

Does Organised Sport Participation Predict Body Appreciation in Adolescents?

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Master thesis in health promotion and health psychology

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Spring 2021

Preface

Two years at the master's program of Health Promotion and Health Psychology at the University of Bergen is now complete. The choice of this topic was based on my interest in the associations between physical and mental health, and my educational background in physical education and psychology. To be allowed two semesters to explore and learn about a research topic is something I am very grateful for. It has been enjoyable, challenging, and educative. However, it has also been lonelier than expected due to the Covid-19 pandemic. Therefore, I am especially grateful for the people that have helped me along the way.

I want to thank my supervisor, Ellen Haug, who has guided me from the start. Thank You for being invested in my process and providing valuable feedback. Also, thanks to my "veiledningsgruppe" where we together could reflect on the challenges we were faced with. Further, I want to thank "tante Grete" for helping me with some final questions towards the end. Thanks to my family for being the best support team in general. I am especially grateful for the weekends of skiing- it has been the best escape to recharge. Most importantly, thanks to my partner Luke. Thanks for always having my back and for your (sometimes annoyingly) ability to turn everything into a silver lining. You now have my full attention, and I cannot wait to go surfing with you again!

Katrine Viktoria Hole

Bergen, May 2021

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Abstract

Background: Of adolescents in Norway, 70% report experiencing body appearance pressure. Positive body image can be a protective factor against body image concerns and promote healthy behaviours. Sport has been suggested to be an enhancing area for positive body image. However, in Norway six out of ten drop out of organised sport in adolescent years.

Objective: To examine associations between sports participation and body appreciation, and between participation in different sport types (individual, team, or both) and body appreciation. It was also examined if gender moderated the associations.

Method: The study applied data of adolescents in first year of high schools from COMPLETE ($n = 2249$), an RCT-study administered by the HEMIL-center at the University of Bergen. The Body Appreciation Scale-2 was applied as measure. Multiple regression analyses were conducted to examine if sports participation predicted body appreciation. Interaction variables were also included to examine if gender moderated the associations.

Results: There was a significant, but weak positive association between sport participation and body appreciation, and between all three sport groups and body appreciation. There was a significant effect of gender as a moderator between participation in both sports and body appreciation. Follow-up analysis revealed this association was only significant for boys.

Conclusion: Sport participation is a positive predictor of body appreciation, independent of whether adolescents participate in individual sports, team sports, or both individual and team sports. To facilitate and encourage adolescents to continue with sports can be an important focus to enhance health promoting effects.

Keywords: sports participation, body appreciation, positive body image, adolescents, individual sports, team sports.

Samandrag

Bakgrunn: 70% av norsk ungdom opplev kroppspres. Eit positivt kroppsbilete kan verke beskyttande mot kroppspres og bidra til auka helsefremmande åtferd. Idrett har blitt foreslått som ein arena som kan fremme eit positivt kroppsbilete. Likevel så sluttar 6 av 10 ungdom med idrett i tenåra.

Formål: Å undersøke samanhengane mellom idrettsdeltaking og kroppstilfredsheit og mellom ulike former for idrettsdeltaking (individuell, lagidrett, eller begge) og kroppstilfredsheit. Det vart også undersøkt om kjønn modererte samanhengane.

Metode: Studien brukte data av studentar på første studieår på vidaregåande skule ($n = 2249$) frå COMPLETE, ein RCT-studie gjennomført ved HEMIL-senteret på Universitetet i Bergen. Det vart gjennomført regresjonsanalyser for å undersøke om idrettsdeltaking predikerte kroppstilfredsheit. Interaksjonsvariablar vart også inkludert for å undersøke om kjønn modererte samanhengane.

Resultat: Funna viste ein signifikant, men svak positiv samanheng mellom idrettsdeltaking og kroppstilfredsheit, og mellom alle tre idrettsgruppene og kroppstilfredsheit. Moderasjonsanalyser viste at kjønn modererte samanhengen mellom deltaking i begge idrettar og kroppstilfredsheit. Vidare analyser synte at denne samanhengen berre var signifikant for gutar.

Konklusjon:

Idrettsdeltaking er ein positive prediktor for kroppstilfredsheit, uavhengig av om ungdom deltek i individuell idrett, lag idrett eller begge delar. Å tilrettelegge for og oppmuntre ungdom om å fortsette med idrett kan vere eit viktig fokus for å skape helsefremjande effektar.

Nøkkelord: Organisert idrett, idrettsdeltaking, kroppstilfredsheit, positivt kroppsbilete, ungdom, individuell idrett, lag idrett.

1 Introduction: Background and Problem Statement

Body image has been identified as an important public health concern (Bucchianeri & Neumark-Sztainer, 2014). In the last decade, body image has received increased attention in the media as it has been recognized to influence adolescent's mental health. Adolescents experience extensive pressure to fit society's body ideal and social media is often mentioned as a significant contributor to this pressure (Fardouly & Vartanian, 2016). This is because young adults can compare themselves to multiple appearance-related images in an instant (Fardouly & Vartanian, 2016). Among adolescents in Norway, 70% report they experience body appearance pressure, with the highest prevalence in girls (Bakken, 2019b, p. 72). At the start of this year, the Norwegian government proposed stricter laws of cosmetic surgeries, the marketing of these services, as well as using retouched photos in advertising (Regjeringen, 2021). Through these actions, the government acknowledges the extensive body pressure youths are exposed to.

Due to the physical changes of the body during puberty, adolescents are at particular risk of developing a dysfunctional body image (Abbott & Barber, 2010). Girls in puberty will experience weight gain and more curves on their bodies. At the same time, they are through media exposed to images of thin models which may lead to less satisfaction with their bodies (Carey et al., 2013). Even though most research on body image has been conducted with women or adolescent girls, it is today acknowledged that boys too are influenced by society's ideal body perceptions (Argyrides et al., 2020). While girls experience pressure to look thin, boys experience pressure to be muscular (Griffiths et al., 2013).

Body image is well known in research but has mostly been pathologically driven where negative body image has been largely studied (Tylka & Wood-Barcalow, 2015b). In line with the positive psychology field, recent research has shifted to focus on positive body image and how this can be supported in adolescents. Positive body image is recognised as distinct from the traditional studied aspects of negative body image and should not be thought of as low levels of negative body image (Tylka & Wood-Barcalow, 2015b). Thus, there is a need for researchers to study positive body image separately from negative body image. A positive body image reflects healthy attitudes towards the body such as love, appreciation, and acceptance (Homan & Tylka, 2014). It also involves rejecting ideals of appearance communicated through media and appreciating what the body can do (Tylka & Wood-

Barcalow, 2015b). Despite positive body image being distinct from a negative body image, overlapping effects between them exist. For example, body appreciation, a measure of positive body image, has been identified as a protective factor against eating disorders in adolescents (Argyrides et al., 2020; Jankuskiene et al., 2020).

Given the social, evaluative, and competitive aspects of the sport context, sports participation has been suggested to play a role in body image (Sabiston et al., 2019). Research of sports participation and negative body image is inconsistent. Some studies have found lower levels of body dissatisfaction in sports participating adolescents compared to non-sport participating adolescents (Goodwin et al., 2016). Other studies suggest that sport can lead to increased feelings of negative body image, especially in aesthetic sports at an elite level (Bratland-Sanda & Sundgot-Borgen, 2013). Few studies have addressed if organised sports participation is associated with adolescent's positive view of their bodies. It has been suggested that sports can offer individuals opportunities to adopt body image values based on functionality, in line with a positive body image (Abbott & Barber, 2011). Despite that adolescents are in a critical period where body image plays an important role, positive body image is understudied in this population (Baceviciene & Jankauskiene, 2020).

Research has reported that people who are appreciative towards their bodies are more likely to engage in health promoting behaviour (Andrew et al., 2014; Andrew et al., 2016). It has been suggested that positive body image reflects an interest to nurture and protect the body (Thomas & Warren-Findlow, 2020). These findings suggest that positive body image has important implications for overall health. The development of healthy habits during adolescence can have positive health effects into adulthood (Aarts et al., 1997; Kjønniksen et al., 2008). At the same time as the body is changing in adolescent years, many reduce their physical activity levels (Haug et al., 2020, p. 14). Sport has been acknowledged as a health promoting area that increases physical activity, social connections, and opportunities to master and learn new skills (Wold, 2017, p. 211). In Norway, many children and adolescents participate in sports, however, one of the factors which influence participation is socioeconomic status (SES) (Jacobsen et al., 2021, p. 35). Further, six out of ten adolescents drop out of organised sports before the age of 17-18 years old (NIF, n.d.). More girls than boys drop out (Samdal et al., 2016, p.22), and it is especially after the age of 13-15 years the dropouts are present (Wold, 2017, p. 227).

From a health promotion perspective, it is important to understand factors that help adolescents thrive. As a positive body image involves rejection of appearance ideals it can serve as a protective factor against body appearance pressure. According to the World Health Organisation (WHO) “Health promotion is the process of enabling people to increase control over, and to improve their health” (WHO, 1986, p. 1). Health promotion work aims to strengthen health in a population (Espnes & Smedlund, 2018, p. 295). Thus, finding factors that influence positive body image is in line with the goals of health promotion. This may particularly be important for girls, as they report lower levels of body appreciation compared to boys (He, Sun, Zickgraf, et al., 2020). There is limited research regarding behaviour associated with positive body image in adolescents. To identify possible areas to promote a positive body image, it is necessary to study factors that may be associated with a positive body image, such as sports participation.

2 Concepts

Positive psychology, positive body image, body appreciation, and organised sports participation are important concepts in this study. Therefore, this section will define the terms, and explain the underlying meaning.

2.1 Positive psychology

Positive psychology aims to understand what makes people healthy and happy (Tylka, 2012). The field emerged around the year 2000 as a contrast to the narrative focus of psychology as pathologically driven, and as an additional focus under the health psychology field (Seligman & Csikszentmihalyi, 2000). Researchers wanted to shift the focus towards how to build fulfilled individuals that thrive (Seligman & Csikszentmihalyi, 2000). Positive psychology helps people identify what their strengths are, and how to use these strengths to create meaningful lives (Tylka, 2012). The field of positive psychology was not developed to replace the pathological focus that exists in psychology, but to highlight that the positive characteristic is not equal to the absence of the negative characteristic (Tylka, 2012). Positive psychology emphasizes that there also needs to be a focus on how to increase positive characteristics (Tylka, 2012).

2.2 Positive Body Image

It is within the framework of positive psychology, that the study of positive body image has evolved. Positive body image is multifaceted, and includes body appreciation, body acceptance, a broad conceptualizing of beauty, regular engagement in adaptive self-care, and accepting information that supports body positivity (Tylka & Wood-Barcalow, 2015b). Tylka & Wood-Barcalow (2015b) proposed that individuals with a positive body image feel comfortable and confident in their own bodies, are mindful of what their bodies need, and engage in healthy behaviours. They appreciate what their bodies can do and acknowledge that their bodies are unique in their own ways (Tylka & Wood-Barcalow, 2015b). Further, they protect their bodies by rejecting unrealistic body images reflected through media (Avalos et al., 2005).

Tylka and Wood-Barcalow (2015b) emphasize how positive body image should not be thought of as the same as low negative body image: “If body image therapies reduce symptoms of negative body image, but do not enhance aspects of positive body image, they may promote a neutral body image at best” (Tylka & Wood-Barcalow, 2015b, p. 120). Having a positive body image has been shown to have a unique pattern of superior well-being, as compared to a negative body image group and a “normative body image discontent” group (William et al., 2004, as cited in Tylka & Wood-Barcalow, 2015b). Even though research supports that positive body image is distinct from negative body image (Andrew et al., 2014), it does not mean that there are no overlapping effects. For example, a study found that higher scores of body appreciation decreased the risk of disordered eating in both girls and boys participating in competitive sports (Jankuskiene et al., 2020). Consequently, some aspects of body appreciation could reflect aspects of low negative body image, but in addition body appreciation reflects aspects beyond this. For example, a study of college students found that those with greater body appreciation were more likely to engage in health preventing behaviours such as eating healthy and engaging in physical activity (Thomas & Warren-Findlow, 2020). On the other side, those who only reported to be satisfied with their bodies, were not likely to do the same (Thomas & Warren-Findlow, 2020). The researchers suggest these findings supports how body appreciation reflects an interest to nurture and protect the body, above and beyond simply being satisfied with it (Thomas & Warren-Findlow, 2020).

Another construct often found in positive body image literature is embodiment. According to Tylka and Piran (2019) embodiment is an overarching construct that includes both positive and negative body image. Like positive body image, embodiment also studies how individuals experience their bodies when they engage in different settings (Tylka & Piran, 2019, p. 5). When embodiment is used in positive psychology it is often referred to as positive embodiment, highlighting the positive aspects of the construct. The construct is defined as “positive body connection and comfort, embodied agency and passion, and attuned self-care” (Piran, 2016, p. 47).

2.3 Body Appreciation

In the last decade of positive body image research, positive body image has often been operationalized as body appreciation (Avalos et al., 2005). This construct has only been empirically studied for 15 years and is now what most research on positive body image is focused at (Tylka, 2019, p. 23). Avalos et al. (2005) developed the Body Appreciation Scale (BAS) to measure the construct. The scale measured four components of body appreciation: a) positive evaluations of the body, b) accepting the body despite imperfections, c) respecting the body by attending to bodily needs, and d) rejection of unrealistic body appearance ideals (Avalos et al., 2005). However, several limitations of the scale were identified suggesting low factor loading of some items, gender-specific, and some items implied positive body image was the opposite of negative body image. Tylka and Wood-Barcalow (2015a) proposed a revised version of the BAS. Items that used biased terms representing negative body image was removed (Tylka & Wood-Barcalow, 2015a). The new scale, BAS-2, was also made more gender-equal by removing sex-specific items. The BAS-2 was made up of five items from the original scale, and five new items (Tylka & Wood-Barcalow, 2015a).

In this study, the term body appreciation will be used when reviewing literature that has used the BAS or the BAS-2. Positive body image will be used as a broader term where other measurements of the construct have been used, for example, body functionality, body acceptance, embodiment, and body satisfaction.

2.4 Organised Sports Participation

In Norway, the sporting area is one of the most valuable places for health promotion work (Wold, 2017, p. 227). According to the Norwegian Sports Organisation (NIF) (2015, p. 24),

sports participation is referred to activities that involve a) physical activity with aspects of competition, exercise-and/or leisure, b) the competition is following approved guidelines and c) the activity is guided by the ethical norms common for the particular activity. The Norwegian Sports Organisation has highlighted these values as important; joy, community, health, honesty, voluntary, democracy, loyalty, and equality (NIF, 2015, p. 5).

In Norway, youth sport is defined as activities for individuals at the age of 13-19 years old (NIF, 2015, p. 9). The sample of this study will be 16–19-year-old Norwegian high school students. Thus, the sample will fall under the definition of youth sport. Youth sport should give the individuals opportunities to take ownership in their activities to further develop (NIF, 2015, p. 27). From the age of 15 years old, the youths are also offered opportunities in leadership, coaching, and refereeing (NIF, 2015, p. 27). Accordingly, sport provides opportunities to grow as sport participants, leaders, referees, and coaches. This study includes variables of both team sports and individual sports. Team sports are referred to as sports where individuals are working together towards achieving a goal such as soccer, handball, and ice hockey. Individual sports are when individuals are working alone towards achieving a goal such as swimming, athletics, and tennis.

3 Theories

The next section will discuss three theories that represent different perspectives on body image. These theories can help increase our understanding of positive body image in relation to sport participation. The theories are, the Objectification theory (Frederickson & Roberts 1997), the Embodiment model (Menzel & Levine, 2011), and the Social comparison theory (Festinger, 1954). In the next section, the three theories will be explained further.

3.1 Objectification Theory

The objectification theory states the society forces women to look at their bodies from an observer's perspective (Fredrickson & Roberts, 1997). Fredrickson & Roberts (1997) suggested that when looking at their bodies from an observer's perspective, girls and women increase habitual body monitoring because of self-objectification. Self-objectification becomes a strategy to help understand how they will be treated by others, but this strategy might lead to negative psychological effects. The theory poses that engaging in self-

objectification will lead girls and women to place more emphasis on how they look to others instead of focusing on how they feel or what they can do (Fredrickson & Roberts, 1997).

Fredrickson & Roberts (1997) suggested four consequences of objectification; shame, anxiety, lack of peak motivational states, and lack of awareness from internal bodily states. When women compare themselves to the ideal body created by society and evaluate their bodies as “not good enough”, feelings of shame may occur. Further, not feeling in control of when their bodies will be evaluated by others, could lead to feelings of anxiety. When experiencing their bodies being monitored, evaluated, and objectified, peak motivational states may be hindered (Fredrickson & Roberts, 1997). Fredrickson & Roberts (1997) refers to Csikszentmihalyi’s theory of flow to explain this. According to Csikszentmihalyi (1982, as cited in Fredrickson & Roberts, 1997) flow is the subjective state people experience when they are highly engaged in something that they forget both time, fatigue, and everything else happening around them. Fredrickson & Roberts (1997) believes objectification inhibits women from experiencing the state of flow in two different ways. First, habitual body monitoring by women themselves limits their chances of experiencing flow. Second, consciously experiencing their bodies being observed by others will also stop them from fully engaging in the activity. The last consequence is a lack of internal body awareness. It proposes when having an observer’s perspective of the physical self, women focus their energy on outer appearance, leaving less room for attending to internal body awareness. Because of the strive to look a certain way, women tend to avoid internal cues such as hunger to achieve the ideal body size perceived by society (Fredrickson & Roberts, 1997).

The theory acknowledges that objectification will not be the same experience for all women. Women will internalize an observer’s perspective to different degrees which will be moderated by age, sexuality, ethnicity, and physical attributes (Fredrickson & Roberts, 1997). Fredrickson & Roberts (1997) suggested sport participation in early childhood through girls’ adolescent years as a protective factor to reduce objectification. In support of this, Slater and Tiggemann (2011) found in their cross-sectional study of adolescent girls (12-16 years old) that those who played more than one sport reported lower levels of self-objectification than girls who were not active in sport or played just one sport. Similarly, Slater and Tiggemann (2012) found that the amount of time spent on playing sports predicted lower self-objectification levels in adolescent girls one year later (Slater & Tiggemann, 2012). Even though the theory was originally developed for females, Slater and Tiggemann (2010)

examined the theory in a sample of Australian girls and boys (12-16 years old). The study found gender differences on variables of the objectification theory such as girls experienced higher levels of body surveillance, body shame, appearance anxiety and disordered eating, indicating that girls are more prone to objectification. Despite gender difference, the study did find that the model of objectification proposed by Fredrickson and Roberts (1997) is also supported in boys (Slater & Tiggerman, 2010).

3.2 Embodiment Model

Menzel and Levine (2011) introduced the embodiment model to explain how positive body image may develop. Menzel and Levine (2007) (as cited in Menzel & Levine, 2011) defined the construct of embodiment as:

“An integrated set of connections in which a person experiences her or his body as comfortable, trustworthy, and deserving of respect and care because the person experiences her or his body as a key aspect of- and express through her or his physicality-competence, interpersonal relatedness, power, self-expression, and well-being (Menzel & Levine, 2011, p. 170).

Menzel and Levine (2011) suggested that there is sufficient overlap between the two constructs of positive body image and embodiment. When a woman or man has enough opportunities to form a good and connected relationship with her/his body, they would have a better awareness of what their bodies need, be more comfortable in attuning to those needs and taking care of the body and appreciating all aspects of it (Menzel & Levine, 2011, p. 172). Just like the measurement of body appreciation, positive embodiment includes positive connection and gratitude of the body as well as taking care of it (Tylka & Piran, 2019). However, the positive embodiment construct further includes experiences of agency to act in the world and connections to bodily desires (Piran, 2019, p. 15).

Menzel and Levine (2011) proposed that engaging in embodying activities would influence positive body image. They defined embodying activities as activities activating body-mind connection leading to a feeling of being within and “at one” with the body. This influence would either be directly through embodying experiences or indirectly through reduced self-objectification. To illustrate, Menzel and Levine (2011) used the example of competitive

athletics. They pointed out how athletics could enhance embodiment through (1) Frequent states of mind-body integration, (2) increased body awareness, (3) Increased body-responsiveness, (4) increased sense of physical empowerment, and (5) an overall sense of physical competence.

Other embodying activities proposed by Menzel and Levine (2011) are hiking, rock climbing, scuba diving, martial arts, and yoga. Mahlo and Tiggeman (2016) aimed to test the embodiment model by comparing a sample of yoga practitioners to non-yoga practitioners. They found a positive association between participating in yoga and body appreciation. In support of the embodiment model, this positive association were mediated by embodiment and reduced self-objectification (Mahlo & Tiggeman, 2016).

3.3. Social Comparison Theory

Leon Festinger introduced the social comparison theory in 1954 and proposed that individuals strive to find accurate evaluations of themselves on different characteristics (Festinger, 1954). Festinger stated people would look for objective information when available, and if not, they would make subjective comparisons (Festinger, 1954). According to Halliwell (2012), research on social comparison has found that Festinger underestimated the complexity of social comparisons as subjective social comparisons are also present when objective information is available. Social comparison theory has since evolved and today researchers agree that people are not objective in their evaluations of themselves. Social comparison theory acknowledges that in addition to self-evaluation, people make social comparisons for self-improvement and self-enhancement (Halliwell, 2012). Self-improvement refers to when an individual is looking towards others for inspiration on how to improve, while self-enhancement is a comparison aimed at protecting or enhancing self-esteem (Halliwell, 2012).

Halliwell (2012) explains how social comparison theory separates between upward and downward comparisons. When individuals engage in upward social comparison, they compare themselves to someone that is perceived to be superior to them. The opposite is a downward social comparison where individuals compare themselves to someone inferior to them. Generally, an individual would engage in downward social comparison if he or she is under threat and wants to enhance self-esteem, and upward social comparison when he or she is interested in self-evaluation or self-improvement. Three factors influence the social

comparison process: similarity, relevance and controllability. First, individuals tend to compare themselves with people like themselves. Second, the characteristic must be important to the individual for the comparison to affect him or her, referred to as relevance of comparison. Third, controllability refers to how much control an individual perceives to have over making changes based on the social comparison. For example, if the result from an upward social comparison seems unchangeable, the individual will not become motivated to engage in self-improvement behaviour, and instead, self-esteem may be reduced (Halliwel, 2012, p. 752).

Regarding body image, research has found that social comparisons based on appearance are central. People who compare themselves unfavourably to others based on appearance are more likely to experience body dissatisfaction (Myers & Crowther, 2009). The relationship between social comparison and body dissatisfaction is stronger for women than men and among younger than older participants (Myers & Crowther, 2009). Social appearance comparison has been found to be negatively associated with body appreciation and intuitive eating in adolescent girls (Andrew et al, 2015). One study investigates the effects of adolescent girls viewing body-positive content on social media and found brief exposure to this content led to greater mood and body satisfaction (Cohen et al., 2019). In contrast, the study of Cohen et al. (2017) found that Instagram users who followed appearance-focused accounts had increased levels of thin-ideal internalisation and a drive for thinness. The same study did not find any associations between body image concerns when accounts were appearance neutral such as travel photos (Cohen et al., 2017). These studies underscore that what body ideals girls choose to compare themselves to, will influence body image.

4 Literature Review

The following chapter presents previous research on sports participation and positive body image. First, the search methods which were applied to collect previous research will be described. Then existing research will be described more in depth, followed by a summary of potential research gaps.

4.1. Search Methods

From August 25th, 2020 to September 25th, 2020 a systematic search was conducted in the databases WebOfScience, PsycINFO (accessed via Ovid), PubMed, and Google Scholar. Searches were mainly limited to articles published in the English language. However, regarding sport participation, it was also searched for Norwegian reports which were in the Norwegian language. Articles of all years were included in the search, but articles from the last ten years were prioritized. This prioritization was made because older research mainly examined positive body image as the opposite of negative body image, which more recent research has found to not be correct (Tylka & Wood-Barcalow, 2015b). However, findings from studies of older dates that were relevant for this study, based on the topics of body appreciation, or sport and positive body image, were included. Both qualitative and quantitative studies were accepted. Applying the snowball method, reference-list from relevant journal articles were also assessed to find further relevant literature. Table 1 demonstrates the different keywords used. The keywords were used in different combination using the Boolean operators “OR” and “AND”. Table 2 demonstrates two of the main searches conducted, how the different operators were included, and the numbers of results for each database. Truncation was used to broaden the search to include various endings of the keywords.

The initial search revealed there was not enough research conducted with body appreciation and adolescents in relation to sports participation. Therefore, the search also included the keyword “student*” which is often referred to as a university and college sample where the age means are higher than for the sample of this study. This was decided to ensure enough literature on studies exploring sport participation and positive body image. Besides, this age group is close in age, and therefore likely to reflect similar trends. Inclusion criteria were studies where the sample mean age was 20 years old or less. Even though the purpose of this

study is to examine sport participation, studies investigating the effects of exercise and physical activity on positive body image were also included. This decision was made as there is limited literature focusing only on sport participation and positive body image. For example, when using the keywords *sport** AND *body appreciation*, WebOfScience produced six results and PsycINFO seven results. As physical activity and exercise are activities where mind-body connections also are present, it is likely to reflect some of the underlying mechanisms for the association between body appreciation and sport participation. When the search was extended to include several keywords (see table 2), WebofScience and PsychINFO both published 67 results each.

For the databases WebOfScience, PsychINFO, and PubMed, the process would be to first read all abstracts and identify relevant articles. Then these articles would be further studied to decide whether they could be included based on their relevance. For Google Scholar, this strategy was not possible due to the high numbers of results. Instead, articles that were most frequently cited or with a particular relevant title, were chosen to further investigate.

Table 1.

Keywords Included in Literature Search

Sport participation	Positive Body image	Socio-demographics	Health
Sport*	Body appreciation	Adolescen*	Health benefits
Exercis*	Body acceptance	Student*	Health outcomes
Physical activit*	Positive body image	Youth*	Health predictors
Sport* participation	Positive embodiment	Girls	Mental health
Team sport*	Body satisfaction	Boys	Body mass index
Individual sport*		Gender	BMI
Sport type		Socioeconomic Status SES	

Table 2.

Example of two systematic Search and their Results

Main Search	Database			
	Psych INFO	WebOf Science	PubMed	Google Scholar
Gender differenc* AND body appreciation OR positive body image	22	39	19	4170
Sport OR physical activit* OR exercise* AND body appreciation OR positive body image OR body acceptance AND adolescen* OR youth* OR student*	67	67	66	7050

Between 20th of January and 31st of March 2021 a new search using the same keywords was conducted to look for updated research across the different databases. As a result, four new publications were included.

4.2 Previous Research Findings

This subchapter will present previous research regarding sport participation and positive body image. The literature review aimed to examine existing research on both sports participation and body appreciation, as well as associations between them. The second purpose was to identify potential research gap. First, the prevalence of sport participation will be described together with research on gender and SES differences as well as mental health benefits. Then research on positive body image in adolescents will be introduced followed by studies that have examined the BAS-2. Gender and body mass index (BMI) differences in body appreciation will also be discussed. Research which has examined associations between exercise/physical activity will then be presented followed by research on sports participation and body appreciation. Finally, potential research gaps will be discussed.

4.2.1 Prevalence of sports participation

In Norway, organised sports participation is the leisure activity that most adolescents engage in (Jacobsen et al., 2021, p. 31). In a national study of adolescents ($n=239\ 288$), Jacobsen et al. (2021) measured the prevalence of sports participation. Results revealed that of adolescents in 8th grade of middle school, 61% of the boys and 59% of the girls participated in sports. The percentage declined every year in middle school through to high school. Among adolescents attending first year of high school, only 38% of the boys and 33% of the girls reported being active in sports (Jacobsen et al., 2021, p. 32). Torstveit et al. (2018) found in their sample of Norwegian adolescents ($n=13\ 269$) that 67% of those between 13 to 14 years old, participated in sports, compared to only 40% of those between 16 to 17 years old (Torstveit et al., 2018). This is in line with what the Norwegian Sports Organisation reported: among those between 6 to 12 years old, 496 358 adolescents were members in a sport organisation, compared to 337 457 adolescents between 13 to 19 years old (NIF (2020, p. 7-8). Before the age of 17 to 18 years, six out of ten adolescents drop out of organised sports (NIF, n.d.).

The national study by Samdal et al. (2016, p. 22) also studied sports participation in adolescents ($n=4\ 592$) but separated between participation in individual sports and team sports and used the same measurements as the present study. Of the sample including students in first year of high school, 40% of the boys and 19% of the girls were active in team sports. Further, more boys compared to girls (25% vs 19%) were active in individual sports (Samdal et al., 2016, p. 22). Heradstveit et al. (2020) also used same measurements as Samdal et al. (2016) in a study of 16 to 19 years old adolescents from the west coast of Norway. In comparison, they found that there were no gender differences between participation in individual sports with 30.8% of girls and 29.7% of boys reporting to be involved. However, as with the study of Samdal et al. (2016), there were gender differences confirmed in team sports with fewer girls (21.4%) being active compared to boys (34.3%) (Heradstveit et al., 2020). Overall, these results suggest that in Norway, more boys than girls participate in sports, and the dropout rate in sports participation is larger for adolescent girls than boys. It has also been confirmed in a large European study of 11 072 adolescents (14-15 years old) that more boys than girls are active in sports (McMahon et al., 2017). McMahon et al. (2017) further separated between individual sports/fitness activities and team sports. While 46.6% of boys reported being involved in team sports, only 19% of the girls reported the same. A larger

percentage of the girls (41.7%) reported being active in individual sports/fitness activities compared to the boys (30.1%) (McMahon et al., 2017).

Regarding studies of SES, it is commonly found that adolescents from lower SES are less likely to participate in sports. Andersen and Bakken (2019) examined economic resources and sports participation in 10 531 adolescents (16-18 years old) in Oslo, the capital city of Norway. Results revealed that adolescents with parents in service class positions would have a 10-11% higher probability of participating in organised sports, compared to adolescents with parents that were unskilled workers (Andersen & Bakken, 2019). Heradstveit et al. (2020) studied sports participation and parental socioeconomic status in adolescents from the west coast of Norway. Adolescents who perceived their family's finance as better than others were more likely to participate in individual sports, compared to those who perceived their family's finance as equal to or poorer than others. These findings were particularly evident among boys. Further, adolescents who perceived their families to be poorer than others were also less likely to be engaged in organised team sports (Heradstveit et al., 2020). The national Norwegian study by Jacobsen et al. (2021) also found that SES plays a role in sports participation. Results showed, 60% of adolescents from high SES participated in organised sports compared to only 31% of adolescents from low SES (Jacobsen et al., 2021, p. 35). Socioeconomic differences with participation in sports have not only been found in Norway. Badura et al. (2021) found in their study of adolescents from Canada and eight European countries that those with higher SES were more likely to participate in organised sports compared to those with lower SES.

4.2.2 Sports participation and mental health benefits

As few studies have examined body appreciation regarding different sport types, it was decided to include studies that have examined sport types with other mental health constructs. This was decided on the basis that body appreciation is found to be positively associated with different psychological constructs, such as self-esteem, adaptive coping, and life satisfaction (Jauregui-Lobera & Bolanos-Rios, 2011; Piko et al., 2020).

A longitudinal study of 17 550 adolescents from 71 different high schools in Canada studied associations between sports participation and psychological adjustment (Brière et al., 2018). It was found that sports participation predicted lower symptoms of social anxiety and loneliness one year later (Brière et al., 2018). Interestingly, these results were not different when

comparing sport frequency, type of sports (individual and team), gender, and age (Brière et al., 2018). The study hypothesized that increased frequency of sports participation and participating in team sports would increase benefits, but this hypothesis was rejected (Brière et al., 2018). Importantly, the study found that sports participation predicted greater reductions in mental health problems in students who already suffered from mental health problems at baseline (Brière et al., 2018). Sports participation predicted reduced depressive symptoms in these students. The study suggests that participation in sports builds resilience in students with pre-existing psychological vulnerabilities (Brière et al., 2018).

While the study of Brière et al. (2018) found no differences regarding sport types on the association between sports participation and psychological adjustment, Guddal et al. (2019) found that team sports were associated with improved mental health outcomes. They examined associations of psychological distress, self-esteem, and life satisfaction with sports participation in 7 619 adolescents in Norway. The study separated between individual sports and team sports, and between junior high school girls and boys (13-15 years old) and senior high school girls and boys (16-19 years old). A significant association between participation in team sports and reduced odds of low self-esteem was found in both junior and high school girls, while no significant effect was found for boys. Participation in team sports was also significantly associated with reduced odds of low life satisfaction among all girls and junior high school boys. Further, only for girls in high school, team sports were found to be significantly associated with reduced odds of psychological distress. Participation in individual sports was associated with reduced odds of low self-esteem among junior high school girls and senior high school boys. Being active in individual sports was also associated with reduced levels of low life satisfaction in senior high school girls. No significant association was found in either of the groups between participation in individual sports and psychological distress. These results suggest that participation in team sports (compared to non-participation) is more strongly associated with positive mental health effects than participation in individual sports. These findings were particularly evident in high school girls (Guddal et al., 2019).

The European study ($n= 11\ 072$) by McMahon et al. (2017) also highlighted the benefits of team sports in girls. Girls active in team sports had significantly higher well-being and lower anxiety and depressive symptoms compared to girls active in individual sports/fitness activities. In boys, the study only found significant differences between team sports and

participation in other sports on wellbeing with those active in team sports reporting higher levels (McMahon et al., 2017). A systematic review of sports participation in adolescents has also confirmed that team sports are associated with improved mental health outcomes compared to individual activities (Eime et al., 2013). Further, a longitudinal study by Sabiston et al. (2016) found that participation in team sports in high school predicted lower depressive symptoms in early adulthood. For individual sports, no significant longitudinal effect was found (Sabiston et al., 2016).

4.2.3 Positive body image in adolescents

Most research on positive body image has been conducted with adult women. There has been considerably less research conducted with adolescent girls compared to women. And not surprisingly, there have been even fewer studies exploring body appreciation in men and adolescent boys. Before 2015, only one qualitative study had explored positive image in adolescents and only two quantitative studies had explored the concept of body appreciation (measured with the BAS) in adolescents.

The qualitative study of Frisé and Holmqvist (2010) sought to investigate positive body image in Swedish adolescent boys and girls. The sample was recruited from a longitudinal body image study where those adolescents who reported the highest levels of body esteem at age 10 and 13, were recruited to join the qualitative study. The final sample consisted of 15 boys and 15 girls between the age of 13 and 14 years. A semi-structured interview was conducted where the focus was on three related constructs to positive body image: satisfaction with own appearance, view on exercise, and influence from family and friends. Results revealed that adolescents with a positive body image had a functional view of their bodies, accepted what they perceived as their imperfections, were physically active, and placed little emphasis on negative comments about their appearance received from family and friends. This was even though most of the adolescents rated their appearance to be “average” (Frisé & Holmqvist, 2010). Thus, this study supports some of the aspects that measure positive body image in the Body Appreciation Scale (Avalos et al., 2005).

Jauregui-Lobera and Bolanos-Rios (2011) found in a sample of 312 Spanish girls and boys (12-20 years old) that body appreciation, measured with the BAS was positively correlated with self-esteem and adaptive coping, while negatively correlated with body dissatisfaction,

ineffectiveness, and social insecurity. Another study that investigated perceptions of weight in Spanish adolescents found that misperception of being overweight was associated with lower body appreciation (Jauregui-Lobera et al., 2011). This misperception was more common in female, and older age groups (Jauregui-Lobera et al., 2011). However, the number of participants in this study was small ($n=85$), and recruited from only one school, making it difficult to generalise the results.

Within the last five years, research on body appreciation with adolescents has increased. Most of this research has aimed to study what health behaviours or psychological constructs are associated with body appreciation. The study of Andrew et al. (2016) was the first to use a longitudinal design in any age group. They studied positive body image in girls at the age between 12 and 16 years, by exploring potential predictors of body appreciation and examined health-related outcomes of body appreciation. The BAS was used as a measurement of body appreciation, and the sample included 298 girls. Questionnaires were completed twice with one year between, and the predictors of body appreciation were media consumption, perceived body acceptance by others, and engagement in sports and hobbies. Results revealed perceived body acceptance by others was positively related to body appreciation at both time 1 and time 2. Reading non-fashion magazines was positively related to body appreciation at time 1, while appearance-based media was negatively related at time 1. Sport participation was found to be positively related to body appreciation at time 2. However, it was only perceived body acceptance by others that prospectively predicted an increase in body appreciation from time 1 to time 2. Interestingly, a reverse direction was also found, suggesting that the relationship was bi-directional. Another aim of the study was to study different health-related outcomes over one year. The results revealed body appreciation predicted a decrease in the use of alcohol, cigarette, and dieting one year later. Adolescent girls with higher levels of body appreciation were less likely to engage in smoking or alcohol consumption compared to peers with lower body appreciation. High body appreciation also predicted an increase in physical activity, measured one year later (Andrew et al., 2016).

Piko et al. (2020) examined correlates of body appreciation in a Hungarian female adolescent sample ($n=454$) between 14 to 20 years old. The psychological variables were self-esteem, satisfaction with life, and optimism. Health behaviour variables were sport participation, frequency of smoking and drinking, and self-perceived health. Variables regarding weight included BMI, presence of overweight, eating disorders in the family, and dieting behaviour.

Correlation analyses demonstrated a positive association between body appreciation and self-esteem, life satisfaction, optimism, self-perceived health, sports participation, and diet control. There was a negative association between body appreciation and BMI, the presence of overweight, eating disorders in the family, and binge drinking. The study also conducted multiple regression analyses exploring which variables significantly contributed towards body appreciation. When all variables were included in the final model, only self-esteem, life satisfaction, self-perceived health, and eating disorders in the family remained significant (Piko et al., 2020). A study of 2 605 adolescents in Cyprus (13-18 years old) aimed to examine both risk and protective factors of disordered eating (Argyrides et al., 2020). Body appreciation was identified as a protective factor against eating disorders for both genders and across all BMI groups (Argyrides et al., 2020).

Only one Norwegian study has examined positive body image in adolescence. This study used the research-based positive embodiment construct (Sundgot-Borgen et al., 2019). Sundgot-Borgen et al. (2019) used a cluster-randomized controlled study to examine the effects of the intervention, “The Healthy Body Image”, on positive embodiment and health-related factors. The intervention involved three 90-min workshops with three weeks between each session. Themes were positive body image, body idealization, fat talk, social media use, positive self-talk, body functionality, exercise, and nutrition. When compared to the control group the intervention group demonstrated an immediate change in positive embodiment and health outcomes which also was evident at follow-up. However, this effect was only observed in girls. Even though boys in the intervention group reported higher positive embodiment after the intervention, this effect was not evident at 3-months and 12-months follow-up. This study demonstrates that girls and boys may need to be target differently to enhance positive body image (Sundgot-Borgen et al., 2019).

4.2.4. The Body Appreciation Scale-2

When the BAS-2 was developed as an improvement from the BAS, it was only tested in college and community samples of adults between 18 and 56 years old. Within the last four years, studies have examined the scale’s psychometric properties in adolescent from different countries. Alcaraz-Ibáñez et al. (2017) were the first to test the scale’s psychometric properties in a sample of adolescents. The study included 840 adolescents in Brazil between the age of 13 and 17 years. Results supported the one-factor structure of the instrument, high internal reliability, and temporal stability over two weeks. Out of the ten items, item five was

identified as having the lowest factor loading (.53). Convergent validity was also supported by results indicating negative associations with social physique anxiety, and BMI, and positive associations with life satisfaction (Alcaraz-Ibáñez et al., 2017).

Also seeking to validate the BAS-2, Lemoine et al. (2018) included adolescents (12-19 years old) from Denmark, Portugal, and Sweden. Average scores for girls were 3.73, 3.81, and 3.73 respectively, and for boys 4.13, 4.31, and 4.13. Results revealed body appreciation was positively correlated with self-esteem, psychological well-being, and intuitive eating. In all three countries, a single-factor structure was supported. Also in this study, item five showed the lowest factor loading, ranging from .44 to .70. Boys had higher levels of body appreciation than girls and the scale was found to be invariant across sex. The results indicated little cross-cultural differences among adolescents on levels of body appreciation, suggesting the scale was partially scalar invariant. Therefore, scores of body appreciation measured with the BAS-2 scale could be compared across all three countries and both genders (Lemoine et al., 2018).

Góngora et al. (2020) studied the psychometric properties of the Latin-American Spanish translation of the BAS-2 scale in a large sample ($n= 3\ 845$) of adolescents (12-20 years old) from three Latin-American countries: Argentina, Mexico, and Colombia. They reported average scores of body appreciation of 3.72-4.25. The findings supported the validity and reliability of the Latin-American translation of the scale. A one-factor structure was supported in all three samples with good internal reliability. As found in the study of Alcaraz-Ibáñez et al. (2017) and Lemoine et al. (2018), item five was found to have the lowest factor loading, ranging from .54 to .65. Convergent validity was supported with low levels of body appreciation associated with a higher drive for thinness in females, and a higher drive for muscularity in males. The study was the first to find measure invariance in samples from different countries, meaning that if results revealed differences between group, these differences reflect differences among the samples rather than psychometric differences related to the scale (Góngora et al., 2020).

Another study examined the psychometric properties of the Lithuanian version of the BAS-2 scale in a sample of 1 412 adolescents between the age of 15 and 18 years (Baceviciene & Jankauskiene, 2020). Here average body appreciation scores were 3.24 for girls and 3.41 for

boys, thus lower than the previous studies. Invariance across gender was found and the original one-dimension structure was supported (Baceviciene & Jankauskiene, 2020). The scale reflected good internal reliability and temporal stability over two weeks. Results revealed body appreciation was positively associated with self-esteem, body functionality, and sports participation (Baceviciene & Jankauskiene, 2020). Further, higher levels of body appreciation were related to lower levels of disordered eating in both girls and boys (Baceviciene & Jankauskiene, 2020).

4.2.5 Gender and BMI differences in positive body image

As with most research on body image, gender differences have been established in positive body image as well. Abbott and Barber (2010) studied gender differences among Australian adolescents. To measure body image, they used the Embodied Image Scale (EIS). This scale measures the cognitive, behavioural, and affective components of body image separately for two different dimensions, the functional and the aesthetic. Results suggested that girls were more focused on their appearance, and reported to be less satisfied with their bodies, compared to males. Interestingly, younger girls (13-14 years old) valued functionality higher than appearance compared to older girls (16-17 years old). Further, across both genders, the older adolescents reported being more focused on body attractiveness compared to the younger adolescents. When measures of functional body image were compared to measures of aesthetic body image, both genders valued functional aspects of the body as more important (Abbott & Barber, 2010). Prior research has suggested females are more focused on appearance. Abbot & Barber (2010) hypothesize that if girls are asked to consider the functionality of their body, such as what it can do, they will appreciate this aspect more. These findings highlight the importance of not just measuring appearance-based motives when studying body image, as it may fail to include all aspects of the construct (Abbot & Barber, 2010).

The first study to examine gender differences in body appreciation of an adolescent sample (12 -20 years old) was Jauregui-Lobera and Bolanos-Rios (2011) when developing a Spanish version of the BAS. They found that boys reported higher levels of body appreciation than girls (Jauregui Lobera & Bolanos Rios, 2011). However, this study used the body appreciation scale which included sex-specific items, therefore the suggested gender differences could reflect the quality of the instrument rather than actual gender differences.

Later, other studies have examined gender differences by using the gender-equal BAS-2 (Tylka & Wood-Barcalow, 2015a), and found similar results. Adolescent boys report higher levels of body appreciation compared to adolescent girls in the Mexican, Argentinean, and Colombian samples (Góngora et al., 2020), a Brazilian sample (Alcaraz-Ibáñez et al., 2017), a Lithuanian sample (Jankauskiene et al., 2020), and the Danish, Portuguese and Swedish samples (Lemoine et al., 2018). Gender differences in positive body image have also been assessed in a sporting context. In a sample of American student athletes in college there was a significant gender difference where male athletes reported higher levels of body appreciation and body functionality compared to female athletes (Soulliard et al., 2019).

He, Sun, Zickgraf et al. (2020) conducted a metanalytic study including 40 articles between 2008 and 2019 which studied gender differences in body appreciation measured by the BAS or the BAS-2. The selected 40 studies resulted in a total of 21 257 participants ranged in age from 9 to 91 years. The study confirmed that males have higher levels of body appreciation compared to females. However, the gender difference was small. The study highlighted three moderators that could explain the different results of gender differences in previous studies: survey method, sample type, and mean age. There were smaller gender differences in paper-pencil surveys compared to online surveys and in community samples compared to college samples. Further, when there was an increase in age, gender differences in body appreciation decreased (He, Sun, Zickgraf, et al., 2020). Thus, it is likely that gender differences will be larger among adolescents compared to samples at an older age.

When examining body image, it is common in research to include measures of body weight or BMI. In a Hungarian female sample, it revealed a negative association between BMI and body appreciation (Piko et al., 2020). Góngora et al. (2020) also identified a small but significant negative association between BMI and body appreciation levels. The correlation was stronger for girls than boys in the Argentinean and Mexican sample, while the correlation strength in the Colombian sample was similar for both genders (Góngora et al., 2020). Baceviciene and Jankauskiene (2020) also found a significant association between BMI and body appreciation in both girls and boys and similar findings were reported by Lemoine et al. (2018). However, in their study, this relationship was only found significant in the Portuguese sample (Lemoine et al., 2018). In their meta-analysis of 166 studies, He, Sun, Lin, et al. (2020) found that overall, there is a significant negative relationship between BMI and body appreciation. The association between body appreciation and BMI was negative and small for

males and negative and small, but close to moderate for females. According to the researchers, these findings echo the negative attitudes society has towards heavy bodyweight and its idealization of leanness (He, Sun, Lin, et al., 2020).

4.2.6 Physical activity, exercise, and positive body image

As there exists few studies that have examined sport and body appreciation, studies of exercise and body appreciation will also be described. Homan & Tylka (2014) were the first to empirically test if exercise was related to the positive ways women perceive their bodies. They studied the relationship between frequency of exercise and positive body image, measured as body appreciation (using the BAS), internal body orientation, and functional body satisfaction. The sample they used was college women between 18 and 51 years old ($M=19.88$) and the results revealed exercise frequency demonstrated a positive relationship with all three aspects of positive body image. Interestingly, this relationship was weaker if the participants were motivated to exercise for appearance-based reasons such as weight and shape. For example, individuals with high exercise frequency who were motivated by appearance-based reasons would have lower body appreciation compared to someone who exercised less but had a low appearance-based motivation (Homan & Tylka, 2014). Later, Tylka and Homan (2015) studied exercise motives and positive body image in a sample of college students, this time including males as well. They found that functional exercise motives are connected to a greater positive embodiment in both genders. Further, they found that when participants perceived their bodies to be accepted by others it was directly associated with higher functional exercise motives, and indirectly related to lower appearance motives for exercise through internal body orientation (Tylka & Homan, 2015). This study supports research demonstrating that people's motivation to exercise is relevant to their positive embodiment (Tylka & Homan, 2015). Further, it highlights how crucial it is to perceive the body as accepted by others (Tylka & Homan, 2015).

A self-report study by Wasylykiv and Butler (2014) measured exercise behaviour, body orientation, and body appreciation (measured by the BAS) in 142 female university students (17-24 years old). Body orientation was measured as whether participants focused on how their bodies looked, body-as-object, or what they could do, body-as-process. Results revealed the sample had a stronger body-as-object orientation than body-as-process orientation, but

there was a positive association between frequency of exercise and body-as-process orientation (Wasyliw & Butler, 2014).

Laudańska-Krzemińska et al. (2020) studied the role of physical activity for body acceptance in 231 Polish adolescents (13-16 years old). Body acceptance was measured using a single-item questionnaire: “to what extent do you accept your body?” with a response option rated in a seven-point Likert scale from “not at all accepted” to “fully accepted”. The study found that physically active girls reported a less slim idea vision of their figure compared to less active girls. Physical fitness was a greater predictor of body acceptance than physical activity in both girls and boys (Laudańska-Krzemińska et al., 2020). Despite that this study included body acceptance as a measurement, it did not examine whether participants related body acceptance to functional aspects of the body or simply to appearance. Therefore, the results could not explain different aspects of positive body image within this sample. Further, the study did not examine what types of physical activity the adolescents were engaged in. However, the study demonstrated that physical fitness levels predicted whether adolescents accepted their bodies. As a certain amount of physical activity over time is required to achieve good physical fitness levels the study indicated that physical activity could be a potential protective factor in adolescents.

A Norwegian study of university students aimed to examine whether there were differences in body appreciation and body appearance pressure between exercise science students and a reference group of other students. In this study, Sundgot-Borgen et al. (2021) found that female exercise students had higher scores on body appreciation compared to the female reference group, while there was found no group difference in males. Male exercise students (69%) reported significantly higher general body appearance pressure compared to the male reference group (57%). Interestingly, there was no significant difference between female exercise students (85%) and the female reference group (83%). The study found that body appreciation was negatively correlated with personal body appearance pressure, physical comparison, and internalization of the thin body ideal while it was positively related to self-esteem and life satisfaction. Compared to the female reference group, female exercise science students reported lower scores of physical comparisons and higher scores of self-esteem and life satisfaction. These findings indicate that despite female exercise science students report high levels of body appearance pressure, they also report characteristics that protect their body image reflected by their body appreciation scores and other mental health constructs.

Further, fitness centers were identified as the most common setting for all students' groups to be exposed to body appearance pressure (Sundgot-Borgen et al., 2021).

4.2.7 Sports participation and positive body image

To this date, only a few studies have aimed to study the associations between sports participation and positive body image in adolescents. Abbott and Barber (2011) investigated the association between participation in sports, physical activity or being inactive, and positive body image in adolescent Australian girls ($n= 1002$). To measure body image, the Embodied Image scale, which measures six subscales were applied: Functional value, aesthetic value, functional behavioural-investment, aesthetic behavioural investment, functional satisfaction, and aesthetic satisfaction. An example of functional value versus aesthetic value was “*one of the most important reasons why people should take care of their bodies is so they can be physical active*” versus “*one of the most important reasons why people should take care of their bodies is so they can look good*”. The results revealed the girls who participated in sports reported higher satisfaction with the functional dimension of their body, higher functional values, and higher functional behavioural-investment, compared to both physically active and non-physically active girls. The study found that of those who were physically active (running, going to the gym, etc.) there were no associations of positive evaluations of their body's functionality (Abbot & Barber, 2011). Thus, this study demonstrated that participating in organised sports may contribute to a higher positive body image, compared to general physical activity or exercise.

The study of Abbot & Barber (2011) also studied whether sport types influenced positive body image. They examined body image in adolescent girls in three different sports groups: aesthetic sports only, non-aesthetic sports only, and a hybrid group (both aesthetic and non-aesthetic sport). The results demonstrated that girls in non-aesthetic sports and hybrid group reported higher satisfaction with their bodies' functionality, and functional behavioural investment, compared to those involved in aesthetic sports. Despite these findings, it was not found significant differences between the non-aesthetic and aesthetic groups regarding aesthetic values, aesthetic behavioural investment, or aesthetic satisfaction (Abbot & Barber, 2011). The study of Abbot and Barber (2011) was the first quantitative study to examine sports participation and positive body image in adolescents. However, the study only included girls.

As previously described, the qualitative study of Frisé and Holmqvist, (2010) included 30 Swedish adolescents with a positive body image. Most of these adolescents were physically active and emphasized the functionality of their body rather than appearance. The study did not look at the difference between adolescents involved in sports and those involved in exercising. However, the majority reported to be active in sports, while some also reported engaging in exercises such as running and home-workouts. The researchers hypothesized that the right motivation to exercise may have influenced these adolescents' positive body image. The participants reported to exercise because they thought it was fun, and they got to be with friends. Consequently, sports and physical activity were considered health promoting for these participants (Frisé & Holmqvist, 2010).

A more recent study by Gomez-Baya et al. (2019) analysed the mediating role of body satisfaction on the relationship between sports participation and depressive symptoms in a large sample ($n=1810$) of Spanish adolescents between the age of 13 and 18 years. Body satisfaction was measured by asking "Do you like your physical appearance?". It was found that adolescents who were more active in sport participation reported higher body satisfaction which in turn was associated with lower levels of depressive symptoms. Further, the results revealed that gender moderated the association between sports participation and body satisfaction. While the effect of sports participation on body satisfaction was significant in boys, this was not observed in girls (Gomez-Baya et al., 2019). Thus, the study demonstrates that the effects of sports participation on positive body image may be different for boys than girls. However, compared to studies using measurements of body functionality or body appreciation, this study only measured how adolescents perceive their bodies from an appearance point of view. As previously mentioned, this is not a sufficient measurement for assessing the various dimensions of positive body image.

Another study, by Soulliard et al. (2019), explored differences in positive body image between American student athletes ($n = 79$) and non-athletes ($n = 175$) between 18 and 38 years old ($M = 19.51$). Two measures of positive body image were used, the BAS-2 scale and the Functionality appreciation scale (FAS). Comparing gender differences in the athlete sample it was found that male athletes reported higher levels of body appreciation and functionality appreciation compared to female athletes. However, athletes of both genders reported significantly greater levels of body appreciation and functionality appreciation

compared to non-athletes. Soulliard and colleagues also studied the relationship between positive body image and sport-related variables such as sport confidence, flow state, and subjective sport performance among student athletes. Results demonstrated that both body appreciation and functionality appreciation were positively related to sport confidence and flow state in student athletes (Soulliard et al., 2019).

Jankauskiene et al. (2020) did a cross-sectional study examining associations between body appreciation and disordered eating in Lithuanian adolescents (15-18 years old) involved in different sports at different levels. The study included a large sample ($n = 1412$) from 41 randomly selected schools in 26 different cities. They separated between leisure sports “*Do you exercise during leisure-time sports activities without the intention to compete in sports competitions?*” and competitive sports “*Do you participate actively in competitive sports and take part in sports competitions with professional sports goals?*”. They found that adolescents involved in either leisure sports or competitive sports reported higher levels of body appreciation compared to adolescents not involved in sports (Jankauskiene et al., 2020). Thus, this study supports the findings of Soulliard et al. (2019). Gender was also assessed where results revealed boys had higher levels of body appreciation than girls after BMI and sports type were controlled (Jankauskiene et al., 2020). Further, the study of Jankauskiene et al. (2020) found that adolescents active in sport reported lower body dissatisfaction compared to non-active adolescents. While body appreciation and body functionality were associated with lower levels of disordered eating in girls not active in sports, active in leisure sports, and active in competitive sports, this was only observed for boys who were active in competitive sports. In addition, the study examined whether adolescents involved in weight-sensitive sports would demonstrate lower levels of body appreciation and higher levels of disordered eating compared to those involved in less weight-sensitive sports. The results revealed no significant difference related to sports type (Jankauskiene et al., 2020).

4.3 Gap in the Research Literature

Studies of positive body image in adolescents were almost non-existent before 2016. Despite an increase over the last five years, this literature review has demonstrated that there is a need for more research. There is a need for more knowledge regarding associations between health promoting activities and body appreciation. Most studies have focused on how positive body image is related to other concepts of body image such as self-esteem, intuitive eating, and body dissatisfaction. Less research has examined if health-related behaviours are associated with positive body image, which is necessary to understand the potential protective effects of positive body image. Further, some studies have only been studying positive body image in girls while others have studied one aspect of positive body image such as satisfaction with appearance, thus failing to conceptualise the whole construct.

Only two studies have examined sport participation and positive body image using the BAS-2 in adolescents or young adults (Jankauskiene et al., 2020; Soulliard et al., 2019). To the best of my knowledge, no Nordic countries have studied the relationship between sports participation and body appreciation among adolescents. Conflicting findings are found between sport types, separated as aesthetic/non-aesthetic or weight-sensitive/less weight sensitive, and positive body image (Abbot & Barber, 2011; Jankauskiene et al., 2020). No previous studies have examined differences between body appreciation and sport types separated as individual or team sports. One study found no differences between the two sport types concerning mental health effects (Brière et al., 2018), while other studies have found team sports to be more strongly associated with positive mental health effects compared to individual sports (Eime et al., 2013; Guddal et al., 2019, McMahon et al., 2017; Sabiston et al., 2016). Therefore, it is of interest to examine whether sport types (individual and team sport) influences body appreciation levels. Importantly, some studies suggest associations between sport participations and body image are different for boys than for girls (Gomez-Baya et al., 2019; Soulliard et al., 2019). Finally, the BAS-2 has, to the best of my knowledge, not been examined in a sample of adolescents in Norway. Therefore, no data on body appreciation levels and gender differences in this population exist. As research has found the scale valid in two other Scandinavian languages (Leomine et al., 2018), it is reasonable to think that the same applies to a Norwegian version. However, to increase knowledge, it is of interest to see whether the factor structure and reliability of the BAS-2 scale is satisfactory, also in a Norwegian context.

5 Objective and Research Questions

The purpose of this study is to examine associations between sports participation and body appreciation in a sample of adolescents in Norway who are in first year of high school. It will also be explored if the associations with body appreciation vary according to types of sports participation. Furthermore, the moderating effect of gender on the relationship between sports participation and body appreciation levels will be examined. In the literature review, it was found a negative association between BMI and body appreciation (He, Sun, Lin, et al., 2020). As the dataset of the present study did not include measures of BMI, it was decided to examine SES differences in body appreciation, as SES is found to be a predictor of BMI in adolescents (Ramos et al., 2019; Tsitsika et al., 2016). Based on the purpose of this study and previous research, six sub-questions will be explored:

Research question 1:

What is the factor structure and internal validity of the BAS-2 scale?

Research question 2:

How many adolescents participate in sports, and are there any gender and SES differences?

Research question 3:

What are the scores of body appreciation in adolescents, and are there any gender and SES differences?

Research question 4:

Does sports participation predict levels of body appreciation when adjusting for gender and SES?

Research question 5:

Does participation in individual sports, team sports, or both, predict levels of body appreciation when adjusting for gender and SES?

Research question 6:

Does gender moderate the relationships between sports participation and body appreciation

6 Data and Method

To use a method means to follow certain rules to achieve a goal (Johannesen et al., 2016, p. 25). In empirical research, it is about how to collect, analyse and interpret the results of data (Johannesen et al., 2016, p. 25). This chapter will first introduce the scientific worldview that this study is guided by, as well as the research method and the study design. The sample and procedures are then described followed by variables, and data analysis methods. Finally, the quality assurances and ethical considerations will be discussed.

6.1 Scientific Worldview

Philosophical worldviews, also called paradigms, influence the nature of research (Creswell & Creswell, 2018, p. 5). Creswell and Creswell (2018) define worldviews as “a general philosophical orientation about the world and the nature of the research that a researcher brings to a study” (p. 5). The main purpose of this study is to examine associations of sports participation and body appreciation in adolescents at the age between 16 and 19 years. Based on the research questions, the postpositivist worldview will guide this process as this view acknowledge that a research process starts with a theory before collecting data to verify or falsify it (Creswell & Creswell, 2018, p. 7). The postpositivist worldview emerged as a response to the positivist worldview, which stated that absolute truth is what we can observe (Creswell & Creswell, 2018, p. 6). Instead, the postpositivist worldview acknowledged that we cannot be certain about our claims when our research involves human behaviour (Creswell and Creswell, 2018, p. 6). As this study involves humans it acknowledges that the results observed do not always reflect the absolute truth. This view has also been called the scientific method, or empirical science, and it is deterministic in the way it believes causes determine outcomes or effects (Creswell & Creswell, 2018, p. 6). It is also reductionistic in that postpositivists want to reduce ideas into testable variables (Creswell & Creswell, 2018, p. 6). In the present study, this is reflected by applying the BAS-2 scale when examining the variable “body appreciation”. This scale has been developed by undergoing different statistical analyses where many items have been redefined and reduced until reaching a level of satisfactory reflection of the concept “body appreciation”. In line with the postpositivist worldview, the study aims to acquire knowledge objectively based on a survey (Creswell & Creswell, 2018, p. 7). This worldview is popular for quantitative researchers.

Two different approaches to logical thinking in scientific research are inductive and deductive (Halvorsen, 2008, p. 24). Inductive thinkers do not base their observations on theories and study a restricted number of observations and draw conclusions based on these (Bjørndal & Hofoss, p. 20). This approach does not guarantee that the conclusions which are drawn are correct (Bjørndal & Hofoss, 2004, p. 20). The current study is based on a deductive approach which starts with theories from empirical observations. The approach also aims to examine already established theories by collecting relevant information (Bjørndal & Hofoss, 2004). The research questions for this study were developed deductively by first reviewing previous research on the topics and theories such as the objectification theory (Fredrickson & Roberts, 1997), the embodiment model (Menzel and Levine, 2011) , and the social comparison theory (Festinger, 1954).

6.2 Research Method and Design

This study utilises quantitative research methods guided by the post positivist worldview. It is deductively testing objective theories by examining relationships between variables using statistical analysis (Creswell & Creswell, 2018, p. 4). Variables are usually measured with instruments, gathering numerical data which can be analysed through statistical methods (Creswell & Creswell, 2018, p. 4). An example of such instrument is the BAS-2 scale which in this study is used to measure the dependent variable body appreciation. As the main purpose of this study is to empirically examine the relationship between sports participation and body appreciation, a survey design was applied. This quantitative research method gives us data of attitudes or opinions of a sample that can be generalised to a population (Creswell & Creswell, 2018, p. 147). In this study, the sample was adolescents. Three types of questions can be answered from the survey design. These are descriptive characteristics of a sample, relationships between variables, and the predictive relationship between variables over time (Creswell & Creswell, 2018, p. 147). In the current study, a survey design allowed us to study both the descriptive characteristics of the sample and the relationships between variables. This survey design was cross-sectional, which means data was only collected at one point in time (Creswell & Creswell, 2018, p. 149). The benefits of a cross-sectional survey design are that it allows us to collect a large amount of information in a short amount of time, and it is cost-effective (Jacobsen, 2015, p. 108). A weakness is that it will not allow us to conclude about the direction of the relationship (Jacobsen, 2015, p. 109). However, as this was never the purpose of this study, a cross-sectional survey design was appropriate.

The dataset for this study was gathered from a larger research project at the Department of Health Promotion and Development, at the University of Bergen. The research project was called COMPLETE and was a cluster randomised control study where the goal was to reduce dropouts in high school by strengthening psychosocial aspects of the learning environment (Larsen et al., 2018). The purpose of the COMPLETE study was to test and evaluate two different interventions, the Dream School Program (DSP) and the Mental Health Support Team (MHST). Data was collected prior (baseline), during (time 1), and after the interventions (time 2), and compared to a control group from schools that had not received either of the two interventions (Larsen et al., 2018). In the present study data from all groups (control, intervention 1, and intervention 2) collected at time 1 was used.

6.3 Sampling and Procedure

A population is all the objects or individuals that the research question wants to study (Bjørndal & Hofoss, 2004, p. 34). For this study, the population would be students in first year of high school in Norway. Because it is impossible to study all objects or individuals in one population, the researchers study a sample of the population (Bjørndal & Hofoss, 2004, p. 34). The sample must be representative of the population that the research questions aim to study. In COMPLETE all high schools from the counties Sogn og Fjordane, Hordaland, Troms, and Nordland, representing different geographical areas in Norway (Sogn og Fjordane and Hordaland is today one county Vestland) were invited to participate (Larsen et al., 2018).

The schools were recruited through written invitations and meetings, where 19 schools showed interest, and 17 schools met the requirements for participation. Two cohorts of students were included. Baseline data from cohort 1 ($n=3003$) was collected in August 2016 and baseline data from cohort 2 ($n= 3022$) was collected in august 2017 (Larsen et al., 2018). For this study, data from timepoint 1(March 2017) of cohort 1 is examined. Both written and oral information about the survey was provided to the participants before participation. As all students had turned 16 years old, no informed consent by parents was required. Data was collected electronically during class, administered by staff from Oxford Research (Larsen et al., 2018).

6.4 Variables

A variable is a characteristic that can vary in values (Witte & Witte, 2015, p. 14). When included in research, variables have been operationalized into meaningful questions that can be observed and measured (Johannesen et al., 2016, p. 58). The variables relevant for this study were sport participation, body appreciation, gender, and socioeconomic status (SES). Age was also included for descriptive purposes.

6.4.1 Organised sports participation

Sports participation is an independent, categorical variable with four different response categories. Organised sports participation (Appendix A) was assessed with the following question “*how often do you usually participate in these organised activities during your spare time?*” followed by the explanation “*with organised activities, we mean activities run by sports clubs, other clubs or organisations*”. Two classifications were related to sports participation; (1) *organised team sports (such as football, handball, basketball, ice hockey)*, and (2) *organised individual physical activities (such as swimming, cycling, martial arts, athletics, touring, dance, cross country skiing)*. The responses were:

- 1) *Do not do these activities*
- 2) *2-3 times a month or less*
- 3) *About 1 day a week*
- 4) *2 times a week or more often*

The same questions and response categories have previously been used in the Norwegian HEVAS-study (Samdal et al., 2016). It should be noted that it was used the phrasing “*organised individual physical activities*” instead of “*organised individual sports*”. This means that participants may have included both individual sports and other individual physical activities such as going to the gym. However, this study will from onwards refer to this category as *individual sports*.

6.4.2 Body appreciation

In the current study, body appreciation is the outcome variable, also called the dependent variable. It is a continuous variable, measured by using the Body Appreciation Scale- 2 (BAS-

2) (see appendix B for Norwegian translation). This scale is the most widely used scale to assess positive body image (Halliwell, 2015). It is made up of 10 questions and uses a 5-point Likert response format (*All the time, Often, Part of the time, Rarely, Not at all*). All questions were positively worded (e.g. “*I am happy with my body*”, “*I appreciate the different and unique sides of my body*”). It is composed of one dimension, and good internal reliability (Cronbach $\alpha = .92- .94$) have been reported in both a college sample (Tylka & Wood-Barcalow, 2015a) and samples of adolescents (Lemoine et al., 2018).

6.4.3 Sociodemographic variables

Age is a continuous variable and was included for descriptive analysis. Adolescents reported year and month of birth, and age was calculated from these responses.

To measure **gender**, respondents were asked whether they identified as either a “girl”, “boy” or “other”. Respondents who identified as a girl or a boy were included in the study. Gender is a categorical variable. Gender was included to examine gender differences in sport participation and body appreciation, and whether gender moderated associations between sport participation and body appreciation. It was also included as a control variable.

SES was included in this study to examine differences in sport participation and body appreciation based on SES. It was also included as a control variable. This is to make sure that if there is an association between sport participation and body appreciation, this is not a result of SES. The measure of SES was perceived wealth asked as “*How well off is your family*”? The response format was a five-point scale (*1= very well off, 2= well off, 3=medium well off, 4= not well off, 5=not at all well off*) (Appendix C) (Iversen & Holsen, 2008). This question has previously been used in the HEVAS-study (Samdal et al., 2016), and in a study assessing inequality in health behaviour in early adolescence (Iversen & Holsen, 2008). Because very few respondents answered “not at all well off” the scale was collapsed into three categories and treated as a categorical variable. Participants who responded either 4 and 5 were recoded to 1= *low SES*, participants who responded 3 were recoded to 2= *medium SES*, and respondents of 1 and 2 were recoded to 3= *high SES*.

6.5. Quality Assurance

The purpose of research is to ensure valid and truthful knowledge about the world (Jacobsen, 2015, p. 15). To achieve this, researchers need to collect, treat, and present their data systematically (Jacobsen, 2015, p. 16). Two important requirements in this process are validity and reliability (Jacobsen, 2015, p. 16). The next section will explain how quality during the research process was ensured.

6.5.1. Reliability

Reliability refers to the consistency of a measurement (Morling, 2015, p. 129). If a measurement is reliable, it should reflect the construct it is measuring consistently over time (Field, 2018, p. 821). Three types of reliability are inter-rater reliability, test-retest reliability, and internal reliability (Morling, 2015, p. 129). *Inter-rater reliability* refers to observational measures where two or more independent observers will find the same findings (Morling, 2015, p. 129). As this study examines objective numerical data, this form of reliability is not relevant. *Test-retest reliability* refers to getting consistent scores every time a measurement is being used (Morling, 2015, p. 129). For this study, body appreciation might differ over time as adolescents are getting older (Quittkat et al., 2019). The BAS-2 scale has been found to have 2-week stability (Alcaraz-Ibáñez et al., 2017; Baceviciene & Jankauskiene, 2020). As the present study used a cross-sectional design where body appreciation was only measured once, internal reliability was measured instead. *Internal reliability* refers to whether the participant answers consistently, independent of how the researcher phrased the question (Morling, 2015, p. 130). Items of a scale are often made up of the same questions but in different phrasings. To measure internal reliability is a method to examine whether participants' responses are consistent on the items intended to measure the same underlying construct (Morling, 2015, p. 134). As mentioned, the BAS-2 Scale has demonstrated high reliability, measured as internal consistency (Tylka & Wood-Barcalow, 2015a; Lemoine et al. 2018). For this study, internal consistency for the BAS-2 scale was examined to ensure that internal consistency was at an acceptable level for the specific sample. Results of the reliability analysis are presented in the data analysis section.

6.5.2. Validity

Validity refers to if research is measuring what it is supposed to measure (Morling, 2015, p. 136). To assess the validity of a scale, empirical evidence from research analyses is collected

(Pallant, 2016, p. 7). In a study, there can be high reliability, but low validity. For example, using a scale to measure weight is a reliable measurement, but it is not valid for measuring body appreciation. As the measurement is not measuring what it intended to measure, it has little use (Morling, 2015, p. 146). There are different ways of measuring validity in quantitative research.

Construct validity refers to how well researchers are measuring what they intend to measure (Jacobsen, 2015, p. 351). In studies of adolescents, the BAS-2 correlated positively with self-esteem, psychological well-being, and intuitive eating (Lemoine et al., 2018), indicating good construct validity. **Criterion validity** is assessing whether the concept we are measuring, would correlate with other concepts that theory states should be correlated (Jacobsen, 2015, p. 357). The BAS-2 scale has been found to have a positive association with intuitive eating, and a negative association to eating disorder symptomatology, supporting the scale's criterion validity (Tylka and Wood-Barcalow, 2015a). **Internal validity** refers to what degree researchers can be confident that a causal relationship is credible and could not be explained by external factors that were not controlled for (Morling, 2015, p. 69). This study was only examining relationships among variables rather than causality. To ensure internal validity, gender and SES as co-founding variables that could potentially influence the results were controlled for. However, the results could still be influenced by other variables that this study did not account for. **External validity** refers to how well the results from the sample being studied can be generalised to the population that the study aimed to target (Morling, 2015, p. 67). In this study, participants were only recruited from four different counties, and 17 different schools. It is therefore not representing the whole country. But the results could be generalizable to an extent because of its geographical spread and its large sample size ($n=2249$).

6.6 Data Management and Data Analyses Method

The next section will describe the data management methods and the statistical analyses that was performed in this study. During this process educational books about statistics were used regularly (Field, 2018; Pallant, 2016; Tabachnick & Fidell, 2014). The statistical analyses were conducted using IBM SPSS statistics 26.

6.6.1 Preliminary statistical analyses

The datafile was received complete and ready to examine. Prior to the analyses, data was examined for evidence of data entry error. This was done by conducting frequencies analyses of the variables of interest. Frequencies analyses provide information about minimum and maximum values, mean and standard deviation, missing data, and extreme outliers (Pallant, 2016, p. 45-48). No implausible values were identified, and therefore no values were excluded from the analyses.

If any data was missing the “exclude pairwise” option in SPSS was used. This method involves that a participant is only excluded for specific analysis where required data is missing (Pallant, 2016, p. 58). Thus, the participant would still be included in other analyses if the necessary information were provided. Non-response was generally low. Body Appreciation was the variable with the most missing responses. However, questions on BAS-2 scale were completed by 93.5-94.2 % of the sample.

The purpose of this study was to examine body appreciation in adolescents. According to WHO (n.d.), adolescents are young people between the age of 10 and 19 years old. Based on this definition, it was decided to exclude participants who were above 19 years old. As a result, 78 participants were removed from the data set which was equal to 3.4% of the sample. As the sample size was large ($n= 2327$), this reduction was considered appropriate. The final sample size was 2249, where a large part of the sample was 16 and 17 years old (92.4 %).

Recoding and computing variables

For both the two measures of sports, (team sports and individual sports), the four categories were collapsed into two categories and recoded into “active” and “not active”. The cut-off for being active was set to at least one day a week, therefore including respondents who answered, “about 1 day a week” or “2 times a week or more often”. Participants who responded, “don’t do these activities” or “2-3 times a month or less” were treated as “not active”.

To answer the research questions, two new variables were computed from “team sports” and “individual sports”. To avoid overlapping effects where the same respondents were represented in different groups (i.e., individual sports and team sports), clean groups were

created. First, the variable was labelled “Sport types” with the following categories “not active”, “active individual sports only”, “active team sports only”, and “active both individual sports and team sports (hybrid)”. Second, the variable “sport types” was recoded into 0= not active in sports, and 1=active in sports, and labelled “sports participation”.

Reversing scores and total scores

To make it easier to compare the results of the BAS-2 scale with other studies using the same scale, all 10 items were reversed such that the responses “not at all” were given score 1 and the responses “always” were given score 5. Thus, higher scores on the BAS-2 scale meant higher levels of body appreciation. After this step, total scores for the scale were calculated. Total scores were then transformed to participants average response to item 1 to 10. By 186 of 2 249 participants did not respond to all items, therefore total score of BAS-2 scale was not calculated in 8.3 % of the sample. As this was less than 10%, no alternative calculations to achieve total scores of the missing responses was applied.

Descriptive analysis

Descriptive analyses were conducted to describe characteristics of the sample (Pallant, 2016, p. 53). For the categorical variables (gender, SES, and sports participation), frequencies and percentage on each response were obtained. For body appreciation, descriptive analysis including mean, standard deviation, range of scores, skewness and kurtosis were obtained. In addition to the descriptive analysis providing important information such as number and percentage of females and males, they also allow to check for any violations of assumptions (Pallant, 2016, p. 53). Because the Kolmogorov-Simonov statistics showed a significant result for the BAS-2 scale, the assumption of normality was not met. According to Pallant (2016, p. 63), this is common in large samples. A look at the histogram revealed that the score of BAS-2 was moderately negatively skewed. However, as this study had a large enough sample size ($n > 200$) this would not make any significant differences in analysis (Tabachnick & Fidell, 2013, p. 80).

Reliability test BAS-2

To examine internal consistency for the BAS-2 scale, a reliability analysis was conducted. The most common indicator for internal reliability is found through the correlation-based

statistic Cronbach's alpha (α) (Morling, 2015, p. 135). This means, that for each item on the scale, the variance within the item and the covariance between the item and any other item from the scale is calculated (Field, 2018, p. 822). Good internal reliability for a self-report measure is a Cronbach's alpha estimate above .7 (Morling, 2015, p. 135). In this study, the results of the BAS-2 scale were Cronbach's alpha of 0.97, indicating high internal consistency.

6.6.2 Main statistical analyses

Exploratory factor analyses

A factor analysis takes a large set of variables and attempts to reduce it into a smaller set of variables while keeping as much of the original information as possible (Field, 2018, p. 779). One of the main techniques in factor analysis is called principal component analysis (Pallant, 2016, p. 182). Principal component analyses were conducted for this study to examine whether the BAS-2 scale was measuring one underlying factor. As previous studies examining the BAS-2 scale in adolescent samples have performed this analysis separately for boys and girls (Alcaraz-Ibáñez et al., 2017; Baceviciene & Jankauskiene, 2020; Góngora et al., 2020; Lemoine et al., 2018), it was decided that this study would follow these examples. Before performing the principal component analyses (PCA), the suitability of the data for factor analyses was assessed. Two main issues to consider are the sample size and the strength of the relationship among the items being above .3 (Pallant, 2016, p. 183). The sample size for boys ($n = 1235$) and girls ($n = 1012$) in this study was considered large enough, and in the correlation matrix, all coefficients were above .3 in both samples. Two other statistical tests generated by IBM SPSS are the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity (Pallant, 2016, p. 184). The KMO value was .96 (boys) and .97 (girls), exceeding the recommended value of .6 (Kaiser, 1974). Bartlett's test of Sphericity was for both boys and girls statistically significant ($p < .001$) (Bartlett, 1954), supporting the factorability of the correlation matrix.

Chi-square test

The purpose of the chi-square test is to explore the relationship between two categorical variables with two or more categories (Pallant, 2016, p. 218). A chi-square test was performed to examine whether there were any differences in sports groups regarding gender and SES. To

examine the relationship in detail for types of sports involvement and gender, and between sports involvement and SES, the following four sport groups were included: not-active, active individual only, active team only, and hybrid. The assumption that the frequency of cases in each cell should be above 5 (Pallant, 2016, p. 218) was met. As the table was larger than 2x2 the value of Cramer's V was used to report effect sizes where different criteriums are used depending on the table size (Pallant, 2016, p. 222). For the analysis of gender differences in sports participation, the criteria used for judging effect size were .01= small, .03 = medium, and .50= large (Pallant, 2016, p. 222). For the analysis of SES differences in sport participation, the criteria used were small=.07, medium=.21, and large=.35 (Pallant, 2016, p. 222).

As the contingency table was 2x4 for gender and sports participation, and 3x4 for SES and sport participation, a chi-square test could not provide us with information as to which percentages contributed to the statistically significant effect (Gignac, 2019, p. 16). Hence, post-hoc analyses were conducted by using the methods adjusted standardized residual analysis. Adjusted standardized residuals greater than 1.96 indicate a significant difference between expected and observed cell percentage (Gignac, 2019, p. 16). However, because the number of statistical analyses on the same sample of data increase, the chances of a familywise error rate increase. To avoid increasing the familywise error rate beyond .05, the p-values associated with the adjusted standardised residuals were corrected with a Bonferroni correction (Gignac, 2019, p. 18).

Independent- samples t-test and analysis of variance

When interested in comparing the mean scores of two different groups, an independent-samples t-test is appropriate (Pallant, 2016, p. 244). In the present study, an independent sample t-test was conducted to examine any gender differences in levels of body appreciation. Assumptions of the level of measurement, random sampling, and independence observations were met. In this study the significance value of Levene's test was .026., thus violating the assumption of equal variances (Pallant, 2016, p. 247). Therefore, the alternative t-value provided by IBM SPSS was reported. Based on the values from the analysis, effect size (eta-squared) was calculated. Effect size gives information about how large the differences between groups are (Pallant, 2016, p. 247). According to Cohen (1988, p. 284), the guidelines for interpreting effect size of eta squared values are .01= small effect, .06= moderate effect, and .14= large effect.

A one-way between-subjects analysis of variance (ANOVA) was conducted in the present study to examine differences in body appreciation levels between the three SES groups: low, medium, and high. This test is similar to a t-test but is used when there are more than two groups to compare (Pallant, 2016, p. 109). Effect size used was Eta squared (η^2), where .01= small effect, .06= medium effect, and .14= large effect (Pallant, 2016, p. 260). Any significant effects found by the one-way ANOVA were followed up by post-hoc test. While the ANOVA test only tells us whether the groups differ, a post-hoc test will tell us which groups that are significantly different from each other (Pallant, 2016, p. 109). Assumptions of the level of measurement, random sampling, and independence of observations were met (Pallant, 20016, p. 207). Scores on the dependent variable, body appreciation, were not normally distributed, but as each group had a large enough sample size ($n > 30$), the one-way ANOVA is robust against violation of this assumption (Pallant, 2016, p. 208). The power of a one-way ANOVA test can be influenced by sample size, effect size, and alpha level. As each group had a sample size of $n > 100$, power would not be an issue (Pallant, 2016, p. 209). The Kolmogorov-Smirnov test revealed that body appreciation scores were not normally distributed for each of the three SES groups; Low SES group $D(129) = .083, p = .03$, Medium SES group $D(558) = .069, p < .001$, high SES group $D(1367) = .104, p < .001$. This data indicated that the assumption of normality was violated. However, ANOVA is robust to violations of normality when the sample size is large enough (Pallant, 2016, p. 208). The assumption of homogeneity of variance was also violated. Consequently, the results of the Welch test were reported, which is a robust test of equality of means (Field, 2018, p.537). As the sample size in the three SES groups was very different, Hochberg's GT2 post hoc test was used (Field, 2018, p. 551).

Correlation analyses

The correlational analysis examines the linear relationship between two variables (Pallant, 2016, p. 134). Correlational analyses were conducted to examine if there was a relationship between body appreciation, sports participation, individual sports participation, team sports participation, participation in both individual and team sports, gender, and SES. For this study, the correlational analyses aimed to find which variables the study should include in the regression analysis. The value of the correlational coefficient can range from -1 to 1 and indicates the strength of the relationship between two variables (Pallant, 2016, p. 137). In the correlational analyses both the parametric analysis Pearson and the nonparametric analysis

Spearman's rho were performed. As SES is an ordinal variable, and the variable of body appreciation did not meet normality, results were reported in Spearman's rho (Pallant, 2016, p. 129). A value of r between .10 to .29 indicates a small association, .30 to .49 indicates a medium association, and .50 to 1.0 indicates a strong association (Pallant, 2016, p. 137). The correlation analyses do not allow us to control for any confounders but can tell us about the association between two variables and the strength and direction of this relationship (Pallant, 2016, p. 145).

Hierarchical multiple regression analyses

To examine if sports participation was a predictor of body appreciation, hierarchical multiple regression was used as the statistical analysis. In multiple regression analysis the dependent variable should be continuous, while the predictor variables could be continuous or dichotomous (Tabachnick & Fidell, 2013, p. 155). In this study, body appreciation was the dependent variable. The predictor variable was sports participation which was dichotomous (0= not active, 1= active). When examining associations between two variables, it is important to consider whether underlying factors influence the results. These factors are called confounders (Bjørndal & Hofoss, 2004, p. 36) A hierarchical multiple regression analysis provides information while statistically controlling for the effect of other variables (Pallant, 2016, p. 150). It also provides information regarding how much unique variance each variable account for (Pallant, 2016, p. 155). To ensure a large enough sample size to run subgroup analysis of the different sport groups, it was decided to include responses from all participants collected at time 1 (first follow up) (Larsen et al., 2018). As the sample was made up of two intervention groups and one control group (Larsen et al., 2018), group-type (condition) were dummy coded and controlled for in step 1. It was identified there was no significant effect of group-type. Two other variables that could potentially be co-founders in this study are gender and SES. Consequently, these variables were controlled for. In step 2 gender was added, and in step 3 SES was added. SES were dummy coded where the "high" SES group was set as a reference group.

Another purpose of this study was to examine whether gender moderates the association between being active in sports and body appreciation levels. A moderator variable will affect the relationship between two other variables (Field, 2018, p. 484). If gender is a moderator variable, the association between sports participation and body appreciation levels will differ between boys or girls. To examine if this was true, an interaction variable between gender and

sports participation was created and included in the last step of the analysis. This was performed manually by multiplying the independent variable (sports participation) with the moderator variable (gender).

Before interpreting results from multiple regression, it is important to check for assumptions first (Pallant, 2016, p. 159). An examination of correlations revealed that none of the independent variables were highly correlated (above .7), thus all variables were retained. The collinearity statistics (i.e., Tolerance and VIF) were all within accepted limits (tolerance value of less than .10, or a VIF value of above 10). Therefore, the assumption of multicollinearity was not violated. Inspections of residual and scatter plots suggested the assumption of normality, linearity, and homoscedasticity was not violated. The data were examined for the presence of univariate and multivariate outliers. No significant univariate was identified using the cut-off for $p = .001$. No significant multivariate outliers were identified as having Mahalanobis's Distance scores greater than 24.32, the cut-off for $p = .001$ with seven predictors (Pallant, 2016, p. 161). Consequently, no outliers were excluded from the final analysis.

This study also aimed to examine the relationship between body appreciation and engagement in different types of sports; being active in individual sports, being active in team sports, or being active in both individual and team sports. To examine this, a new hierarchical multiple regression analysis was performed with sport types as predictors. Each of the sport types were dummy coded, and the "not active" group was set as the reference group. Group-type (condition), gender, and SES were controlled for in the same order as the first regression analysis. A significant effect related to group type was not found. In the last step, a moderation analysis of gender was conducted. Interaction variables between gender and each of the sport groups (individual, team, and hybrid) were created. An examination of correlations revealed that none of the independent variables were highly correlated (above .7), therefore all variables were retained. The assumption of multicollinearity was not violated as Tolerance and VIF values were within acceptable limits. Inspections of residual and scatter plots suggested the assumption of normality, linearity, and homoscedasticity was not violated. The data were examined for the presence of univariate and multivariate outliers. Significant multivariate outliers were identified as having Mahalanobis's Distance scores greater than 31.26, the cut-off for $p = .001$ with eleven predictors (Pallant, 2016, p. 161; Tabachnick & Fidell, 2014, p. 10). It was identified eight cases with values exceeding 31.26 (critical value),

which composes only 0.36% of the total sample. Examining the casewise diagnostic table, three cases were found to have a residual value of above 3.0 or below -3.0. It was examined whether these three cases would have any influence on the results of the model by looking at the maximum value of Cook's distance. As the maximum value was 0.009, it can be assumed that these cases do not influence our model results. Tabacknick and Fidell (2014, p. 109) argue only values larger than 1 are a potential problem. Therefore, no outliers were excluded from the final analysis.

The regression analysis found a significant moderation effect of gender between participation in both individual and team sports and body appreciation. As a result, it was decided to conduct separate regression analyses for each gender to examine the association between participation in both sport types and body appreciation. Preliminary analysis was conducted to ensure no violation of the assumption of normality, linearity, multicollinearity, and homoscedasticity. As with the previous regression analysis, the condition groups were controlled for with no significant effect.

6.7 Ethical Considerations

Scientific research aims to search for the truth (NESH, 2016, p. 9). However, there can never be any guarantee that research will reach this goal as most conclusions are temporary and limited (NESH, 2016, p. 9). Ethical research consists of a variety of norms, values, and institutional arrangements which help to establish and regulate scientific research (NESH, 2016, p. 5).

This study has focused on ethical considerations by reflecting on choices being made in the method and analysis section of this study. It refers to other research sources when necessary, the reasoning for worldview and scientific methods are explained, and there is openness about weaknesses of the study. The ethical guidelines should be thought of as a helpful tool which underscore important factors that researchers should consider but also factors which may need to be evaluated against each other and/or against other requirements (NESH, 2016, p. 7). To follow these ethical guidelines is considered a good research practice (NESH, 2016, p. 11).

The principle of confidentiality means that researchers should not forward information or present research data in ways that could identify participants (NESH, 2016, p. 16). In the

COMPLETE study, none of the questions could identify the participants directly. Participants' right to anonymity and confidentiality was secured using anonymous ID numbers and an encryption key for personal details (Larsen et al., 2018). Respecting participants by securing their anonymity, integrity, freedom, and codetermination is an important aspect of research ethics (NESH, 2016, p. 12). If a study involves collecting personal and sensitive information the researchers are required by law to provide sufficient information to participants and to get informed consent (NESH, 2016, p. 13). Researchers are responsible for giving the participants information regarding the aim of the study, who will have access to the data, how the results will be used, and the possible consequences of participation (NESH, 2016, p. 13). All participants in this study gave written informed consent. As all participants had turned 16-years at the point of data collection, no informed consent by parents was required. The COMPLETE project has granted ethical approval from the Norwegian Centre for Research Data (NSD) (see Appendix B). Therefore, the current study did not need to apply for ethical approval.

The present study chose to use data that had already been collected. As the data set already studied variables of interest with a large sample, this was considered as a better option than to collect data myself. This is also ethical as many students have used their time to answer different surveys. Therefore, it is important to ensure that a large amount of the data is examined so their time does not go to waste.

7 Results

The main objective of this study was to examine the associations between sports participation and body appreciation in adolescents whilst adjusting for relevant sociodemographic factors, and whether this association was moderated by gender. The following chapter will present the results that emerged from the analysis. The results are presented in the same order as the research questions.

7.1 Exploratory Factor Analyses

Exploratory factor analyses were conducted separately for boys and girls on the 10 items of the BAS-2 scale. For both genders, the principal component analyses revealed that only 1 component had eigenvalues above Kaiser's criterion of 1, explaining 77.3% of the variance in the boys' sample and 80.1% in the girls' sample. An inspection of the two screeplots revealed a break between the first and second components, also supporting a one-component solution for both boys and girls (Cattell, 1966). As both Kaiser's criterion and Catell's scree test tends to overestimate the number of components, parallel analysis has been shown as the most accurate approach (Pallant, 2016, p. 185). A parallel analysis compares the size of the eigenvalues with eigenvalues obtained from a randomly generated data set of the same sample size (Pallant, 2016, p.185). Parallel analyses supported the one-dimensional factor structure of the scale in both samples, as only the first eigenvalue exceeded the corresponding value from the random dataset. Table 3 shows item-loading for each item. All items loaded strongly on one component ($> .7$) and indicated high internal reliability between items.

Table 3.*Factor analyses of the BAS-2 scale for boys and girls*

Item	Item loading	
	Boys (<i>n</i> = 1114)	Girls (<i>n</i> = 948)
1. I respect my body	.87	.89
2. I am happy with my body	.90	.92
3. I think that my body has at least some good qualities	.88	.90
4. I have a positive attitude towards my body	.93	.95
5. I listen to the body's needs	.81	.78
6. I love my body	.91	.94
7. I appreciate the different and unique side of my body	.91	.92
8. My behaviour shows my positive attitude to my body, for example, that I'm going with my head raised and smiling	.83	.83
9. I am comfortable in my body	.90	.93
10. I feel nice to look at even if I'm different to the media's appeals of attractive people	.85	.89

Note. Cronbachs α = .97 (boys) and = .97 (girls).

7.2 The Sample

The final sample consisted of 2 249 adolescents (45% female) between the age of 16 and 19 years ($M = 16.87$, $SD = 0.4$). This subchapter will first present results of the prevalence of sport participation across gender and SES, followed by differences in body appreciation levels across gender and SES.

7.2.1 Organised sports participation in relation to gender and SES

Table 4 shows the number of participants who were non-active, active in individual sports only, active in team sports only or active in both sport types distributed by gender and SES. A chi-square test for independence indicated significant gender differences in sports participation with a small to medium effect size, $\chi^2(3, n = 2209) = 32.73$, $p < .001$, $v = .122$. A post-hoc z-test on the adjusted residuals with Bonferroni Correction revealed that there

were significant differences between the male and female percentage, only for the individual sports group and the hybrid sports group, $p < .001$. More girls (23.3%) than boys (16.3%) were active in individual sports and more boys (15.9%) than girls (9.9%) were active in both individual and team sports.

A chi-square test for independence indicated significant differences in sports participation based on SES $\chi^2(6, n = 2189) = 42.71, p < .001, v = .099$. However, the effect size was small (Pallant, 2016, p. 222), indicating that SES has a small effect on the choice of sports participation in adolescence. Adjusted residuals indicated significant differences between expected and observed frequencies in all three SES groups of those who did not participate in sports. These cells remained significant after a Bonferroni correction with p values of $p = .001$ (low SES), $p = .012$ (medium SES), and $p < .001$ (high SES). Significantly more participants than expected in the low (64.8%) and medium SES (54.4%) group did not participate in sports, and significantly fewer participants than expected in the high SES (44.7%) did not participated in sports. Of the other cells, after a Bonferroni correction was applied, only the low SES and high SES groups of team sports remained significant with p values of $p = .002$ and $p < .001$. Significantly less participants than expected from low SES (6.9%) were active in team sports and significant more participants than expected from high SES (21.2%) were active in team sports.

Table 4.
Descriptive data of prevalence for sports participation and gender and SES differences

		% (n)			
		Not Active	Individual Sports	Team Sports	Hybrid
Gender	Boys	47.8 (579)	16.3 (197)***	20 (242)	15.9 (193)***
	Girls	50 (499)	23.3 (233)***	16.7 (167)	9.9 (99)***
	Total	48.8 (1078)	19.5 (430)	18.5 (409)	13.2 (292)
SES	Low	64.8 (94)***	17.2 (25)	6.9 (10)**	11 (16)
	Medium	54.4 (325)*	19.9 (119)	15.2 (91)	10.4 (62)
	High	44.7 (647)***	19.5 (282)	21.2 (307)***	14.6 (211)

Note. Chi-square test for independence. * $p < .05$. ** $p < .01$. *** $p < .001$.

7.2.2 Body appreciation in relation to gender and SES

Average scores on body appreciation were 3.64 with a standard deviation of 1.02, indicating large differences within the sample. Table 5 shows that body appreciation varied by gender ($t(1896.25) = 12.78, p < .001$, with girls ($M = 3.31, SD = 1.06$) reporting lower levels compared to boys ($M = 3.87, SD = 0.93$). The effect size was large (eta squared) of $\eta^2 = 0.73$.

A one-way between subjects ANOVA test was conducted to compare SES groups and body appreciation. Results are presented in table 5. There was a statistically significant difference at the $p < .001$ level in body appreciation levels for the three SES groups: $F(2, 327.96) = 40.1, p < .001$. Despite the statistical significance, the actual difference in mean scores between the groups was quite small. This is evident in the small effect size obtained (eta squared = 0.04). Post-hoc comparisons using the Tukey HSD test indicated that the mean score for the SES low group was significantly different from SES medium group ($p = .003$), and SES high group ($p < .001$). The mean score from the SES medium group was significantly different from the SES high group ($p < .001$).

Table 5.

Body appreciation levels and gender and SES differences

Group (n)	M (SD)	t	df	95% CI	p-value
Gender a		12.78	1896.3	0.47-0.65	<.001*
Boys (1114)	3.87 (.093)				
Girls (948)	3.31 (1.06)				
SES b			2, 327.96		<.001*
Low (129)	3.07(1.16)			2.87-3.27**	
Medium (558)	3.39 (1.01)			3.31-3.47**	
High (1367)	3.75 (0.99)			3.69-3.80**	

Note. a= independent sample t-test. b= One-way ANOVA with Welch's F reported. *two-tailed.**for mean.

7.3 Correlational Analyses

Table 6 displays intercorrelations between body appreciation, individual sport, team sport, gender, and SES. Body appreciation was significantly correlated to all variables except for individual sport. The strongest correlation coefficient was between body appreciation and gender ($r = -.27, n = 2062, p < .001$). As female was recorded as (= 1), this means that there is a negative association between being female and body appreciation. Even though this was the highest correlation coefficient, the strength of the relationship was small (Cohen, 1988, p. 79). Of the sports groups, team sports ($r = .08, n = 2063, p < .001$), and hybrid ($r = .12, n = p < .001$) demonstrated positive significant associations with body appreciation.

Table 6.

Intercorrelations between body appreciation, sports participation, individual sports, team sports, hybrid (both individual and team sports), gender, and SES

	1	2	3	4	5	6	7
1. Body Appreciation	-						
2. Sports participation	.16***	-					
3. Individual sports	.02	.48***	-				
4. Team Sports	.08***	.47***	-.23***	-			
5. Hybrid	.12***	.38***	-.19***	-.18***	-		
6. Gender	-.27***	-.02	.09***	-.04	-.09***	-	
7. SES	.20***	.12**	.003	.10***	.06**	-.05*	-

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Spearman's rho.

7.4 Hierarchical Multiple Regression Analyses

A hierarchical multiple regression analysis was performed to examine to what extent sports participation predicted body appreciation levels while controlling for gender and SES.

Another hierarchical multiple regression analysis was then conducted to examine more in detail the different types of sports participation as a predictor for body appreciation while controlling for gender and SES. This subchapter will describe the results of these two analyses.

7.4.1 Sports participation and body appreciation

Table 7 shows the results of the hierarchical multiple regression analysis examining associations between sports participation and body appreciation. As described in methods, condition groups (not shown) and sports participation were entered at step 1. Condition groups showed no significant effect with intervention group 1 ($\beta = -.02, p = .446$) and interventions group 2 ($\beta = -.01, p = .709$). Sports participation was a significant predictor and explained 2.8% ($\beta = .17, p < .001$) of the variance in body appreciation levels. At step 2 gender was added as a control variable, explaining an additional 7.3% ($\beta = -.27, p < .001$) of the variance in body appreciation. Sports participation remained significant. To control for SES, these variables were entered at step 3, explaining an additional 3% ($p < .001$) of the variance in body appreciation. Sports participation continued to remain significant. When sports participation, gender and SES was included, the final model (step 3) explained 13.1% ($p < .001$) of the variance. Gender showed the highest unique contribution ($\beta = -.263, p < .001$). The interaction variable between gender and sports participation did not contribute significantly to body appreciation levels (step 4).

Table 7.

Hierarchical regression analysis with sports participation as predictor of body appreciation while controlling for gender and SES. Gender included as a moderator in the last step

	<i>B</i>	(95% CI)	<i>SE B</i>	β	R^2	ΔR^2
Step 1					.028***	
Sports participation	.343	(.255, .431)	.045	.166***		
Step 2					.101***	.073***
Sports participation	.328	(.243, .413)	.043	.159***		
Gender	-.562	(-.647, -.476)	.044	-.271***		
Step 3					.131***	.030***
Sports participation	.286	(.202, .371)	.043	.139***		
Gender	-.544	(-.629, -.460)	.043	-.263***		
Low SES	-.568	(-.741, -.395)	.088	-.135***		
Medium SES	-.310	(-.405, -.214)	.049	-.133***		
Step 4					.131***	.000
Sports participation	.299	(.185, .412)	.058	.145***		
Gender	-.531	(-.651, -.410)	.061	-.256***		
Low SES	-.568	(-.741, -.395)	.088	-.135***		
Medium SES	-.310	(-.406, -.214)	.049	-.133***		
Sports participation x gender	-.027	(-.196, .142)	.086	-.011		

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. High SES was the reference group for SES. Condition groups 1 and 2 were included in step 1 (control groups as the reference group) but showed no significant effect.

7.4.2 Sport types and body appreciation

Table 8 shows the effect of different types of sports participation (individual, team, hybrid) on body appreciation levels, after controlling for gender and SES. Condition groups (not shown) and sports groups were entered at step 1. Condition groups showed no significant effect with intervention group 1 ($\beta = -.02, p = .482$) and interventions group 2 ($\beta = -.01, p = .705$). All three sports groups were significant predictors of body appreciation. Together they explained 3.3% ($p < .001$) of the variance in body appreciation levels. Gender was entered at step 2 and explained an additional 7% ($\beta = -.267, p < .001$) of the variance. The three sport groups remained significant. The variables of SES were entered at step 3 explaining another 3% ($p < .001$) of the variance. The three sport groups continued to remain significant. The final model (step 3) explained 13.2% of the variance ($p < .001$). Gender ($\beta = -.260, p < .001$) showed the highest significant unique contribution. This means that being a boy, body appreciation levels will increase by .260 standard deviations compared to being a girl. Of the three sport groups, the hybrid group ($\beta = 1.21, p < .001$) contributed the most, followed by team sports ($\beta = .106, p < .001$), and individual sport ($\beta = .093, p < .001$).

At the final step, interaction variables between gender and each of the three sport groups were created and entered. Together, these three interaction variables did not contribute to significant additional variance. Out of the interaction variables, “hybrid x gender” gave a significant unique contribution ($\beta = -.058, p < .05$). This means that if an adolescent is active in both individual and team sports, body appreciation levels will be moderated by whether the adolescent is a girl or a boy. The two other interaction variables did not contribute significantly to body appreciation levels.

Table 8.

Hierarchical regression analysis with sport types as predictor of body appreciation while controlling for gender and SES. Gender included as a moderator in the last step

	<i>B</i>	(95% KI)	<i>SE B</i>	β	R^2	ΔR^2
Step 1					.033***	
Individual sports	.223	(.105, .342)	.060	.085***		
Team Sports	.370	(.250, .490)	.061	.138***		
Hybrid	.478	(.343, .615)	.070	.156***		

Step 2					.103***	.07***
Individual sports	.265	(.151, .380)	.058	.101***		
Team sports	.340	(.224, .456)	.059	.127***		
Hybrid	.411	(.279, .543)	.067	.134***		
Gender	-.554	(-.639, -.468)	.044	-.267***		
Step 3					.132***	.030***
Individual sports	.244	(.131, .356)	.057	.093***		
Team sports	.284	(.169, .399)	.059	.106***		
Hybrid	.369	(.239, .500)	.066	.121***		
Gender	-.538	(-.622, -.453)	.043	-.260***		
Low SES	-.570	(-.743, -.398)	.088	-.136***		
Medium SES	-.308	(-.403, -.213)	.049	-.132***		
Step 4					.135***	.003
Individual sports	.230	(.068, .391)	.082	.088**		
Team sports	.253	(.103, .403)	.077	.095**		
Hybrid	.470	(.308, .633)	.083	.154***		
Gender	-.522	(-.641, -.403)	.060	-.252***		
Low SES	-.570	(-.742, -.397)	.088	-.136***		
Medium SES	-.303	(-.398, -.207)	.049	-.130***		
Individual sports x gender	.023	(-.201, .248)	.114	.007		
Team sports x gender	.079	(-.152, .310)	.118	.020		
Hybrid x gender	-.291	(-.562, -.021)	.138	-.058*		

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. SES high were reference group for SES. Condition group 1 and 2 were included in step 1 (control groups as reference group) but showed no significant effect.

7.4.3 Moderating effect of gender between participation in both individual and team sports and body appreciation

Because the regression analysis found a significant moderation effect of gender between the hybrid sport group and body appreciation, it was decided to conduct a separate regression analysis for boys and girls to examine the associations between participation in both individual and team sports and body appreciation. For boys, it was found that after gender and SES was controlled for, participation in both individual and team sports was a significant predictor of body appreciation ($\beta = .149, p < .001$). For girls, it was found no significant association between participation in both sport types and body appreciation levels after SES was controlled for ($\beta = .013, p = .687$). Figure 1 demonstrates the moderating effect of gender on the association between participation in both sport types and body appreciation.

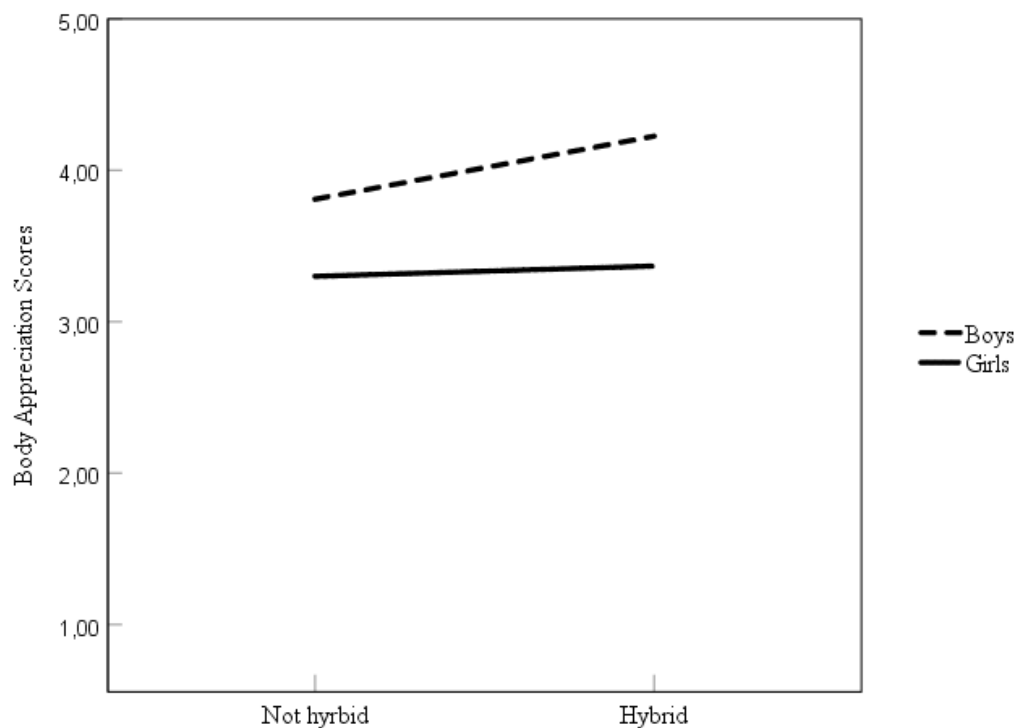


Figure 1. The moderating effect of gender on the associations between being active in both individual and team sports and body appreciation

8 Discussion

This chapter will discuss the research questions of this study considering the results from the analyses. First, the main results will be presented before the results of each research question will be separately discussed. The results will be discussed against previous research and theories guided by the objectification theory (Fredrickson & Roberts, 1997), the embodiment model (Menzel & Levine, 2011), and the theory of social comparison (Festinger, 1954). Finally, the strengths and weaknesses of the study will be discussed before addressing the direction for future research and possible implications for health promotion practice.

8.1 Main Results

The primary purpose of this study was to examine associations between sports participation and body appreciation in adolescents attending the first year of high school. Initially, the unidimensional factor structure of the BAS-2 was confirmed. Regression analysis showed that there was a significant association between sports participation and body appreciation, after controlling for gender and SES. It was further examined if the relationship varied according to sport types, more specifically, individual sports, team sports, or individual and team sports (hybrid). After gender and SES were controlled for, it was found participation in all three sport groups significantly predicted body appreciation. Out of the three groups, the hybrid group was the strongest predictor, followed by participation in team sports.

The present study also aimed to examine whether gender moderated the relationship between sports participation and body appreciation. However, no moderation effect was found. This indicates that the associations between sports participation and body appreciation did not differ between genders. Assessing each sport type separately, the study identified a significant interaction effect of gender between participation in both individual and team sports and body appreciation. Separate regression analysis of each gender revealed that there was only a significant association between participation in both individual and team sports (hybrid) and body appreciation for boys. Further, the descriptive analysis revealed significant gender and SES differences in sports participation and in body appreciation levels.

8.2 Factor Structure and Internal Validity of the BAS-2

This subchapter will present the results from the factor analysis conducted with the BAS-2. Consequently, the results will be discussed against previous research. Research applying the BAS-2 scale with adolescents is limited and only limited studies have examined its psychometric properties in a sample of adolescents. To my knowledge, this is the first time a study has included the BAS-2 scale in adolescents in Norway.

Results confirmed the scale has a unidimensional factor structure in boys and girls, as has been presented in previous studies with adolescents (Alcaraz-Ibáñez et al., 2017; Baceviciene & Jankauskiene, 2020; Góngora et al., 202; Lemoine et al., 2018). The literature has identified item five “*I listen to the body’s needs*” as the lowest factor loading (Alcaraz-Ibáñez et al., 2017; 2020; Góngora et al., 202; Lemoine et al., 2018). In the current study, the factor loading for this item was strong with .81 for boys and .76 for girls, although it demonstrated the lowest loading of the ten items. In line with previous studies (Baceviciene & Jankauskiene, 2020; Lemoine et al., 2018; Góngora et al., 2020), the scale revealed high internal consistency (Cronbach’s alpha). The analyses in this study have been conducted in line with other studies that have aimed to examine the factor structure of the BAS-2 scale (Góngora et al., 2020; Alcaraz-Ibáñez et al., 2017; Baceviciene & Jankauskiene, 2020; Lemoine et al., 2018). All ten items of the scale are valid to use in the sample of this study.

Other studies have also examined convergent validity and found that body appreciation correlated positively with self-esteem, psychological well-being, and intuitive eating (Lemoine et al., 2018). For girls, the BAS-2 was found negatively correlated with body dissatisfaction and a drive for thinness, while for boys the scale was negatively correlated with a drive for muscularity (Góngora et al., 2020). Alcaraz-Ibáñez et al. (2017) also supported convergent validity when they found a negative association between BAS-2 and social physique anxiety and a positive association with life satisfaction. Temporal stability over a two-week period has also been confirmed in samples of adolescents (Alcaraz-Ibáñez et al., 2017; Baceviciene & Jankauskiene, 2020). Overall, these findings provide support for the use of a Norwegian translation of the BAS-2 in measuring body appreciation among adolescent boys and girls in Norway.

8.3 Sports Participation

The following subchapter will discuss the prevalence of sports participation. First, overall sports participation will be discussed. Then sports participation and gender differences will be addressed regarding overall participation and concerning sport types (individual, team, hybrid). Finally, SES differences in sports participation will be addressed.

8.3.1. Prevalence of sports participation

Approximately 50% of the sample reported being active in sports. Interestingly, this is a higher percentage than Torstveit et al. (2018) found in their study of Norwegian adolescents between 16 to 17 years old, where the percentage was 40%. A large Norwegian national study of adolescents in the same age group also reported lower numbers of sports participation, compared to the present study (Jacobsen et al., 2021). In their study, 38% of the boys and 33% of the girls were active in sports (Jacobsen et al., 2021, p. 32) compared to 52.2% (boys) and 50% (girls) in the present study. There could be many reasons for these different findings. One of them could be concerning the wording of the question related to individual sports. Individual sports were in the current study measured as “*Organised individual physical activities*”, which may have led participants to include self-organised activities such as going to the gym or practicing yoga. In comparison, Torstveit et al. (2018) measured sports participation as “*organised leisure-time sport activities*” and included measurements for physical activity such as leisure-time exercise and self-organised activity. In the study of Jacobsen et al. (2021), the definition of sports participation was also more specific, measured as “*participation in sport clubs*”. Other reasons why the present study had higher levels of sports participation than previous studies of Norwegian adolescents in the same age group could be related to regional differences. For example, the study of Torstveit et al. (2018) included adolescents from the southern region of Norway, while the current study included adolescents from the four counties Sogn og Fjordane, Hordaland, Troms, and Nordland. According to Bakken (2019a, p. 42), adolescents from both Sogn og Fjordane and Hordaland (today one county: Vestland) reported higher levels of sports participation than the average national levels.

The present study, and the studies of Torstveit et al. (2018) and Jacobsen et al. (2021), demonstrates that the number of sports-active adolescents in the first grade of high school in Norway is lower than found in younger age groups (Jacobsen et al., 2021, p. 32). This mirrors

what the Norwegian Sports Organisation have reported of participant numbers between age groups (NIF, 2019). The increase in drop out is of worry, as the sporting context is an important health promoting area. Studies have shown that those who drop out are more likely to engage in drug-related activities and get involved in illegal behaviour (Bakken, 2019a, p. 91). Compared to those who continue with sports, those who drop out generally score lower on most indicators measuring life quality (Bakken, 2019a, p. 91). Despite that some choose to engage in other health promoting activities, it has been found that 30% of adolescents (13-18 years) that have dropped out of organised sports, are exercising less than weekly. In comparison, among adolescents who are still active in sports, almost everyone reports exercising weekly (Bakken, 2019a, p. 79). Importantly, a ten-year longitudinal study tracking adolescent in Norway from they were 13 to 23 years old, found that those who were active in sports at a young age were more likely to be active in adulthood (Kjønniksen et al., 2008).

8.3.2 Gender differences

This study did not find gender differences regarding participation in sports or not. If we look at sports participation overall, gender varied marginally with fewer girls (50%) being active in sports than boys (52.2%). Previous studies of Norwegian samples (Jacobsen et al., 2021, p. 33; Torstveit et al., 2018) and a large European sample (McMahon et al., 2017) have found that significantly fewer girls than boys participated in sports. The fact that the present study did not find significant gender differences in overall sports participation may be related to the observed increase in the number of girls (13-19 years old) that participate in sports (NIF, 2020, p. 8). According to the Norwegian Sports Organisation, the number of girls active in sports has increased by 1.9 percentage points in the last six years. (NIF, 2020, p. 8). In comparison, the number of boys active in sports has been stable (NIF, 2020, p. 8).

Additionally, the results of the present study suggest that a high number of girls reported being active in individual sports. As discussed, the measure of individual sports in this study may have led participants to include individual self-organised activities. Regardless, it is a positive finding that the present study did not find gender differences in sports participation, indicating that among high school students in Norway, sports participation is equally available for both genders.

When analysing sport types, significant gender differences were observed. The present study chose to separate between participants active in either individual sports or team sports, and

those who were active in both sport types, thus including a third sport group (hybrid). By doing this, it provides new information to the field regarding participation in different sport types. Consequently, it is difficult to compare the results with previous studies which have only separated between individual sports and team sports. In the current study, the categorisation into three groups of sport involvement demonstrated significant gender differences with more boys than girls reported being involved in both individual and team sports. Both Norwegian studies and international studies have typically found that significantly more boys are active in team sports compared to girls in this age group (Heradstveit et al., 2020; McMahon et al., 2017; Samdal et al., 2016, p. 22). It is thus an interesting finding that at the age of 16 years more boys than girls attended simultaneously individual and team sports. This tendency may be a result of gender norms, where it has historically been more accepted that boys are involved in sport than girls (Trolan, 2013). Even today, boys could have more opportunities to engage in different sports than girls, and parents may be more invested in their sons' sporting activities (Strandbu et al., 2020). In adolescents from immigrant families, it has been found larger gender differences in sports participation compared to adolescents with Norwegian parents (Jacobsen et al., 2021, p. 17). Girls from immigrant families report that they have more duties at home compared to their brothers and are more limited regarding sports participation due to religious norms (Younis, 2010). Finally, as the sample is at the age where the interest in fitness centres increases (Bakken, 2020, p. 28), it could be that boys attend the gym in addition to their team sports activities, and this has been included in the measure of individual sports. A national study found that 50% of boys in high school report exercising in a gym weekly (Bakken, 2020, p. 31).

When examining who was active in individual sports only, the current study found that significantly more girls (23.3%) than boys (16.3%) were active, while Samdal et al. (2016, p. 22) found opposite results using the same measure for individual sports and the same age group. Again, these numbers are not comparable due to the hybrid group of this study. If there was no hybrid group in the present study, the percentage of girls and boys that participated in individual sports would have been approximately the same. This was also found by Heradstveit et al. (2020) who included adolescents from the west-coast of Norway with 30.8% of girls versus 29.7% of boys being active in individual sports, using the same measure as the current study and the study of Samdal et al. (2016). Interestingly, in the European study, McMahon et al. (2017) reported that more girls (41.7%) than boys (30.1%) were active in

individual sports/fitness activities. These results could be related to age. The sample of McMahon et al. (2017) was between 14 and 15 years old, while the reported age group from the present study, the study of Heradstveit et al. (2020), and Samdal et al. (2016) were between 16 and 19 years old. Norwegian studies have found that more girls than boys drop out of sports during adolescent years, with the largest drop out identified in the transition from middle school to high school at the age of 15-16 years (Bakken, 2020, p. 28; Samdal et al., 2016, p. 22). Overall, the present study shows that more girls participate in individual sports (23.3%) than team sports (16.7%) while more boys participate in team sports (20%) than individual sports (16.3%). This has also been confirmed in other studies (Heradstveit et al., 2020; McMahon et al., 2017).

8.3.3 SES differences

It is well-known that economical cost influences sports participation among adolescents in Norway (Andersen & Bakken, 2019). As expected, the present study confirms there was significant SES differences with a higher number of adolescents with low SES not participating in sports compared to those with medium SES and high SES. This has also been demonstrated in previous Norwegian studies (Andersen & Bakken, 2019; Heradstveit et al., 2020; Jacobsen et al., 2021). For example, Jacobsen et al. (2021, p. 35) found that while only 31% of adolescents with low SES would participate in sports, 60% of those with high SES would participate. Differences in sports participation because of SES have also been established in a large European sample (Badura et al., 2021). An interesting finding of the current study was that among the sport groups, significant SES differences was only observed in the team sports group, with fewer people from the low SES group participating compared to people from the high SES group. In comparison, Heradstveit et al. (2020) identified significant SES differences in the individual sports group and in the team sports group. Overall, these findings are interesting, considering Norway was the first European country to organise a large national “sport for all” campaign as far back as 1967 (Van Tuyckom & Scheerder, 2010). Keeping that in mind, the findings of the present study indicate that these goals have not been achieved and more work towards achieving these goals should be prioritized.

8.4 Body Appreciation

The next section will first discuss overall body appreciation levels. Then gender differences will be compared to previous research, the objectification theory, and social comparison theory. Finally, the results from examining SES differences will be discussed.

8.4.1. Body appreciation levels

The average score for body appreciation levels in this sample was 3.68 with large individual differences. Significant gender differences (*girls* = 3.31, *boys*=3.87) were also found, with a large effect size. As body appreciation is a relatively new research field, only a few studies have measured body appreciation scores in adolescent samples. However, those that exist and have applied the BAS-2, can be compared to the results of the current study.

Based on the results of this study, the body appreciation levels of Norwegian adolescents are lower than some studies and higher than others. A Lithuanian sample (15-18 years old) reported mean scores for girls (3.24) and boys (3.41) which were slightly lower than the present study (Baceviciene & Jankauskiene, 2020). Opposite, Lemoine et. al (2018) found in their samples of Danish, Portuguese, and Swedish adolescents (12-19 years old) that average scores were higher than the present study (*girls*= 3.55-3.81, *boys*= 4.13- 4.31). The study of Góngora et al. (2020) also reported higher average scores for body appreciation (3.72-4.25) in their samples of adolescents (12–20-year-old) from Argentina, Mexico, and Colombia. The slightly lower scores observed in the present study are interesting and may be a result of different factors. The studies of Lemoine et al. (2018) and Góngora et al. (2020) had broader age groups and included adolescents as young as 12 years old. Research has found that compared to younger adolescents, older adolescents are more occupied with appearance (Abbott & Barber, 2010), and appearance-related comparisons are proven to be negatively related to body appreciation (Andrew et al., 2015). The small sample size for each country in the study of Lemoine et al. (2018) should also be noted, where the total sample size of adolescents was between 129 and 513 for each country. Therefore, the sample may not be representative of the whole Portuguese, Swedish, and Danish adolescent population. In comparison, the current study included a sample of over two thousand participants. Interestingly, Góngora et al. (2020) found that adolescents from Argentina reported significantly lower levels of body appreciation compared to Mexico and Colombia, suggesting there might be cultural differences between countries which influence body appreciation levels. As discussed, other studies have reported higher levels of body

appreciation than the current study. The present study also found large individual differences in the scores. These findings indicate that there is a potential for improvement in the way Norwegian adolescents view their bodies.

8.4.2 Gender differences

The significantly higher body appreciation levels in boys compared to girls mirror previous research on body appreciation with adolescent samples (Góngora et al., 2020; Alcaraz-Ibáñez et al., 2017; Jankauskiene et al., 2020; Lemoine et al., 2018). These findings may be discussed in the light of the objectification theory. In the Objectification theory, Fredrickson and Roberts (1997) stated that adolescent girls are in the age group where they come to realise that the body is an object that society will study and have opinions on. This could lead to a focus on appearance rather than what their bodies can achieve. Further, it can lead to ignorance of internal cues, thus failing to respond to bodily needs (Fredrickson & Roberts, 1997), an important aspect of body appreciation. Slater & Tiggerman (2010) tested the Objectification theory in a sample of adolescents between 12- to 16-years-old and results demonstrated that girls experienced higher levels of body surveillance, body shame, appearance anxiety, and disordered eating compared to boys. These results indicate that girls may be more prone to objectification than boys (Slater & Tiggerman, 2010). If that is true, according to the Objectification theory this may explain why girls in the present study had lower levels of body appreciation than boys.

Fredrickson and Roberts (1997) emphasize that objectification levels will be modified by age. This study included adolescents, which are at a vulnerable age because of recent changes in the body due to puberty. This is especially evident in girls, as they tend to gain weight and curves while comparing themselves to a thin idealisation provided by society and social media (Carey et al., 2013). In their meta-analytic review, He, Sun, Zickgraf et al. (2020) encountered that while one study found that body appreciation increased with age in women (Tiggemann & McCourt, 2013), another study revealed that age was not correlated with body appreciation in men (Swami et al., 2016). Based on these findings, He, Sun, Zickgraf et al. (2020) suggested that females tend to increase body appreciation levels as they get older, while in males, body appreciation remains more stable over time. Accordingly, there are likely to be gender differences in adolescents, as confirmed in the present study.

The Social comparison theory, and the research derived from it, could further increase our understanding of gender differences in body appreciation. The theory proposed that individuals strive to find accurate evaluations of themselves by comparing themselves to others (Festinger, 1954). Research on social comparison theory has found adolescent girls to have a higher frequency of appearance-related comparisons compared to adolescent boys, where these comparisons often are upward comparisons (Myers & Crowther, 2009). Upward comparisons are comparisons against someone who is perceived to be superior to ourselves. Thus, engaging in upward comparisons are likely to lead to feelings of not being good enough or emphasizing areas for improvement. As research has pointed out, appearance-related comparisons are negatively correlated to body appreciation (Andrew et al., 2015). Both the current research, previous research, and theory suggest that there are gender differences in how adolescents perceive their bodies. Therefore, programs that aim to increase body image should keep this in mind.

8.4.3 SES differences

A decision was made to examine differences in SES as a potential confounding variable. This was based on the literature indicating that SES is a predictor for sports participation (Andersen & Bakken, 2019), but also for BMI (Ramos et al., 2019; Tsitsika et al., 2016) which is related to body appreciation (He, Sun, Lin, et al., 2020). Significant, but small differences in body appreciation were found among the three SES groups (low, medium, and high). When further exploring the differences, it was identified that adolescents from low SES had significantly lower levels of body appreciation compared to adolescents from both the medium SES group and the high SES group. It was also revealed that the medium SES group had significantly lower body appreciation levels than the high SES group. These findings suggest that SES plays a role in body appreciation. As no other studies have examined SES and body appreciation, this is a novel addition to the positive body image field.

There are limited studies which have examined SES in relation to other measures of body image. Ramos et al. (2019) found in a large sample of Spanish adolescents that a low family affluence score was associated with low body image satisfaction and body image perceptions of being overweight. Also, regarding nutritional health, families from lower SES suffer more than families with higher SES. When compared to a high-income family that would use 10% of their income to eat healthily, a low-income family would have to use 30% of their family

income to buy the same food (Ward et al., 2013). As no previous studies have examined SES with body appreciation only assumptions can be made that less access to healthy food because of low SES, might influence body appreciation. Ward et al. (2013) found that families with lower income are more vulnerable to health problems associated with poor diet as cheaper food generally involves higher levels of fat and sugar, thus leading to higher body weight.

Body appreciation includes positive evaluations of the body and accepting it the way it is. For adolescents with high body weight, this could be harder to practice because of pressure from peers and society on how a “healthy” body should look like. Further, if suffering from health problems, the focus may be on how the body is not functioning rather than the positive aspects of it. In samples of adolescents, a negative association between BMI and body appreciation has been established (Baceviciene & Jankauskiene, 2020; Góngora et al., 2020; Piko et al., 2020). The objectification theory emphasizes how society’s perceptions of the “perfect body” could lead to feelings of not being good enough and shame related to this (Fredrickson & Roberts, 1997). Negative attitudes from social settings may lead people to take an observer’s perspective on their bodies, thus leaving less room for attending to internal body awareness, such as bodily needs (Frederickson & Roberts, 1997). People with higher BMI may experience feelings of being stigmatized, and as a result, it becomes difficult to appreciate the body (He, Sun, Lin, et al., 2020). In their meta-analysis, He, Sun, Lin, et al. (2020) confirmed there is a significant negative relationship between BMI and body appreciation.

Overall, the result from the present study suggests that adolescents from lower SES are more likely to report lower levels of body appreciation compared to adolescents from higher SES. Despite that the results revealed a small effect size, the results are interesting as it indicates that SES could play a role in adolescents’ body image. As explained above, eating habits and BMI may be related to these results as people from low SES generally tend to have higher BMI. However, other factors may also have played a role.

8.5 Sports Participation and Body Appreciation

This subchapter will address results from the research question aimed to examine associations between sports participation and body appreciation.

Multiple regression analysis revealed that sports participation demonstrated a significant contribution to body appreciation levels after gender and SES were controlled for.

A significant association between sports participation and body appreciation has previously been confirmed in adolescents in Lithuania while controlling for BMI (Baceviciene & Jankauskiene, 2020; Jankauskiene et al., 2020). Higher body appreciation has also been confirmed in student athletes compared to non-athletes (Soulliard et al., 2019). The observed effects may be explained by the established link between body appreciation and body functionality. The studies of Baceviciene and Jankauskiene (2020) and Soulliard et al. (2019) found a significant association between body appreciation and body functionality despite using different measures of body functionality. However, it should be mentioned that a focus on body functionality may for some individuals be associated with lower body appreciation (Alleva et al., 2015). For example, if someone strives to reach elite levels, suffers from injuries, or has a physical disability (Alleva et al., 2015). When comparing functional and aesthetic dimensions of body image in adolescent girls, it was found that sports participating girls reported higher functional satisfaction, functional values, and functional behavioral investment compared to both physically active and non-physically active girls (Abbot & Barber, 2011). Thus, indicating that sports participation can increase functional appreciation beyond general physical activity.

Soulliard et al. (2019) pointed out that male and female athletes score higher on body appreciation compared to both male and female non-athletes. They suggested that sports participation serves as a protective factor against body concerns (Soulliard et al., 2019). Supporting this, Jankauskiene et al. (2020) demonstrated that a higher score of body appreciation and body functionality decreased the risk of disordered eating in adolescents who participated in competitive sports. Although this was not examined in the present study, the sporting context may be particularly beneficial for positive body image compared to fitness centers, which increase in popularity in late adolescent years (Bakken, 2020, p. 28). A study of Australian adolescents showed that girls who exercised at a gym showed higher levels of body shame and disordered eating symptomatology than girls who did not exercise at a gym (Slater & Tiggerman, 2011). Further, university students in Norway have reported fitness centres as the setting where they most commonly experience general body appearance pressure (Sundgot-Borgen et al., 2021). The same study found that general body appearance pressure was negatively associated with self-esteem, life satisfaction, and body appreciation while positively associated with thin idealization and physical appearance comparison

(Sundgot-Borgen et al., 2021). As previously discussed, appearance-related comparisons are also observed to be negatively related to body appreciation in a sample of adolescents (Andrew et al., 2015). Supporting this, Homan and Tylka (2014) revealed that people who exercised for appearance-based reasons would have lower body appreciation compared to those with low appearance-based motivation. Further, perceived acceptance by others is associated with higher functional exercise motives, lower appearance motives (Tylka & Homan, 2015) and higher body appreciation (Andrew et al. 2016). These findings could enhance the importance of the sporting context, as the motivation to participate in sports during adolescence is likely to be for enjoyment and social connections (Frisén & Holmqvist, 2010; Goodwin et al., 2016). Consequently, having fun and learning new skills could be their focus rather than how they look. According to the objectification theory, a functional focus will naturally lead to less self-objectification compared to an appearance focus (Fredrickson & Roberts, 1997). Further, as adolescents emphasize social connections in their sport activities, they may feel more accepted in this group compared to other exercise settings.

The association between sports participation and body appreciation can also be viewed in light of the embodiment model, which proposes that engagement in embodying activities would influence positive body image (Menzel & Levine, 2011). Sport can provide opportunities for mind-body integration by increasing body awareness and body responsiveness as well as an increased sense of physical empowerment and physical competence. According to the embodiment model, this will lead to increased embodiment (Menzel & Levine, 2011). In support of this, Soulliard et al. (2019) reported that body appreciation and functionality appreciation were associated with sport confidence and flow state in a sample of student athletes. They emphasized that increased sport confidence may arise because of embodiment, where athletes experience ownership and trust in their bodies. The embodying experiences that sports allows for, is likely to lead to increased attention to the movements, which can explain the association between embodiment and flow (Soulliard et al., 2019). As previously presented, Fredrickson and Roberts (1997) believed self-objectification prevented women from experiencing states of flow. The Embodiment model proposes that increased embodiment could be a result of reduced self-objectification (Menzel & Levine, 2011). Based on the above findings, it is possible that sports participation, through the experience of flow, reduces self-objectification, which then enhances embodiment. While the present study identified a positive association between sports participation and body appreciation, other studies have partially supported this by using different measures of

body image. Some studies have examined appearance-related aspects of body image and found that adolescents active in sports are more satisfied with appearance compared to non-active adolescents (Gomez-Baya et al., 2019; Jankauskiene & Baceviciene, 2019). This could be because adolescents who are active in sports may be closer to the ideal physical body image than non-active adolescents (Jankauskiene & Baceviciene, 2019). Supporting this is the negative association between body acceptance and BMI (Laudańska-Krzemińska et al., 2020), and between body appreciation and BMI (Baceviciene & Jankauskiene, 2020; Góngora et al., 2020; He, Sun, Lin, et al., 2020; Lemoine et al., 2018). As previously noted, body appreciation reflects more aspects of body image than just satisfaction with appearance. However, adolescents who are satisfied with how they look may spend time appreciating what they have, rather than focusing on negative aspects. This may lead them to increased attention to internal needs, following the objectification theory (Fredrickson & Roberts, 1997). Sport-active adolescents may also be more satisfied with their bodies because of increased physical fitness. Perceived physical fitness has been reported higher in sport-active adolescents compared to non-sport active adolescents (Jankauskiene et al., 2020). Further, Laudańska-Krzemińska et al. (2020) reported that physical fitness was a greater predictor of body acceptance than physical activity. Another factor is that when being overweight, engagement in certain physical activities may be limited, leading to frustration with their body's functionality, thus reducing body appreciation (He, Sun, Lin, et al., 2020). Based on the above findings, it can be hypothesized that adolescents who are active in sports are more likely to have higher physical fitness than non-sport active adolescents. This could further lead to higher appreciation of both functionality and appearance, therefore increasing body appreciation.

Although there was a significant association between sports participation and body appreciation, the association was weak. Sports participation explained 3% of the variance while gender explained 7% and SES 3%. Therefore, it is likely that many factors play a role in adolescents' body appreciation. However, one could hypothesize that sports participation was not a stronger predictor than the observed results because sports participating adolescents compare themselves with other sports participating adolescents. This would be in accordance with social comparison theory that proposes individuals tend to compare themselves with people who are like themselves (Festinger, 1954). This means that adolescents are more likely to compare themselves with peers rather than celebrities. Consequently, this may lead to higher expectations of their bodies' functional capacity compared to adolescents who are not

active in sport, which further may influence body appreciation. In addition, social comparison theory has received criticism as research has found that people compare themselves to unrealistic body ideals presented through media equally as often as they compare themselves to peers (Myers & Crowther, 2009). Taking this into consideration, sports participating adolescents could compare themselves to their sports-idols who are likely to be close to the ideal body image as professional athletes generally are lean and muscular. Social comparison theory proposes that relevance influences social comparison, meaning that individuals will make comparisons on characteristics that are important to them (Halliwell, 2012, p. 752). Non-active participants may have other idols they compare themselves to, such as models presented in social media.

The sporting context is complicated. While sports participation is related to mastery and increased self-esteem (Wold, 2017, p. 208), it could also be thought of as an area for objectification, especially in competitions where there is likely to be audience watching. A focus on the audience rather than sport-specific tasks could lead to a decreased inner awareness, thus reducing body appreciation levels (Fredrickson & Roberts, 1997). This may be particularly evident in individual sports compared to team sports with multiple players active at the same time. This will be discussed further in the next subchapter.

8.6 Sport Types and Body Appreciation

To examine more in depth, organised sports participation was categorised into three groups: individual sports, team sports, or hybrid (individual and team sports). It has been suggested that sport types may influence the health effects of sports participation (Eime et al., 2013; Guddal et al., 2019; McMahon et al., 2017). This subchapter will discuss the results of the regression analysis aimed at studying whether sport types predicted body appreciation.

It was found that all three sport groups showed a significant contribution to body appreciation levels after gender and SES were controlled for. This adds new knowledge to the field as it is the first study to separate between team sports and individual sports when studying body appreciation. It was revealed that the hybrid group had the highest regression estimate, followed by being active in team sports only. However, the considerable overlap in the confidence intervals indicates that the differences are not significant. These findings are

positive, suggesting that being involved in sports is beneficial for body appreciation, independent of the type of sports participation.

Based on previous studies, one could anticipate that adolescents who participate in both individual and team sports may have broader experiences of the functional range of their bodies, thus appreciating their bodies more. For instance, Slater and Tiggeman (2011) reported that girls who played more than one sport had lower self-objectification levels and body image concerns compared to girls who played exactly one sport and girls who played no sports. This was not observed in the sample of boys (Slater & Tiggeman, 2011). As discussed, according to the objectification theory, lower levels of self-objectification could lead to more awareness to internal needs (Fredrickson & Roberts, 1997). In addition, it could be thought of as likely that participants in the hybrid group have more sessions during the week. This may also lead the hybrid group to higher physical fitness. As discussed in the previous section, physical fitness may be related to positive body image (Laudańska-Krzemińska et al., 2020). The current findings did not support that involvement in both individual and team sports was significantly more favourable to individual or team sports only. After all, participants in the other groups may also be active in more than just one sport, for example two team sports such as handball and soccer. Further, one study found that the relationship between exercise frequency and body appreciation was weaker when the motivation to engage in exercise was for appearance-based reasons (Homan & Tylka, 2014). The present study did not include measurement of the exact frequency of sport sessions during the week or motivation for participation, thus it was not possible to examine the effect of these factors.

No previous studies have examined individual and team sports separately to body appreciation. Therefore, the current finding, demonstrating an effect on body appreciation for both sport types is interesting. When assessing other mental health benefits from sports participation, results are conflicting. Brière et al. (2018) observed no differences between individual sports and team sports concerning psychological adjustment. Contradictory to Brière et al. (2018), Guddal et al. (2019) revealed that team sports were more strongly associated with positive mental health effects in adolescents in Norway, and this was especially evident for girls. Also in a large European study, team sports were found more favourable compared to individual sports regarding mental health effects (McMahon et al., 2017). A systematic review by Eime et al. (2013), confirmed that team sports is associated with improved health outcomes compared to individual activities. Further, a longitudinal

study found that participation in team sports in high school was associated with lower depressive symptoms in early adulthood, while no effect was observed for those who had been active in individual sports (Sabiston et al., 2016). Despite that team sports have been reported to have increased mental health benefits compared to individual sports, the result of the present study indicates that this is not the case for body appreciation.

While the present study separated between individual and team sports, other studies of sports participation and positive body image have separated between aesthetics and non-aesthetics sports, or weight-sensitive and non-weight sensitive sports. In this study, the individual sports group was the weakest predictor among the sport groups. This could be explained by research highlighting that many individual sports (e.g., gymnastics, dance, high jump, swimming) have more focus on appearance than team sports (e.g., ball sports) (Slater & Tiggerman, 2011). One study revealed a significant positive association between time spent on aesthetic activities or exercising at a gym, and disordered eating, in both girls and boys (Slater & Tiggerman, 2011). As previously stated, body appreciation can be a protective factor against disordered eating (Jankauskiene et al., 2020). Further, athletes in sports who emphasize leanness have been found to be at higher risk for developing eating disorders (Bratland-Sanda & Sundgot-Borgen, 2013; Kong & Harris, 2015). Despite this, when Jankauskiene et al. (2020) examined differences in body appreciation between weight-sensitive sports and non-weight-sensitive sports, no significant differences were observed. This is interesting as it suggests, in accordance with the present study's findings, that sports participation influence body appreciation regardless of sport types. These two studies are the only studies that have examined sport types in relation to body appreciation.

The study of Abbot and Barber (2011) used the Embodied Image Scale instead of the BAS-2 to study associations between sport types and positive body image. They found that girls active in sports with a non-aesthetic focus scored higher on functional satisfaction compared to participants active in aesthetic sports or participants in a hybrid group. Functional values were also lower in the aesthetic sport group, compared to both the non-aesthetic sport group and the hybrid group. However, when examining aesthetic body image, there was found no significant differences between the sport groups (Abbot & Barber, 2011), indicating that sport types did not influence orientation towards appearance. According to these findings, it seems to be the functional aspects of body image that differ from sport types. As previously argued, body functionality is positively associated with body appreciation (Baceviciene &

Jankauskiene, 2020; Soulliard et al., 2019). The present study and the studies discussed indicate, that independent of sport types, sports participation is positively related to body appreciation. Since few studies have examined differences in sport types and positive body image, more research will be needed to expand our knowledge.

8.7 Gender as a Moderator between Sports Participation and Body Appreciation

The next subchapter will discuss the results of the moderation analyses between sports participation and body appreciation, and between all three sport groups and body appreciation.

No significant effect was observed of gender as a moderator between overall sports participation and body appreciation. When examining each sport group separately, it was found that for adolescents active in both individual and team sports, gender moderated the relationship with body appreciation. Separate regression analyses for gender revealed that there was a significant association between participation in both individual and team sports and body appreciation for boys only. These findings suggest that being active in both individual and team sports may provide more opportunities for boys to appreciate their bodies, compared to girls.

Soulliard et al. (2019) found there was a gender difference in their athlete's sample where males reported higher levels of body appreciation than females. This gender difference was larger than in their non-athlete sample, indicating that sport participation was more favorable to men's body appreciation levels. They believed this was because male athletes self-objectify their bodies less compared to female athletes. Further, female athletes would be more likely to experience higher sociocultural pressure regarding how they present themselves, leading to increased feelings of objectification (Soulliard et al., 2019). Supporting this, is a study among Australian adolescents active in sports, which reported girls experienced higher levels of teasing while participating than boys. They felt evaluated because of their looks, laughed at because of appearance or for being uncoordinated, and were provided with nicknames because of body size or body weight. The same study reported that experiences of teasing in a sport context were positively associated with body image concerns and self-objectification, in both girls and boys (Slater & Tiggerman, 2011).

Gomez-Baya et al. (2019) have supported that sports works in favour of boys compared to girls regarding body image. They reported that gender significantly moderated the association between sports participation and body satisfaction. While the effect was significant for boys, this was not found in girls (Gomez-Baya et al., 2019). Boys active in sports may be more satisfied with appearance compared to girls because being active in sports leads to a more muscular body. A muscular body is a popular body ideal for boys, while the ideal appearance image for girls has been the “thin ideal” (Griffiths et al., 2013). It has been reported a stronger negative association between BMI and body appreciation in women compared to men (He, Sun, Lin, et al., 2020). As society typically perceives the ideal body for women to be “thin”, and for men to be “muscular”, women need a lower BMI to achieve the “ideal body” compared to men, as muscles often lead to higher weight (He, Sun, Lin, et al., 2020). Participation in sports for girls may lead to a more muscular body, which could potentially be bigger than the “thin ideal”. Research has found that girls experience conflicting body ideals between the sporting context and the social context (Lunde & Gattario, 2017), which may influence body appreciation.

The results of this study have shown that gender does not moderate the relationship between overall sports participation and body appreciation. Other studies have suggested that sport participation may be more favorable to boys’ body image (Gomez-Baya et al., 2019; Slater & Tiggerman, 2011; Soulliard et al., 2019). However, the present study identified that gender moderated the relationship between the hybrid group and body appreciation suggesting that there may be some aspects of sport that is more positively associated with body appreciation for boys than girls. There exists little research about the moderation effect of gender regarding sport participation and positive body image. Therefore, generalisation of findings is limited and more research is required.

8.8 Methodological Evaluations

As with all research, the strengths and limitations of the study need to be considered. Making the readers aware of these, is in line with the ethical guidelines of good research ethics. Therefore, the following subchapter will address methodological evaluations of the present study.

8.8.1 Sample

A strength of the study was the large sample size of over two thousand adolescents. A high number of participants increases the chances of the results being generalisable to a larger population (Jacobsen, 2015, p. 300). However, the participants were only recruited from four different geographical areas, thus it may not be representative for the whole country. The schools were also self-selected, and there may be differences between schools that choose to participate and those who chose not to concerning psychosocial aspects, which was the focus of the COMPLETE study (Larsen et al., 2018). A strength of the study is that the schools were randomly assigned to either intervention groups or the control group (Larsen et al., 2018). In the present study data from both intervention groups and control groups was included to allow for a large enough sample size to separate between different sport groups. To minimise the potential risk of factors of the conditions influencing the results, the present study controlled for any possible effects in the main analysis.

8.8.2 Study design

This study used a cross-sectional design, and therefore, no causal conclusions can be made (Jacobsen, 2015, p. 109). Based on the presented theories it is likely that sports participation increases body appreciation, but it could also be that body appreciation increases sports participation. At the same time, the relationship may be reciprocal where some engage in sports because they appreciate their bodies, while others experience increases in body appreciation from engaging in sports. To collect data, a survey design was used. This method is beneficial in the way that it is cost-effective, and the results will be based on adolescents' own experiences (Jacobsen, 2015, p. 109). A weakness of the design is that self-reported data might undermine the study's validity due to response bias (Rosenman et al., 2011). Response bias could be a result of misunderstanding or social-desirability, where respondents are answering what they believe make themselves look better despite being anonymous (Rosenman et al., 2011). Therefore, it cannot be guaranteed that the present study is free from response biases. Nonetheless, compared to a qualitative method, a survey design will allow participants to respond without the researcher being present, which is more likely to create honesty (Halvorsen, 2008, p.143). The study was part of a large survey that the participants were asked to complete, including 59 questions in total, where the BAS-2 scale was introduced as number 54. The order of the questions could affect the answers as respondents may become fatigued or lose interest (Halvorsen, 2008, p. 135). In the present study, this can be observed through the numbers of missing responses, which increased throughout the

survey. However, the percentage of missing responses was still small, and it would be difficult to measure body appreciation in other ways with a sample size as large as the present study.

8.8.3 Measurements

The BAS-2 scale is the most used measurements of positive body image, and the scale's validity and reliability have been confirmed in studies of different adolescents' populations (Alcaraz-Ibáñez et al., 2017; Baceviciene & Jankauskiene, 2020; Góngora et al., 202; Lemoine et al., 2018). This study contributes to the growing research of body appreciation and adds to the knowledge that the BAS-2 has a unidimensional factor structure with high internal consistency.

The measurement of organised sports participation has not been validated but has previously been used in a large national study (Samdal et al., 2016) and in a large study ($n=10\ 257$) of adolescents from the west coast of Norway (Heradstveit et al., 2020), which allows for comparisons. Self-reported responses to physical activity have been found inaccurate, reflecting poor validity and reliability (Kohl et al., 2000). However, organised sport participation is more specific and is limited to some forms of physical activity which is likely to increase the validity. The current study did not include measurements of physical activity, which may have influenced the results. As pointed out, respondents reporting to be active in individual sport may have included individual physical activities.

The measure of SES included the students' evaluations of the perceived wealth of their families. Despite that subjective measures of SES are common to use in studies of adolescents (Quon & McGrath, 2014), they may be prone to bias (Svedberg et al., 2016). Further, the study only included one SES indicator, perceived wealth. Inclusion of parental occupation, education level, or material assets is likely to have reflected a more nuanced picture (Svedberg et al., 2016). However, adolescents may have difficulties answering questions about parents' occupation due to re-call bias or feelings of shame if parents are unemployed (Svedberg et al., 2016). If only one measurement of SES should be included, research has found subjective perception of wealth to be important when assessing SES with health (Iversen & Holsen, 2008; Svedberg et al., 2016).

8.8.4 Statistical analysis

Based on the aims of this study, the variables for sports participation were dichotomised into not/active in sport with the cut-off for being active in sports set to at least one day a week. This decision was made to make sure the group was big enough for further analyses. This meant that participants who were active in sports less than two-three times monthly were included in the not active group, which is the same cut-off that the Norwegian sports Organisation uses (NIF, 2019, p. 17), and have been used in other studies (Heradstveit et al., (2020; Samdal et al., 2016). Different from other studies, the present study chose to examine the prevalence of sports participation by separating between individual, team, and both. This can be considered a strength as it provides new knowledge regarding sports participation among adolescents. A potential downside is that it makes it harder to compare results with studies that have only separated between individual and team sports. As the current study included different measures of sports participation (individual and team), it was possible to examine differences between the associations of each sport group with body appreciation. As a strength of the main analysis, the effects of gender and SES were controlled for when examining the associations between sports participation and body appreciation. The association between sports and body appreciation became to some degree weaker after gender and SES were controlled for, indicating that gender and SES influence the relationship between sports participation and body appreciation. However, other confounding variables that were not controlled for may still have influenced the results, such as BMI (He, Sun, Lin et al., 2020), body appearance pressure (Sundgot-Borgen et al., 2020), eating habits, or perceived body acceptance (Andrew et al., 2016).

8.9 Implications for Future Research and Health Promoting Practice

This study aimed to increase the knowledge between sports participation and positive body image, being one of few studies that have examined this, and the first in a Norwegian context. The following section will discuss implications that have been derived throughout the discussion of this study.

The Norwegian health minister, Bent Høie, states that “To love yourself and to be satisfied with your own body is good for your health” (Regjeringen, 2021). The current findings of this study suggest that for adolescents, sports participation is associated with a higher appreciation of their bodies. Therefore, sports could be thought of as a health promoting area for

adolescents' body image. An important implication of this study was that it was the first to separate between individual and team sports. The results demonstrated that both sport types were positively related to body appreciation, indicating that sports, in general, are positive. The natural focus on body functionality in sport has been suggested as an important factor to these findings (Baceviciene & Jankauskiene 2020; Soulliard et al., 2019). Therefore, coaches could focus the adolescent's attention to functional aspects of their bodies, leading the focus away from appearance. The present study found that only 50% of the sample participated in organised sports with no gender differences. Additionally, the age of this sample represents the period when many adolescents drop out of organised sports (NIF, n.d.). Consequently, the community could improve current frameworks and introduce new strategies to ensure adolescents continue participating in sports. This may particularly be important today, as adolescents in Norway due to the Covid-19 pandemic, have over a long period experienced uncertainty in regards to access to their sporting activities.

The present study did not measure frequency of sports and weekly sessions, or participation level and motivation for participation. To gain a more nuanced picture of sports participation, future research could include more specific measures of frequency of sports and sport sessions to further assess whether these factors influence body appreciation levels. Research has also suggested that body image may be influenced by competition levels (Kong & Harris, 2013), thus differences between recreational levels of sports versus elite levels where the pressure to perform is likely to be higher, could be addressed. Further, only one study has used a longitudinal design when examining sports participation as a predictor of body appreciation and did not find support one year later in adolescent girls (Andrew et al., 2016). Future research should aim to test the causal relationship between these two variables by using a longitudinal research design to examine whether this is also the case for Norwegian adolescents. Finally, the present study did not include measures of general physical activity. In addition to sport, the embodiment model suggested yoga, hiking, rock-climbing, and scuba-diving. There has been documented an association between yoga and body appreciation in adult women (Menzel & Levine, 2011). Therefore, different activities could be examined regarding body appreciation to find out whether sports participation is unique from other physical activities, especially in a vulnerable age such as adolescent years is.

The current study contributed with the novel finding that SES differences exist in body appreciation levels among adolescents. As no previous studies have examined this, future

research should aim to replicate these findings as well as study potential factors that influence these differences. The present study also supported that fewer adolescents from low SES are active in sports compared to high SES. This means that adolescents from low SES would be less likely to experience positive health effects, including positive effects on body image. In Norway, the number of children and adolescents below 18 years that live at risk of poverty, is an increasing problem (Regjeringen, 2020). At an international level, to fight poverty is the United Nations (UN) Sustainable Development Goal (SDG) number one (United Nations, 2015). Further, one of the main goals of health promotion, developed by the World Health Organisation, is to reduce inequities in health (WHO, n.d.). Accordingly, the Norwegian government in 2020, introduced a new strategy plan to reduce poverty. In this strategy plan one of the main goals is to increase participation in organised activities, such as sports participation (Departementene, 2020, p. 67). Also at a local level, according to the Norwegian Public Health Act, each municipality is responsible to reduce social equities (Folkehelseloven, 2011, § 2). Thus, despite both international, national, and local levels having clearly defined goals to reduce poverty and ensure equal access to organised activities for all children, the present study found differences regarding SES. In addition, one of the main goals of the Norwegian sports Organisation is to reduce economic barriers to sports participation in children and youth (NIF, 2015). These findings, emphasize that the government, the Norwegian Sports Organisation, and the local communities need to work together to develop sustainable plans to achieve the common goals of equal access to organised activities such as sports participation. Thus, reducing cost as a barrier to sports participation is an important goal of health promotion and could lead to increased health benefits in adolescents from low SES, including increased body appreciation.

Another implication of this study is that the factor structure of the BAS-2 was confirmed. This means that the scale could be used in research of adolescents to enhance our understanding of body appreciation in a Norwegian context. The scale being valid in a Norwegian sample allows the study to compare findings with studies from other countries, expanding our knowledge within the positive body image field. When body image is discussed publicly, the focus has been on negative body image and the increased health risk followed by it. Recent research suggests that a focus on increasing positive body image may also be important. Because a positive body image is acknowledged to be distinct from a negative body image (Tylka & Wood-Barcalow, 2015b), it may be possible to increase positive body image regardless of some levels of body dissatisfaction being present (Andrew et al., 2016). The

body appreciation levels of this study, with large individual differences, revealed that there is a potential for improvement in Norwegian adolescent's body image. This study found that sports participation was a predictor of body appreciation. However, sport only explained 3% of the variance, thus other factors play a role as well. It is important to identify different factors that may influence body appreciation to create sufficient interventions or health education programs aimed to increase body appreciation. Not surprisingly, gender differences were found, with boys reporting higher body appreciation levels than girls. As a result, interventions aimed at increasing body appreciation may need to be targeted differently to girls than to boys. This has been supported in a Norwegian intervention that aimed to increase embodiment (Sundgot-Borgen et al., 2019). Importantly, this study demonstrated that sports participation matters to boys' body appreciation. Further, the results indicate that there may be aspects of sport that are more valuable for boys than girls concerning body appreciation. Future research should aim to continue examining the moderating effect of gender on different aspects of sports as well as other factors that may influence genders differently.

The Norwegian government is concerned about the extensive body pressure children and adolescents are experiencing (Regjeringen, 2021). Consequently, they have proposed stricter laws for marketing of cosmetic surgeries as well as the use of retouched photos in advertising (Regjeringen, 2021). However, based on previous research, theories, and the findings of the present study, educating adolescents about positive body image should also be considered to be important. A positive body image is critical in adolescents as developing positive attitudes towards their body can help reject unrealistic appearance ideal (Tylka & Wood-Barcalow, 2015b), prevent eating disorders (Argyrides et al., 2020; Baceviciene & Jankauskiene, 2020), increase self-esteem and life satisfaction (Baceviciene & Jankauskiene, 2020; Lemoinet et al., 2018; Piko et al., 2020), and be associated with overall health (Andrew et al., 2016). In 2020, the Norwegian government introduced new interdisciplinary themes in the Norwegian school system with one of them being "Public health and mastery of life". The goal within this theme is to educate students on factors associated with good physical and mental health, where the development of positive self-esteem is particularly important (Udir, n.d.). For example, in the physical education curriculum for students in their final year of middle school (10th grade), one of the goals related to the theme "public health and mastery of life" states that the students should be able to "reflect on how different representations of the body in media and society influence physical activities, body image, and self-esteem" (Udir, n.d.). This provides

a great opportunity for schools to include positive body image as a theme. Thus, teachers or relevant stakeholders should be educated in how positive body image could be taught to students in a health promoting manner.

9 Summary and Conclusion

As much as 70% of adolescents in Norway report body appearance pressure, with the highest prevalence among girls (Bakken, 2019b, p. 72). A positive body image reflects appreciation and acceptance of the body as it is and rejecting appearance ideals communicated through media and other sources (Tylka & Wood-Barcalow, 2015b). Further, sports participation is associated with improved mental health and social enjoyment (Wold, 2017, p. 208), and has been suggested to enhance positive body image (Abbott & Barber, 2011). However, during adolescent years, many adolescents drop out of organised sports (NIF, n.d.). The present study aimed to examine the association between sports participation and body appreciation.

Sports participation was in the current study found to be positively associated with body appreciation after gender and SES was controlled for. The association was similar for both girls and boys as no moderation effect of gender was found. When examining sport types, it was found that all three sport groups (individual, team, and hybrid), were significantly associated with body appreciation, indicating that participation in sports is independent of sport types. While gender did not moderate the relationship in the individual sports group and the team sports group, it was found to significantly moderate the associations between the hybrid group and body appreciation. Further analyses found that there was only a significant association between participation in both individual and team sports and body appreciation for boys. Finally, gender differences and SES differences were found in sports participation and in body appreciation levels.

Overall, this study provides new information to the research field of positive body image, indicating that, independent of individual sports, team sports, or both, sports participation is positively associated with body appreciation. As few studies have examined this, more research is needed to further increase knowledge. Future research should focus on sport-specific factors such as frequency of sports and weekly sessions as well as the moderating role of gender related to this.

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Appendix A: Questionnaire for participation in organised sport

12. Hvor ofte deltar du vanligvis i disse typene organiserte aktiviteter på fritiden?

(Med organiserte aktiviteter mener vi aktiviteter som er drevet av idrettsklubber, andre klubber eller organisasjoner)

(Oppgi kun ett svar pr. spørsmål)

	Holder ikke på med denne typen aktivitet	2-3 ganger i måneden eller sjeldnere	Omtrent 1 dag i uken	2 ganger i uken eller oftere
Organisert lagidrett (for eksempel fotball, håndball, basketball, ishockey)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organiserte individuelle fysiske aktiviteter (for eksempel svømming, sykling, kampsport, friidrett, turn, dans, langrenn)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix B: Body Appreciation Scale-2 in Norwegian

For hver av påstandene under, kryss av i hvilken grad de passer for deg
(Oppgi kun ett svar pr. spørsmål)

	Hele tiden	Ofte	En del av tiden	Sjelden	Ikke i det hele tatt
Jeg respekterer kroppen min	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jeg er fornøyd med kroppen min	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jeg synes at kroppen min i det minste har noen gode kvaliteter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jeg har en positiv holdning til kroppen min	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jeg lytter til kroppens behov	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jeg er glad i kroppen min	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jeg setter pris på de ulike og unike sidene ved kroppen min	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oppførselen min viser min positive holdning til kroppen min, for eksempel at jeg går med hodet hevet og smiler	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jeg er komfortabel i kroppen min	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jeg føler meg fin å se på selv om jeg er ulik medias fremstillinger av tiltrekkende mennesker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix C: Questionnaire for socioeconomic status (SES)

Hvor god råd har din familie?

(Oppgi kun ett svar)

- Svært god råd
- God råd
- Middels god råd
- Ikke særlig god
- Dårlig råd

APPENDIX D: Approval from NSD



Torill Marie Bogsnes Larsen
HEMIL-senteret Universitetet i Bergen
Christiesgt. 13
5015 BERGEN

Vår dato: 27.06.2016

Vår ref: 48551 / 3 / ASF

Deres dato:

Deres ref:

TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 02.05.2016. Meldingen gjelder prosjektet:

48551	<i>Gode psykososiale læringsmiljø bedrer gjennomføring i den videregående skolen</i>
<i>Behandlingsansvarlig</i>	<i>Universitetet i Bergen, ved institusjonens øverste leder</i>
<i>Daglig ansvarlig</i>	<i>Torill Marie Bogsnes Larsen</i>

Personvernombudet har vurdert prosjektet, og finner at behandlingen av personopplysninger vil være regulert av § 7-27 i personopplysningsforskriften. Personvernombudet tilrår at prosjektet gjennomføres.

Personvernombudets tilråding forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, <http://www.nsd.uib.no/personvern/meldeplikt/skjema.html>. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, <http://pvo.nsd.no/prosjekt>.

Personvernombudet vil ved prosjektets avslutning, 31.12.2019, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

Kjersti Haugstvedt

Amalie Statland Fantoft

Kontaktperson: Amalie Statland Fantoft tlf: 55 58 36 41

Vedlegg: Prosjektvurdering

Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.

Personvernombudet for forskning



Prosjektvurdering - Kommentar

Prosjektnr: 48551

NASJONAL SAMARBEIDSSSTUDIE

I meldeskjemaet har dere opplyst om at prosjektet er en nasjonal samarbeidsstudie hvor Universitetet i Bergen er behandlingsansvarlig institusjon. Personvernombudet forutsetter at dere har avklart ansvaret for behandlingen av personopplysninger mellom institusjonene. Vi anbefaler at dere inngår en avtale som omfatter ansvarsfordeling, ansvarsstruktur, hvem som initierer prosjektet, bruk av data og eventuelt eierskap.

FORMÅL

Målet med prosjektet er å prøve ut og evaluere både implementeringsprosess og effekt av forskningsbaserte tiltak som bedrer det psykososiale læringsmiljøet og bidrar til reduksjon av frafall innenfor videregående opplæring.

UTVALG

Utvalget består av omtrent 2500 elever i første klasse på videregående, ved 17 skoler. De samme elevene blir fulgt frem til våren 2019. I tillegg utgjør omtrent 500 lærere, ansatte i oppfølgingstjenesten, rektor, elever og elevmentorer en del av utvalget.

SAMTYKKE

Enkelte av informantene i prosjektet er under 16 år. I e-post mottatt 24.06.2016, beskriver forsker at det vil bli hentet inn aktivt samtykke fra foreldre, for alle elever som ikke er fylt 16 år innen dato for datainnsamling. Fylkeskoordinator tilknyttet prosjektet (ansatt i fylkeskommunen) vil på bakgrunn av lister for opptak identifisere de elevene hvor det er behov for samtykke. Da det er eleven selv som søker opptak til videregående opplæring, er ikke fylket sikker på om de vil ha foreldres e-post. En e-post vil derfor bli sendt til eleven med forespørsel om å sende den videre til foreldre. Det vil bli sendt en påminnelse på SMS. Ved skolestart vil det bli gitt skriftlig informasjonsskriv til de elevene hvor en ennå ikke har mottatt tilbakemelding på samtykke. Det vil bli lagt opp til at foreldrene kan levere samtykke på nett ved hjelp av et svarskjema, på SMS eller skriftlig på tilbakemeldingsskjema i informasjonsskrivet. Informasjonsskrivet mottatt 24.06.2016, er godt utformet.

Elever som er 16 år eller over, skal samtykke til deltakelse selv. Vi er enig i at umyndige elever over 16 år kan samtykke selv til deltakelse i dette prosjektet, og opplysningene kan behandles med hjemmel i personopplysningsloven §§ 8 første ledd og 9 a). Informasjonsskrivet mottatt 24.06.2016, er godt utformet

DATAMATERIALET

Data innhentes gjennom elektronisk spørreskjema, intervju og registerdata. Spørreskjema til elevene vil bli besvart i en klassesstime. Personvernombudet legger til grunn at elever som ikke deltar i undersøkelsen vil ha tilrettelagte aktiviteter mens undersøkelsen pågår. Det er vår vurdering at man gjennom spørreskjema til elevene innhenter opplysninger om (psykiske) helseforhold. Slike opplysninger er etter personopplysningsloven § 2 punkt 8 c) sensitive. Første spørreskjemaundersøkelse gjennomføres ved skolestart høsten 2016. Deretter vil det

gjennomføres en oppfølging våren 2017, 2018 og 2019.

Forskergruppen skal også koble på registerdata fra fylkeskommunen til svarene fra undersøkelsen. Variablene som skal innhentes fra fylkeskommunenes register er:

- Kjønn
- Studieretning
- Gjennomsnittskarakter
- Fravær
- Frafall
- Avbruddsårsak

Forsker forklarer hvilke verdier variabelen avbruddsårsaker består av, på e-post mottatt 24.06.2016. Personvernombudet vurderer at forskergruppen ikke får tilgang på særlig sensitiv informasjon gjennom verdiene på variabelen.

KOBLING

Det er fylkene som registrerer de indikatorene forskergruppen trenger for å analysere effekten av tiltakene.

Fylkene er aktive samarbeidspartnere i dette prosjektet, og det er etablert egne koordinatorstillinger i hvert fylke. Koordinatoren henter ut informasjon fra fylkets eget register. Ut fra klasselister for alle førsteklasser ved de inkluderte skolene vil det bli laget unike ID-nummer for alle elevene, som ikke er identifiserbare.

Klasselisten med nye unike ID-nummer og elevenes navn vil gjøres tilgjengelig for forskerne som gjennomfører datainnsamlingen i klassen. På denne måten kan de gi elevene deres unike id som de fører inn i spørreskjemaet.

Etter datainnsamlingen er gjennomført på skolen vil klasselistene destrueres. Det samme unike ID-nummeret brukes også i registerdata fra fylkets register for å anonymisere informasjonen før den sendes til forskerne, for kobling opp mot spørreskjemadata. Håndteringen av koblingsnøkkelen vil gjøres av fylkeskoordinator, og koblingsnøkkelen vil ikke være tilgjengelig for forskerne.

DATABEHANDLER

Eanalyzr er databehandler i prosjektet, og personvernombudet forutsetter at det inngås en databehandleravtale med Eanalyzr, jf. personopplysningsloven § 15.

INFORMASJONSSIKKERHET

Forventet prosjektslutt er 31.12.2019. Ifølge prosjektmeldingen skal innsamlede opplysninger da anonymiseres. Anonymisering innebærer å bearbeide datamaterialet slik at ingen enkeltpersoner kan gjenkjennes. Det gjøres ved å:

- slette direkte personopplysninger (som navn/koblingsnøkkel)
- slette/omskrive indirekte personopplysninger (identifiserende sammenstilling av bakgrunnsopplysninger som f.eks. bosted/arbeidssted, alder og kjønn)

VILKÅR

Personvernombudet ber om å få tilsendt spørreskjema og/eller intervjuguiden for hver runde - i god tid før oppstart/datainnsamling. Skjema sendes: personvernombudet@nsd.uib.no