

The Effect of Daily Physical Activity on the University Student's Subjective Self-esteem

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Abstract

The following study examined the effects of physical activity against university students' self-esteem levels in a medium sized city in Sweden. The paper was demarcated to investigate whether sport students differed from social program students on their level of self-esteem due to the amount of physical activity performed. We even took the variable of gender in account for examining the differences. The results showed that the group of sport students did in fact differ from the social program group on self-esteem, in terms of high and moderate physical activity, but not for low physical activity. The same outcome applied to the amount of physical activity performed only. When analyzing the gender differences, the results showed females in favor for having higher self-esteem levels than males across all three conditions of physical activity. Females also tended to perform high and moderate physical activity in a greater sense than males, while low activity had no significant difference. A conclusion was reached and we answered the research question that sport students did in fact have higher self-esteem levels and performed a higher amount of physical activity than social program students. However the differences was not noticeable large between the groups, which could be explained by other environmental and individual factors allowing this paper for further research within the topic and population of university students.

Keywords. Physical activity, self-esteem, group differences, university students

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Psychology 3
Spring 2018

Effekten av regelbunden fysisk aktivitet på universitetsstudenters subjektiva självkänsla

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Sammanfattning

Följande studie har undersökt effekten av fysisk aktivitet mot universitetsstudenters självkänsla i en medelstor stad i Sverige. Arbetet är avgränsat till att undersöka huruvida sport studenter skiljer sig från sociala-programstudenter i nivåer av självkänsla beroende på deras fysiska aktivitet. Vi tog även hänsyn till könsvariabeln vid undersökning av variablerna. Resultatet visade att gruppen av sport studenter skiljde sig från de sociala-programstudenterna i deras självkänslnivåer i termer av hög och måttlig fysisk aktivitet, men ej för lätt fysisk aktivitet. Samma utfall gällde vid mätning av enbart utförd fysisk aktivitet. Vid analys av könsskillnaderna visade resultatet att kvinnor hade högre självkänsla utifrån fysisk aktivitet under alla tre nivåer än män. Kvinnor tenderade även att utföra hög och måttlig fysisk aktivitet i större utsträckning än män, medan lätt fysisk aktivitet inte visade upp någon skillnad. Ett slutsats nåddes där frågeställningen besvarades i form av att sport studenter hade högre självkänsla utifrån hur mycket fysisk aktivitet de utförde än sociala-programstudenter. Skillnaderna var emellertid inte märkbart stora mellan grupperna vilket kan antyda på andra individuella och omvärldsiga faktorer som påverkar utfallet. Detta möjliggör för fortsatt forskning inom området och framförallt inom populationen av universitetsstudenter.

Nyckelord: självkänsla, fysisk aktivitet, gruppskillnader, universitetsstudenter

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Psykologi III

VT - 18

The Effect of Daily Physical Activity on the University Student's Subjective Self-esteem

The fact that physical activity has an effect on adolescents and people in general common health has been a well-examined topic, where the majority of findings show that there are associations between executing some sort of physical activity in enhancement to one's subjective self-esteem (e.g., Fox, 2000; Schwerdt & Scheel, 2011) and mental health (Morgan, 1997). Further researchers have focused more in what ways and which type of physical activity gives higher or larger values of self-esteem, which is an interesting topic. In order to create any further research in explaining any additional contribution, one must first define and demarcate the concept of physical activity and self-esteem to the specific path that this study tends to follow, in order to create a sufficient addition. Moreover, what the relation between physical activity and self-esteem looks like and if it differs regarding to different demographic variables, such as age and gender, and why the relation is of importance.

It is shown that any kind of physical activity improves our biological health in terms of lower risk for heart and cardiovascular diseases (Mavrovouniotis, 2012), metabolic syndromes such as diabetes (Hurley, Hanson, & Sheaff, 2011), obesity in terms of high body mass index (Ramirez-Velez et al., 2016) and different chronic diseases (Hurley, Hanson, & Sheaff, 2011). While an improved sense of our physical ability and appearance alters our feelings of self-determination and acceptance, which constitutes to the physical domain of our self-esteem (Fox, 2000). Self-esteem can therefore be divided into two categories in terms of physiology. Whereas the first is the physical acceptance contributing the effect of how well we accept our body and physical appearance for what it is (Fox, 1998). While the other part includes our exercise efficacy in terms of sport competence, physical strength, physical condition and attractiveness of our body (Fox, 1998). All these components constitutes to the psychophysical mechanism of our mood, overall acceptance, sense of belonging, self-worth and value, appearance and functioning known as our self-esteem (Fox, 2000). None the less,

the effect of physiological activation in terms of, for example, increased heart rate, cardiovascular responses and lower blood pressure, derived from physical activity is highly observed in having a positive increase of a person's perceived self-esteem (Schwerdt & Scheel, 2011). This definition will represent the term physical activity in this paper along with any kind of work-out assessment or training of any kind (Sani et al., 2016) known as physical self-perception (Fox, 2000). Since perception is a subjective concept, it varies in terms of individual differences (Morgan, 1997), meaning that different people experience different sensations from performing any kind of physical assessment. Much due to differences in what type of physical activity one is participating. For instance, it can be defined as muscular and resistance training in terms of endurance (Ciccolo et al., 2016) or any type of aerobic exercise (Ryan, 2006) which all reaches different physical results which should be taken in account for when conducting and interpreting research data based on people's subjective reports on self-perception.

As it has already been stated, self-esteem is one of the outcomes people receive from performing any kind of physical activity, but to fully understand the concept one needs to clarify the effect on self-esteem and its importance for people in general. Self-esteem is a self-related concept with the purpose of feeling good about oneself (Baumeister et al., 2003). It refers to a person's evaluation of himself/herself, their self worth and own value as a perception (Pyszczynski et al., 2004) meaning that it fluctuates over time and across individuals. Furthermore, self-esteem can be determined and noted by the amount of value people place on themselves (Baumeister et al., 2003) and can be referred to an overall understanding and care of the self. It is therefore in direct response to our overall well-being in terms of high or low values. Where rather large amounts can be interpreted as arrogance, grandioseness and superiority while low amounts leads to distortion and maybe most importantly, insecurity (Baumeister et al., 2003). Therefor the goal with self-esteem is to keep

it at a balanced level for optimizing a person's psychological well-being, while its very existence is to function as a coping mechanism against threats to our subjective well-being (Pyszczynski et al., 2004). Overall, the meaning of self-esteem in everyday life is to give us feelings of worthiness in positive ways. That we receive feeling of being valuable to ourselves and others which brings us positive emotions, as well as feelings of success and motivation in our lives (Crocker & Knight, 2005). However, the issue of self-esteem of being seen as a subjective perception needs to be further raised. That is, self-esteem as interpretation is highly affected by people's own beliefs according to what makes them think and feel more or less about themselves (Crocker & Knight, 2005). There are several individual differences which describes the subjectiveness of self-esteem as a variable (Morgan, 1997). Rather more important, people differ in ways that they describe gives them feelings of self-worth in a positive manner, which purports to their overall mental well-being (Crocker & Knight, 2005; Pyszczynski et.al, 2004), a fact important to take in account for when measuring self-esteem as a dependent variable (Morgan, 1997).

So far we understand that self-esteem is a part of the various health benefits derived from performing any kind of physical activity, mental and physical (Baumeister et al., 2003; Fox, 2000). As already stated by Fox (2000) low levels of self-esteem is closely related to psychophysical well-being, that is the less one think of themselves as a person, the less they appreciate their overall Physical appearance. It is also examined that any kind of physical exercise leads to lower reported levels of depression as well as anxiety (Biddle, 1995). Aside from benefits for the own person in terms of self-esteem, physical activity is showed to have social benefits. Where sport participation share a relation to increased socialcement and social behaviour, which is explained as an outcome of the improvement in self-esteem (Biddle, 1995). The effect can therefore be considered as being described as both direct and indirect. That is the direct effect in mostly physical terms, such as body improvement in

appearance, muscle mass and better scores on body mass index (Sani et al., 2016). While the indirect effect is more described as the effect of an increased physical sensation and alter feelings of efficacy, improving and increasing the levels of self-esteem (Sani et al., 2016). It is also considered that any other environmental progress is an indirect effect of physical activity and sport participation contributing to higher self-esteem (Biddle, 1995).

Moreover, since the study aims against the self-reported levels of self-esteem we are interested in the mental health outcomes rather than physical benefits, where involvement in physical activity is examined as a treatment against mental health hazards such as high levels of anxiety and depression (Saxena et al., 2005). Physical activity interventions is said to increase the mechanism of processing and coping with anxiety and depression. However, it is far less research examining the intensity, amount and type of exercise that reaches these benefits (Saxena et al., 2005). Ryan (2008) reached a conclusion regarding physical activity as a treatment against depression, where self-esteem was considered as an additional beneficial outcome, which decreased depressive symptoms along with any kind of exercise. Physical activity was therefore seen as an antidepressant which intervention gave higher levels of self-efficacy leading to a higher self-esteem which altogether improved the coping with anxiety and depression (Ryan, 2008). Therefore, the contribution to mental health benefits derived by self-esteem is determined by the level of self-esteem the person has, which all together acts as a coping strategy against constructs harmful to our overall mental well-being (Crocker & Knight, 2005; Pyszczynski et al., 2004; Ryan, 2008; Saxena et al., 2005).

On the other hand the opposite angle of the relation is not as well documented, that is investigating whether low physical activity leads to lower levels of self-esteem. However, some have taken this path where group differences have been examined between people who participate in daily physical assessment and people who do not. It was noted that people who

did not participate in any physical activity tended to score higher in terms of anxiety and depression, independent of gender, in opposite of people who did experience regular physical activity (Dunn, Trivedi, & O'Neal, 2001). That is, the less a person conduct him or herself to any kind of physical assessment, the higher they risk their mental health in terms of depression and anxiety, which earlier is stated as the threats which our self-esteem is coping with. Furthermore, people who attend regular physical activity also tend to lower the risk of some chronic mental disorders (Goodwin, 2003). That is supporting the negative association from low, or absence of, physical activity as an increase for the likelihood of becoming mentally ill. Physical activity can therefore be seen as an important and continuous intervention as a counteract against mental health hazards. Both as a prevention and an antagonistic approach before mental illness exploits and when it is manifested (Faulkner & Carless, 2006). It can therefore also be seen as a rehabilitation as a way of decrease the feelings of anxiety and depression, boost the self-esteem and increase the overall well-being.

An interesting investigation is the topic of gender differences within the relation of physical activity and self-esteem. Previous studies show that men differ compared to women on both aspects (Furnham et al., 2002). Several studies investigated whether college students strength and self-esteem correlated with each other. These results showed a link between the two variables in men but not in women, this because it seems that muscular strength tend to be more meaningful for men and not for women (Ciccolo et al., 2016; Daniels & Leaper, 2006; Klomsten et al., 2005; McCreary & Sasse, 2000). Where other studies show significance on men's global self-esteem but not on men's physical self-esteem (Lazarevic et al., 2017). On the other hand, women had a direct effect on physical self-esteem but not on women's global-self-esteem. Both gender's physical self-esteem was positively associated by a person's own thoughts of their own physical strength (Ryan, 2008). However, Furnham, Badmin and Sneade (2002) conducted a study which showed that most women work out only

for losing weight and to get skinny, not for getting muscles. Also, women were less happy over their way of looking. When it comes to self-esteem, women showed lower self-esteem than men (Cooper & Fairburn, 1983; Furnham & Calnan, 1998; Furnham et al., 2002). On the other hand, many scientists have shown that men are unhappy with their bodies on the same level as women are (Silberstein et al., 1988). That might be true for some people but not everyone. It is thus showed that males have higher values for level of exercising. However, when it comes to self-esteem, there was no difference between the two genders which may incline the differentiability of reported results depends on population and sample investigated rather than absence or existence of gender differences (Lazarevic et al., 2017).

In contribution to the research regarding the solely relation between physical activity and the gender differences, another angle considers the relation of the variables within the population of students, both from college and university. The findings here suggest that the relation is very much the same, where physical activity is in direct relation to an increase in students' perceived levels of self-esteem. More so, the relation tends to be stronger and including mediating effects, for instance from self-efficacy, which increases the self-esteem derived from amount of physical activity performed (Joseph et al., 2014). In contribution, it is examined that lack in physical activity is related with lower self-esteem (Hubbs, Doyle, & Bowden, 2012). In other words, the less students tend to involve themselves in any type of physical assessment, the lower they score on levels of subjective self-esteem. Other have examined physical activity as an intervention in school programs where it is stated that an increase in daily exercise, mandatory or not, did affect the levels of self-esteem in a positive manner (Liu, Wu, & Ming, 2015). So far it can be concluded that the relation is similar for students and people in general, but the reason to continue examination for students is due to the relation changes in magnitude and the fact that physical activity contributes to positive self-esteem via other variables aswell (Joseph et al., 2014).

However, a group of researchers have examined the amount of physical activity among sport students and students who do not attend any sport studies in order to create a theoretical approach to this issue. Their results indicated that there are significant differences between groups of students in amount of performed physical activity (Kondric et al., 2013). Although this study examines differences in motivation due to amount of physical activity, it still contributes with a theoretical background to the fact of differences within the population of university students allowing for further research (Kondric, et al., 2013). As stated by earlier research and theories, the more one experience physical activity the higher they will score on perceived self-esteem (Baumeister et al., 2003; Biddle, 1995; Fox, 2000). This would suggest that those who choose their lifestyle based on interest in physical activity, in this case choosing to study physiology and sports, would lead to an increased daily amount of exercise (Kim & Lee, 2010). As a matter a fact, the likelihood of participating in any kind of sport do increases due to taking physical education classes in university (Kim & Lee, 2010). It can also be stated that attending physical education courses would function as an intervention leading to an increase in physical activity performed (Kim, 2010). However, none of the previous studies have taken self-esteem as an outcome variable when examining the effect of increased physical activity from sport students. Neither have any checked the differences from sport students against other students in terms of beneficial outcome, such as self-esteem, due to physical activity performed.

As clarified by earlier researchers and literature, there is a relation between physical activities contributing to a higher sense of self-esteem. Moreover, a majority of the literature is demarcated to examine the relation of the two variables on youths, whether it is early adolescents or college students. We tend however continue the research among university students since much of the literature mention that further research is needed to give a clearer view of the relation and further explain its relation. Therefor the purpose of this study is to

investigate whether there are any differences in self-esteem due to amount of physical activity among university students. We then delimit the paper to differences among groups of students. The research question for this study is whether there are any differences between sport science students and social science students in terms of self-esteem, depending on their physical activity. In the two groups examined, there are three different programs included. For the sport science group we include physical teacher, sports management and training program. For the social science group we include law, economic, and psychology program. We are interested in investigating by how much each group differs in amount of performed physical activity and its effect of the students' self-esteem. We also take the aspect of gender in consideration and examine whether there are differences among males and females across the groups. Our hypothesis is that (1) the students within sport science programs will have higher levels of self-esteem due to their physical activity and (2) that sport science students will have higher amount of physical activity than social science students. We hypothesize (3) that males will have higher self-esteem in terms of physical activity and also (4) will perform physical activity in a greater sense than females.

Method

Participants

The participants of this study were university students in a medium-sized city in Sweden. To create and reach a sufficient sample we used a quota sampling method where we collected participants from each group via class attending. The total number of students who answered the survey was 268, where the sport program group of students consisted by 120 participants were included by 40 training-program students, 40 physical activity teacher students and 40 students reading sport management program. The remaining 148 social program students consisted of 55 law students, 52 economic students and 41 psychology students. The gender participation was divided by 122 men and 146 women. Within the sport

programs, the male participation was 61 and females were 59. While the social program groups was divided in 61 males and 87 females. In total, almost all attended classes received zero loss of answered questionnaires. The one exception was for the law student class, where 60 questionnaires were handed out and 55 were received answered which represents a loss of five questionnaires (response rate = 83.3%). No compensation of any kind was promised in return of answering the questionnaires.

Measures

It was used a questionnaire with a total of 19 questions and was divided in three parts. The first part aimed three demographic questions asking the gender of the participants and their age, followed by which one of the programs that they belong into, i.e the mixed group of psychology, economics and law or any sport program. Part two of the questionnaire included six questions regarding the physical activity performed by the participants during the last seven days. These question was close ended by a scale ranging from one to four, were 1= *doesn't agree* and 4= *completely agree*. The question considered how many days per week the participants performed any kind of physical activity and how many hours they usually spend exercising these types. This measurement was developed by the IPAQ-group which claims the reliability and validity of the questions to be sufficient (IPAQ, 2005). Cronbachs alpha for the items developed by the IPAQ-group was at a value of $a = .6$, which does not meet the criteria of being at $a = .7$ or higher. However, we tend to use it since it compels with the items we want to examine and the IPAQ-group states on their website that the survey has been used for several earlier studies across cultures (Azevedo et al., 2007, Torstveit & Sundgot-Borgen, 2004) which we accept as an argument for its credibility.

We later divided these six questions into three categories based on an index of those performing high, moderate or low physical activity. Questions in the high performance index regarded how many days and how many hours the participant performed any kind or high

endurance or intensity training, such as weight lifting and high intensity cycling. Moderate physical activity treated the same questions but in a moderate physical manner, such as light jogging, along with low physical activity regarding lighter walks. The reason for doing so was due to alter reliable analysis of the data and to fully see the differences among the groups whether the participants engaged themselves in high, moderate or low physical activity. It also granted more detailed information in terms of categorical differences among the two groups.

The third and last part of the questionnaire treated the self-esteem levels of the participants which we derived from Rosenberg (1965) and contains ten items listed from one to four, where 1= *strongly disagree* and 4= *strongly agree*. The scale includes questions such as “on the whole, you are satisfied with yourself”, “you feel that you have a number of good qualities” and “you take a positive attitude towards yourself” (Rosenberg, 1965). The measurement is world-wide used and is included in several researches and is told to hold face validity and a high reliability. More so, five of the ten items is reversed in a negative manner, example of these issues are “At times you think you are no good at all” and “you certainly feel useless at times” (Rosenberg, 1965) , and is taken in account for when analyzing the data and computing its statistics. The cronbachs alpha for Rosenbergs self-esteem scale reached a number of .9, which inclines a high reliability.

Procedure

This study shared characteristics of a non-experimental study design since we did not have any control for extraneous variable nor manipulation of the independent variable when measuring the dependent variable. The collection of data was obtained through a questionnaire which we physically handed out and gathered during each setting. The purpose was to examine across-group differences and differences between gender (Christensen, Johnson, & Turner, 2014). We collected the data by attending classes of the two groups where

we handed out the questionnaires and gathered the information on the same time setting. The classes attended were chosen by completing a list of all classes and all semesters from each of the program for this spring in chronological order and thereafter randomly chosen by a numerator. This approach was chosen to eliminate extraneous variable due to what semester the students were at within each program. The participants was given 10 minutes to fill in the questionnaire, a time calculated via the two pilot tests we conducted before giving out the questionnaires in classes. We attended three classes within the mixed group, one class of each economy, law and psychology program. While we attended three classes within the sport group, one class for those who studies to become a physical activity teacher, one for sports management and one class of trainee program. The reason to do so was to reach an equal number of participants of each group to create a sufficient sample to represent the population of all sport student respectively mixed students of economics, law and psychology at a medium sized university in Sweden. The ethical issues considered are the participants anonymity and confidentiality, which we clarified in the information letter attached to the questionnaires. We also stated that all personal data gathered will be erased directly after the study is conducted and all sensitive information will be held among us two researchers only and will not spread to other surveys. We also informed that the participation was completely voluntary and could be disrupted at any time without further explanation.

Results

Descriptive statistics

To answer the research question, if sport students differs from social program students in terms of self-esteem due to amount of physical activity, we analyze the means and standard deviations from all programs. Instead of dividing the six programs into groups of three due to their belonging, we analyze and interpret all values for each of the program and gender for

all variables. The reason for this approach is better clarity and statistical overview (see *Table 1*). We can see that the amount of physical activity do in fact have an advantage for the three groups of sport teacher, sport management and training program answering for the groups of sport students. This tends however to be true regarding high and moderate physical activity, while the low amount of activity do not share any high differences when comparing the means against law, economy and psychology program answering from the social program group (see *Table 1*). In order to receive reliable data and to avoid complicated and complex data interpretation, we divided the physical activity scale in three indexes representing high, moderate and low physical activity. This allowed us to clearer see which group differed the most regarding the mean values. The approach is later on used in the statistical analysis. Furthermore, the mean levels of self-esteem seem to be rather stable across the groups, including the gender (see *Table 1*). This suggests that the participants answered quite similarly on the self-esteem scale. When seeing to the gender means, the values seem to be similar between men and women, along with the reported values of self-esteem, which holds no surprising difference (see *Table 1*).

Table 1. Descriptive statistics for all groups and genders against all variables, where the physical activity values are derived from an index.

	Male	Female	Sport teacher	Sports management	Training program	Psychology	Economics	Law
<i>n</i>	122	146	40	40	40	41	52	55
High physical activity	M = 1 SD = .41	M = 1.2 SD = .42	M = 1.3 SD = .4	M = 1.2 SD = .33	M = 1.4 SD = .24	M = .92 SD = .4	M = .9 SD = .4	M = .1 SD = .44
Moderate physical activity	M = 1.1 SD = .39	M = 1.1 SD = .4	M = 1.4 SD = .4	M = 1.2 SD = .37	M = 1.2 SD = .37	M = .9 SD = .36	M = .9 SD = .31	M = 1 SD = .37

Light physical activity	M = 1.2 SD = .36	M = 1.3 SD = .36	M = 1.4 SD = .31	M = 1.2 SD = .34	M = 1.4 SD = .31	M = 1.2 SD = .41	M = 1.1 SD = .39	M = 1.3 SD = .35
Self-esteem	M = 1.8 SD = .6	M = 1.9 SD = .53	M = 1.7 SD = .46	M = 1.8 SD = .44	M = 1.9 SD = .54	M = 2.2 SD = .66	M = 1.9 SD = .52	M = 1.8 SD = .57

Statistical analysis

To answer our first hypothesis, a set of three 2x6 Factorial ANOVAs was executed to see the group differences between students level of self-esteem in terms of the amount of physical activity performed. That is how much all groups differ from each other in levels of self-esteem depending on their amount of physical activity Therefore the independent variables were high, moderate and low physical activity, in set of three, where all included two factors each derived from the physical activity along with the program which consists of six groups, while the dependent variable was self-esteem.

The results showed that at high physical activity there was a significant main difference $F(7, 255) = 6.24, p < .001$ with a non-significant interaction effect $F(30, 225) = 1.18, p = .25$. At a moderate physical activity there was also a significant main difference $F(8, 221) = 1.8, p = .07$ followed by a non-significant interaction effect $F(33, 221) = 1.01, p = .46$. However, at the level of low physical activity, no such difference was found.

Furthermore, the second hypothesis regarding the students with high physical activity having higher self-esteem level was shown to be existent ($M = 1.8, SD = .56$).

To answer the third hypothesis referring to sport students having higher levels of self-esteem dependent on physical activity we followed up with a post-hoc test with equal variance assumed by Bonferroni. These results showed that the greatest differences was between sport teacher program ($M = 1.65, SD = .46$) and psychology program ($M = 2.23, SD = .66$) with a significant *mean difference* of .59, $p < .001$, followed by sportmanagement ($M =$

1.75, $SD = .44$) and psychology program with a *mean difference* = .48, $p < .001$ and training program ($M = 1.86$, $SD = .55$) and psychology program with *mean difference* = .37, $p < .05$.

When seeing to the program differences of physical activity only, we conducted three one-way ANOVAs for all six programs in terms of high, moderate and low physical activity. Here, the independent variable was the program and dependent variable was physical activity. The differences of high physical activity was significant $F(5, 262) = 12$, $p < .001$ as well as moderate physical activity which was significant at $F(5, 262) = 11$, $p < .001$. Low physical activity was also significant at $F(5, 262) = 2.9$, $p < .05$. Overall, the results show that the sport-programs had higher levels of physical activity than the social program in terms of high and moderate physical activity, while low physical activity do not have any noticeable difference when comparing the means. The post-hoc test showed that the greatest differences was within the high physical activity index for training program ($M = 1.4$, $SD = .24$) and psychology program ($M = .92$, $SD = .4$) with a significant *mean difference* of .48, $p < .001$. Followed by sport teacher program ($M = 1.3$, $SD = .4$) and economic program with *mean difference* = .35, $p = .001$. When accounting for moderate physical activity, the greatest difference was between sport teacher program ($M = 1.4$, $SD = .4$) and economic program ($M = .9$, $SD = .31$) with a significant *mean difference* = .45, $p < .001$.

In order to answer the third hypothesis, that males have higher self-esteem levels depending on physical activity, three 2x2 Factorial ANOVAs was conducted to see the gender differences. Here the independent variables were high, moderate and low physical activity which all included two factors each derived from the physical activity respectively, along with gender which included men and women, while the dependent variable was self-esteem. The results showed that there was a significant difference between genders on level of self-esteem depending on the amount of physical activity performed. More detailed information showed a significant difference at high physical activity $F(7, 252) = 6.6$, $p < .001$ with a non-

significant interaction effect $F(7, 252) = 1.4, p = .7$. Moderate physical activity was also significant at $F(8, 250) = 4.5, p < .001$ with a non-significant interaction effect $F(8, 250) = 1.4, p < .2$. At low physical activity the difference was significant at $F(8, 250) = 2.8, p = .005$ followed by a non-significant interaction effect $F(8, 250) = 1.5, p = .16$. We can see that females ($M = 1.9, SD = .53$) have a higher level of self-esteem than males ($M = 1.7, SD = .59$) on all three levels of physical activity.

To answer the fourth hypothesis we ran three additional one-way ANOVAs in order to see the gender differences between the levels of physical activity. Independent variable is gender and dependent variable is physical activity. Results showed only one significant difference regarding high physical activity $F(1, 266) = 9.1, p = .003$ for males ($M = 1, SD = .41$) and females ($M = 1.2, SD = .42$), meaning that men and women only differ in terms of high physical activity performed with women in favor. However, when it comes to moderate and low physical activity, no such difference was found as significant.

Discussion

The purpose to this study was to contribute with further research regarding the relation between self-esteem and physical activity within the population of university students. Especially to fill in the gaps of the differences within university students and create follow up research regarding sport students in relation to social program students, in this case law, economics and psychology. As the results showed, our first hypothesis regarding high levels of physical activity contributing to high levels of self-esteem in students was shown to have a significant positive relation throughout high and moderate physical activity, while not for low amount of physical activity. That is those who work out more tend to feel better about themselves, which goes in line with the conclusions drawn by earlier researchers (Fox, 2000; Ryan, 2008). Regarding the non-significance of light performance, it can be explained that everyday exercise such as picking up groceries and taking a walk to and from school is not

differentiated depending on what program a person studies. Furthermore, there was a significant difference between the programs. Where those attending any kind of sport program had both higher levels of physical activity and self-esteem scores, which states that our second and third hypothesis regarding these statements was true. Most importantly, these findings contribute with earlier research within sport students as being more physically active and therefore receive a higher level of self-esteem (Kim & Lee, 2010).

However, the most interesting result was regarding the gender differences. We hypothesized that men would exercise more than women and have a higher self-esteem level based on the physical activity performed (Cooper & Fairburn, 1983; Furnham & Calnan, 1998; Furnham, et al., 2002). However, none of these hypotheses was shown to be true, which we can see from the results. The findings show that regarding self-esteem in terms of physical activity, females had higher scores on all three categories of high, moderate and low physical activity. What is interesting though is that the differences declined as the index went from high to low, yet still significant. These results suggest that women tend to feel better about them depending on their level of physical activity (Lazarevic et al., 2017). Since the difference is greatest at high performance, women get a greater self-esteem boost than men. This is shown to be true even when conducting moderate and low activity, although the difference declines it is still significant, suggesting that women feel better about them and gain higher self-esteem than men regardless of the level of performance. The last hypothesis concerned men as being more physically active, even this statement tended to be rejected based on the results. Women exercised in a greater manner than men at high physical activities, what is interesting though is that the gender differences was non-significant for both moderate nor low physical activity, meaning that there are no gender differences between participating in physical activity for university students. However, it is important to

take in account for the advantage of more participation of women than men in the study which may interfere with the derived results (Ryan, 2008).

Our contribution to the topic is the focus on university students, which has not been a large part of earlier research. We filled some of the missing gaps of the relation between physical activity and self-esteem in students and adolescents who attend a higher education, which are represented by the group differences found and the greatest differences between sport programs and social program. This in turn lines up possibilities for further research within the specific population and groups of university students. Furthermore, this study shares similar outcome from a lot of existing literature explaining the relation between the variables and how it affects different kind of people and groups of people. However, maybe the most important contribution is regarding the gender differences within university students where the results derived did not retain the hypothesis stated. Even more so, it both argued with and against some of the earlier findings, which could mean that the topic involving gender is more complex, and still needs further investigation for more insight and understanding.

If we speculate about our findings it is rather clear that those who study any kind of sport science programs has an interest in sports and physiology, which would induce them to exercise in a higher matter than those within the social program group (Kondric et al., 2013). It could also be due to the fact that any kind of physical activity is a mandatory and regularly recurring part of their everyday life, both in university and leisure time, which would explain their high levels of sport participation. The social science programs, however, lack mandatory physical activity and is therefore completely supposed to perform any kind of exercise from their own interest and discipline, which can be less continuous than the amount of physical activity for the students in sport programs. Moreover, the self-esteem scores from all participants in each group could be due to a lot of other variables than primarily physical

activity (Fox, 2000). As already stated, physical activity is only one of a numerous variables contributing to self-esteem and is easily interfered with a person's social life and overall surrounding (Biddle, 1995). The reason for sport science students to score higher on self-esteem than the social science group could be explain in such ways as they are overall more satisfied with their choice of studies. Those who have an interest in sports is expected to choose their program primarily from interest which infers that they will study the subject most close to their heart, will and engagement (Kim, 2010). When it comes to the results regarding gender differences, the fact that women tend to have higher amount of high physical activity could be due to women in general being more aware of their physical and psychological well-being. Rationally, it could be understood in such way that women activate themselves physically in terms of reducing body weight and increase their physical appearance (Adrian et al., 2002) to obtain a healthier lifestyle. Still, it is said that men and women do not differ on the perceived self-esteem due to amount of physical activity (Ryan, 2008), only that men tend to have a greater ambition to increase their muscular strength and appearance which they tend to do (Ciccolo et al., 2016). So perhaps the results could be more clear if it would be possible to see more detailed information about what kind of physical activity is performed the most. On the other hand, the results regarding gender could be explained yet again by individual differences, rather than gender only, depending on life choices, such as university program (Kim, 2010). But it could also be interpreted that men and wome quite equally increases their self-esteem from performing physical activiy or sport invlovement (Lazarevic et.al.,2017), thus we have only focused on group differences instead of analysing the similarities.

Limitations in study were mostly due to its demarcation of population and derived sample. The results cannot fully be generalized onto the world-wide population of university students across countries and culture. Mostly since we conducted the research in a medium sized Swedish city and university, but also because we did not take ethnicity in account for

when measuring and implement the data collection analyzes. More so, we only included participants from two groups within the university which holds a threat against the external validity and generalizability for the population of university students. Instead of narrow it down, the research could have included an equal number from each different program on the whole university and measure it against the total students within the sport program. However, this would have been impossible due to the time limit for conducting the research and too much information to process for only a team of two people. We also had an uneven number of women and men distributed in the study, were women accounted for the majority of the answers, which might have made the results skewed from what it would have looked if it was evenly distributed. However, the gender distribution of the survey was difficult to establish because the lack of time and the uneven number of women and men in the classes attended. It is rather impossible to select classes due to number of men and women and even more so it would have been ethically wrong to exclude participant conditionally on their gender. Moreover, the scale in use of measuring physical activity only seeks to the amount and time spent on physical activity conducted in the last seven days. Because of that, some participants answered the survey directly after the holiday which might have been interfered with the data results as a reason why several participants didn't get physically activite during the days off. We chose however to execute the study, because there is no scheduled holidays when studying at higher education or university in general. Furthermore, we didn't ask the participants about what kind of exercise they participate in generally. The main reason of this because it would be too complex and involve a greater data collection wich would consume more time than we have. Most importantly, it would not follow the line of this studies main research question and therefore not be adequate when receiving an answer to the question. Maybe the greatest limitation and threat against this study is due to the approach of analyzing data for physical activity in form of an index value. Although this granted easier interpretation

and overview of the statistical analyzes, none of earlier surveys using the *IPAQ physical activity scale* was found to take the same or similar approach. This holds a great threat against the reliability of the study but is however a useful tool in analyzing the data.

One of the strengths of this study is due to number of several previous studies that have researched about self-esteem and physical activity, which strengthens our result in several cases. One of which the vast majority reached similar or even closely related analysis with the ones executed by this study. More so, the measurements made on the students, both on self-esteem and physical activity, were consistent with our framework of what we requested to receive to fully answer our research question and more importantly, to test our hypothesis. The second strength of the study is the topic. Self-esteem and physical activity is an interesting topic which stretches across age, gender, culture, country and individual preferences in general. We chose to focus on university students in Sweden and more specific students from psychology, economics, law, training, sport teacher and sports management program. Because of that, it was easy to find students willing to answer the survey. The study had only one loss of participation and almost all of the classes attended were full at the moment which optimized the data collection. The third strength according to us is that we used already available, known and tested scales, which are the *Rosenberg's self-esteem scale* and *IPAQ physical activity scale*. We knew from before that these scales were reliable and used for previous studies where their finding were similar to the majority of studies within the topic, both in conclusions and method.

For further research, it would have been interesting to focus on if different types of physical activity affect self-esteem, and if so, what kind of exercising affect self-esteem to become higher versus lower. Another interesting subject to focus on might be if age plays an important role for how much you exercise and how high versus low your self-esteem is. More so, this study lines up for further research regarding differential statistics between all possible

university programs, how they differ in amount of performed physical activity and its effect on their subjective self-esteem. It would also be interesting to see what specific kind of physical exercise reveals higher self-esteem among students and examine other positive outcomes regarding university studies, such as higher motivation and lower stress values. As a lot of earlier studies have focused on it would be interesting to see a relation between regularly physical activity gaining lower stress values and target it against academic performance.

References

- Azevedo, M. R., Araujo, C. L. P., Reichert, F. F., Siqueira, F. V., Da Silva, M. C., & Hallal, P. C. (2007). Gender differences in leisure-time physical activity. *International Journal of Public Health, 1*, 8-15, 17966815
- Baumeister, R., Campbell, J., Krueger, J., & Vohs, K. (2003). Does high self-esteem cause better performance: Interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest, 4*(1), 1-44, 1529-1006.01431
- Biddle, S. (1995). Exercise and psychosocial health, *Research Quarterly for Exercise and Sport, 66*, 292-297, 10.1080
- Biddle, S. J. H., Fox, K. R., & Boutcher, S. (2000). *Physical activity and psychological well-being*. New York, Taylor & Francis Group.
- Christensen, L. B., Johnson, R. B., & Turner, L. A. (2014). *Research Methods, Design and Analysis (12th ed.)* USA: Pearson.
- Ciccolo, J. T., SantaBarbara, N. J., Dunsiger, I. S., Busch, A. M., & Bartholomew, J. B. (2016). Muscular strength is associated with self-esteem in college men but not women, *Journal of Health Psychology, 2*, 3072-3078. 26169439
- Crocker, J., & Knight, K. M. (2005). Contingencies of self-worth. *Currents Directions in Psychological Science, 14*, 200-203, 0963-7214

- Daniels, E., & Leaper, C. (2006). A longitudinal investigation of sport participation, peer acceptance, and self-esteem among adolescent girls and boys. *Sex Roles, 55*(11). 875-880, 11199-006-9138-4
- Dunn, A. L., Trivedi, M. H., O'Neal, H. A. (2001) Physical activity dose-response effects on outcomes of depression and anxiety, *Medicine & Science in Sports & Exercise, 587-597*, 11427783
- Fairburn, C. G., Cooper, P. J., Kirk, J. O., Amp, A., & Connor, M. (1985). The significance of the neurotic symptoms of bulimia nervosa. *Journal of Psychiatric Research, 19*(2), 135-140. 01454455870114002
- Faulkner, G., Carless, D. (2006). Physical activity in the process of psychiatric rehabilitation: theoretical and methodological issues, *Psychiatric Rehabilitation Journal, Vol. 29*, 258-266. 1447-0349
- Fox, K. R. (2000). *The effect of exercise on self-perception and self-esteem*. UK: Routledge.
- Fox, K. R. (1998). Advances in the measurement of the physical self. In J. D. (Ed.), *Advances in sport and exercise psychology measurement* (pp. 295 - 310). Morgantown, West Virginia: Fitness Information Technology.
- Furnham, A., Badmin, N., & Sneade, I. (2002). Body Image Dissatisfaction: Gender Differences in Eating Attitudes, Self-Esteem, and Reasons for Exercise. *The Journal of Psychology, 136* (6), 581-596, 10.1.1.331.2864
- Furnham, A., & Calnan, A. (1998). Eating disturbance, self- esteem, reasons for exercising and body weight dissatisfaction in adolescent males. *European Eating Disorders Review, 6* (1)., 58-72, 291099-0968
- Goodwin, R. D. (2003) Association between physical activity and mental disorders among adults in the United States, *Preventive Medicine, 36*, 698–703, 0091743503000422
- Hubbs, A., Doyle, E. I., Bowden, R. G., & Doyle, R. D. (2012). Relationships among Self-Esteem, Stress, and Physical Activity in College Students. *Psychological Reports, 110*(2)., 469-474, 22662400

- Hurley, B., Hanson, F., & Sheaff, E. (2011). Strength training as a countermeasure to aging muscle and chronic disease. *Sports Medicine*, 41(4), 289-306, 11585920
- International Physical Activity Questionnaire: IPAQ group. (2005). *Downloadable Questionnaires*. Retrieved from https://sites.google.com/site/theipaq/questionnaire_links
- Joseph, R. P., Royse, K. E., Benitez, T. J., Pekmezi, D. W. (2014) Physical activity and quality of life among university students: exploring self-efficacy, self-esteem, and affect as potential mediators, *Qual life res*, vol. 23, 661–669, 11136-013-0492-8
- Kim, M. (2010). Exercise Stages of Change among University Students Taking Fitness and Sport Skills Courses. *Perceptual and Motor Skills*, 110(3), 1149-1153,
- Kim, M-S., Lee, H-S. (2010) Effect of University Physical Education Courses on Intention for Physical Activity Adherence in Korea, *perceptual and motor skills*, 2, 458-462, 10.2466
- Klomsten, A. T., Marsh, H. W., & Skaalvik, E. M. (2005) Adolescents' perceptions of masculine and feminine values in sport and physical education: A study of gender differences, *Sex Roles*, 52, 625–636, 11199-005-3730
- Kondric, M., Sindik, J., Furjan-Mandic, G., & Schiefler, B. (2013). Participation motivation and student's physical activity among sport students in three countries. *Journal Of Sports Science And Medicine*, 12(1), 10-18, 3761756
- Lazarević, L. B., Lazarević, D & Orlić, A. (2017). Predictors of students' self-esteem: The importance of body self-perception and exercise. *Psihološka Istraživanja*, 20 (2), 239-254, 0352-73791702239
- Mavrovouniotis, F. (2012), Physical activity and fibrinolytic response, *Journal of Physical Education and Sport*, 482-490. 2247-8051
- McCreary, D. (2002). Gender and age differences in the relationship between body mass index and perceived weight: exploring the paradox. *International Journal of Men's Health*, 1(1), 31-42, 10608265
- McCreary, D. R., Sasse, D. K. (2000) An exploration of the drive for muscularity in adolescents boys and girls. *Journal of American College Health*, 48, 297–304, 07448480009596271

- Mingli Liu, Lang Wu, & Qingsen Ming. (2015). How does physical activity intervention improve self-esteem and self-concept in children and adolescents? evidence from a meta-analysis. *PLoS ONE*, *10*(8), 0134804.
- Morgan, W. P. (1997) *Physical Activity and Mental Health*. Madison, WI, USA: Taylor & Francis
- Pyszczynski, T., Greenberg, J., Solomon S., Arndt J., Schimel J., & Cooper, H. (2004). Why do people need self-esteem? A theoretical and empirical review. *Psychological Bulletin*, *130*(3), 435-468, 0033-2909-130.3.435
- Ramírez-Vélez, R., Correa-Bautista, J. E., Lobelo, F., Lobelo, M., Alonso-Martínez, A., Rodríguez-Rodríguez, F., & Cristi-Montero, C. (2016) High muscular fitness has a powerful protective cardiometabolic effect in adults: influence of weight status, *BMC public health*, *1*, 1-8, 12889-016-3678-5
- Rosenberg, M. (1965). *Society and the adolescent self-image*. USA: Princeton University Press
- Ryan, M. (2008). The antidepressant effects of physical activity: Mediating self-esteem and self-efficacy mechanisms. *Psychology & Health*, *23*(3), 279-307, 14768320601185502
- Schwerdtfeger, A. R., & Scheel, S. M. (2012). Self-esteem fluctuations and cardiac vagal control in everyday life. *International Journal of Psychophysiology*, *3*, 328-335, 22154973
- Saxena, S., Van Ommeren, M., Tang, K. C., & Armstrong, T. P., (2005) Mental health benefits of physical activity, *Journal of Mental Health*, *14*, 445-451, 09638230500270776
- Silberstein, L. R., Striegel-Moore, R. H., Timko, C., & Rodin, J. (1988). Behavioural and psychological implications of body dissatisfaction: Do men and women differ? *Sex Roles*, *19*, 219–232. 00290156
- Step toe, A., Kimbell, J., & Basford, P. (1998). Exercise and the experience and appraisal of daily stressors: a naturalistic study. *Journal of Behavioral Medicine*, *21*(4), 363-74. 9789166
- Torstveit, M., Sundgot-Borgen, J. (2004) Are Young Norwegian Women Sufficiently Active?, *Tidsskrift for den Norske laegeforening*, *19*, 2488-2499, 10.1.1.1032.758
- Yigiter, K. (2014). The effects of participation in regular exercise on self-esteem and hopelessness of female university students, *Social Behavior and Personality: An international journal*, *42*(8), 12-33, 42.8.1233

Zamani, S., Fathirezaie, Z., Brand, S., Pühse, U., Holsboer-Trachsler, E., Gerber, M., & Talepasand, S.

(2016). Physical activity and self-esteem: Testing direct and indirect relationships associated with psychological and physical mechanisms. *Neuropsychiatric Disease and Treatment*, *12*, 2617-2625, 10.2147.116811