The University of Rome "Foro Italico"

The German Sport University, Cologne

The University of Southern Denmark, Odense

The Norwegian School of Sport Sciences, Oslo

The University of Vienna

European Master in Health and Physical Activity

(Laurea Magistrale Internazionale in Attività Fisica e Salute) LM 67- I

"Prevalence of Body Dissatisfaction in Norwegian performance and regular lower secondary schools: An 8th grade sample, situated in the Oslo area"

Øystein Slokvik

Candidate

Prof. Jorunn Sundgot-Borgen

Supervisor

PhD. Candidate Annett Victoria Stornæs

Co - Supervisor

Academic Year of 2016-2018

ACKNOWLEDGEMENT

Five meaningful and educational years of higher education are concluded with this thesis. There have been some rough moments where I thought I had bitten off more than I could chew, but in the end, it was all worth it. However, none of this would have been achievable, had it not been for the encouragement and help of others.

First of all; I am truly grateful for the help of my supervisors Prof. Jorunn Sundgot-Borgen and PhD. Candidate Annett Victoria Stornæs. You have broadened my knowledge and increased my insight, to a topic of great importance. Thank you both for letting me have the opportunity of writing my thesis on the baseline-data of your research. Also, thank you for good guidance, and for your patience and understanding along the way. I also want to give a particular gratitude to Annett who has worked hard to collect the data. To share some of the data with me, is truly generous. Thank you.

Furthermore, I have been blessed with good friends, both inside and outside of school. Their presence and their positivity, have given me energy, and helped me ease my mind at times where school has been stressful. Thank you.

Finally, I would never have been able to finish my master degree, had it not been for my parents. They have supported me, and encouraged me throughout all my years of studying. Thank you, it is worth everything to me.

ABSTRACT

Background: Body dissatisfaction (BD) is a psychological phenomenon associated with both physical and mental illness. Society is in need of more research on the topic of body dissatisfaction and its prevalence among adolescents. Specifically, it is important to know more about the prevalence of BD in adolescents attending performance schools (specialized sport / ballet / music schools).

Objective: The main objective of this thesis was to find the prevalence of BD among an 8th grade sample (from Oslo / Akershus, Norway), consisting of students from performance schools (sport / ballet / music) and regular lower secondary schools. Furthermore, the thesis focuses on differences in prevalence among gender and school type. The second objective was to look for associations between global self-worth and BD.

Method: This is a cross-sectional study, consisting of quantitative retrospective data, collected using written self-report questionnaires. It includes 666 regular lower secondary school students, and 166 students from performance schools. An abbreviated version of the *"Eating Disorder Examination Questionaire"* (EDE-Q) was used to assess BD, and a revised version of Harter´s Self Perception Profile for Adolescents (SPPA-R) (Wichstrøm, 1995) was used to assess their global self-worth.

Results: There are great gender differences in the prevalence of BD, and students from performance schools are less dissatisfied with their bodies compared to students from regular lower secondary schools. Furthermore, a negative correlation was found between global self-worth and BD in both genders.

Conclusion: There is significantly lower prevalence of BD among boys than girls, and students attending performance schools are less dissatisfied with their body compared to the students from the regular schools. A clear association between global self-worth and BD was found.

ABBREVIATIONS

BD	-	Body Dissatisfaction
BI	-	Body Image
DE	-	Disordered Eating
ED	-	Eating Disorder(s)
SD	-	Standard Deviation
EDE-Q	**-**	**Eating Disorder Examination Questionnaire (EDE-Q 6.0)**
SC & WC	-	Shape and Weight Concern
SC	-	Shape Concern
WC	-	Weight Concern
SPPA-R	**-**	**Harter´s Self Perception Profile for Adolescents (Revised)**
AC	-	Athletic Competence
CF	-	Close Friends
PA	-	Physical Appearance
SA	-	Social Acceptance
SCo	-	Scholastic Competence
SF	-	Global Self-Worth
GS	-	Global Score

TABLES

FIGURES

APPENDIXES

Table of Content

1.0 Introduction

The appearance of a person is now, more than ever, closer connected to one´s identity. As the media and technology has been changing rapidly the last two decades, so has the standards for appearance, health and body. Everyone has the ability to be their own publisher, and it seems to be a trend of showing off the perfect side of life, rather than what is reality. Being spectators to perfect lives, puts a psychological pressure on the younger generation of today. By creating a false sense of truth, the society "quietly demands" an impossible standard of life, which most people are not able to achieve. It is discussed that today's society demands more of its children than ever before (Hogan, Strasburger & FAAP, 2008; McVeigh, 2016; Kvittingen, 2017; Zehnder, 2018).

Problematic eating behaviors can occur early in life, and furthermore, body dissatisfaction (BD) and body-focus may develop already at pre-adolescent age (Sands, Tricker, Sherman, Armatas, Maschette, 1997; Campbell & Peebels, 2014). BD have shown to be both a predictor and risk factor for the development of disordered eating (DE) eating disorders (ED) behaviors, as well as depression (Moore, 1993; Bucchianeri et al, 2012). The worst scenario of both depression and ED is suicide and death (Wichstrøm, 2015). If BD potentially can be the beginning of a fatal outcome, it is vital to gather more information to understand its relevance to human health.

In 2010 the estimated cost of mental disorders in Europe were 798 billion euros (€), whereof 105.2 € came from ED (Gustavsson et al., 2011). An estimated cost for child/adolescent disorders were 5.2 billion € (Gustavsson et al., 2011). In Norway alone, at any time; it is estimated that 50000 women in the age of 15-44 years old, struggle from an ED (Torgersen & Hånes, 2018). Of these, 2700 have anorexia nervosa, 18000 have bulimia nervosa, and

28000 struggle from overeating (Torgersen & Hånes, 2018). Neumark-Sztainer, Wall, Larson, Eisenberg & Loth, (2011), found in a 10-year longitudinal study of 13 year-old adolescents, that of the girls; 22% were dieting, 60% reported unhealthy weigh control behaviors, and 8.4% reported extreme weight control behaviors. Specifically, a prevalence of 3.3% girls were using dieting pills, 6.8% were vomiting, 1.3% reported use of laxatives, and 9.9% were binge eating. Approximately one-third of males reported unhealthy weight control behaviors (Neumark-Sztainer et al., 2011). Moreover, Mantilla & Birgegård, (2016) found that 27.1% of girls were exercising to compensate for food intake on a regular basis. Unfortunately, compared to females, few males seek help for eating and body concerns and thereby go unnoticed, and will not be diagnosed with and treated for their problems (Strother, Lemberg, Stanford & Tuberville, 2012).

Furthermore, if diagnosed with an ED, males are more likely to be diagnosed with an unspecified ED versus any other (Jennings & Phillips, 2017). DE and ED can occur throughout life, although some types more frequently occur at a younger age (Torgersen & Hånes, 2018). BD and DE are closely related, and although being a serious problem, it can be difficult to detect. Unfortunately, many individuals most likely walk unnoticed, before getting help (Campbell & Peebels, 2014). If BD potentially can be the beginning of a fatal outcome, it is vital to gather more information to understand its relevance (Moore, 1993; Bucchianeri et al, 2012).

2.0 Thesis questions

The purpose of this master thesis is to investigate the prevalence of body dissatisfaction (BD) in a Norwegian, 8th grade population, situated in the Oslo & Akershus area (in addition to one school situated in Trøndelag and Vestfold, Norway). Gender differences and differences among adolescents from different school settings (referred to as I. "Performance schools" and II) "Regular schools" in the thesis, are investigated, with the use of a self-report questionnaire (Eating Disorder Examination questionnaire; sub scales "weight-concern" and "shape concern"). Adolescents from regular lower secondary schools are compared to adolescents attending specialized sport schools, ballet and music academies.

2.1 Thesis questions

I) What is the prevalence of body dissatisfaction among 13-14 year-old boys and girls from 14 lower secondary schools in Norway?

II) Are there differences in body dissatisfaction among the adolescents at the performance schools compared to the regular schools?

III) Are there differences in body dissatisfaction between boys and girls?

IV) Is there a correlation between body dissatisfaction and self-worth among these adolescents?

3.0 Theory

3.1 Body image and ideals

Both genders are exposed to unrealistic body image (BI) ideals in early childhood (Hogan et al., 2008; Quick, Eisenberg, Bucchianeri & Neumark-Sztainer, 2013; MacNeill, Best & Davis, 2017). BI, which can briefly be defined as the internal representation of an individual's outer appearance (Meland, Haugland & Breidablik, 2006), is a multidimensional construct that is influenced by biological, psychological, and social factors, and is significantly influenced by family, peers and media (Hogan, et al., 2008; Campbell & Hausenblas, 2009; Neumark-Sztainer, Bauer, Friend, Hannan, Story & Berge, 2010; Quick et al., 2013; Voelker, Reel & Greenleaf, 2015). A pressure to imitate a specific body ideal, derives from individuals of significance (Hogan et al., 2008). A negative BI is common (Campbell & Hausenblas, 2009), and it is physically, psychologically, and economically harmful (Campbell & Hausenblas, 2009)

BI ideals are found to be associated with mental disorders, and can potentially threaten the adolescents sense of well-being and health (Hogan et al., 2008; Quick et al 2013). An emphasis on appearance has been considered more important for the woman ideal, than that of a man's (Campbell & Hausenblas, 2009). The male ideal is a lean and muscular body (Brierley, Brooks, Mond, Stevenson & Stephen, 2016), whereas the female ideal is based on a cultural expectation of a thin and lean, but still a curved body (Voelker et al., 2015). Thus, it is common to find gender differences in the prevalence and magnitude of mental disorders and issues, such as ED and BD (Quick et al 2013). Unrealistic or exaggerated body ideals encourage drive for thinness among females, and a drive for muscularity in males (Bardone-Cone, Cass & Ford, 2007; Streeter, Milhausen & Buchholz, 2012). Such ideals are associated with greater BD in both genders (Campbell & Hausenblas, 2009).

Media is a powerful influencer on people´s behavior and attitudes. It may affect how adolescents react, in order to keep up with society and peers (Bardone et al., 2007; Campbell & Hausenblas, 2009). Desired body shapes are most often based on the "beautiful" bodies, of the most successful people (Hogan et al., 2008; Campbell & Hausenblas, 2009; Voelker et al. 2015). Moreover, fashion magazines use Photoshop to edit images of even healthy models, in order to fit a certain ideal. Historically, there has been an association between advertising and disordered BI (Campbell & Hausenblas, 2009).

Body ideals vary across, genders, age, and time. However, ethnicity has also shown to be a significant factor that influence the BI. Specifically, in USA, African American female adolescents have shown greater acceptance for a heavier weight, than Asian-American and Caucasian adolescents (Campbell & Hausenblas, 2009). Pernick, Nichols, Rauh, Kern, Ji, Lawson, & Wilfley, (2006) also found similar ethnical differences in the development of ED and BD in athletes, indicating a clear separation in body ideals between ethnicities.

Negative BI arises primarily from the sociocultural pressures of human ideals (Thompson et al., 1999). Family and peers play an extensive role in the development of BI ideals within a young individual (Hogan et al., 2008; Neumark-Sztainer, Bauer, Hannan, Story & Berge, 2010; Quick et al., 2013), where mothers behaviors and attitudes have shown to play a significant role on the BI ideals of young girls (Neumark-Sztainer et al., 2010). Moreover, adolescence may be affected by their peers´ opinions (Presnell, Bearman & Stice, 2003; Bearman, Martinez & Stice, 2006). Although parents and friends are important influences on the BI, even they are affected by external forces. Without a doubt, media is known to play a major role on the influence of BI and weight concerns in adolescents (Tylka & Wood-Barcalow, 2015; Voelker et al. 2015).

Negative BI is related to emotional distress, anxiety, depression, BD, ED, and suicide. Dramatic body altering measures often come as a result of the BD appearing when a negative BI is present. Unhealthy dieting, DE, steroid use and cosmetic surgery are the most common means used to alter the body (Campbell & Hausenblas, 2009).

3.2 Body Dissatisfaction (BD) in adolescents

BD is a multidimensional and complex feature of the mind, branching into psychological, physical, and environmental aspects of psychology. It is a public mental health problem of great concern, that can be explained as the discrepancy between the perceived and the ideal body shape (Dion et al. 2015). BD displays great gender differences and has been found to be lower in early adolescence compared to late adolescence (Dion et al. 2015). Adolescence is a time of tremendous change in physical appearance, and the BI becomes a great concern of many teenagers (Hogan, et al., 2008), hence developing BD.

3.2.1 Body Dissatisfaction - prevalence

Among children and young adolescents, the prevalence of BD varies greatly within the literature. It ranges from below 10% to over 80%, keeping an average of approximately 30-50% among girls (Campbell & Hausenblas, 2009; Quick et al., 2013; Dion et al., 2015), and an average of 0-30% among boys (Campbell & Hausenblas, 2009; Quick et al., 2013; Dion et al., 2015). In Oslo, Bakken, (2015, 2018), found a prevalence of approximately 20% BD in adolescents. Considering the significant relationship between BD and other mental disorders, this is not remarkable. The high prevalence of BD among the adolescent population is however concerning. It seems to be of a continuously increasing problem across the adolescent populations, with girls still on average reporting higher levels of negative BI, than boys. Of girls that are considered normal weight by medical standard, as

much as 20% to 50% may feel too fat, and 40% consider themselves over-weight (Hogan et al., 2008). Of significance, overweight/obese populations are more likely to have higher body-image disturbances and dissatisfaction compared to normal weight populations (Dion et al. 2013).

Interestingly, as much as 68% of normal-weight girls and 18.8% of underweight girls have reported to want a thinner shape (Dion et al., 2015). In comparison 36.3% of normal-weight boys and 71.4% of underweight boys wanted a bigger shape (Dion et al., 2015). The profile of overweight boys was similar to that of overweight girls in that more wanted a thinner shape (Dion et al., 2015).

3.2.2 Body Dissatisfaction - risk factors / predictors

Depending on method and structure of research, different personal and socio-economic factors have been associated with BD within literature (Quick et al., 2013). Over the past decades, several cross-sectional and longitudinal studies have found various factors associated with BD, such as excessive weight, body and appearance concerns, bullying, depression, DE and ED, and more (Fulkerson et al., 1999).

3.2.2.1 Body Mass Index (BMI)

BMI is a predictor of BD in adolescents (Presnell et al. 2003; Dion et al., 2015; Figueiredo, Simola-Ström, Isomaa & Weiderpass, 2018). Elevated adiposity increase BD because the current body ideal is a lean body (Bardone-Cone et al., 2007; Campbell & Hausenblas, 2009). The greater the deviation from a current ideal physique, the greater the BD may be (Dion et al., 2015). However, Calzo, Sonneville, Haines, Blood, Field & Austin, (2012); Presnell et al., (2003) did not find BMI to be a predictor in boys.

3.2.2.2 Weight talk & negative comments

Parents, are the ones that leave the greatest impact on children's judgment and beliefs, therefor a child is more likely to act a specific way, if they have learned so from an adult (Hogan et al., 2008; Neumark-Sztainer et al., 2010; Quick et al., 2013). Parents encouraging their daughters to lose weight have shown to predict an increased drive for thinness and higher likelihood of BD in adolescents (Hogan et al., 2008). If a mother shows acceptance for dieting, or display unhealthy behaviors in front of a child, these behaviors may be adopted by the child. Hillard, Gondoli, Corning, & Morrissey, (2016), argued however, that negative attitudes of mothers, was not increasing the negative thoughts in the child alone. If negative comments were given in a way that would put the child in a "spotlight", this could contribute to an increase of shape concerns and BD within the child. In situations where mothers acknowledged and accepted their own problems with shape concerns, their children would not display the same negative concerns regarding shape, because of a higher acceptance for the problem, hence resulting in a trusted bond between mother and child (Hillard et al. 2016). Mothers weight talk has also shown to be associated with lower self-worth in girls (Bauer, Bucchianeri & Neumark-Sztainer, 2013). Comments about weight or form should not be addressed negatively towards children, hence their vulnerable state in life, but also as such negativity is specifically related to BD in adolescent girls (Hogan et al., 2008; Neumark-Sztainer et al., 2010; Quick et al., 2013).

Dion et al., (2015) found that at age 14, negative comments about weight increased the likelihood of girls wanting a thinner shape at 18 years. Appearance teasing at baseline predicted greater BD in both girls and boys at follow-up (Quick et al., 2013; Dion et al., 2015).

3.2.2.3 Lowered Self-Esteem

van den Berg, Mond, Eisenberg, Ackard, & Neumark-Sztainer, (2010) found a strong BD / self-esteem relationship in girls, and furthermore Wickstrøm & Soest, (2016) also found a prospective relationship between self-esteem and BD. Wickstrøm & Soest, (2016) also found a small effects size of self-esteem on later BD in girls. It is only reasonable to suggest this connection. Because, when someone is not satisfied with their body, it is not remarkable if one feels emotionally unsatisfied with "the self".

Self-worth in its broadest sense is how a person value his/her self. The concept is used to understand the believed worth of a life, from individual point of views. It is often considered a representation of the global self-esteem (Harter, 2003). Self-esteem is related to the ability to hold a favorable attitude towards "one's self" (Bailey, 2003), and to maintain a positive belief or attitude even in situations that are challenging (Henriksen, Ranøyen, Indredavik & Stenseng, 2017). It is a matter of being able to pass valued judgments on who one is, what one does, or how one appears (Harter, 2003). Where global self-worth is the complete "value" of a life, self-esteem is the overall judgment/assessment a person can give him or herself. I.e. it is possible to have low self-esteem but at the same time feel that life is of significant value (Harter, 2003).

Self-esteem is closely connected to mental health, but it is impossible to fully understand its structure within human psychology (Bailey, 2003). Because, although self-esteem is considered a stable part of the personality, it transforms as a result of recent failures or accomplishments. Furthermore, self-esteem is individually dependent, whereas differences are found from person to person (Bailey, 2003). Nevertheless, the concept of self-esteem has been well documented within health research. Often linked to well-being and quality of life, self-esteem is important for domains such as school, work, and physical activity.

An association between self-esteem and BD may also be stronger within groups that emphasize on the importance of appearance and body shape (van den Berg et al., 2010). Stronger associations are also expected at ages in which appearance-related concerns are higher (van den Berg et al. 2010). Self-esteem has been found to be lower among girls than among boys, and to decrease as adolescent's progress from early to late adolescence (van den Berg et al. 2010). Low self-esteem is also related to a variety of negative aspects, such as emotional distress and ED (van den Berg et al. 2010; Henriksen et al., 2017)

3.2.2.4 Ethnicity

Literature indicate ethnicity as being a predictor of BD. Pernick et al., 2006 saw higher levels of BD in Caucasian and Latina athletes compared to African-American athletes. What is interesting is that the African-Americans were more satisfied with their weight and less preoccupied with being thin, despite having higher BMI. Quick et al. 2013 also found that ethnicity was associated with BD at a 10-year follow-up. Researchers suggested that ethnic groups may respond differently to mainstream beauty standards of Caucasians, through a social comparison processes (Quick et al. 2013). Individuals who do not identify themselves as being white will neither be affected by the "white beauty standards", as other cultural criteria for physical attractiveness is more important (Quick et al. 2013).

3.2.3 Body Dissatisfaction - gender differences

BD exist in both genders of all ages, but there are significant gender differences (Bardone et al., 2007), and current research argue that the female population strive for thinness, whereas males more often are preoccupied with the need for muscles (Bearman et al., 2006; Bratland-Sanda & Sundgot-Borgen, 2012; Brierley et al., 2016). Old beliefs that ED was a female oriented problem, has led to a male underrepresentation in published literature on BD (Burnette, Simpson & Mazzeo, 2017). Much of the published literature did not

exclusively investigate boys (Dominé, Berchtold, Akré, Michaud & Suris, 2009) However, researchers now recognize it to be a problem within both genders. Although, research also becomes increasingly more problematic, if/when diagnostic criteria and screening tools are based on old literature (Neumark-Sztainer et al., 2011; Arnow et al., 2017). If the emphasize is centered on weight and shape concerns related to thinness, the research can fail to detect BD (Arnow et al., 2017), due to a regular preoccupation with muscularity (Mantilla, Birgegård & Clinton, 2017)**.** Rather than wanting to lose weight, males may very well want to gain weight in form of muscles (Bearman et al., 2006; Bratland-Sanda & Sundgot-Borgen, 2012). It is a common outcome of research that males score lower on negative aspect regarding BD, compared to females. Compared; 1:2 girls, and 1:5 boys report having seriously tried to lose weight (Dion et al., 2015). Dion et al, (2015) found the likelihood of wanting a thinner shape at 18 years 4.7 times greater in boys wanting a thinner shape at age 14, but 11.1 times lower in boys wanting a bigger shape.

3.2.4 Body Dissatisfaction, disordered eating and eating disorders in sports

Over the past 20 years, there has been a growing interest in the eating behaviors and attitudes of athletes (Fulkerson et al. 1999). DE and ED in athletes has been frequently studied, however measurements specifically investigating BD is not commonly used. It is most often a sub measurement when assessing ED. The risk of developing ED among athletes varies, depending on gender, sports discipline and competitive level (Thiemann, Lenebauer, Vocks, Platen, Auyeung, & Herpertz, 2015). The average percentage of adolescent male athletes with DE have been found to be approximately 15% (Martinsen et al., 2009), whereas other research shows a prevalence ranging from approximately 0-20% (Bratland-Sanda & Sundgot-Borgen, 2013). BD is lower, with an average of 0-5 % being dissatisfied (Fulkerson et al., 1999; Martinsen et al., 2009; Goodwin, Haycraft & Meyer, 2016). Ranges of DE are reported from 5-45% in athletes (Martinsen et al., 2009; Bratland-Sanda & Sundgot-Borgen,

2013; Pettersen, Hernes & Skårderud, 2016). Of the female athletes 10-20% display BD (Fulkerson et al., 1999; Martinsen et al., 2009; Goodwin et al., 2016). Male athletes generally display lower levels of BD than female athletes, similar to the general populations (Rosenddahl et al. 2008; Matinsen et al. 2009; Pettersen, Hernæs, Skårderud, 2016). In opposition to research showing less prevalence of DE in athletes, Skårderud, Fladvad, Garthe, Holmlund & Engebretsen, (2012), stated that serious ED are more common in athletes than within the general population.

Although BD is a risk factor for developing ED, there is not necessarily a direct connection between them, in either the general population nor in athletes. Brechan & Kvalem, (2015) states that BD is necessary in the development of ED, but not a sufficient factor to explain the emergence of ED. BD can be easily misunderstood as the definite cause for ED, as it often plays a major role in the development of unhealthy eating behaviors. However, in sports ED can appear as a result of weight specific demands (Goodwin, Haycraft & Meyer, 2016). Therefore, it may be possible that athletes are not dissatisfied with their bodies, but overly focused on performance, perfection, and/or other aspects that may help increase unhealthy behaviors (Forsberg & Lock, 2006). Several studies actually suggest that sports lower the risk of BD and ED (Martinsen et al. 2010; Goodwin, Haycraft & Meyer, 2016). Eriksen et al. (2017) found that adolescents participating in sports were more satisfied with their body and health, compared to adolescents not participating in sport. Some researchers argue that adolescent athletes represent a group closer resembling the considered ideal of physical perfection (Martinsen et al., 2010; Rosenvinge, Sundgot-Borgen, Pettersen, Martinsen, Stornæs, & Pensgaard, 2018). If so, maybe this is the reason why some studies have seen lower BD in athletes, than controls. However, even if being closer to the ideal, some athletes still diet and show dissatisfaction with their bodies (Martinsen et al., 2010). Athletes practicing sports emphasizing leanness are at considerably higher risk of attaining

an unhealthy eating behavior (Sundgot-Borgen & Torstveit, 2010). Elite adolescent athletes of a wide range of sports are seeking treatment for ED (Martinsen et al., 2010).

However, it is well known that the human physiology is individually dependent, and based on genetic differences. Seeing that the BI ideals of society is largely based on a considered and desired perfection, it becomes impossible for everyone to meet this required standard of appearance. In many sports, the best athletes become the standard for excellent physique (Sundgot-Borgen et al., 2004), thus everyone else may strives to be equally fit. Even if healthy and realistically showing close resemblance to what is the ideal body, subjective beliefs in disagreement with what is real, might blind individuals, creating an unreasonable desire for improvements of the body.

Hausenblas & Fallon, (2006) saw an association between exercising and improved BI, and athletes have been shown to have superior well-being, including being better adjusted, feeling less nervous or anxious, being more often full or energy and happy about their life (Eime, Young, Harvey, Charity & Payne, 2013). Athletes compared to non-athletes less often feel sad or depressed, they often have healthier BI ideals, and most important fewer attempts of suicide (Eime et al., 2013).

Studies have found athletes to display higher self-esteem than non-athletes (Martinsen et al. 2010). Better self-esteem is linked to BD, and regular exercising may increase the sense of competence, leading to increased self-esteem, and improved global self-worth (Martinsen et al. 2010; Eime et al., 2013).

Furthermore, non-athlete controls often develop unhealthy eating behaviors in a quest for a better appearance, whereas many athletes develop unhealthy eating behavior trying to

improve performance (Martinsen, Bratland-Sanda. Eriksson, Sundgot-Borgen, 2010). Athletes competing in aesthetic sports, weight regulated sports or "lean sports" have a higher risk of developing ED, than other athletes participating in sports not concerned with weight (Moore, 1993; Parks & Read, 1997; Sundgot-Borgen, Torstveit & Skårderud, 2004; Martinsen et al, 2010; Lombardo, Battagliese, Lucidi, Frodt, 2012; Kong & Harris, 2015; Giel et al, 2016; National Eating Disorder Association, 2018).

Goodwin et al. 2016, argued that sport could represent a protective environment from the development of BD and ED in adolescents, by shifting the focus of a thin body ideal, to a healthier and more functional one. Furthermore, sport could also offer great satisfaction as a natural way of improving the human physique, and therefore decreasing the dissatisfaction of one's appearance (Goodwin et al., 2016)

3.2.4.1 Body Dissatisfaction in dancing

Robbeson, Kruger & Wright, (2015) found that among dancers aged 19, actual body weight was significantly different from desired body weight. A negative energy balance was found in 81% of the dancers, and 69% of the dancers were identified as at risk for DE (Robbeson, Kruger & Wright, 2015). Most dancers wanted to change their current body weight for appearance (Robbeson et al., 2015). Bettle et al., (2001) also found that 13 to 17-year old female dancers valued their personality less beautiful, pleasant, attractive, confident, lovable, and good, compared to the non-dancing control group. They were also more preoccupied with weight (Bettle, Bettle, Neumärker & Neumärker, 2001). Although the study of Robbeson et al., 2015 consisted of participants of an average age of 19 years, sports emphasizing leanness increase the risk for ED (Hatmaker, 2005). So any ways, their findings can still be relevant for further research on younger subjects.

3.2.5 Body Dissatisfaction - outcome and associations

BD can lead to many disorders and diseases (such as ED and depression), and is closely associated with lowered mental health. It is a common health problem, but complex in its existence. If dissatisfied with the body, unhealthy improvements such as the use of illegal substances or cosmetic surgery can occur (Hogan et al., 2008). The worst outcome of BD may be suicide (Crow, S., Eisenberg, M. E., Story, M. & Neumark-Sztainer, D. (2008), or the development of ED or other mental disorders that may cause early death (Wichstrøm, 2008; Dion et al., 2015).

4.0 Method

4.1 Design

The thesis is a cross-sectional study, using the baseline-data of an ongoing Phd project; *"Too perfect to be healthy?"* (Phd candidate Annett Victoria Stornæs, at the Norwegian School of Sport Sciences, Department of Sports Medicine). All data used are quantitative retrospective data, collected during spring/autumn 2016, with the use of written self-report questionnaires. For this study a short version of the *"Eating Disorder Examination Questionaire"* (EDE-Q), with its sub-scale; Shape Concern (SC) and Weight Concern (WC) are used to assess BD in adolescents. A revised version of the Harter´s Self Perception Profile for Adolescents (SPPA-R) (Wichstrøm, 1995) is used to assess self-perception and esteem, and furthermore to look for correlation between EDE-Q and SPPA-R.

This thesis can contribute to better knowledge regarding prevalence of BD within adolescents in Oslo, Norway, and help shed more light on a public health problem concerning not only Norwegian adolescent children, but adolescents in other parts of the "western world". It will be impossible to define the cause for BD; however new hypotheses can be developed based on the findings.

4.2 Recruitment of schools and students

Adolescents were recruited from n=14 different Norwegian lower secondary schools. An invitation alongside information concerning the Phd-research, was sent by e-mail to the principal of each school. Specifically, three schools are specialized sport schools. These three specialized sport schools were the only one of its kind in Norway, at the time of data collection. Furthermore, one regular school included a class with highly talented classical

music students, and another regular school included a class of elite classical ballet students. All schools offering specialization (sports, music, ballet) have separate admission criteria/auditions for students attending.

4.3 Participants

A total of 14 lower secondary schools and 1254 adolescent students were invited to participate at baseline. The master thesis includes 832 (66%) lower secondary school students born in 2002 (girls n=446 and boys n=386) (Table 1). All participants were 13-14 years at the time of data collection, and attended 8th grade in 2015/2016. The students were either attending regular public / private schools (n=666) or specialized "performance" sport schools / ballet academy (n=70 girls, n =73 boys) specialized classic music class (n=13 girls, n = 10 boys)

Table 1. Gender distribution within school type.

	Performance Schools		**Regular schools**		**Total**	
	n	***%***	***n***	***%***	***n***	***%***
Girls	83	50	363	54.5	446	53.6
Boys	83	50	303	45.5	386	46.4
Total	166	100	666	100	832	100

4.4 Data collection:

4.4.1 Questionnaires:

Written self-reported questionnaires were delivered by hand and carried out at each school, in a classroom with the PhD Candidate present. Before answering the questionnaire all students were given both oral and written information about the study, and guidelines regarding the questionnaire. The original questionnaire included a set of different psychometric instruments *("Child-Adolescent Perfectionism Scale (CAPS-22)", "Frost Multidimensional Perfectionism Scale (F-MPS)", "The Perceived Parental Pressure subscale of the Multidimensional Inventory of Perfectionism in Sport (MIPS)", "Sport Multidimensional Perfectionism Scale-2 (Sport-MPS 2)", "Eating Disorder Examination Questionnaire (EDE-Q 6.0)", "Body Appreciation Scale-2 (BAS-2)", "Short version; Revised Children´s Anxiety and Depression Scale (RCADS)", "The Resilience Scale for Adolescents (READ)", "Short version of Harter´s Self-perception Profile for Adolescents (SPPA-R)", "Rosenberg self-esteem scale (RSES)", "The Directon of Motivation Scale"*). For the purpose of the master thesis, the short version of the Eating Disorder Examination Questionnaire (EDE-Q 6.0) and the revised edition of Harter´s Self Perception Profile for Adolescents (SPPA-R) (Wichstrøm, 1995) was used (Appendixes 5-6). Height weight, Body Mass Index (BMI) and training level are also reported in this thesis.

4.4.2 Anthropometric data:

Weight and height was self-reported, and Body Mass Index (BMI) is transformed using the equation: Mass/Height^2. BMI is not a perfect measurement for use in adolescents and children, nor in adults (Drake, Longacre, Dalton, Langeloh, Peterson, Titus & Beach, 2013). First of all, BMI measurements will not account for type of mass (Bone, muscles, fat etc.), and therefore can be misleading in some individuals. "ISO-BMI" can be used in children,

taking in account their underdeveloped bodies (NIPH, 2015; NHI, 2016; WHO, 2018). However anthropometric data will not affect the results of the other measurements in the thesis.

4.4.3 Body Dissatisfaction

To measure BD the two subscales, weight concern and shape concern from the Eating Disorder Examination Questionnaire (EDE-Q 6.0) (Fairburn, 2009) was used. EDE-Q is a well documented self-report instrument, used for assessing problematic eating behaviors in humans. The original questionnaire consists of 28 items, and is based on a semi structured interview called *"The Eating Disorder Examination"* (Carter, Stewart, Fairburn, 2001; Mond, Hay, Rodgers, Owen, Beumont, 2004; Berg, Peterson, Frazier & Crow, 2011; Reas, Øverås, Rø, 2012; Mond, Hall, Bentley, Harrison, Gratwick-Sarll, Lewis, 2014; Rø, Reas, Stedal, 2015; Mantilla & Birgegård, 2016; Jennings & Phillips, 2017; Norwegian Association for Cognitive Therapy, 2018). The EDE-Q 6.0 includes 4 items; Restrictions/Restraint (R), Eating Concern (EC) Shape Concern (SC) and Weight Concern (WC). The questionnaire measures the frequency of eating habits, thoughts, feeling and concerns towards weight issues and one's body shape, during the last four weeks. Each question includes a seven-option-answer (rating 0-6), where an answer of 0 is equal to the lowest possible measurement/none occurrence, opposite to 6 which is the answer for the highest occurrence within a question (Fairburn, 2009). For the purpose of this thesis, only the sub-scales SC and WC have been used. Due to the age of the participants, the items regarding Restrictions/Restraints (R) and Eating Concerns (EC), were deliberately excluded from this study, in the belief that such questions could possibly increase the participant's awareness and negative thoughts concerning eating patterns, and body satisfaction. Items 6, 10, 11, 23, 26, 27 and 28 are included in the SC sub-scale. The WC sub-scale includes question 12, 22, 24 and 25 (Friborg, Reas, Rosenvinge & Rø, 2013). To obtain subscale-

scores, the ratings for the relevant items are added together and the sum divided by the total number of items forming the subscale.

4.4.3.1 Validation

The EDE-Q has been thoroughly researched (Berg et al., 2011), and validated among the adult population (Mond et al. 2004; Mantilla & Birgegård, 2016), and research support its reliability (Luce & Crowther, 1999). However, more research is needed regarding different groups, such as adolescents of both genders. Its´ validity and applicability in relation to particular groups in society, is of particular concern (Mantilla et al., 2017).

4.4.3.2 Cut off

Norms based on clinical populations are set to 4 (Ekeroth & Birgegård, 2014. Rø, Reas, Stedal, 2015). A score ≤ 4 is considered similar to having an ED. This thesis will focus on the clinical cutoff point, although this cutoff point is based on subjects already being treated for ED. Therefore, an additional recommended cutoff of of 2.5, suggested by Rø, Reas & Stedal, 2015 is applied and discussed.

4.4.4 Self-Worth

To measure self-worth, the Norwegian revised edition of Harter´s Self Perception Profile for Adolescents (SPPA-R) was used (Wichstrøm, 1995). The original Self Perception Profile for Adolescents (HSPPA-R) is a questionnaire measuring levels of global self-worth. It consists of 30 questions divided into 9 different sub-scales. This questionnaire originally consists of 7 subscales: Scholastic Competence (SC) (item 1, 7, 13, 19, 25), Social Acceptance (SA) (item 2, 8, 14, 20, 26), Athletic Competence (AC) (item 3, 9, 15, 21, 27), Physical Appearance (PA) (item 4, 10, 16, 22, 28), Close Friends (CF) (item 5, 11, 17, 23, 29), Global Self-Worth (SF) (item 6, 12, 18, 24, 30), and the Romantic Appeal (RA) sub-

scale (Wichstrøm, 1995). RA has been removed from this thesis. Within each scale, items are scored 4, 3, 2, 1, where 4 represents the most satisfactory self-judgment and 1 represents the least satisfactory self-judgment. Two or three items within each subscale are reversed (Wichstrøm, 1995). The Scholastic Competence sub-scale is originally abbreviated SC, but because of the EDE-Q Shape Concern (SC) the abbreviation in this thesis will be SCo.

4.4.4.1 Validation

Wichstrøm, (1995) found the revised edition (SPPA-R) to have substantially better reliability, better convergent validity, and better factorial validity than the original version. Rose, Hands & Larkin, (2011) also found the SPPA-R to have good validity. However, more research is needed to investigate the revised questionnaire.

4.5 Statistical analysis

IBM Statistical Package for the Social Sciences (SPSS), version 25, was used to analyze all data. Descriptive statistics with frequencies, means and standard deviations are reported. Cross-tabulation was used to compare different groups regarding the EDE-Q subscale scoring. Independent Sample T-test was used to compare means between the groups (gender and school type). "Visual Binning" was used to set cutoff points for the EDE-Q subscales, in order to categorize healthy and unhealthy participants. These scores where transformed into diagrams with the use of Microsoft Exel. Correlation (Bivariate) was used to look for correlations between BMI, exercise levels, EDE-Q and SPPA-R scoring. The statistical level (p) of significance on all analyzes are set to ≤ 0.05.

4.6 Inclusion / Exclusion criteria

To be included in the study, each school had accepted written invitations. All included participants and their parents/legal guardians gave their written informed consent to participate in the study. All students included are from the 2002-cohort, and were 8th grade students during the spring 2016. Withdrawal and incomplete questionnaires were exclusion criteria's. However, as the questionnaire were a collection of several underlying questionnaires, incomplete "sub-questionnaires", did not lead to exclusion from the master thesis. Such participants were marked with missing data within the data-set, but used in analyzes where full completion of a questionnaire was attained (i.e. if completing the EDE-Q but not the SPPA-R, this student was analyzed when only looking at the EDE-Q scores).

4.7 Research ethics

The project is approved by the Regional Committees for Medical and Health Research Ethics (REC-sør-øst A, 2015/1358), and follows the ethical research guidelines specified for use in children and adolescents. An invitation along with information about the project was sent by e-mail to the principal of each school. The schools sent information concerning the project to the parents/legal guardians. The PhD candidate also visited every participating school before the data collection, to inform both students and teachers about the project, and explain its purpose. To participate in the research, every parent had to sign an informed consent, and every child had to participate voluntarily. Participants were allowed to withdraw their participation, without any repercussions. All data are confidential, and participants are anonymous and unidentifiable, throughout, and in any form of publication.

5.0 Results

Results are presented in table 2-5 (appendix 1), as means and SD, for height, weight, BMI, training volume, EDE-Q and SPPA-R. Figure 1-7 shows the separation of participants scoring above or below the clinical cutoff for the EDE-Q. Correlations (Bivariate) was performed on all variables to look for a significant coherence, hence the complicated structure of BD (Appendixes 2-4)

5.1 Anthropometric data.

Height and weight displayed significant differences between girls and boys (Table 2). No significant differences were found between the adolescents from the two school types (Table 2).

Table 2: Anthropometric data of girls and boys, based on school type, presented as means and standard deviation.

		Girls				Boys			
		Performance school	**Regular school**	**t**	**p**	**Performance school**	**Regular school**	**t**	**p**
Height	*Mean (SD)*	1.63 (0.05)	1.63 (0.07)	-.07	0.94	1.66 (0,09)	1.66 (0.09)	-.13	0.9
Weight	*Mean (SD)*	50.83 (6.58)	52.03 (8.7)	-1.14	0.25	53.44 (9,51)	53.53 (9.69)	-.08	0.94
BMI	*Mean (SD)*	19.19 (2.19)	19,47 (2.76)	-.82	0.41	19.13 (2.21)	19.26 (2.45)	-.41	0.68

Level of significance: 0.05

**** Abbreviation:*** *BMI = Body Mass Index*

5.2 Training volume:

The results show that boys train significantly (p=<.001) more than girls. Students attending performance schools train significantly (p=<.001) more than students attending regular schools (Table 3).

Training volume had a significant negative correlation to the EDE-Q, and a significant positive correlation to the SPPA-R in girls (Appendixes 2-4).

Table 3: Hours of exercise during a week among girls and boys attending "performance schools" and "regular schools", presented as means and standard deviations.

		Girls				Boys			
		Performance School	**Regular Schools**	**t**	**p**	**Performance Schools**	**Regular Schools**	**t**	**p**
Training volume	*Mean (SD)*	11.4 (6.15)	5.42 (3.82)	8.28	<.001	11.49 (5.37)	7.3 (4.52)	6.36	<.001

Level of significance: 0,05.

5.3 Body Dissatisfaction - prevalence

Totally, 10.8 % of the adolescents score above the clinical cutoff (4.0) on SC & WC combined. If using the recommended cutoff (2.5) of Rø, Reas & Stedal, (2015), a total of 22 % of the adolescents score above the clinical range (Figure 1).

11.4 % of the adolescents score above the clinical cutoff on the SC scale, whereas 23.3 % score above when using the suggested cutoff (Figure 1). Moreover, 12.3 % of the adolescents score above the clinical cutoff on the WC scale, whereas 23.5 % score within the clinical range when using the 2.5 suggested cutoff (Figure 1).

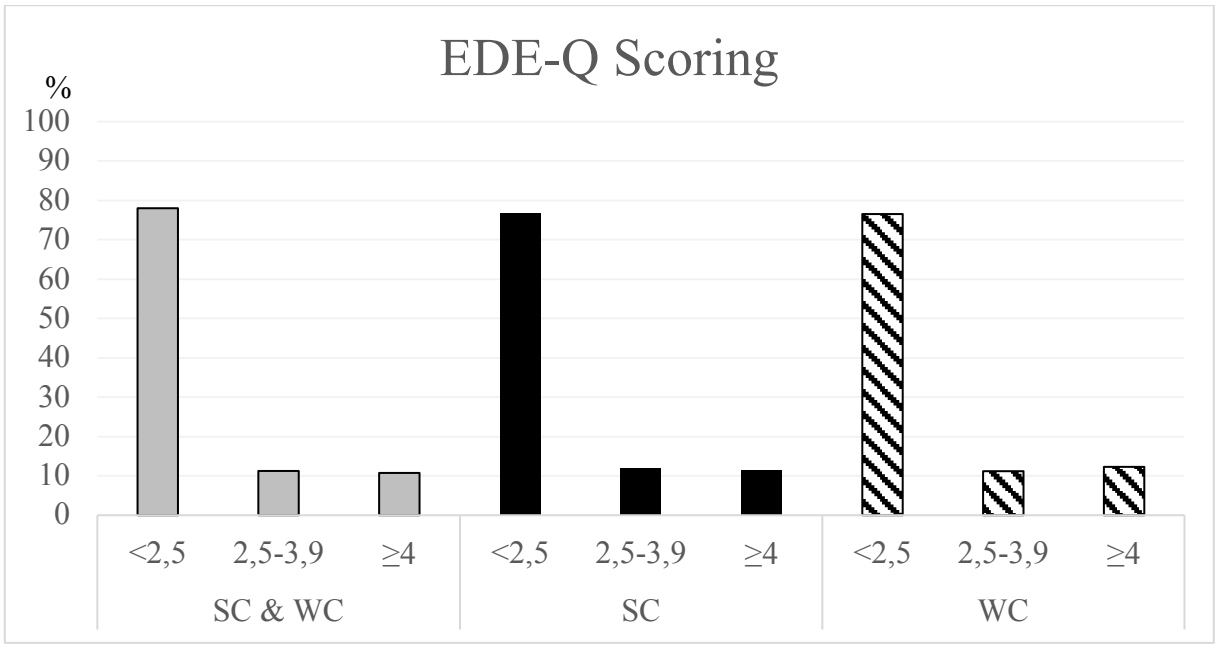

Figure 1: *Full sample of adolescents, percentage scoring above/below the clinical references.*

**** Abbreviations:*** *EDE-Q: Eating Disorder Examination Questionnaire, SC: Shape Concern, WC: Weight Concern, SC & WC: Shape and Weight Concern.*

5.4 Body Dissatisfaction - school group differences

The EDE-Q mean scores are significantly lower among girls attending performance schools ($p=<0.001$), compared to girls attending regular lower secondary school (Table 4). Boys attending performance schools also score significantly lower ($p=<0.005$) than boys attending regular lower secondary schools (Table 4).

Students from performance schools appear to have lower mean levels of BD, and less students score above what is considered unhealthy behavior. Male students from regular lower secondary schools, have higher mean levels of BD (Table 4), but the rate of subjects scoring above what is considered unhealthy is similar within the performance schools (Figure 3, 5, 7)

Of the girls attending performance schools the percentage scoring >4 (SC=9.6%, WC=8.4%) is almost half of what is reported in regular schools (SC=21.1%, WC=21.9%). This means that 1:5 girls attending regular lower secondary schools have concerns regarding their own bodies, whereas approximately 2:25 girls attending performance schools have the same issues (Figure 2, 4, 6). If using the 2.5 cutoff (Rø, Reas & Stedal, 2015), even more girls report unhealthy scores, and approximately 40% of the girls attending regular lower secondary schools, score above a cut-off of 2.5 (figure 2, 4, 6).

Few boys score >4, even based on school type. The results show a slight tendency where more boys report unhealthy behavior in the regular schools, compared to the performance schools. When looking closer at the 2.5 cutoff, this becomes clear. It is not strange, considering the mean scores of the EDE-Q mentioned earlier. The percentages (number) of boys with high scores are however low in general (Figure 3, 5, 7).

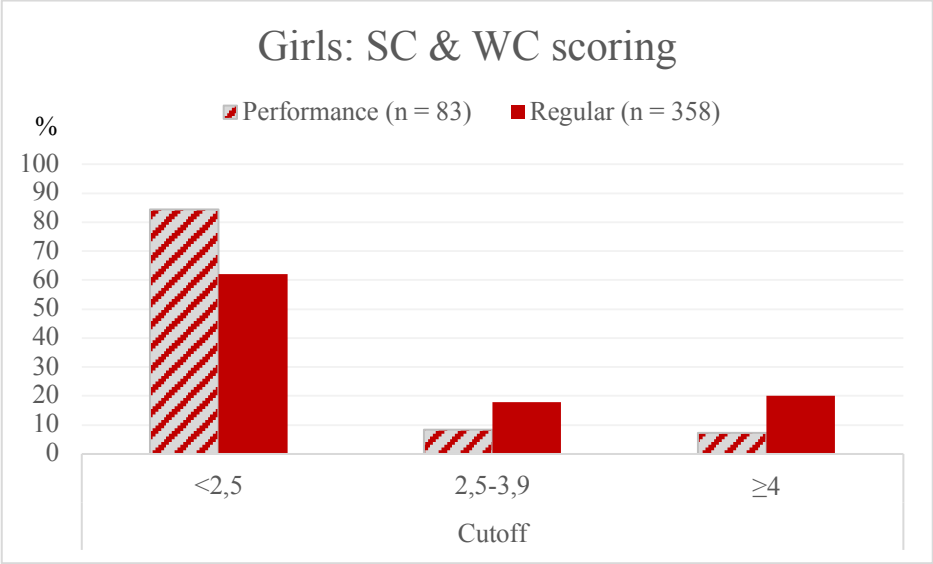

***Figure 2**: Percentage of girls scoring above/below the clinical cutoff suggested in Rø et al., 2015 (≤ 2.5), and the commonly used clinical cutoff (≤ 4) of the EDE-Q SC & WC.*

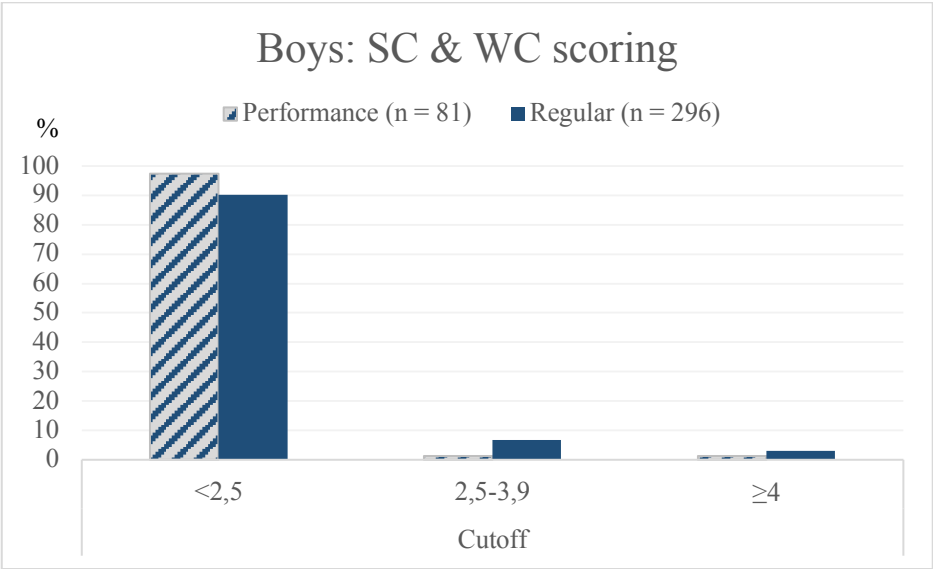

***Figure 3:** Percentage of boys scoring above/below the clinical cutoff suggested in Rø et al., 2015 (≤ 2.5), and the commonly used clinical cutoff (≤ 4) of the EDE-Q SC & WC.*

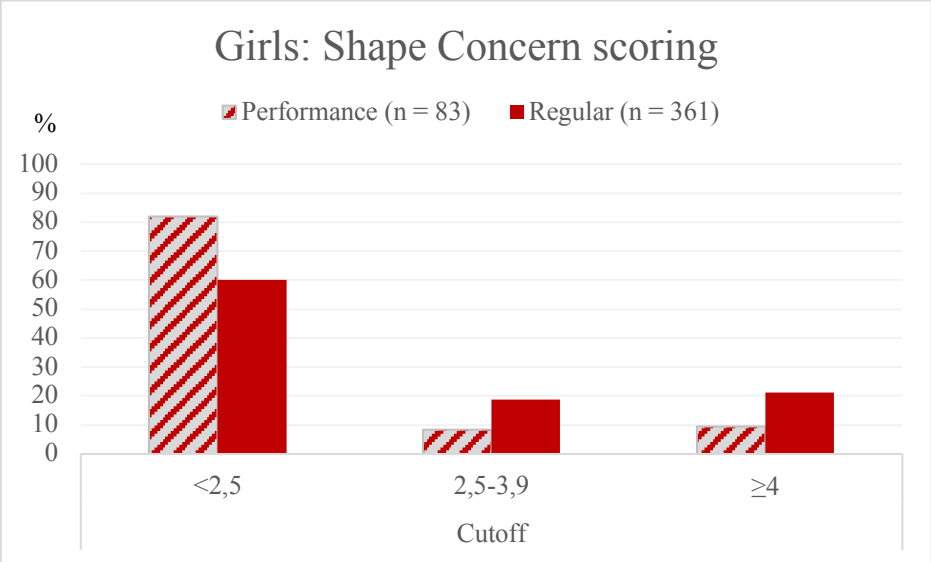

Figure 4: *Percentage of girls scoring above/below the clinical cutoff suggested in Rø et al., 2015 (≤ 2.5), and the commonly used clinical cutoff (≤ 4) of the EDE-Q SC.*

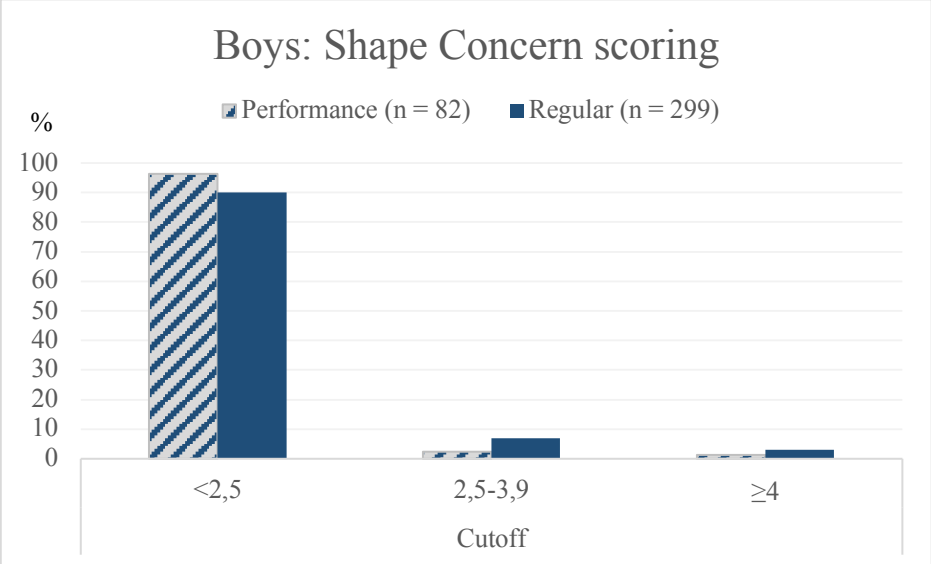

Figure 5: *Percentage of boys scoring above/below the clinical cutoff suggested in Rø et al., 2015 (≤ 2.5), and the commonly used clinical cutoff (≤ 4) of the EDE-Q SC.*

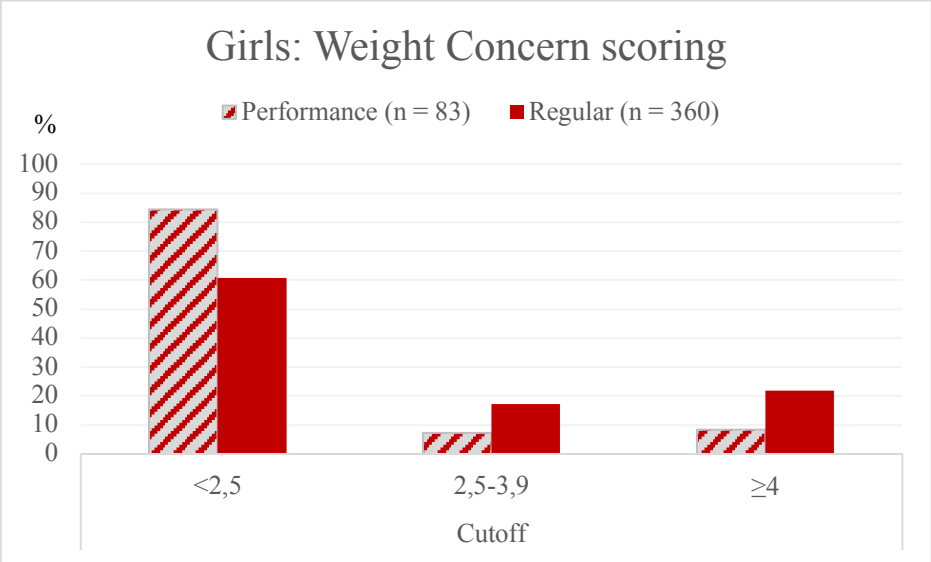

Figure 6: *Percentage of girls scoring above/below the clinical cutoff suggested in Rø et al., 2015 (≤ 2.5), and the commonly used clinical cutoff (≤ 4) of the EDE-Q WC.*

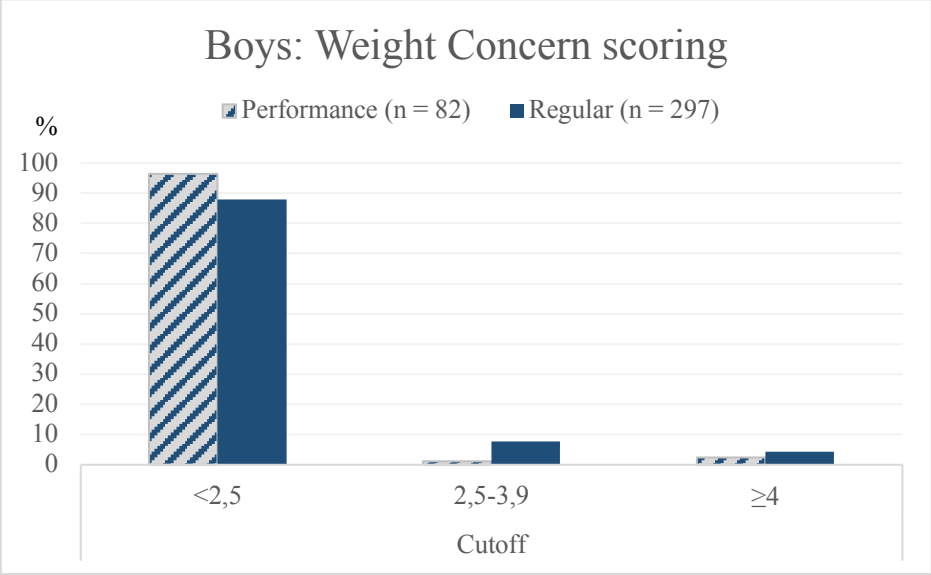

Figure 7: *Percentage of boys scoring above/below the clinical cutoff suggested in Rø et al., 2015 (≤ 2.5), and the commonly used clinical cutoff (≤ 4) of the EDE-Q WC.*

5.5 Body Dissatisfaction - gender differences

The female sample had higher average mean scores on all parts of the EDE-Q compared to the males, independent of school type (Table 4). Even female participants of the performance schools had higher scores compared to the male samples from the regular lower secondary schools (Table 4, Figure 2-7).

Table 4: Mean scores of the EDE-Q sub-scales among gender, and school type.

		GIRLS				BOYS				TOTAL			
		Performance Schools	Regular schools	t	p	Performance schools	Regular schools	t	p	Performance schools	Regular schools	t	p
EDE-Q SC	*Mean (SD)*	1.51 (1.45)	2.31 (1.77)	-4.36	<.001	0.55 (0.74)	0.92 (1.13)	-3.46	.001	1.04 (1.25)	1.68 (1.67)	-5.54	<.001
EDE-Q WC	*Mean (SD)*	1.26 (1.44)	2.1 (1.8)	-4.6	<.001	0.54 (0.74)	0.87 (1.22)	-2.86	.005	0.9 (1.24)	1.55 (1.68)	-5.58	<.001
EDE-Q SC & WC	*Mean (SD)*	1.42 (1.38)	2.24 (1.74)	-4.65	<.001	0.55 (0.74)	0.9 (1.12)	-3.33	.001	0.99 (1.19)	1.64 (1.63)	-5.72	<.001

Level of significance: 0,05

**** Abbreviations:*** *EDE-Q: Eating Disorder Examination Questionnaire, SC: Shape Concern, WC: Weight Concern, SC & WC: Shape and Weight Concern.*

5.6 Body Dissatisfaction and Global Self-Worth – is there an association?

Pearson´s correlation (Bivariate) was computed to assess relationship between the variables. All variables showed a significant negative correlation with the EDE-Q and its subscales, for both girls and boys (Appendixes 2-4).

Specifically, the EDE-Q showed a significant negative correlation with all parts of the SPPA-R, in both genders (Appendixes 2-4). Lower BD would therefore show higher levels of global self-worth, and vice versa.

Similar to the EDE-Q, all SPPA-R subscales means (except from SCo: p=0.08) were significantly lower in girls attending performance schools compared to girls attending regular schools' p=<0.001 (Table 5).

Of the male SPPA-R subscales scores, only AC, SF and GS (p=<0.04) showed significant differences between performance schools and regular schools (Table 5).

Except from the SPPA-R SCo and CF, boys had significantly higher average scores compared to the girls (Table 5).

Table 5: **Mean scores of the SPPA-R sub-scales among gender, and school type.**

		GIRLS				BOYS				TOTAL			
		Performance School	**Regular school**	**t**	**p**	**Performance school**	**Regular school**	**t**	**p**	**Performance school**	**Regular school**	**t**	**p**
SPPA-R SCo	*Mean (SD)*	3.1 (0.68)	2.96 (0.64)	1.78	0.08	3.07 (0.5)	3.06 (0.55)	0.17	0.87	3.09 (0.6)	3 (0.6)	1.52	0.13
SPPA-R SA	*Mean (SD)*	3.27 (0.5)	2.99 (0.6)	4	<.001	3.33 (0.47)	3.25 (0.53)	1.09	0.28	3.3 (0.48)	3.1 (0.59)	4.36	<.001
SPPA-R AC	*Mean (SD)*	2.76 (0.68)	2.45 (0.67)	3.6	<.001	2.3 (0.53)	2.84 (0.65)	2.24	0.03	2.88 (0.62)	2.63 (0.69)	4.41	<.001
SPPA-R PA	*Mean (SD)*	2.9 (0.76)	2.53 (0.83)	3.77	<.001	3.28 (0.57)	3.12 (0.69)	1.92	0.06	3.1 (0.7)	2.8 (0.82)	4.62	<.001
SPPA-R CF	*Mean (SD)*	3.46 (0.57)	3.23 (0.65)	2.89	.004	3.33 (0.58)	3,25 (0.58)	1.32	0.19	3.4 (0.58)	3.24 (0.62)	3.01	.003
SPPA-R SF	*Mean (SD)*	3.29 (0.65)	2.93 (0.75)	3.99	<.001	3.50 (0.43)	3.38 (0.56)	2.13	0.04	3.4 (0.56)	3.14 (0.71)	5.04	<.001
SPPA-R GS	*Mean (SD)*	2.42 (1.74)	1.42 (1.38)	4.36	<.001	3.26 (0.35)	3.15 (0.43)	2.21	0.03	3.19 (0.43)	2.99 (0.48)	4.98	<.001

Level of significance: 0,05

**** Abbreviations:*** *SPPA-R: the revised version of Harter´s Self Perception Profile for Adolescents, SCo: Scholastic Competence, SA: Social Acceptance, AC: Athletic Competence, PA: Physical Appearance, CF: Close Friends, SF: Global Self Worth, GS: Global Score.*

5.7 Further Correlation analysis

5.7.1 BMI

A significant positive correlation was found between BMI and EDE-Q, meaning that higher BMI will increase SC & WC within this group of adolescents (Appendixes 2-4).

A significant negative correlation was found to the SPPA-R meaning that higher BMI lowers the global self-worth of this population (Appendixes 2-4).

5.7.2 Training volume

Training volume showed a significant negative correlation with the EDE-Q and its subscales, for girls, meaning that less training can increase EDE-Q scores (Appendix 2).

The correlation analysis also showed a positive correlation between training volume and the SPPA-R which means that a higher training volume improves the global self-worth. This was similar in both genders (Appendixes 2-4).

6.0 Discussion

6.1 Body Dissatisfaction - prevalence

Similar to Bakken, (2015, 2018) a total of 22% adolescents struggle with BD. The average EDE-Q mean scores of the total sample are approximately 1.3. The results of both subscales of the EDE-Q are in line with other studies (Carter et al, 2000; Mond et al., 2014; Mantilla & Birgegård, 2016; Mantilla et al., 2017), even though the mean score of BD is slightly lower in those studies compared to the scores of the regular lower secondary school sample in this thesis. The mean global EDE-Q score in Rø et al., (2015) research was 1.25, similar to the female sample from the performance schools, and close to the mean score of the total male sample. Martinez & Stice, (2006), found a 44% prevalence of BD in girls and 19% for boys. This is also similar to the prevalence of BD in both subscales found in this thesis.

6.2 Body Dissatisfaction - school group differences

Despite a positive association between sport and ED, the results of the EDE-Q of this thesis contradicts previous research (Sundgot-Borgen, 1993; Hausenblas & Carron, 1999; Smolak, Murnen & Ruble, 2000; Sundgot-Borgen & Torstveit, 2004; Meyer et al., 2011), showing significantly lower scores among the adolescents in the performance schools compared to the regular schools, regarding BD.

Several studies have researched the differences between athletes and non-athletes, however, BD is often a secondary measurement, when assessing ED. Unlike Fulkerson et al. (1999) showing higher levels of BD in athletes compared to controls, present results show a significantly lower BD in athletes compared to non-athletes. The average scores are slightly higher, although similar to the findings of Martinsen et al., (2009); Rosendahl et al., (2009);

Torstveit et al., (2015); Goodwin, Haycraft & Mayer, (2016). The result may indicate that female adolescent are less likely to have BD, if attending regular lower secondary schools, compared to a performance school. Although, it is impossible to see any causal relationship, risk of odds based on the analysis of this thesis. Male students from regular lower secondary schools in Oslo / Akershus, have a significantly higher mean level of BD, but the rate of subjects scoring above the clinical cutoff is similar within both school types.

6.3 Body Dissatisfaction - gender differences

In the very majority of research on the topic of BD, gender differences are reported. A clear pattern of lower scores among the male population is found throughout, and there is agreement that more knowledge is needed regarding the male population (Mond et al., 2014; Jennings & Phillips, 2017; Quick et al., 2013).

Literature shows average SC scores of 2.0-2.15, and WC score of 1.8-1.9 for adolescent girls (Carter et al., 2000; Mond et al., 2014; Mantilla & Birgegård 2016). For adolescent male populations average SC scores seems to be 0.70-0.80, and WC 0.6-0.7 (Carter et al., 2000; Mond et al., 2014; Mantilla & Birgegård 2016). The results in this thesis shows similar scores (Table 4). It means that the concerns over shape, is stronger than the weight concerns within this population. A greater difference between the two sub-scales are first of all visual in females. A transformation during puberty might be one cause for the high scores on the EDE-Q among the girls (van den Berg et al., 2010). However, these are speculations. Bearman, Martinez & Stice, (2006), also found similar gender differences, however in their study boys scored closer to the girls.

The prevalence of boys with BD is approximately 10 % (Figure 3, 5, 7). Depending on

which cutoff is used, 20-40 % girls attending regular lower secondary schools are dissatisfied, compared to 10-15 % of from the performance schools (Figure 2, 4, 6). Such results are in line with previous findings (Quick et al., 2013; Mond et al, 2014; Mantilla & Birgegård, 2016; Mantilla et al., 2017; Bakken, 2018).

6.4 Body Dissatisfaction and Global Self-Worth – is there an association?

Most of the research on this topic has been conducted with the use of cross-sectional samples (Barker & Bornstein, 2010), and the majority of research find associations between self-esteem and BD. The result of this thesis also show a clear association between the EDE-Q and SPPA-R between both genders, specifically, a negative correlation between SC & WC and the SPPA-R. This indicates a relationship between SC & WC and global self-worth / self-esteem. These results are in accordance with previous research (van den Berg et al., 2010; Mäkinen, Puukko-Viertomies, Lindberg, Siimes & Aalberg, 2012; Brechan & Kvalhem, 2014; Wichstrøm & Soeast, 2015).

All SPPA-R subscales means (except from SCo: p=0.08) were significantly higher in girls attending performance schools compared to girls attending regular schools' p=<0.001 (Table 5). This may indicate that female students attending performance schools have lower BD, due to improved global self-worth.

6.5 Further correlations regarding training volume

The correlation analysis also showed a positive correlation between training level and the SPPA-R which means that higher levels of exercising improve the global self-worth. This was similar in both genders (Appendixes 2-4). Regular maintenance of the recommended

60 minutes of moderate to vigorous physical activity each day (WHO, 2018) can result in increased physical fitness, lower body fat, favorable cardiovascular health and metabolism, enhanced bone health and a reduction in mental illness in children and adolescents (Eime et al., 2013). What is alarming is that girls attending regular schools do not meet the recommendations of WHO and NDH, of minimum 60 minutes of moderate to vigorous activity each day (Table 3). Training level showed a significant negative correlation with the EDE-Q and its subscales, for girls, meaning that low levels of training can increase EDE-Q scores (Appendix 2). The low level of training seen within the general girl population, may therefore be a contributor to a higher level of BD, and at the same time affect the global self-worth negatively.

6.6 Data collection

6.6.1 Organizing

Planning and organizing is vital in order to execute a data collecting procedures properly. Even though planning ahead may optimize the process, unforeseen events can occur, which needs to be dealt with when meeting with the participating schools and students during the data collection. If a problematic situation occurred it had to be handled in correspondence to the ethical guidelines and rules, and at the same time, it was of importance to be flexible as being “guests” at the school. However, if not handled properly it might make an impact on the data collection (i.e. less time answering the questionnaires and attrition), and resulting in less accurate and or/ reliable results. However, in i.e. shortage of time, most students were allowed to finish during the next school hour or during the school breaks.

6.7 Questionnaires

6.7.1 Self reporting

Self-report questionnaires are frequently used in health research, due to costs and practical implication (Demetriou, C., Ozer, B., U. & Essau, C., A., 2017). It is commonly used when researching larger groups.

There will always be a risk of bias when using self-report methods to collect data (Brenner & DeLamater, 2016). It is therefore impossible to rule out the potential for bias in this thesis, as all answers of a self-report questionnaire are relying solely on the honesty of its participant. Recall bias can be a problem within self-report methods, and the questionnaire used in this thesis is no exception (Brenner & DeLamater, 2016). Because the EDE-Q is focusing on the last 28 days; the students had to remember what they had done in the past. The same applied for how much physical training they had each week. Based on the frequency of a previous "action", a subject might report more of an "action" easy to remember, and less of "actions" hard to remember (Brenner & DeLamater, 2016). An answer can be influenced by unknown confounding variables such as motivation, mood, concentration, air condition, language barriers, and even at what time of day the test is performed (Jacobs et al., 1999). When using self-reporting questionnaires, there are no guarantees of participants answering the most correct (honest) answer. In some cases, participants have a specific answering pattern, to attract attention and get noticed, if in desperate need of help. In comparison, other participants answer untruthfully, to walk unnoticed, so one can hide problems considered shameful or taboo (Brenner & DeLamater, 2016). Participants sometimes choose to answer untruthfully, based on what they believe is socially accepted or wanted, or as means to elevate themselves (Brenner & DeLamater, 2016). This type of report bias, can occur if participants are not given appropriate

information, spacing or silence to perform the questionnaire. It can also occur if there is a belief that one's results would become visual to people of close connection (such as teachers, family or friends etc.) Before conducting the questionnaire in this study, the students were made aware that no one (except from scientists at the NSSS) were to gain access to their results during the session, or afterwards. The students were told to sit apart from each other, because of the confidentiality of the questions they were about to answer. This would also help to separate group of friends, so that each student would dare to be as honest as possible, rather than relying on, or being influenced by the opinion of a friend. If someone were to finish as quickly as possible, this would raise some concerns, as it could imply that the student was not answering honestly. It would most likely be visual (to some extend) when plotting the results into SPSS, and could also be noted during sessions (I.e. if someone checked all the answers of one category/classification). The questionnaire of such participants would however be very difficult to disregard, unless 100% certain the participant had performed poorly, intentionally. Frequent cases of bias will create a misleading result. The lower number of participants the greater impact it has on the results. A high number of participants will therefore help to decrease the impact of such bias. The large number of participants within this study is therefor a strength, when comparing results to reality.

6.7.2 Motivation

Motivation was an important factor due to the large size of the original questionnaire. Good encouragements and sufficient explanations for the importance of participating, were given before each session, to increase the motivation of the students. If the questionnaire were performed at the end of the day, tired students knowing that they could go home when finished, could rush through the questionnaire to end the school day. The heat inside the classrooms could also influence their ability to concentrate, and therefore answer differently

than what they would have done under better conditions. However, the Phd candidate asked the students briefly during and after each session, how they experienced the questions, and if they had understood them properly. They could also ask for help at any time during the session, and so, minimize the number of wrong answers.

6.8 EDE-Q 0.6

6.8.1 Self-report

There is an EDE-Q version for children and younger subjects (Carter et al., 2001; Mantilla & Birgegård, 2016). It differs from the adult version, focusing on the past 14 days, rather than the last 28 days. It uses simplified language more understandable for children and adolescents. Unfortunately, research on the adolescent version of the EDE-Q has been extremely limited (Carter et al., 2001; Mantilla & Birgegård, 2016; Mantilla et al., 2017). To perform the original EDE-interview, one need to have extensive training (Carter et al., 2001). These interviews are often performed by psychiatrists, on single subjects. Also, the interviews can become time consuming, which furthermore increases the costs of a research project. Because of the need for available and certified practitioners, research method such as the EDE-interview, become impractical when assessing larger group samples. In those cases, the EDE-Q self-report questionnaire can become helpful. It requires little or no formal training for the practitioner, and it is less expensive and time consuming. This makes it more suitable for attaining data from larger groups. Furthermore, it is possible that self-report methods like this provide more valid data concerning shameful behavior, as participants feel and stay anonymous when answering the questions, compared to an interview (Carter et al., 2001; Brenner & DeLamater, 2016). However, self-report methods like this have also been criticized by scientist being incapable of assessing the complexity of ED (Carter et al., 2001).

6.8.2 Cutoffs

In comparison to a study performed on a clinical adult population (Welch, Birgegård, Parling & Ghaderi, 2011), Mantilla & Birgegård, 2016 discovered that a clinical group of adolescents (aged 12-14) scored lower on all EDE-Q subscales compared to the adults. As much as 40% boys, and 25% girls managed to score below the clinical cutoff-off score (≥4), and within the normal range on the EDE-Q Global scale and sub scales (Mantilla & Birgegård, 2016). In both studies the SC and WC subscales of the EDE-Q, generated the highest scores. The eating concern subscale, showed the lowest scores (Mantilla & Birgegård, 2016). The clinical cutoff-score is similar for both genders, but literature indicate that this cutoff-score might be set too high for males, and often end up showing less cases of problematic behavior, than what might be a reality (Rø et al., 2015). The consensus on the clinical cutoff score of the EDE-Q of ≥ 4, can be compared to having an ED. For a general populations of adolescents, researchers often use a different cutoff point (Carter et al., 2001; Rø et al., 2015; Mantilla & Birgegård, 2016). The results from Mantilla & Birgegård, (2016) showed no average EDE-Q subscale scores above the originally suggested cut-off for clinical significance (≥4), within a clinical population. This could indicate, that the cutoff scores used on adults, may not be as efficient in adolescent research. The cutoff-score is similar for both genders, but literature also show that the standard cutoff-score might be set too high for males, and often end up showing less cases of problematic behavior, than what might be a reality (Rø et al., 2015). For this master thesis, a cutoff ≥4 is used for both boys and girls, in addition to a recommended cutoff of ≥2.5 (Rø. et al., 2015). This was done in order to highlight the differences of a considered standard, and a present "belief for change" (Rø. et al., 2015). Using only a clinical cutoff can contribute to a misleading result when assessing adolescents, whereas separation between healthy and unhealthy subjects becomes harder to discover. By adding the lower cut-off score, it is also possible to visualize the differences that appear when using other cutoffs from the clinical

standard, but also the importance of developing a shared and accepted standard for research on adolescents. However, keeping the clinical cutoff will give a definite number of adolescents struggling with BD, and raise new awareness to what extend BD is a problem in the rest of society.

6.8.3 Factor analysis

The self-report version of the EDE-Q appears to be an acceptable substitute for the EDE interview when assessing most features concerning ED. However, for complex features, such as shape concern, the EDE-Q may not provide accurate results (Carter et al. 2001; Allen, Byrne, Lampard, Watson & Fursland, 2011; Mantilla et al., 2017). An important problem with the EDE-Q is the lack of systematic knowledge regarding its relation to adolescents (Mantilla et al., 2017). Adolescents actually comprise a significant proportion of ED patients, and it is therefore crucial to understand the validity of this instrument in younger populations (Mantilla et al., 2017). The factor structure of the EDE-Q has been investigated in both adults and adolescents (Friborg et al., 2013; White, Haycraft, Goodwin & Meyer, 2014; Mantilla et al., 2017). By researching the factor structure, it is possible to manipulate the results, in order to create a better form of the EDE-Q. Because there can be great variations between groups (age, gender) when using the EDE-Q, researchers must find appropriate solutions, to overcome such issues. It is especially difficult to assess children and adolescent regarding the EDE-Q, because of little knowledge due to less research performed on this population. Mantilla et al., 2017, failed to find support for the four-factor model of the commonly used EDE-Q. The EDE-Q centered on a single underlying dimension of dissatisfaction with shape and weight in young teenage girls. It is possible that R and EC become more important later in life, when the development of even more complex features of eating pathology appear (Mantilla et al., 2017). Such factors become more important when assessing older population (Mantilla et al., 2017). Regardless, this thesis

has focused on weight and shape concern which have shown to be important when assessing ED behavior in adolescents. Further factor analytic studies of the adolescent version of the EDE-Q are needed in order to investigate its underlying structure and compare its properties to that of the adult EDE-Q version (Mantilla et al., 2017). This is important as a four-factor structure of the EDE-Q is commonly accepted and used in both clinical assessment and for screening purposes in adolescents (Mantilla et al., 2017).

6.9 Weaknesses / Strengths

This thesis cannot explain any causal relationship, nor give any clear answers to why there are differences between gender and school type. It is also worth mentioning that music, ballet and sports students have been analyzed within the same sample in SPSS. One can suggest that sports and ballet students are exposed differently compared to music students, when dealing with issues regarding ED and BD. If so, it can be questioned whether or not it was ideal to put these student groups into the same "category". One strength of this thesis, is the fact that all the schools are dispersed throughout the entire Oslo / Akershus area. In this way, socioeconomic, ethnic and cultural differences are accounted for naturally. A large sample also minimize the effect of potential bias on the results.

6.10 Further implications

Because of the harmful outcomes associated with a negative BI and BD, society could benefit from better understanding the efficacy of interventions aiming to improving BI, and to focus on what predicts a healthy BI (Campbell & Hausenblas, 2009). It is also crucial to investigate the causes for BD, and those factors affecting BD. Furthermore, it is important that researchers come up with good prevention treatments, both in larger societal scale, but also at an individual level. Body-image interventions typically consist of psycho-

educational treatments, cognitive-behavioral treatments, or drug therapies (Campbell & Hausenblas, 2009). As many of these interventions are expensive, in short supply and often unsuited for young populations, other more practical strategies should be examined and promoted (Farrell, Shafran, & Lee, 2006; Campbell & Hausenblas, 2009). Furthermore, although effective treatments exist, only a small proportion of those with BI problems go to treatment (Campbell & Hausenblas, 2009). There are numerous explanations for this. Some of these explanations relate to the practicalities of treatment delivery; such as geographic distance, cost, and lack of availability (Campbell & Hausenblas, 2009). Most females with BI concerns are dissatisfied because they feel overweight (Campbell & Hausenblas, 2009). In contrast, men indicate dissatisfaction because of being to thin, and a desire to gain weight (Campbell & Hausenblas, 2009; Whitehead, Cosma, Cecil, Currie, Currie, Neville & Inchley, J, 2018). With the rise in male body-image concerns, and the pressure for men to achieve a 'fit' physique, further research is needed in order to examine the gender differences in BD, and the effects of exercise interventions on BD. Society should invest in a more critical and controlled health education for its people, whereas certification in health related work (such as the training and fitness industry) could contribute to less lies and a higher quality of information. Stricter rules for the commercial, cosmetic and beauty enhancing industry can decrease temptations for unhealthy behavior and actions. The results of this master thesis may help raise new awareness and questions to what extend BD is a problem in other areas of Norway. It can help increase the general interest in a topic which concerns people of all ages, and open up for further discussion.

7.0 Conclusion

There is greater prevalence of BD among adolescent students attending regular lower secondary schools, than students attending performance schools in the Oslo / Akerhus area. The prevalence of females with BD is significantly higher than that of males, whereas even females attending performance schools score higher than the males from the regular schools. Associations are seen between the EDE-Q and SPPA-R, and the results therefore indicate a relationship between BD and global self-worth. The results cannot explain a causal relationship to BD, neither know anything about the nationwide prevalence of BD. However, these results can be a good indication of how adolescents in other part of Norway may score, at least in other cities and populated areas.

8.0 References

Allen, K. L., Byrne, S. M., Lampard, A., Watson, H. & Fursland A. (2011). Confirmatory factor analysis of the Eating Disorder Examination-Questionnaire (EDE-Q). *Eating Behaviors*. 12(2), 143-151.

Arnow, K. D., Feldman, T., Fichtel, E., Lin, I. H., Egan, A., Lock, J. … Darcy, A. M. (2017). A qualitative analysis of male eating disorder symptoms. *Eating Disorders – The Journal of Treatment and Prevention*. 25(4), 297-309.

Bailey, J. A, II. (2003). The Foundation of Self-Esteem. *Journal of The Nation Medical Association*. 95(5), 388-93.

Bakken A. (2018). *Young in Oslo 2018* (Report (NOVA: online ed.) 2018:6) Oslo and Akershus College of Applied Sciences and Centre for Welfare and Labour Research.

Bardone-Cone, A. M., Cass, K. M. & Ford, J. A. (2007). Examining body dissatisfaction in young men within a biopsychosocial framework. *Body Image* (5) 183-194.

Barker, E. T. & Bornstein, M. H. (2010). Global Self-Esteem, Appearance Satisfaction, and Self-Reported Dieting in Early Adolescence. *The Journal of early adolescence*. 30(2), 205-224.

Bauer, K. W., Bucchianeri, M. M. & Neumark-Sztainer, D. (2013). Mother-reported parental weight talk and adolescent girls´ emotional health, weight control attempts, and disordered eating behaviors. *Journal of Eating Disorders*. 1, 45.

Berg, K. C., Peterson, C. B., Frazier, P. & Crow, S. J. (2011). Convergence of scores on the interview and questionnaire versions of the Eating Disorder Examination: a meta-analytic review. *Psychological Assessment*. 23(3), 714-24.

Bettle, N., Bettle, O., Neumärker, U., Neumärker, K-J. (2001). Body Image and Self-Esteem In Adolescent Ballet Dancers. *Perceptual and Motor Skills*. 93(1), 297-309.

Bratland-Sanda, S. & Sundgot-Borgen, J. (2012). Symptoms of eating disorders, drive for muscularity and physical activity among Norwegian adolescents. *European Eating Disorder Review: the journal of the Eating Disorders Association*. 20(4), 287-93.

Bratland-Sanda, S. & Sundgot-Borgen, J. (2013). Eating disorders in athletes: Overview of prevalence, risk factors and recommendations for prevention and treatment. *European Journal of Sport Science.* 13(5), 499-508.

Brenner, P. S. & DeLamater, J. (2016). Lies, Damens Lies, and Survey Self-Reports? Identity as a Cause of Measurement Bias. *Social Psychology Quarterly*. 79(4), 333-354.

Brierley, M. E., Brooks, K. R., Mond, J., Stevenson., R. J. & Stephen, I. D. (2016). The Body and the Beautiful: Health, Attractiveness and Body Composition in Men´s and Women´s Bodies. *PLOS One*. 11(6), e0156722.

Bucchianeri, M. M., Arikian, A. J., Hannan, P. J., Eisenberg, M. E. & Neumark-Sztainer, D. (2012). Body Dissatisfaction from Adolescence to Young Adulthood: Findings from a 10- year Longitudinal Study. *Body Image.* 10(1), 1-7.

Burnette, C. B., Simpson, C. C. & Mazzeo, S. E. (2017). Exploring gender differences in the link between weight suppression and eating pathology. *Eating Behaviors.* 27, 17-22.

Calzo, J. P., Sonneville, K. R., Haines, J., Blood, E. A., Field, A. E. & Austin, S. B. (2012). The Development of Associations Among BMI, Body Dissatisfaction, and Weight and Shape Concern in Adolescent Boys and Girls. *The Journal of Adolescent Health: official publication of the Society for Adolescent Medicine*. 51(5), 517-523.

Campbell, A. & Hausenblas, H. A. (2009). Effects of Exercise Interventions on Body Image, A Meta-Analysis. *Journal of health Psychology*. 14(6), 780-793.

Campbell, K. & Peebels, R. (2014). Eating disorders in children and adolescents: state of the art review. *Pediatrics.* 134(3), 582-92.

Carter, J. C., Stewart, D. A. & Fairburn, C. G. (2001). Eating disorder examination questionnaire: norms for young adolescent girls. *Behavior Research and Therapy*. 39(5), 625- 32.

Crow, S., Eisenberg, M. E., Story, M. & Neumark-Sztainer, D. (2008). Are Body Dissatisfaction, Eating Disturbance and Body Mass Index Predictors of Suicidal Behavior in Adolescents? A Longitudinal Study. *Journal of Consulting and Clinical Psychology.* 76(5), 887-892.

Dominé, F., Berchtold, A., Akré, C., Michaud, P. A. & Suris, J. C. (2009). Disordered eating behaviors: what about boys?. *Journal of Adolescent Health*. 44(2), 111-7.

Drake, K. M., Longacre, M. R., Dalton, M. A., Langeloh, G., Peterson, K. E., Titus, L. J. & Beach, M. L. (2013). Two methods of measurement for adolescent obesity epidemiology: Reducing the bias in self report of height and weight. *The Journal of Adolescent Health*. 53(3), 322-327.

Eime, R. M., Young, J. A., Harvey, J. T., Charity, J. M. & Payne, W. R. (2013). A systematic review of the psychological and social benefits of participation in sport for children and adolescents: informing development of a conceptual model of health through sport. *International Journal of Behavioral Nutrition and Physical Activity*. 10(98).

Ekeroth, K. & Birgegård, A. (2014). Evaluating reliable and clinically significant change in eating disorders: comparison to changes in DSM-IV diagnoses. *Psychiatry Research*. 216(2), 248-54.

Elgar, F. J., Roberts, C., Tudor-Smith, C. & Moore, L. (2005). Validity of self-reported height and weight and predictors of bias in adolescents. *The Journal of adolescent health: official publication of the Society for Adolescent Medicine*. 37(5), 375-5.

Eriksen, I. M., Sletten M. A., Bakken, A. & Von Soeast, T. (2017). *Stress and pressure among adolescents. Experience, Causes and prevlance of psychological health issues.* (Report (NOVA: online ed.) 2017:6) Oslo and Akershus College of Applied Sciences and Centre for Welfare and Labour Research.

Farrell, C., Shafran, R. & Lee, M. (2006). Empirically evaluated treatments for body image disturbance: A review. *European Eating Disorders Review*, 14(5), 289-300.

Figueiredo, R. A. d. O., Simola-Ström, S., Isomaa, R & Weiderpass, E. (2018). Body dissatisfaction and disordered eating symptoms in Finish preadolescents. *Eating Disorders, The Journal of Treament & prevention.* 24, 1-18.

Forsberg, S. & Lock, J. (2006). The relationship between perfectionism, eating disorders and athletes: a review. *Minerva pediatrica.* 58(6):525-36.

Friborg, O., Reas, D. L., Rosenvinge, J. H. & Rø, Ø. (2013). Core pathology of eating disorders as measured by the Eating Disorder Examination Questionnaire (EDE-Q): the predictive role of a nested general (g) and primary factors. *International Journal of Methods in Psychiatric Research.* 22(3), 195-203.

Fulkerson, J. A., Keel, P. K., Leon, G. R. & Dorr, T. (1999). Eating-disordered behaviors and personality characteristics of high school athletes and non-athletes. *International Journal of Eating Disorders*. 26(1), 73-9.

Giel, K. E., Hermann-Werner, A., Mayer, J., Diehl, K., Schneider, S., Thiel, A. … GOAL study group. (2016). Eating disorder pathology in elite adolescent athletes. *International Journal of Eating Disorders*. 49(6), 553-62.

Goodwin, H., Haycraft, E. & Meyer, C. (2016). Disordered Eating, Compulsive Exercise, and Sport Participation in a UK Adolescent Sample. *European Eating Disorders Review*. 24(4), 304-9.

Gustavsson, A., Svensson, M., Jacobi, F., Allgulander, C., Alonso, J., Beghi, E., ... CDBE2010StudyGroup. (2011). Cost of disorders of the brain in Europe 2010. *European neuropsychopharmacology: the journal of the European College of Neuropsychopharmacology*. 21(10), 718-79.

Harter, S. (2003). The Development of Self-Representation during Childhood and Adolescence. I: Leary, M. R. & Tangney, J. P. (Red). (2003). *Handbook of self and identity*. New York: The Guilford Press.

Hatmaker, G. (2005). Boys with eating disorders. *The Journal of School Nursing*. 21(6), 329- 32.

Hausenblas, H. A. & Carron, A. V. (1999). Eating Disorder Indices and Athletes: An Integration. *Journal of Sport & Exercise Psychology*. 21, 230-258.

Helsebiblioteket. (2018). *EDE-Q - Eating Disorder Examination Questionnaire (6.0)*. Retrieved 12. April 2018 from http://www.helsebiblioteket.no/psykisk-helse/skaringsverktoy/ede-q-eating-disorder-examination-questionnaire-6.0

Henriksen, I. O., Ranøyen, I., Indredavik, M. S. & Stenseng, F. (2017). The role of self-esteem in the development of psychiatric problems: a three-year prospective study in a clinical sample of adolescents. *Child and adolescent psychiatry and mental health*. 11, 68.

Hillard, E. E., Gondoli, D. M., Corning, A. F. & Morrissey, R. A. (2016). In It Together: Mother Talk of Weight Concerns Moderates Negative Outcomes of Encouragement to Lose Weight on Daughter Body Dissatisfaction and Disordered Eating. *Body Image*. 16. 21-27.

Hogan, M. J., Strasburger, V. C. & FAAP. (2008). Body Image, Eating Disorders, and the Media. *Adolescent medicine: state of the art reviews.* 19(3), 521-46.

Kong, P. & Harris, L. M. (2015). The sporting body: body image and eating disorder symptomatology among female athletes from leanness focused and nonleanness focused sports. *The Journal of Psychology*. 149(1-2), 141-60.

Kvittingen, I. (2017). Does Generation-Z turn ill from the demands from school?. *Forskning.no.* Retrieved 1. April 2018 from https://forskning.no/helse-psykiske-lidelser-samfunn-barn-og-ungdom-skole/2017/04/blir-generasjon-prestasjon-syke-av-skolens-krav

Lombardo, C., Battagliese, G., Lucidi, F. & Frodt, R. O. (2012). Body dissatisfaction among pre-adolescent girls is predicted by their involvement in aesthetic sports and by personal characteristics of their mothers. *Eating and Weight Disorders.* 17(2), e116-27.

Luce, K. H. & Crowther, J. H. (1999). The reliability of the Eating Disorder Examination-Self-Report Questionnaire Version (EDE-Q). *The International Journal of Eating Disorders.* 25(3), 349-51.

MacNeill, L. P., Best, L. A. & Davis, L. L. (2017). The role of personality in body image dissatisfaction and disordered eating: discrepancies between men and women. *Journal of Eating Disorders*. 5, 44.

Mantilla, E. F. & Birgegård, A. (2016). Eating disorder examination questionnaire: Norms and clinical reference data from adolescent boys and girls in Sweden. *Psychiatry Research.* 239, 156-62.

Mantilla, E. F., Birgegård, A. & Clinton. (2017). Factor analysis of the adolescent version of the Eating Disorder Examination Questionnaire (EDE-Q): results from Swedish general population and clinical samples. Journal of Eating Disorders. 5(19).

Martinsen, M., Bratland-Sanda, S., Eriksson, A. K. & Sundgot-Borgen, J. (2010). Dieting to win or to be thin? A study of dieting and disordered eating among adolescent elite athletes and non-athlete controls. *British Journal of Sports Medicine.* 44(1), 70-6.

Martinsen, M. & Sundgot-Borgen, J. (2013). Higher prevalence of eating disorders among adolescent elite athletes than controls. *Medicine & Science in Sports & Exercise*. 45(6), 1188- 97.

McVeigh, T. (2016). It's never been easy being a teenager. But is this now a generation in crisis?. *The Guardian*. Retrieved 2. April 2018 from https://www.theguardian.com/society/2016/sep/24/teenagers-generation-in-crisis

Meland, E., Haugland, S. & Breidablik, H-J. (2006). Body image and perceived health in adolescence. *Health Education Research*. 22(3), 342-350.

Mond, J., Hall, A., Bentley, C., Harrison, C., Gratwick-Sarll, K. & Lewis, V. (2014). Eating-disordered behavior in adolescent boys; eating disorder examination questionnaire norms. *International Journal of Eating Disorders.* 47(4), 335-41.

Mond, J. M., Hay, P. J., Rodgers, B., Owen, C. & Beumont, P. J. (2004). Validity of the Eating Disorder Examination Questionnaire (EDE-Q) in screening for eating disorders in community samples. *Behavior Research and Therapy*. 42(5), 551-67.

Moore, D. C. (1993). Body image and eating behavior in adolescents. *Journal of the American College of Nutrition.* 12(5), 505-10.

Muise, A. M., Stein, D. G. & Arbess, G. (2003). Eating disorder in adolescent boys: a review of the adolescent and young adult literature. *Journal of Adolescent Health*. 33(6), 427-35.

Mäkinen, M., Puukko-Viertomies, L-R., Lindberg, N., Siimes, M. A. & Aalberg, V. (2012). Body dissatisfaction and body mass in girls and boys transitioning from early to mid-adolescence: additional role of self-esteem and eating habits. *BMC Psychiatry*. 12, 35.

National Eating Disorder Association. (2018). *Eating disorders and athletes*. Retrieved 28. March 2018 from https://www.nationaleatingdisorders.org/eating-disorders-athletes

Neumark-Sztainer, D., Bauer, K. W., Friend, S., Hannan, P. J., Story, M. & Berge, J. M. (2010). Family weight talk and dieting: How much do they matter for body dissatisfaction and disordered eating behavior in adolescent girls?. *The Journal of adolescent health: official publication of the Society for Adolescent Medicine.* 47(3), 270-276.

Neumark-Sztainer, D., Wall, M., Larson, N. I., Eisenberg, M. E. & Loth, K. (2011). Dieting and disordered eating behaviors from adolescence to young adulthood: Findings from a 10-year longitudinal study. *Journal of the American Dietetic Association*. 111(7), 1004-1011.

Norwegian Association for Cognitive Therapy. (2018). *Eating Disorder Examination Questionaire (EDE-Q 6.0).* Retrieved 12. April 2018 from https://www.kognitiv.no/tool_pdf/eating-disorder-examination-questionnaire-ede-q-6-0/

Norwegian Institute of Public Health. (2016). *Mental disorders among children and adolescents in Norway.* Retrieved 20. August 2018 from https://www.fhi.no/en/op/hin/helse-i-ulike-befolkningsgrupper/mental-health-children-adolescents/

Parks, P. S. & Read, M. H. (1997). Adolescent male athletes: body image, diet, and exercise. *Adolescence.* 32(127), 593-602.

Pernick, Y., Nichols, J. F., Rauh, M. J., Kern, M., Ji, M., Lawson, M. J. & Wilfley, D. (2006). Disordered eating among a multi-racial/ethnic sample of female high-school athletes. *The Journal of adolescent health: official publication of the Society for Adolescent Medicine.* 38(6), 689-95.

Pettersen, I., Hernæs, E. & Skårderud, F. (2016). Pursuit of performance excellence: a population study of Norwegian adolescent female cross-country skiers and biathletes with disordered eating. *BMJ Open Sport and Exercise Medicine*. 2(1), e000115.

Presnell, K., Bearman, S. K. & Stice, E. (2003). Risk factors for body dissatisfaction in adolescent boys and girls: a prospective study. *International Journal of Eating Disorders*. 36(4), 389-401.

Quick, V., Eisenberg, N. E., Bucchianeri, M. M. & Neumark-Sztainer, D. (2013). Prospective Predictors of Body Dissatisfaction in Young Adults: 10-year Longitudinal Findings. *Emerging Adulthood*. 1(4), 271-282.

Reas, D. L., Øverås, M. & Rø, O. (2012). Norms for the Eating Disorder Examination Questionnaire (EDE-Q) among high school and university men. *Eating Disorders.* 20(5), 437-43.

Rose, E., Hands, B. & Larkin, D. (2011). Reliability and validity of the self-perception profile for adolescents: An Australian sample. Australian Journal of Psychology. 62(2), 92-99.

Rosendahl, J., Bormann, B., Aschenbrenner, K., Aschenbrenner, F. & Strauss, B. (2009). Dieting and disordered eating in German high school athletes and non-athletes. *Scandinavian Journal of Medicine and Science in Sports.* 19(5), 731-9.

Rosenvinge J. H., Sundgot-Borgen, J., Pettersen, G., Martinsen, M., Stornæs, A. V. & Pensgaard, A. M. (2018). Are adolescent elite athletes less psychologically distressed then controls? A cross-sectional study of 966 Norwegian adolescents. *Open Access Journal of Sports Medicine*. 9, 115-123.

Rø, Ø., Reas, D. L. & Stedal, K. (2015). Eating Disorder Examination Questionnaire (EDE-Q) in Norwegian Adults: Discrimination between Female Controls and Eating Disorder Patients. *European Eating Disorders Review.* 23(5), 408-12.

Sands, R., Tricker, J., Sherman, C., Armatas, C. & Maschette, W. (1997). Disordered eating patterns, body image, self–esteem, and physical activity in preadolescent school children. *International Journal of Eating Disorders*. 21(2), 159-66.

Skårderud, F., Fladvad, T., Garthe, I., Holmlund, H. & Engebretsen, L. (2012). When sports and health collide. *Tidsskriftet Den Norske Legeforening*. 132(17), 1977-8.

Smolak, L., Murnen, S. K. & Ruble A. E. (2000). Female athletes and eating problems: a meta-analysis. *The International Journal of Eating Disorder*. 27(4), 371-80.

Streeter, V. M., Milhausen, R. R. & Buchholz, A. C. (2012). Body Image, Body Mass Index, and Body Composition in Young Adults. *Canadian Journal of Dietic Practice and Research*. 73(2), 78-83.

Strother, E., Lemberg, R., Stanford, S. C. & Tuberville, D. (2012). Eating Disorders in men: Underdiagnosed, Undertreated, and Misunderstood. *Eating Disorders*. 20(5), 346-355.

Sundgot-Borgen, J. (1993). Prevalence of eating disorders in elite female athletes. *International Journal of Sport Nutrition*. 3(1), 29-40.

Sundgot-Borgen, J. & Torstveit, M. K. (2004). Prevalence of eating disorders in elite athletes is higher than in the general population. *Clinical journal of sport medicine: official journal of the Canadian Academy of Sport Medicine*. 14(1), 25-32.

Sundgot-Borgen, J. & Torstveit, M. K. (2010). Aspects of disordered eating continuum in elite high-intensity sports. *Scandinavian Journal of Medicine and Science in Sports.* 20(2), 112-121.

Sundgot-Borgen, J., Torstveit, M. K. & Skårderud, F. (2004). Eating disorders among athletes. *Tidsskriftet Den Norske Legeforening*. 124(16), 2126-9.

The Eatingdisorder Association. (2018). *Eating disorders – boys and men.* Retrieved 1.April 2018 from http://www.spisfo.no/spiseforstyrrelser/menn-og-spisefo/

Thiemann, P., Lenebauer, T., Vocks, S., Platen, P., Auyeung, B. & Herpertz, S. (2015). Eating Disorders and Their Putative Risk Factors Among Female German Professional Athletes. *European eating disorder review: the journal of the Eating Disorders Association*. 23(4), 269-76.

Thomas, J. J., Keel, P. K. & Heatherton, T. F. (2005). Disordered Eating Attitudes and Behaviors in Ballet Students: Examination of Environmental and Individual Risk Factors. *International Journal of Eating Disorders.* 38, 263-268.

Torgersen, L. & Hånes, H. (2009). *Facts about eating disorders – anorexia, bulimia and overeating.* Retrieved 2. April 2018 from https://www.fhi.no/fp/psykiskhelse/spiseforstyrrelser/spiseforstyrrelser2/

Torstveit, M. K., Aagedal-Mortensen, K. & Stea, T. H. (2015). More than half of high school students report disordered eating: a cross sectional study among Norwegian boys and girls. *PLOS ONE.* 10(3), e0122681.

Tylka, T. L. & Wood-Barcalow, N. L. (2015). What is and what is not positive body image? Conceptual foundations and construct definition. *Body Image*. 14, 118-129.

van den Berg, P. A., Mond, J., Eisenberg, M., Ackard, D. & Neumark-Sztainer, D. (2010). The link between body dissatisfaction and self-esteem in adolescents: Similarities across gender, age, weight status, race/ethnicity, and socioeconomic status. *The Journal of adolescent health: official publication of the Society for Adolescent Medicine.* 47(3), 290-296.

Voelker, D. K., Reel, J. J. & Greenleaf, C. (2015). Weight status and body image perceptions in adolescents: current perspectives. *Adolescent Health, Medicine and Therapeutics*. 6, 149-58.

Welch, E., Birgegård, A., Parling, T. & Ghaderi, A. (2011). Eating disorder examination questionnaire and clinical impairment assessment questionnaire: general population and clinical norms for young adult women in Sweden. *Behaviour research therapy*. 49(2), 85-91.

White, H. J., Haycraft, E., Goodwin, H. & Meyer, C. (2013). Eating Disorder Examination Questionnaire: Factor Structure for Adolescent Girls and Boys. *International Journal of Eating Disorders.* 47(1), 99-104.

Whitehead, R. D., Cosma, A., Cecil, J., Currie, C., Currie D., Neville, F. & Inchley, J. (2018). Trends in the perceived body size of adolescent males and females in Scotland, 1990-2014: changing associations with mental well-being. *International Journal of Public Health*. 63(1), 69-80.

Wichstrøm, L. (1995). Hearter´s Self-Perception Profile for Adolescent: Reliability, validity, and evaluation of the question format. *Journal of personality Assessment*, 65, 100-116.

Wichstrøm, L. (2008). Suicide attempts in Norwegian adolescents: results from the "Ung I Norge" survey. *Suicidologi.* 13(1), 28-33.

World Health Organization. (2018). *Child and adolescent mental Health.* Retrieved 29. March 2018 from http://www.who.int/mental_health/maternal-child/child_adolescent/en/

Zehnder, K. (2018). Millennials are striving for perfection more than previous generations. *Washington Examiner*. Retrieved 28. March 2018 from http://www.washingtonexaminer.com/millennials-are-striving-for-perfection-more-than-previous-generations/article/2645149

9.0 Appendixes

1: Independent sample t-test scores of all variables presented as means and standard deviation.

**** Abbreviations:*** *Performance = performance schools, Regular = regular lower secondary school BMI = Body Mass Index, EDE-Q: Eating Disorder Examination Questionnaire, SC: Shape Concern, WC: Weight Concern, SC & WC: Shape and Weight Concern. SPPA-R: The Self Perception Profile for Adolescents, SCo: Scholastic Competence, SA: Social Acceptance, AC: Athletic Competence, PA: Physical Appearance, CF: Close Friends, SF: Global Self Worth, GS: Global Score.*

		GIRLS				BOYS				TOTAL			
		Performance School	Regular school	t	p	Performance school	Regular school	t	p	Performance school	Regular school	t	p
Height	*Mean (SD)*	1.63 (0.05)	1.63 (0.07)	-.07	0.94	1.66 (0.09)	1.66 (0.09)	-.13	0.9	1.65 (0.07)	1.65 (0.08)	0.09	0.93
Weight	*Mean (SD)*	50.83 (6.58)	52.03 (8.7)	-1.14	0.25	53.44 (9.51)	53.53 (9.69)	-.08	0.94	52.15 (8.28)	52.72 (9.19)	-.70	0.48
BMI	*Mean (SD)*	19.19 (2.19)	19.47 (2.76)	-.82	0.41	19.13 (2.21)	19.26 (2.45)	-.41	0.68	19.16 (2.19)	19.37 (2.62)	-1.03	0.3
Training Volume	*Mean (SD)*	11.4 (6.15)	5.42 (3.82)	8.28	<.001	11.49 (5.37)	7.3 (4.52)	6.36	<.001	11.45 (5.75)	6.28 (4.25)	10.6	<.001
EDE-Q SC	*Mean (SD)*	1.51 (1.45)	2.31 (1.77)	-4.36	<.001	0.55 (0.74)	0.92 (1.13)	-3.46	.001	1.04 (1.25)	1.68 (1.67)	-5.54	<.001
EDE-Q WC	*Mean (SD)*	1.26 (1.44)	2.1 (1.8)	-4.6	<.001	0.54 (0.74)	0.87 (1.22)	-2.86	.005	0.9 (1.24)	1.55 (1.68)	-5.58	<.001
EDE-Q SC & WC	*Mean (SD)*	1.42 (1.38)	2.24 (1.74)	-4.65	<.001	0.55 (0.74)	0.9 (1.12)	-3.33	.001	0.99 (1.19)	1.64 (1.63)	-5.72	<.001
SPPA-R SCo	*Mean (SD)*	3.1 (0.68)	2.96 (0.64)	1.78	0.08	3.07 (0.5)	3.06 (0.55)	0.17	0.87	3.09 (0.6)	3 (0.6)	1.52	0.13
SPPA-R SA	*Mean (SD)*	3.27 (0.5)	2.99 (0.6)	4	<.001	3.33 (0.47)	3.25 (0.53)	1.09	0.28	3.3 (0.48)	3.1 (0.59)	4.36	<.001
SPPA-R AC	*Mean (SD)*	2.76 (0.68)	2.45 (0.67)	3.6	<.001	2.3 (0.53)	2.84 (0.65)	2.24	0.03	2.88 (0.62)	2.63 (0.69)	4.41	<.001
SPPA-R PA	*Mean (SD)*	2.9 (0.76)	2.53 (0.83)	3.77	<.001	3.28 (0.57)	3.12 (0.69)	1.92	0.06	3.1 (0.7)	2.8 (0.82)	4.62	<.001
SPPA-R CF	*Mean (SD)*	3.46 (0.57)	3.23 (0.65)	2.89	.004	3.334 (0.58)	3.25 (0.58)	1.32	0.19	3.4 (0.58)	3.24 (0.62)	3.01	.003
SPPA-R SF	*Mean (SD)*	3.29 (0.65)	2.93 (0.75)	3.99	<.001	3.50 (0.43)	3.38 (0.56)	2.13	0.04	3.4 (0.56)	3.14 (0.71)	5.04	<.001
SPPA-R GS	*Mean (SD)*	2.42 (1.74)	1.42 (1.38)	4.36	<.001	3.26 (0.35)	3.15 (0.43)	2.21	0.03	3.19 (0.43)	2.99 (0.48)	4.98	<.001

Level of significance: 0,05

2: Correlations of all variables within females

GIRLS		BMI	Training volume	EDE-Q SC	EDE-Q WC	EDE-Q SC&WC	SPPA-R SCo	SPPA-R SA	SPPA-R AC	SPPA-R PA	SPPA-R CF	SPPA-R SF	SPPA-R GS
BMI	Pearson Correlation	1	-.02	.35**	.41**	.39**	-.11*	-.02	-.08	-.26**	-.02	-.13**	-.16**
	Sig. (2-tailed)		.67	<.001	<,001	<.001	,04	.64	.13	<.001	.65	.01	.003
	N	392	388	390	391	389	379	388	380	379	384	383	350
Training volume	Pearson Correlation		1	-.15**	-.16**	-.16**	.21**	.23**	.4**	.14**	.12*	.18**	.27**
	Sig. (2-tailed)			.002	.001	.001	<.001	<.001	<.001	.004	.02	<.001	<.001
	N		435	433	433	431	420	428	-.419	421	427	425	386
EDE-Q SC	Pearson Correlation			1	.088**	.98**	-.28**	-.38**	-.4**	-.78**	-.22**	-.71**	-.67**
	Sig. (2-tailed)				<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N			441	441	441	426	436	426	427	434	432	391
EDE-Q WC	Pearson Correlation				1	.95**	-.24**	-.32**	-.39**	-.68**	-.17**	-.62**	-.58**
	Sig. (2-tailed)					<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N				443	441	425	435	425	427	434	431	392
EDE-Q SC & WC	Pearson Correlation					1	-.28**	-.37**	-.41**	-.77**	-.21**	-.7**	-.66**
	Sig. (2-tailed)						<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N					441	423	433	423	425	432	429	390
SPPA-R SCo	Pearson Correlation						1	.44**	.31**	.39**	.21**	.49**	.64**
	Sig. (2-tailed)							<.001	<.001	<.001	<.001	<.001	<.001
	N						428	422	415	416	423	421	393
SPPA-R SA	Pearson Correlation							1	.46**	.47**	.51**	.57**	.78**
	Sig. (2-tailed)								<.001	<.001	<.001	<.001	<.001
	N							438	423	423	430	429	393
SPPA-R AC	Pearson Correlation								1	.38**	.26**	.38**	.64**
	Sig. (2-tailed)									<.001	<.001	<.001	<.001
	N								428	417	422	420	393
SPPA-R PA	Pearson Correlation									1	.26**	.82**	.8**
	Sig. (2-tailed)										<.001	<.001	<.001
	N									429	423	423	393
SPPA-R CF	Pearson Correlation										1	.38**	.57**
	Sig. (2-tailed)											<.001	<.001
	N										436	427	393
SPPA-R SF	Pearson Correlation											1	.86**
	Sig. (2-tailed)												<.001
	N											434	393
SPPA-R GS	Pearson Correlation												1
	Sig. (2-tailed)												
	N												393

****. Correlation is significant at the 0.01 level (2-tailed).**

***. Correlation is significant at the 0.05 level (2-tailed).**

3: Correlations of all variables within males

BOYS		BMI	Training volume	EDE-Q SC	EDE-Q WC	EDE-Q SC&WC	SPPA-R SCo	SPPA-R SA	SPPA-R AC	SPPA-R PA	SPPA-R CF	SPPA-R SF	SPPA-R GS
BMI	Pearson Correlation	1	-.06	.32**	.3**	.32**	-.05	-.02	-.03	-.16**	-.05	-.11*	-.07
	Sig. (2-tailed)		.25	<.001	<.001	<.001	.35	.67	.6	.004	.34	.04	.26
	N	346	343	342	341	339	337	327	334	338	331	335	300
Training volume	Pearson Correlation		1	-.09	-.06	-.08	.08	.21**	.45**	.17**	.12*	.17	.29**
	Sig. (2-tailed)			.07	.23	.12	.11	<.001	<.001	.001	.03	.002	<.001
	N		380	375	373	371	368	360	367	370	364	367	329
EDE-Q SC	Pearson Correlation			1	.83**	.98**	-.26**	-.3**	-.26**	-.58**	-.23**	-.51**	-.49**
	Sig. (2-tailed)				<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N			381	377	377	371	363	369	373	367	370	332
EDE-Q WC	Pearson Correlation				1	-.28**	.83**	-.25**	-.23**	-.49**	-.22**	-.41**	-.42**
	Sig. (2-tailed)					<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N				379	370	377	360	367	371	365	368	330
EDE-Q SC & WC	Pearson Correlation					1	-.27**	-.29**	-.25**	-.57**	-.28**	-.49**	-.48**
	Sig. (2-tailed)						<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N					377	368	359	365	369	363	366	329
SPPA-R SCo	Pearson Correlation						1	.33**	.2**	.34**	.27**	.44**	.58**
	Sig. (2-tailed)							<.001	<.001	<.001	<.001	<.001	<.001
	N						374	359	364	368	362	365	334
SPPA-R SA	Pearson Correlation							1	.38**	.49**	.60**	.54**	.78**
	Sig. (2-tailed)								<.001	<.001	<.001	<.001	<.001
	N							365	359	360	354	358	334
SPPA-R AC	Pearson Correlation								1	.37**	.34**	.35**	.61**
	Sig. (2-tailed)									<.001	<.001	<.001	<.001
	N								372	367	361	363	334
SPPA-R PA	Pearson Correlation									1	.39**	.78**	.8**
	Sig. (2-tailed)										<.001	<.001	<.001
	N									376	365	369	334
SPPA-R CF	Pearson Correlation										1	.47**	.71**
	Sig. (2-tailed)											<.001	<.001
	N										370	362	334
SPPA-R SF	Pearson Correlation											1	.83**
	Sig. (2-tailed)												<.001
	N											373	334
SPPA-R GS	Pearson Correlation												1
	Sig. (2-tailed)												
	N												334

****. Correlation is significant at the 0.01 level (2-tailed).**

***. Correlation is significant at the 0.05 level (2-tailed).**

4: Correlations of all variables within the total sample

TOTAL		BMI	Training volume	EDE-Q SC	EDE-Q WC	EDE-Q SC&WC	SPPA-R SCo	SPPA-R SA	SPPA-R AC	SPPA-R PA	SPPA-R CF	SPPA-R SF	SPPA-R GS
BMI	Pearson Correlation	1	-.05	.32**	.36**	.34**	-.09*	-.03	-.07	-.22**	-.04	-.13**	-.13**
	Sig. (2-tailed)		.22	<.001	<.001	<.001	.02	.38	.067	<.001	.035	<.001	.001
	N	738	731	723	732	728	716	715	714	717	715	718	650
Training volume	Pearson Correlation		1	-.18**	-.17**	-.18**	.16**	.24**	.44**	.19**	.11**	.21**	.31**
	Sig. (2-tailed)			<.001	<.001	<.001	<.001	<.001	<.001	<.001	.001	<.001	<.001
	N		815	808	806	802	788	788	786	791	791	792	715
EDE-Q SC	Pearson Correlation			1	.88**	.98**	-.27**	-.39**	-.41**	-.75**	-.2**	-.69**	-.64**
	Sig. (2-tailed)				<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N			825	818	818	797	799	795	800	801	802	723
EDE-Q WC	Pearson Correlation				1	.95**	-.25**	-.34**	-.39**	-.67**	-.17**	-.60**	-.57**
	Sig. (2-tailed)					<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N				822	818	795	795	792	798	799	799	722
EDE-Q SC & WC	Pearson Correlation					1	-.27**	-.39**	-.42**	-.74**	-.2**	-.68**	-.64**
	Sig. (2-tailed)						<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N					818	791	792	788	794	795	795	719
SPPA-R SCo	Pearson Correlation						1	.4**	.27**	.36**	.23**	.47**	.61**
	Sig. (2-tailed)							<.001	<.001	<.001	<.001	<.001	<.001
	N						802	781	779	784	785	786	727
SPPA-R SA	Pearson Correlation							1	.45**	.51**	.54**	.58**	.79**
	Sig. (2-tailed)								<.001	<.001	<.001	<.001	<.001
	N							803	782	783	784	787	727
SPPA-R AC	Pearson Correlation								1	.43**	.28**	.41**	.66**
	Sig. (2-tailed)									<.001	<.001	<.001	<.001
	N								800	784	783	783	727
SPPA-R PA	Pearson Correlation									1	.29**	.82**	.82**
	Sig. (2-tailed)										<.001	<.001	<.001
	N									805	788	791	727
SPPA-R CF	Pearson Correlation										1	.39**	.61**
	Sig. (2-tailed)											<.001	<.001
	N										806	789	727
SPPA-R SF	Pearson Correlation											1	.86**
	Sig. (2-tailed)												<.001
	N											807	727
SPPA-R GS	Pearson Correlation												1
	Sig. (2-tailed)												
	N												727

****. Correlation is significant at the 0.01 level (2-tailed).**

***. Correlation is significant at the 0.05 level (2-tailed).**

5: Eating Disorder Examination Questionnaire (EDE-Q 6.0)

The EDE-Q items marked in RED are used in this thesis. Which questions belong to each sub scale, is explained below.

SUB-SCALE	QUESTIONS
Shape Concern (SC)	6, 10, 11, 23, 26, 27, 28
Weight Concern (WC)	12, 22, 24, 25.

EATING QUESTIONNAIRE

Instructions: The following questions are concerned with the past four weeks (28 days) only. Please read each question carefully. Please answer all the questions. Thank you.

Questions 1 to 12: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days) only.

.

	On how many of the past 28 days …..	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
1	Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
2	Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?	0	1	2	3	4	5	6
3	Have you tried to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
4	Have you tried to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
5	Have you had a definite desire to have an empty stomach with the aim of influencing your shape or weight?	0	1	2	3	4	5	6
6	Have you had a definite desire to have a totally flat stomach?	0	1	2	3	4	5	6
7	Has thinking about food, eating or calories made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
8	Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
9	Have you had a definite fear of losing control over eating?	0	1	2	3	4	5	6
10	Have you had a definite fear that you might gain weight?	0	1	2	3	4	5	6
11	Have you felt fat?	0	1	2	3	4	5	6
12	Have you had a strong desire to lose weight?	0	1	2	3	4	5	6

Questions 13-18: Please fill in the appropriate number in the boxes on the right. Remember that the questions only refer to the past four weeks (28 days).

Over the past four weeks (28 days) ……

13 Over the past 28 days, how many times have you eaten what other people would regard as an unusually large amount of food (given the circumstances)?	……..
14 ….. On how many of these times did you have a sense of having lost control over your eating (at the time that you were eating)?	……..
15 Over the past 28 days, on how many **DAYS** have such episodes of overeating occurred (i.e., you have eaten an unusually large amount of food and have had a sense of loss of control at the time)?	……..
16 Over the past 28 days, how many times have you made yourself sick (vomit) as a means of controlling your shape or weight?	……..
17 Over the past 28 days, how many times have you taken laxatives as a means of controlling your shape or weight?	……..
18 Over the past 28 days, how many times have you exercised in a "driven" or "compulsive" way as a means of controlling your weight, shape or amount of fat, or to burn off calories?	……..

Questions 19 to 21: Please circle the appropriate number. Please note that for these questions the term "binge eating" means eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating.

19 Over the past 28 days, on how many days have you eaten in secret (ie, furtively)? ….. Do not count episodes of binge eating	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
	0	1	2	3	4	5	6
20 On what proportion of the times that you have eaten have you felt guilty (felt that you've done wrong) because of its effect on your shape or weight? ….. Do not count episodes of binge eating	None of the times	A few of the times	Less than half	Half of the times	More than half	Most of the time	Every time
	0	1	2	3	4	5	6
21 Over the past 28 days, how concerned have you been about other people seeing you eat? ….. Do not count episodes of binge eating	Not at all		Slightly		Moderately		Markedly
	0	1	2	3	4	5	6

Questions 22 to 28: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days).

	Over the past 28 days …..	Not at all		Slightly		Moderate -ly		Markedly
22	Has your weight influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
23	Has your shape influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
24	How much would it have upset you if you had been asked to weigh yourself once a week (no more, or less, often) for the next four weeks?	0	1	2	3	4	5	6
25	How dissatisfied have you been with your weight?	0	1	2	3	4	5	6
26	How dissatisfied have you been with your shape?	0	1	2	3	4	5	6
27	How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?	0	1	2	3	4	5	6
28	How uncomfortable have you felt about others seeing your shape or figure (for example, in communal changing rooms, when swimming, or wearing tight clothes)?	0	1	2	3	4	5	6

What is your weight at present? (Please give your best estimate.) ……

What is your height? (Please give your best estimate.) ……

If female: Over the past three-to-four months have you missed any menstrual periods? ……

If so, how many? ……

Have you been taking the "pill"? ……

THANK YOU

6: The revised version of Harter´s Self Perception Profile for adolescents (SPPA-R) (Wichstrøm, 1995).

This revised version was not available in English. Therefore, the Norwegian version is presented on the next page. All items marked "R" (RED) are reversed questions.

These are the sub-scales and their items.

SUB - SCALE	**ITEM**	**SUB - SCALE**	**ITEM**
Scholastic Competence **(SC)**	1, 7, 13, 19, 25	Social Acceptance (**SA**)	2, 8, 14, 20, 26
Athletic Competence (**AC)**	3, 9, 15, 21, 27	Physical Appearance (**PA**)	4, 10, 16, 22, 28
Close Friends (**CF**)	5, 11, 17, 23, 29	Global Self-Worth (**SF**)	6, 12, 18, 24, 30

Nedenfor er noen spørsmål om hvordan du synes du selv er. Kryss av for det som passer best på deg:

			Stemmer svært godt 4	Stemmer nokså godt 3	Stemmer nokså dårlig 2	Stemmer svært dårlig 1
SC	1	Jeg synes jeg er like smart som andre på min alder	☐	☐	☐	☐
SA	R 2	Jeg synes det er ganske vanskelig å få venner	☐	☐	☐	☐
AC	3	Jeg er flink i all slags sport	☐	☐	☐	☐
PA	R 4	Jeg er ikke fornøyd med utseendet mitt	☐	☐	☐	☐
CF	5	Jeg klarer å få virkelig nære venner	☐	☐	☐	☐
SF	R 6	Jeg er ofte skuffet over meg selv	☐	☐	☐	☐
SC	R 7	Jeg er ganske sein med å bli ferdig med skolearbeidet	☐	☐	☐	☐
SA	8	Jeg har mange venner	☐	☐	☐	☐
AC	9	Jeg tror jeg kan gjøre det bra i nesten hvilken som helst ny sport	☐	☐	☐	☐
PA	R 10	Jeg ønsker at kroppen min var annerledes	☐	☐	☐	☐
CF	11	Jeg har en nær venn som jeg kan dele hemmeligheter med	☐	☐	☐	☐
SF	R 12	Jeg liker ikke den måten jeg lever livet mitt på	☐	☐	☐	☐
SC	13	Jeg gjør det svært godt på skolen	☐	☐	☐	☐
SA	R 14	Andre ungdommer har vanskelig for å like meg	☐	☐	☐	☐
AC	15	Jeg synes at jeg er bedre i sport enn andre på min alder	☐	☐	☐	☐
PA	R 16	Jeg ønsker at jeg så annerledes ut	☐	☐	☐	☐
CF	17	Jeg har en venn som jeg kan dele ting med	☐	☐	☐	☐
SF	18	Jeg er stort sett fornøyd med meg selv	☐	☐	☐	☐
SC	R 19	Jeg har vansker med å svare riktig på skolen	☐	☐	☐	☐
SA	20	Jeg er populær blant jevnaldrende	☐	☐	☐	☐
AC	R 21	Jeg gjør det ikke så godt i nye øvelser i gymtimene	☐	☐	☐	☐
PA	22	Jeg synes jeg ser bra ut	☐	☐	☐	☐
CF	R 23	Jeg synes det er vanskelig å få venner som jeg virkelig kan stole på	☐	☐	☐	☐
SF	24	Jeg liker meg selv slik jeg er	☐	☐	☐	☐
SC	25	Jeg tror jeg er ganske intelligent	☐	☐	☐	☐
SA	26	Jeg føler at jevnaldrende godtar meg	☐	☐	☐	☐
AC	R 27	Jeg synes ikke at jeg har så sterk kropp som andre på min alder	☐	☐	☐	☐
PA	28	Jeg liker utseende mitt veldig godt	☐	☐	☐	☐
CF	R 29	Jeg har ikke noen god venn som jeg kan dele virkelig personlige ting med	☐	☐	☐	☐
SF	30	Jeg er svært fornøyd med hvordan jeg er	☐	☐	☐	☐

7: Harter´s Self Perception Profile for adolescents (HSPPA-R)

What I Am Like

Name_____ Age____ Birthday _____ ☐ Boy ☐ Girl
Month Day (check one)

	Really True for me	Sort of True for me				Sort of True for me	Really True for me
			Sample Sentence				
a.	☐	☐	Some teenagers like to go to movies in their spare time	**BUT**	Other teenagers would rather go to sports events	☐	☐
1.	☐	☐	Some teenagers feel that they are just as smart as others their age	**BUT**	Other teenagers aren't so sure and wonder if they are as smart	☐	☐
2.	☐	☐	Some teenagers find it hard to make friends	**BUT**	Other teenagers find it pretty easy to make friends	☐	☐
3.	☐	☐	Some teenagers do very well at all kinds of sports	**BUT**	Other teenagers *don't* feel that they are very good when it comes to sports	☐	☐
4.	☐	☐	Some teenagers are *not* happy with the way they look	**BUT**	Other teenagers *are* happy with the way they look	☐	☐
5.	☐	☐	Some teenagers feel that they are ready to do well at a part-time job	**BUT**	Other teenagers feel that they are not quite ready to handle a part-time job	☐	☐
6.	☐	☐	Some teenagers feel that if they are romantically interested in someone, that person will like them back	**BUT**	Other teenagers worry that when they like someone romantically, that person *won't* like them back	☐	☐
7.	☐	☐	Some teenagers usually do the right thing	**BUT**	Other teenagers often don't do what they know is right	☐	☐
8.	☐	☐	Some teenagers are able to make really close friends	**BUT**	Other teenagers find it hard to make really close friends	☐	☐
9.	☐	☐	Some teenagers are often disappointed with themselves	**BUT**	Other teenagers are pretty pleased with themselves	☐	☐

	Really True for me	Sort of True for me				Sort of True for me	Really True for me
10.	☐	☐	Some teenagers are pretty slow in finishing their school work	**BUT**	Other teenagers can do their school work quickly	☐	☐
11.	☐	☐	Some teenagers know how to make classmates like them	**BUT**	Other teenagers don't know how to make classmates like them	☐	☐
12.	☐	☐	Some teenagers think they could do well at just about any new athletic activity	**BUT**	Other teenagers are afraid they might not do well at a new athletic activity	☐	☐
13.	☐	☐	Some teenagers wish their body was different	**BUT**	Other teenagers like their body the way it is	☐	☐
14.	☐	☐	Some teenagers feel that they *don't* have enough skills to do well at a job	**BUT**	Other teenagers feel that they *do* have enough skills to do a job well	☐	☐
15.	☐	☐	Some teenagers are *not* dating the people they are really attracted to	**BUT**	Other teenagers *are* dating those people they are attracted to	☐	☐
16.	☐	☐	Some teenagers often get in trouble because of things they do	**BUT**	Other teenagers usually *don't* do things that get them in trouble	☐	☐
17.	☐	☐	Some teenagers *don't* know how to find a close friend with whom they can share secrets	**BUT**	Other teenagers *do* know how to find a close friend with whom they can share secrets	☐	☐
18.	☐	☐	Some teenagers don't like the way they are leading their life	**BUT**	Other teenagers do like the way they are leading their life	☐	☐
19.	☐	☐	Some teenagers do very well at their classwork	**BUT**	Other teenagers *don't* do very well at their classwork	☐	☐
20.	☐	☐	Some teenagers don't have the social skills to make friends	**BUT**	Other teenagers do have the social skills to make friends	☐	☐
21.	☐	☐	Some teenagers feel that they are better than others their age at sports	**BUT**	Other teenagers don't feel they can play as well	☐	☐
22.	☐	☐	Some teenagers wish their physical appearance was different	**BUT**	Other teenagers like their physical appearance the way it is	☐	☐

	Really True for me	Sort of True for me				Sort of True for me	Really True for me
23.	☐	☐	Some teenagers feel they are old enough to get and keep a paying job	**BUT**	Other teenagers do not feel that they are old enough, yet, to really handle a job well	☐	☐
24.	☐	☐	Some teenagers feel that people their age will be romantically attracted to them	**BUT**	Other teenagers worry about whether people their age will be attracted to them	☐	☐
25.	☐	☐	Some teenagers feel really good about the way they act	**BUT**	Other teenagers *don't* feel that good about the way they often act	☐	☐
26.	☐	☐	Some teenagers *do* know what it takes to develop a close friendship with a peer	**BUT**	Other teenagers *don't* know what to do to form a close friendship with a peer	☐	☐
27.	☐	☐	Some teenagers are happy with themselves most of the time	**BUT**	Other teenagers are often not happy with themselves	☐	☐
28.	☐	☐	Some teenagers have trouble figuring out the answers in school	**BUT**	Other teenagers almost always can figure out the answers	☐	☐
29.	☐	☐	Some teenagers understand how to get peers to accept them	**BUT**	Other teenagers don't understand how to get peers to accept them	☐	☐
30.	☐	☐	Some teenagers don't do well at new outdoor games	**BUT**	Other teenagers are good at new games right away	☐	☐
31.	☐	☐	Some teenagers think that they are good looking	**BUT**	Other teenagers think that they are not very good looking	☐	☐
32.	☐	☐	Some teenagers feel like they could do better at work they do for pay	**BUT**	Other teenagers feel that they are doing really well at work they do for pay	☐	☐
33.	☐	☐	Some teenagers feel that they are fun and interesting on a date	**BUT**	Other teenagers wonder about how fun and interesting they are on a date	☐	☐
34.	☐	☐	Some teenagers do things they know they shouldn't do	**BUT**	Other teenagers hardly ever do things they know they shouldn't do	☐	☐

	Really True for me	Sort of True for me				Sort of True for me	Really True for me
35.	☐	☐	Some teenagers find it hard to make friends they can really trust	**BUT**	Other teenagers *are* able to make close friends they can really trust	☐	☐
36.	☐	☐	Some teenagers like the kind of person they are	**BUT**	Other teenagers often wish they were someone else	☐	☐
37.	☐	☐	Some teenagers feel that they are pretty intelligent	**BUT**	Other teenagers question whether they are intelligent	☐	☐
38.	☐	☐	Some teenagers know how to become popular	**BUT**	Other teenagers do not know how to become popular	☐	☐
39.	☐	☐	Some teenagers do not feel that they are very athletic	**BUT**	Other teenagers feel that they *are* very athletic	☐	☐
40.	☐	☐	Some teenagers really like their looks	**BUT**	Other teenagers wish they looked different	☐	☐
41.	☐	☐	Some teenagers feel that they are really able to handle the work on a paying job	**BUT**	Other teenagers wonder if they are really doing as good a job at work as they should be doing	☐	☐
42.	☐	☐	Some teenagers usually *don't* go out with people they would really like to date	**BUT**	Other teenagers *do* go out with people they really want to date	☐	☐
43.	☐	☐	Some teenagers usually act the way they know they are supposed to	**BUT**	Other teenagers often don't act the way they are supposed to	☐	☐
44.	☐	☐	Some teenagers *don't* understand what they should do to have a friend close enough to share personal thoughts with	**BUT**	Other teenagers *do* understand what to do to have a close friend with whom they can share personal thoughts.	☐	☐
45.	☐	☐	Some teenagers are very happy being the way they are	**BUT**	Other teenagers often wish they were different	☐	☐

8: *Training volume questionnaire (hours of training)*

22. Hvor mange timer trener du i uken i en vanlig uke?

Ta med all fysisk trening på en uke; fysisk trening i idrett, dans, gymtimer, annen trening på skolen, og trening i fritiden din – totalt antall timer i snitt i uken

Timer i uken	Under 2 timer	2-4 timer	5-6 timer	7-8 timer	9-11 timer	12-15 timer	16-20 timer	21 timer eller mer
Kryss av								