært uenig
Jeg lærer interessante og nyttige ting på skolen	☐	☐	☐	☐
Jeg blir lei av lærere som forteller hva jeg skal gjøre	☐	☐	☐	☐
Jeg trives på skolen	☐	☐	☐	☐
Jeg jobber hardt på skolen	☐	☐	☐	☐
Lærerne er interesserte og hjelpsomme	☐	☐	☐	☐
Jeg har blitt plaget/mobbet av andre elever på skolen	☐	☐	☐	☐
Jeg syns skolearbeidet er lett	☐	☐	☐	☐
Jeg er glad når jeg kan være borte fra skolen	☐	☐	☐	☐

9. Dette har unge mennesker sagt om framtiden. Hvor enig er du? *Et **x** for hver linje*

	Svært enig	Enig	Uenig	Svært uenig
Begynne å jobbe så fort jeg kan	☐	☐	☐	☐
Være i god form, trene regelmessig	☐	☐	☐	☐
Ta vare på miljøet, landsbygda	☐	☐	☐	☐
Være pen (utseende, klær, ...)	☐	☐	☐	☐
Ha venner å være sammen med	☐	☐	☐	☐
Ha det gøy mens jeg er ung	☐	☐	☐	☐
Tjene penger	☐	☐	☐	☐
Hjelpe til med å forbedre ting på det stedet hvor jeg bor	☐	☐	☐	☐
Jeg vil studere når jeg er ferdig med videregående skole	☐	☐	☐	☐
Jeg vil begynne å jobbe så fort som mulig	☐	☐	☐	☐

10. Hvor mange dager i uka er du så aktiv at du blir andpusten eller svett? *Sett bare et **x**.*

Aldri	Sjelden	Omtrent en dag	2 - 3 dager	4 – 7 dager
☐	☐	☐	☐	☐

11. Når du tenker på de fire siste ukene, hvor ofte deltok du i idrett/sport eller fysisk aktivitet hardt nok til at du pustet fort, svettet eller at hjertet banket fort i 20 minutter? *Sett bare et **x**.*

Aldri	Mindre enn en dag i uken	Omtrent en dag i uken	To eller tre dager i uken	De fleste dager i uken
☐	☐	☐	☐	☐

12. Hvor ofte trener du på følgende måter (i sesongen)? Sett et kryss for hver linje.

	Aldri	Sjelden	Omtrent en dag i uka	2 – 3 dager i uka	4 – 7 dager i uka
Trener/konkurrerer i idrettslag	☐	☐	☐	☐	☐
Trener utenom idrettslag	☐	☐	☐	☐	☐
Trener i treningsstudio	☐	☐	☐	☐	☐
Dansetrening	☐	☐	☐	☐	☐
Går på ski (langrenn)	☐	☐	☐	☐	☐
Sykler	☐	☐	☐	☐	☐
Jogger	☐	☐	☐	☐	☐
Fotturer	☐	☐	☐	☐	☐
Trener på andre måter	☐	☐	☐	☐	☐

13. Dette har noen unge mennesker sagt om fysisk aktivitet og trening. Hvor enig er du? *Et **x** for hver linje.*

	Svært enig	Enig	Uenig	Svært uenig
Jeg er i svært god form	☐	☐	☐	☐
Jeg trener ikke	☐	☐	☐	☐
Jeg trener for å holde meg i god form	☐	☐	☐	☐
Jeg trener fordi utseendet er viktig for meg	☐	☐	☐	☐
Jeg trener for å være sammen med venner	☐	☐	☐	☐
Jeg trener for å bli flink i idrett	☐	☐	☐	☐
Jeg trener når jeg ikke har annet å gjøre	☐	☐	☐	☐
Jeg er i dårlig form	☐	☐	☐	☐
De fleste vennene mine driver med idrett	☐	☐	☐	☐

14. Driver du, har du sluttet eller har du aldri drevet med noen av disse idrettene (i idrettslag).
*Et **x** for hver linje*

	Har aldri drevet	Har sluttet	Deltar
Håndball	☐	☐	☐
Fotball	☐	☐	☐
Ski (langrenn/alpint)	☐	☐	☐
Annet; hvilken:_____	☐	☐	☐
Annet; hvilken:_____	☐	☐	☐

15. Konkurrerer du i den idrettsgrenen du er flinkest i. *Kun et x*

Nei	Lokale konkurranser	Konkurranser andre steder i Trøndelag	Nasjonale konkurranser
☐	☐	☐	☐

16. Her er noe unge mennesker har sagt om hvorfor de deltar i idrett. Hvor enig er du? *Et **x** for hver linje.*

	Svært enig	Enig	Uenig	Svært uenig
Jeg er en flink idrettsutøver	☐	☐	☐	☐
Det er et godt miljø	☐	☐	☐	☐
Mine venner deltar	☐	☐	☐	☐
Jeg liker idretten	☐	☐	☐	☐
Jeg kommer i god form	☐	☐	☐	☐

OM Å SLUTTE MED IDRETT

17. Mange unge slutter med idrett. Hvor viktig tror du disse grunnene er til at de sluttet. *Et x for hver linje.*

	Svært viktig	Viktig	Lite viktig	Ikke viktig
Trening og konkurranser tar for mye tid	☐	☐	☐	☐
De er ikke flinke nok	☐	☐	☐	☐
Trenerne bestemmer for mye	☐	☐	☐	☐
Vennene deres driver ikke med idrett	☐	☐	☐	☐
Miljøet er for dårlig	☐	☐	☐	☐
Får ikke nok oppmerksomhet fra trener	☐	☐	☐	☐

18. Hvis du har sluttet med idrett. Hvor viktig er disse grunnene til at du sluttet. *Et x for hver linje*

	Svært viktig	Viktig	Lite viktig	Ikke viktig
Trening og konkurranser tok for mye tid	☐	☐	☐	☐
Jeg var ikke flinke nok	☐	☐	☐	☐
Trenerne bestemte for mye	☐	☐	☐	☐
Vennene mine drev ikke med idrett	☐	☐	☐	☐
Miljøet var for dårlig	☐	☐	☐	☐
Fikk ikke nok oppmerksomhet fra trener	☐	☐	☐	☐

19. Kryss av for hvordan du trives. Sett bare et **x** for hver linje.

	Svært godt	Godt	Middels	Dårlig	Svært dårlig
På trening	☐	☐	☐	☐	☐
I idrettskonkurranser	☐	☐	☐	☐	☐
Hjemme	☐	☐	☐	☐	☐
I teoretiske timer på skolen	☐	☐	☐	☐	☐
I kroppsøvingstimene på skolen	☐	☐	☐	☐	☐
I friminuttene på skolen	☐	☐	☐	☐	☐
En vanlig dag	☐	☐	☐	☐	☐

20. Hvor ofte gjør du følgende? *Sett ett kryss for hver linje*

	Aldri	Sjelden	1 dag i uka	2-4 dager i uka	5–7 dager i uka
Røyker	☐	☐	☐	☐	☐
Snuser	☐	☐	☐	☐	☐
Drikker alkohol	☐	☐	☐	☐	☐
Spiser frokost	☐	☐	☐	☐	☐
Spiser skolemåltid	☐	☐	☐	☐	☐
Spiser middag	☐	☐	☐	☐	☐

21. Nedenfor er det satt opp ulike påstander. Er du enig eller uenig i påstandene? *Et **x** for hver linje.*

	Svært enig	Enig	Uenig	Svært uenig
Fritidstilbudet er viktig for hvor godt du trives i kommunen	☐	☐	☐	☐
Organiserte aktiviteter er bedre enn å finne på ting sjøl	☐	☐	☐	☐
Voksne blander seg for mye opp i hva ungdom gjør	☐	☐	☐	☐
De unge bør bestemme mer i din kommune	☐	☐	☐	☐
Mange av mine venner drikker alkohol	☐	☐	☐	☐
Jeg har følt press om å drikke alkohol	☐	☐	☐	☐
Det blir stilt for store krav til de unge	☐	☐	☐	☐
Jeg er frivillig til å flytte for å få et bedre fritidstilbud	☐	☐	☐	☐
Voksne bestemmer for mye i idretten	☐	☐	☐	☐
Vennskap med andre er viktigere enn å vinne	☐	☐	☐	☐
De unge burde bestemme mer i idretten	☐	☐	☐	☐
Fysisk aktivitet er viktig for min helse som voksen	☐	☐	☐	☐
Jeg trives bedre på fritida nå, enn hva jeg gjorde i fjor	☐	☐	☐	☐
Jeg er flink i idrett	☐	☐	☐	☐
Jeg er en flink elev	☐	☐	☐	☐
Jeg er fornøyd med meg selv	☐	☐	☐	☐
Jeg likte å svare på dette spørreskjemaet	☐	☐	☐	☐

TANKER OG FØLELSER

22. Her er ulike ting unge mennesker har sagt om seg selv. Når du tenker på dine egne følelser, er du enig eller uenig? *Sett bare et **x** for hver linje.*

	Svært enig	Enig	Uenig	Svært uenig
Jeg er bekymret for huden min (akne, kviser..)	☐	☐	☐	☐
Jeg har en veltrent kropp	☐	☐	☐	☐
Jeg liker ikke kroppen min (figur/bygning/fysikk)	☐	☐	☐	☐
Jeg syns jeg ser bra ut	☐	☐	☐	☐
Jeg ønsker å se annerledes ut i framtiden enn jeg gjør nå	☐	☐	☐	☐
Jeg er fornøyd med meg selv og mine evner	☐	☐	☐	☐
Jeg er lett å like	☐	☐	☐	☐
Jeg har liten tro på meg selv	☐	☐	☐	☐
Det er noen bra ting med min personlighet	☐	☐	☐	☐
Jeg tenker på meg selv som en mislykket person	☐	☐	☐	☐
Jeg liker meg selv	☐	☐	☐	☐
Jeg ønsker ofte at jeg var en annen person	☐	☐	☐	☐
Jeg synes det er pinlig å være sammen med andre	☐	☐	☐	☐
Jeg er fornøyd sånn som jeg er	☐	☐	☐	☐
Det er mange ting med meg selv som jeg ønsker å forandre	☐	☐	☐	☐
Jeg har hatt vanskelig for å falle i søvn eller sove i det siste	☐	☐	☐	☐
Jeg har vært for trøtt til å gjøre ting den siste måneden	☐	☐	☐	☐
Jeg har følt meg ulykkelig eller trist den siste måneden	☐	☐	☐	☐
Jeg har følt håpløshet for framtiden den siste måneden	☐	☐	☐	☐
Jeg har følt meg nervøs eller anspent den siste måneden	☐	☐	☐	☐
Jeg har manglet tro på meg selv den siste måneden	☐	☐	☐	☐
Jeg har bekymret meg for mye om ting i det siste	☐	☐	☐	☐
Jeg har hatt dårlig matlyst den siste måneden	☐	☐	☐	☐
Det har vært vanskelig å være sammen med andre	☐	☐	☐	☐
Jeg har hatt vanskelig for å konsentrere meg	☐	☐	☐	☐

23. Hvordan er helsa di nå? *Sett ett **x**.*

Svært bra	Meget bra	God	Ikke helt god	Dårlig
☐	☐	☐	☐	☐

24. Når du tenker på de siste fire ukene, har du hatt noen av disse plagene?
Sett bare ett **x** for hver linje

	Ikke plaget	Litt plaget	Nokså plaget	Veldig plaget	Ikke aktuelt
Astma eller pipende bryst…	☐	☐	☐	☐	☐
Forkjølelse eller influensa…	☐	☐	☐	☐	☐
Følt meg nervøs, bekymret eller redd…	☐	☐	☐	☐	☐
Hodepine eller migrene…	☐	☐	☐	☐	☐
Smerter i armer, føtter eller ryggen…	☐	☐	☐	☐	☐
Følt meg ensom…	☐	☐	☐	☐	☐
Svimmelhetsanfall eller har besvimt…	☐	☐	☐	☐	☐
Magesmerter/vondt i magen…	☐	☐	☐	☐	☐
Følt meg trist, ulykkelig eller nedfor…	☐	☐	☐	☐	☐
Allergi eller feber…	☐	☐	☐	☐	☐
Vært irritabel eller i dårlig humør…	☐	☐	☐	☐	☐
Kviser, utslett eller andre hudproblemer…	☐	☐	☐	☐	☐

25. Har du noen langvarige sykdommer eller handikap? (med *langvarig* mener vi noe som har plaget deg i en stund, eller som plager deg av og til). *Sett et **x** i den ruten som passer best.*

Nei ☐

Ja ☐

26. Er du hemmet på noen av disse måtene? *Sett ett kryss for hver linje*

	Nei	Litt	Middels	Mye
Er bevegelseshemmet	☐	☐	☐	☐
Har nedsatt syn	☐	☐	☐	☐
Har nedsatt hørsel	☐	☐	☐	☐
Hemmet pga. kroppslig sykdom	☐	☐	☐	☐
Hemmet pga. psykiske plager	☐	☐	☐	☐

27. Hvor stor del av tiden har din helse påvirket dine sosiale aktiviteter (som f. eks å besøke venner, slektninger osv.) i løpet av de fire siste ukene? Sett bare et **x**.

Hele tiden ☐
Mesteparten av tiden ☐
Noen ganger ☐
Sjelden ☐
Aldri ☐

28. Hvem får du informasjon om hva som er viktig for helsa di fra? *Du kan sette flere x*

Foreldre	☐
Lærere	☐
Helsesøster	☐
Lege	☐
Venner	☐
TV, Internett, blader	☐

29. Hvillke av følgende ting har du hatt helse undervisning/informasjon om? Og hvilken av disse tingene ønsker du mere informasjon om? *Sett et **x** i **ALLE** rutene som passer.*

	Nei, har ikke hatt tilstrekkelig undervisning / informasjon om dette	*Ja, har fått tilstrekkelig undervisning/ informasjon om dette*	*Jeg vil gjerne vite mer om dette*
Mat og kosthold	☐	☐	☐
Røyking	☐	☐	☐
Hvordan mestre/ greie skolearbeid og eksamen	☐	☐	☐
Alkoholdrikking	☐	☐	☐
Trening	☐	☐	☐
Narkotika	☐	☐	☐
Seksualundervisning og prevensjon	☐	☐	☐
AIDS	☐	☐	☐
Førstehjelp	☐	☐	☐
Hvordan mestre/ greie problemer og følelser	☐	☐	☐
Stress	☐	☐	☐

30. Er du enig eller uenig i disse påstandene. Sett bare et **x** for hver linje/påstand.

	Helt enig	Litt enig	Vet ikke	Litt uenig	Helt uenig
Jeg blir lettere syk enn andre mennesker på min alder	☐	☐	☐	☐	☐
Jeg har like god helse som andre på min alder som jeg kjenner	☐	☐	☐	☐	☐

31. Hvor stor del av tiden har din helse påvirket dine sosiale aktiviteter (som f. eks å besøke venner, slektninger osv.) i løpet av de fire siste ukene? Sett bare et **x**.

Hele tiden ☐

Mesteparten av tiden ☐

Noen ganger ☐

Sjelden ☐

Aldri ☐

SPØRSMÅL OM STRESS

Her kommer en liste med ting eller situasjoner som du kan oppleve som stressende. Vær snill og fortell oss hvor stressende hver av disse tingene eller situasjonene har vært for deg i løpet av det siste året. Vennligst svar på alle utsagnene/spørsmålene. Sett bare ett kryss i ruten som passer for hvert utsagn.

NB: Hvis det er noe du ikke har opplevd, krysser du i rute nr. 1 (Ikke stressende).

Hvor stressende er …	Ikke	Litt	Moderat	Ganske	Svært
1. … uenigheter mellom deg og faren din?	☐	☐	☐	☐	☐
2. … å stå opp tidlig om morgenen?	☐	☐	☐	☐	☐
3. … å være nødt til å lære ting du ikke forstår?	☐	☐	☐	☐	☐
4. … å ha lærere som forventer for mye av deg?	☐	☐	☐	☐	☐
5. … å bli ertet?	☐	☐	☐	☐	☐
6. … å ha vanskeligheter med noen skolefag?	☐	☐	☐	☐	☐
7. … å følge regler du er uenig i hjemme?	☐	☐	☐	☐	☐
8. … å måtte lese ting du ikke er interessert i?	☐	☐	☐	☐	☐
9. … å bli oversett eller avvist av en person du er interessert i?	☐	☐	☐	☐	☐
10. … å ikke ha nok tid til å ha det gøy?	☐	☐	☐	☐	☐
11. … uenigheter med søsknene dine?	☐	☐	☐	☐	☐
12. … å ikke ha nok tid til å drive med fritidsaktiviteter?	☐	☐	☐	☐	☐
13. … å ha for mye hjemmelekser?	☐	☐	☐	☐	☐
14. … å ikke få nok tilbakemelding på skolearbeidet tidsnok til at det er hjelp i det?	☐	☐	☐	☐	☐
15. … å få forholdet til kjæresten til å fungere?	☐	☐	☐	☐	☐
16. … å bli nedvurdert av vennene dine?	☐	☐	☐	☐	☐

17. … uenigheter mellom foreldrene dine? ☐ ☐ ☐ ☐ ☐
18. … å ha for mye fravær fra skolen? ☐ ☐ ☐ ☐ ☐
19. … hvordan du ser ut? ☐ ☐ ☐ ☐ ☐
20. … uenigheter mellom deg og mora di? ☐ ☐ ☐ ☐ ☐
21. … å gå på skolen? ☐ ☐ ☐ ☐ ☐
22. … å ikke ha nok tid til kjæresten din? ☐ ☐ ☐ ☐ ☐
23. … lærere som erter deg? ☐ ☐ ☐ ☐ ☐
24. … å adlyde regler du er uenig i på skolen? ☐ ☐ ☐ ☐ ☐
25. … å ikke bli hørt på av lærere? ☐ ☐ ☐ ☐ ☐
26. … å ikke komme overens med kjæresten din? ☐ ☐ ☐ ☐ ☐
27. … mangel på respekt fra lærere? ☐ ☐ ☐ ☐ ☐
28. … uenigheter mellom deg og dine venner? ☐ ☐ ☐ ☐ ☐
29. … å ikke komme overens med lærerne dine? ☐ ☐ ☐ ☐ ☐
30. … å slå opp med kjæresten? ☐ ☐ ☐ ☐ ☐

SPØRSMÅL OM DINE FØLELSER AKKURAT NÅ

Under kommer noen utsagn som folk har brukt for å beskrive seg selv. Kryss av for hvert utsagn i den ruten som best beskriver hvordan du føler deg **akkurat nå,** altså, **i dette øyeblikket.** Det er ingen riktige eller gale svar. Ikke bruk for mye tid på hvert utsagn, men gi det svaret som beskriver dine nåværende følelser best.

	Ikke i det hele tatt	Litt	Til en viss grad	Veldig mye
1. Jeg føler meg rolig	☐	☐	☐	☐
2. Jeg føler meg trygg	☐	☐	☐	☐
3. Jeg er anspent	☐	☐	☐	☐
4. Jeg føler at jeg er under press	☐	☐	☐	☐
5. Jeg føler meg vel	☐	☐	☐	☐
6. Jeg føler meg oppskaket	☐	☐	☐	☐
7. Jeg er for tiden bekymret over mulige uhell	☐	☐	☐	☐
8. Jeg er fornøyd	☐	☐	☐	☐
9. Jeg føler meg skremt	☐	☐	☐	☐
10. Jeg føler meg bra	☐	☐	☐	☐
11. Jeg har selvtillit	☐	☐	☐	☐

12. Jeg føler meg nervøs	☐	☐	☐	☐
13. Jeg er skvetten	☐	☐	☐	☐
14. Jeg føler at jeg ikke kan ta avgjørelser	☐	☐	☐	☐
15. Jeg er avslappet	☐	☐	☐	☐
16. Jeg føler meg tilfreds	☐	☐	☐	☐
17. Jeg er bekymret	☐	☐	☐	☐
18. Jeg føler meg forvirra	☐	☐	☐	☐
19. Jeg føler meg stabil	☐	☐	☐	☐
20. Jeg føler jeg har det behagelig	☐	☐	☐	☐

SPØRSMÅL OM FØLELSER SOM GJELDER SISTE UKA

Instruksjoner: Vennligst les hvert utsagn nøye og velg ut det alternativet som best beskriver hvordan du har følt deg **i løpet av den siste uka inkludert i dag.** Sett ett x r for hvert utsagn

	Aldri	Nesten aldri	Noen ganger	Veldig ofte	Alltid
1. Jeg har følt meg trist eller ulykkelig	☐	☐	☐	☐	☐
2. Jeg føler meg på gråten	☐	☐	☐	☐	☐
3. Jeg føler skyld uten å vite hvorfor	☐	☐	☐	☐	☐
4. Jeg har mistet interessen for ting som har vært viktige for meg før	☐	☐	☐	☐	☐
5. Jeg har ikke likt aktiviteter som jeg gjorde før	☐	☐	☐	☐	☐
6. Jeg har følt meg engstelig, rastløs eller irritabel	☐	☐	☐	☐	☐
7. Jeg har mistet troen på meg selv eller undervurderer meg selv	☐	☐	☐	☐	☐
8. Jeg har hatt konsentrasjonsvansker	☐	☐	☐	☐	☐
9. Jeg har hatt vanskelig for å ta avgjørelser	☐	☐	☐	☐	☐
10. Jeg har følt det som om jeg har mislykkes	☐	☐	☐	☐	☐
11. Jeg har følt at ting alltid går galt, uansett hvor hardt jeg prøver	☐	☐	☐	☐	☐
12. Jeg har hatt søvnforstyrrelser – sovet mer eller mindre enn vanlig, eller hatt avbrudd i søvnen	☐	☐	☐	☐	☐

13. Appetitten min har vært unormal – jeg har spist mer eller mindre	☐	☐	☐	☐	☐
14. Jeg har følt at det krever større innsats å gjøre ting	☐	☐	☐	☐	☐
15. Jeg har følt meg trøtt eller har hatt veldig lite energi	☐	☐	☐	☐	☐

SPØRSMÅL OM SELVOPPFATNING

Instruksjon: Når det gjelder disse utsagnene, sett en ring rundt det svaret som stemmer for deg.

	Sterkt uenig	Uenig	Enig	Sterkt enig
I det store og hele er jeg fornøyd med meg selv	☐	☐	☐	☐
Av og til synes jeg ikke at jeg er god i noe i det hele tatt	☐	☐	☐	☐
Jeg føler jeg har flere gode egenskaper	☐	☐	☐	☐
Jeg er i stand til å gjøre ting like bra som de fleste andre folk	☐	☐	☐	☐
Jeg føler at jeg ikke har mye å være stolt av	☐	☐	☐	☐
Til tider føler jeg meg absolutt ubrukelig	☐	☐	☐	☐
Jeg føler at jeg er en person som er verdt noe, i alle fall på lik linje med andre.	☐	☐	☐	☐
Jeg skulle ønske jeg hadde mer selvrespekt	☐	☐	☐	☐
Alt i alt har jeg en tendens til å føle meg mislykket	☐	☐	☐	☐
Jeg har en positiv holdning til meg selv	☐	☐	☐	☐

OPPLEVELSE AV SAMMENHENG

Her er en serie med spørsmål som omhandler ulike sider ved livet vårt. Hvert spørsmål har 7 svaralternativer. Vennligst kryss av for det tallet som best uttrykker det som passer for deg. Tallene 1 og 7 presenterer ytterpunktene. Hvis ordene til venstre for rute 1 er rett for deg, setter du kryss i rute nummer 1. Hvis ordene til høyre for rute 7 er rett for deg, krysser du i rute 7. Hvis du føler noe midt i mellom, setter du kryss i den ruta som passer best for deg. Vennligst sett bare ett kryss for hvert spørsmål.

1. Opplever du at du ikke bryr deg om det som skjer i omgivelsene dine?

	1	2	3	4	5	6	7	
Veldig sjelden eller aldri	☐	☐	☐	☐	☐	☐	☐	Veldig ofte

2. Har du opplevd at du er blitt overrasket over oppførselen til personer du trodde du kjente godt?

	1	2	3	4	5	6	7	
Det har aldri hendt	☐	☐	☐	☐	☐	☐	☐	Det hender alltid

3. Har det hendt at personer du stoler på har skuffet deg?

	1	2	3	4	5	6	7	
Det har aldri hendt	☐	☐	☐	☐	☐	☐	☐	Det hender alltid

4. Inntil nå har livet mitt …

	1	2	3	4	5	6	7	
vært helt uten mål og mening	☐	☐	☐	☐	☐	☐	☐	hatt mål og mening

5. Føler du deg urettferdig behandlet?

	1	2	3	4	5	6	7	
Veldig ofte	☐	☐	☐	☐	☐	☐	☐	Veldig sjelden eller aldri

6. Opplever du ofte at du er i en uvant situasjon og at du er usikker på hva du skal gjøre?

	1	2	3	4	5	6	7	
Veldig ofte	☐	☐	☐	☐	☐	☐	☐	Veldig sjelden eller aldri

7. Er dine dagligdagse aktiviteter en kilde til …

	1	2	3	4	5	6	7	
glede og tilfredsstillelse?	☐	☐	☐	☐	☐	☐	☐	smerte og kjedsomhet?

8. Har du veldig motstridende tanker og følelser?

	1	2	3	4	5	6	7	
Veldig ofte	☐	☐	☐	☐	☐	☐	☐	Veldig sjelden eller aldri

9. Skjer det at du har følelser som du helst ikke vil føle?

	1	2	3	4	5	6	7	
Veldig ofte	☐	☐	☐	☐	☐	☐	☐	Veldig sjelden eller aldri

10. Alle mennesker vil kunne føle seg som tapere iblant. Hvor ofte føler du deg slik?

	1	2	3	4	5	6	7	
Aldri	☐	☐	☐	☐	☐	☐	☐	Veldig ofte

11. Hvor ofte opplever du at du over- eller undervurderer betydningen av noe som skjer?

	1	2	3	4	5	6	7	
Du over- eller undervurderer det som skjer	☐	☐	☐	☐	☐	☐	☐	Du ser saken i rett sammenheng

12. Hvor ofte føler du at de tingene du gjør i hverdagen er meningsløse?

	1	2	3	4	5	6	7	
Veldig ofte	☐	☐	☐	☐	☐	☐	☐	Veldig sjelden eller aldri

13. Hvor ofte har du følelser du ikke er sikker på at du kan kontrollere?

	1	2	3	4	5	6	7	
Veldig ofte	☐	☐	☐	☐	☐	☐	☐	Veldig sjelden eller aldri

TILFREDSHET MED LIVET

Nedenfor står fem utsagn om tilfredshet med livet som et hele. Vis hvor godt eller dårlig hver av de fem påstandene stemmer for deg og ditt liv ved å sette en ring rundt det tallet som du synes stemmer best for deg. (**Sett en ring for hvert spørsmål**).

	Stemmer dårlig						Stemmer perfekt
På de fleste måter er livet mitt nær idealet mitt	1	2	3	4	5	6	7
Mine livsforhold er utmerkede	1	2	3	4	5	6	7
Jeg er tilfreds med livet mitt	1	2	3	4	5	6	7
Så langt har jeg fått de viktige tingene jeg ønsker i livet	1	2	3	4	5	6	7
Hvis jeg kunne leve livet på nytt, ville jeg nesten ikke forandret på noe	1	2	3	4	5	6	7

SPØRSMÅL OM HVORDAN DU HÅNDTERER VANSKELIGHETER OG STRESSENDE SITUASJONER

Nedenfor beskrives en situasjon og en del måter å takle den på. Merk av på skalaen til høyre hvordan hvert alternativ passer for deg. *Sett ett **x** for hver linje.*

Når du møter vanskeligheter eller føler deg stresset, hvor ofte gjør du følgende?

	Aldri	Sjelden	Noen ganger	Ofte	Vanligvis
1. Snakker med moren din om det som plager deg…	☐	☐	☐	☐	☐
2. Jobber hardt med skolearbeid eller skoleprosjekter…	☐	☐	☐	☐	☐
3. Snakker med en bror eller søster om hvordan du har det…	☐	☐	☐	☐	☐
4. Spiller tv-/videospill, biljard, flipperspill, osv...	☐	☐	☐	☐	☐
5. Engasjerer deg mer i aktiviteter på skolen…	☐	☐	☐	☐	☐
6. Sover…	☐	☐	☐	☐	☐
7. Handler, kjøper ting du liker…	☐	☐	☐	☐	☐
8. Røyker…	☐	☐	☐	☐	☐
9. Driver med anstrengende fysisk aktivitet (jogging, sykling, osv)…	☐	☐	☐	☐	☐
10. Blir sint og kjefter på folk…	☐	☐	☐	☐	☐
11. Sier stygge ting til andre, er sarkastisk…	☐	☐	☐	☐	☐
12. Prøver å diskuterer med foreldrene dine og snakke ut, inngå kompromisser…	☐	☐	☐	☐	☐
13. Er sammen med en venn eller venninne…	☐	☐	☐	☐	☐
14. Går på kino…	☐	☐	☐	☐	☐
15. Banner…	☐	☐	☐	☐	☐
16. Prøver å ta egne avgjørelser…	☐	☐	☐	☐	☐
17. Gir andre skylden for det som skjer…	☐	☐	☐	☐	☐
18. Avreagerer ved å klage til familiemedlemmer…	☐	☐	☐	☐	☐
19. Snakker med en venn om hvordan du har det…	☐	☐	☐	☐	☐
20. Er nær noen du bryr deg om…	☐	☐	☐	☐	☐
21. Snakker med faren din om det som plager deg…	☐	☐	☐	☐	☐

22. Sier hyggelige ting (gir varme hilsener) til andre…	☐	☐	☐	☐	☐
23. Ser på tv…	☐	☐	☐	☐	☐
24. Drikker øl, vin, sprit…	☐	☐	☐	☐	☐
25. Spiser…	☐	☐	☐	☐	☐
26. Prøver å se det positive i en vanskelig situasjon…	☐	☐	☐	☐	☐
27. Prøver å finne ut hvordan du skal takle problemene eller spenningen, på egen hånd…	☐	☐	☐	☐	☐
28. Gråter…	☐	☐	☐	☐	☐
29. Avreagerer ved å klage til vennene dine…	☐	☐	☐	☐	☐
30. Prøver å pleie vennskap eller få nye venner…	☐	☐	☐	☐	☐
31. Prøver å hjelpe andre med å løse problemene sine…	☐	☐	☐	☐	☐
32. Driver med en hobby (syr, sykler)…	☐	☐	☐	☐	☐
33. Organiserer livet ditt og det du må gjøre…	☐	☐	☐	☐	☐
34. Prøver å forbedre deg (komme i form, få bedre karakterer, osv)…	☐	☐	☐	☐	☐

ANDRE KOMMENTARER

Hvis det er noe annet du ønsker å si om deg selv eller miljøet ditt, så skriv det gjerne på linjene nedenfor.

✍ .....

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TUSEN TAKK FOR AT DU HAR DELTATT I DENNE UNDERSØKELSEN.
Sjekk at du har husket å fylle ut alle spørsmålene og at du ikke har utelatt noen av sidene.

Appendix B: Approval by the Regional Committees for Medical Research Ethics (REK)

Emne: 2011/1556 REK midt
Fra: post@helseforskning.etikkom.no
Dato: 29.08.2011 09:46
Til: unni.moksnes@svt.ntnu.no
Kopi: rek-4@medisin.ntnu.no;

Vår ref. nr.: 2011/1556
Prosjektleder: Unni Karin Moksnes

Kjære Unni Karin Moksnes,

Vi viser til framleggingsvurdering og e-post innsendt henholdsvis 16.8.2011 og 22.8.2011. Søknaden angående *Oppvekst i bygder* er fordelt til REK sør-øst. Alle henvendelser om denne søknaden må heretter rettes til dem.

Vi ber om at alle henvendelser sendes inn via vår saksportal: http://helseforskning.etikkom.no eller på e-post til: post@helseforskning.etikkom.no.

Vennligst oppgi vårt referansenummer i korrespondansen.

Med vennlig hilsen | Best regards
Karoline Bjørstad Berget
Førstekonsulent
post@helseforskning.etikkom.no
T: 73597509

Regional komité for medisinsk og helsefaglig forskningsetikk REK midt-Norge (REK midt)
http://www.helseforsking.etikkom.no

REK
REGIONALE KOMITEER FOR MEDISINSK OG HELSEFAGLIG FORSKNINGSETIKK

Muntlig bekreftelse pr. telefon fra REK sør-øst C om at prosjektet bærer seg fullstendig på anonyme data og derfor kommer utenfor helseforskningsloven
Dato: 03.10.11

Unni Karin Moksnes