Sports Participation and Mental Health among Adolescents

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Foreword

Submitted in partial fulfilment of the requirements of the BSc Psychology degree, Reykjavik University, this thesis is presented in the style of an article for submission to a peer-reviewed journal.

Abstract-English

The main topic of this study is sports participation, gender difference, and the affect it can have on depression and anxiety among adolescence. In this study a data from ICSRA was used with sample of 2000 Icelandic 10th graders. 2X2 MANOVA was used to test the relationship. The hypothesis is that there is a connection between persons sports participation with sports club per week and level of depression and/or anxiety. The main results in this study was that those who participate in sport with sports club show less depression than those who participate less in sports. There was not significant relationship between sports participation and anxiety. When looking at gender difference and mental well being, girls tend to experience more depression and anxiety.

Keywords: sports participation, adolescence, depression, gender difference and anxiety.

Abstract-Icelandic

Markmið þessarar rannsóknar var að skoða íþróttaiðkun og kynjamun og hvort það geti haft áhrif á þunglyndi og kvíða meðal unglinga. Tilgátan var sú að samband væri á milli íþróttaiðkunar með íþróttafélagi og kvíða og þunglyndi. Gögn voru fengin frá Rannsóknum og greiningu. 2000 manna úrtak var notað úr rannsókn frá 2009 sem gerð var meðal 10. bekkinga á Íslandi. Notast var við 2X2 MANOVA til að vinna úr gögnum. Helstu niðurstöður rannsóknarinnar sýndu að það þeir sem stunda meira og oftar íþróttir með íþróttafélagi sýna minna þunglyndi en þeir sem stunda sjaldan íþróttir. Það voru ekki marktæk tengsl á milli íþróttaiðkunar og kvíða. Þegar skoðaður var kynjamunur mátti sjá að stúlkur sýndi meiri andlega vanlíðan en drengir. Þunglyndi og kvíði var marktækt hærri hjá stúlkum.

Leitarorð: Íþróttaiðkun, unglingar, þunglyndi, kvíði og kynjamunir.

Sports participation and mental health among adolescents

The years from when children become thirteen and start 8th grade can be years of various changes in their lives. School gets more demanding; along with physical growth that can be tough on them. Social life and friends become more important in their lives and parents less important. Adolescence years can be difficult and challenging for everyone involved, according to research by Sawyer et al., (2001) where mental health among Australian adolescence and children were looked at, 14% of participants were reported to have mental health problems. There was gender difference as well, were girls were lower than boys when it came to mental health, or 10% versus 19% of the boys. This has been supported in the literature for example in Saluja et al., (2004) research among adolescence, the results indicated that depression was higher among girls (25%) than boys (10%) and that overall around 20% of adolescence reported symptoms of depression. They suggest that more should be done to screen for depression among adolescence and better resources (Saluja et al., 2004). Those research indicate what Fergusson & Woodward, (2002) found in their research that adolescents who develop depression between ages 14 and 16 are significantly at higher risk of later depression, anxiety, substance abuse, suicide attempts and little education. Rerearch conducted among Icelandic adolesence in 2008, showed a significant increase in depression among both boys and girls (Sigfusdottir, Asgeirsdottir, Sigurdsson, & Gudjonsson, 2008a). Sourander et al., (2004) found in their research among Finnish adolescense that level of mental health service seeking, had increased among participants. These aforementioned researc show the need for improvement in awakening in mental health among adolescence.

Mental disorders, like depression and anxiety can appear and increase with substance abuse among adolescence. Premature alcohol drinking and substance abuse

can increase the risk of mental disorders (Deykin, Levy & Wells, 1987). Sport participation is likely to have multiple and good effects on health. Sport participation can decrease cardiovascular diseases, obesity and obesity as well as other diseases (Moore & Werch, 2005). Participation in sports can lead to better social status, mental and physical well-being, enhanced school achievement, improved locus of control and better leadership (Moore & Werch, 2005). In Slutzky and Simpkins (2009), research, self-esteem and self-evaluation were significantly higher for those adolescence that participate in sports. In the same research Slutzky and Simpkins found out that neither gender nor sports participation had negative effects on self-image. Those findings are supported by research done by Leaper (2006) where they found adolescence self-image to be higher for those who participate in sports and those that are more popular among friends. Mortl et al. (2004) reported a positive relationship between participation in sports, specially group sports and effects on life satisfaction, smoking, alcohol consumption, depression and anxiety.

Organized after school activities are very common and considered easy to approach in Iceland, Recently, for example there are many fitness centers, summer programs among sports clubs and courses for those who do not participate in competitive sports (Vilhjalmsson & Kristjansdottir, 2003). From the years 1992-2006, sports participation among adolescence in Iceland has increased for the ages of 11 to 15 (Eiðsdóttir, Kristjánsson, Sigfúsdóttir, & Allegrante, 2008).

Can those children who have been very active in there after school activities keep on being so active without it affecting their mental health? Research shows that organized after school activities can help adolescent's psychosocial growth (Larson, 2000; Roth & Brooks-Gunn, 2003). Roth and Brooks-Gunn (2003) also showed that after school activities could be powerful in preventing adolescents to engage in health-

compromising behavior in addition to helping them build self-esteem and develop better life skills. According to Mahoney, Cairns, & Farmer (2003), adolescents that engage in extracurricular activities throughout their education show more positive results in their future education. A small gender differences was noticed (Mahoney et al., 2003). This is consistent with other research that have reported that prevention effect extracurricular activities can have on early school dropout among adolescents (Mahoney & Cairns, 1997). There have also been positive relations between participation in after school activities and antisocial behavior (Mahoney, 2000). Participants in the investigation who engage in extracurricular activities were less likely than other participants to drop out of school as well as get arrested as adolescents (Mahoney, 2000) adolescences experiences of negative feelings of self-efficacy and social competence has bee linked with higher risk of depression (Bandura, Pastorelli, Barbaranelli, & Caprara, 1999; Kistner & Balthazor, 1999).

Participation of some sort of physical activity for 60 minutes a day is recommended for adolescence (Strong et al., 2005). That amount of exercise per day is related to better health and behavior. This is consistent with study findings showing that regular exercise can increase peoples extraversion and sensation seeking as well as decreasing their anxiety, depression and neurotic (De Moor, Beem, Stubbe, Boomsma, & De Geus, 2006). On the other hand sport participation can increase feelings of physical health but not mental health. An increase of the level of depression and anxiety has been reported in conjunction with sports participation (Frederick & Ryan, 1993).

The evidence indicating that sport participation can also have negative effects as well as positive on mental health and well being among adolescence

Larson, Hansen, & Moneta, (2006) found in their research that stress among adolescense who participated in sports was high. In research among competitive gymnasts, girls were

tired, confused, unsecure and more anxious than those not participating in gymnastics (Kolt & Kirkby, 1994). Similar results have been repored in other sports. Results from research conducted by Sara J.Donaldson and Kevin R. Ronan (2006), showed that athletic competence had negative affects on anxiety, depression, internalizing, social and attention problems. In research Sigfusdottir et al., (2008) that was conducted from 1996 to 2006, there could be seen significant increase in depression among girls, whereas there was no change among boys. When looking at anxiety there was significantly more anxiety for both boys and girls. Also the correlation between sport participation and alcohol consumption was explored among high school students in Florida, suggesting a higher risk of alcohol use and alcohole abuse among white males in sports (Eitle, Turner, & Eitle, 2003). A strong negative relationship between football players and wrestlers on violant behavior has also been establihed. Both football and wrestling are contact sports that can have negative affects as suggested by the authors. No significant correlation was reported between violance and baseball, basketball, tennis and other sports where participants where not in as much contact with each other (Kreager, 2007). Lavallee & Flint, (1996) found in their research that social support had significant relationship with depression, if sport participants had low social support, there was a higher risk of depression. Anxiety, depression and anger also increased the risk of injury. Anxiety can increase the risk of developing major depression among adolescense and young adults (Cole, Peeke, Martin, Truglio, & Seroczynski, 1998; Wittchen, Kessler, Pfister, Höfler, & Lieb, 2000).

These findings above suggest that sport participation can have mixed effects, both positive and negative, on depression and anxiety.

This research will focus on sport participation among 10th graders in Iceland. It will explore how often 10th graders practice and compete with sports club per week and if that has effects on their depression and anxiety.

Hypothesis: a) There is a connection between persons sports participation with sports club per week and if level of depression and/or anxiety increases when sports participation is high, b) Is there a gender difference when considering difference between sports participation with sports club, depression and anxiety?

Method

In this study data came from ICSRA (Icelandic Center for Social Research and Analysis). For the last 15 years ICSRA has specializes in researching well being of young adolescence in Iceland. The survey, used in this research was conducted in February 2009. Teachers distributed anonymous questionnaires to 10th graders in all highschools in Iceland. All at the same time (Rannsóknir og greining, 2009).

Participants

Participants in the research were students in 9th and 10th grades in Iceland. The samples for the research were those students who attended school the day the questionnaire was conducted. In this research there were 7.714 participants who completed the survey. Participants were asked not to write their name or their ID number on the questionnaires. After completing the questionnaire, participants were asked to put it in to blank envelope and hand it over to the teacher. At any point in the research, students could withdraw themselves from it. Parents or guardians were notified before the questionnaire was conducted and were asked to notify the school if they did not want their child to participate in the study.

Sample size here consisted of 2000 participants in 10th grades that were randomly selected from the original sample used in this study. The age of participants was 15 to 16 years old. Gender ration was considerably even. Male participants were 968 or 48.8%, girls were 1006 or 50% and 26 or 1.3% did not report their gender.

An advanced questionnaires, developed by ICSRA was used. Strong requirement was for reliability and validity in the research. The questionnaires where showned to have acceptible reliability and validity. Questions were formulated by professionals in social science.

The focus of my study was to see if sport participation can have a negative effects on mental health among 16 year old students in Iceland.

Measures and design

To measure the independent variable, sport participation, the question "How often do you engaged in sports (practices or competes) with sports club?" was used. Answers possibilities ranged from 1= "almost never", 2= once a week", 3= " twice a week", 4= " three times a week", 5= " four to six times a week" and 6= "almost every day". Answer choices were combined using SPSS to get fewer answer possibilities, Answer choices two and three were combined into one and four and five. In the end there were four answer possibilities.

To determine gender the question "are you a boy or a girl"? Was used with the answer possibilities 1= "boy", and 2= "girl".

To measure dependant variable, 12 items from the depression dimension scale that was defined by (Derogatis LR, Lipman RS, Covi L, & Rickels K, 1971). Following statetments were asked regarding how often participants related to them preveious week. "I felt sad or had little interest in doing things", "I had little appetite", I felt lonely", "I cried easily or wanted to cry", I had sleeping problems", I felt sad or blue", I was not

exciting in doing things", I was slow or had ad little energy", "The future seemed hopeless", I thought of comitting suicide", I felt like everyone had let me down", I had no one to talk to". Answer possibilities ranged from 1= "(almost) never", 2= "rarely", 3= "sometimes" and 4= "often" (Sigfusdottir, Asgeirsdottir, Sigurdsson, & Gudjonsson, 2008b). Those items were combined into a scale ranging from 0-36 with Chronbach´s alpha 0.910.

To measure dependant variable, 3 items from the anxiety scale defined by (Derogatis LR et al., 1971). Following statetments were asked regarding how often participants related to them preveious week. "Nervousness or shakiness inside", Being suddenly scared or for no reason", and "feeling tense or keyed up". Answer possibilities ranged from 1= "(almost) never", 2= "rarely", 3= "sometimes" and 4= "often" (Sigfusdottir et al., 2008a). Those items were combined into a scale ranging from 0-9 with Chronbach´s alpha 0.753.

Statistical analysis

This study tested if there was an relationship bteween anxiety and depression among adolescents to how often they participated in sports, using correlation, gender differences was also explored. SPSS 22 was used for all statistical analysis. For the reason the independent variables were correlated multivariate analysis of variance (MANOVA) was used to measure the relationship between sports participation and gender and anxiety and depression.

Results

A 2X2 MANOVA was conducted to examine the difference in gender and sports participation on depression and anxiety. The independant variables were 16 year old adolescense and sports participation. The dependant variables were depression and anxiety. The means and standard deviation by gender and sports participation are reported below. The assumption of equality of covariance matrices was not satisfied, Box´s M=103.73, F=4.91, p<.001. For that reason Pillai´s Trace was used instead. There was a significant main effect for gender (Pillai´s Trace=.032, F=29.448, p<.001), also there was a significant main affect for sports participation, (Pillai´s Trace =0.028, F=8.565, p<.001). Interaction between gender and sports participation there were not a signifacant main affect (Pillai´s Trace =0.003, F=1.020, p=.410).

To further examine the differences between gender and sports participation, univariate follow-up procedures were conducted to determine difference in the individual dependant variables. For gender there was a statistically significant difference for both anxiety (F=53.302, p<.001) and depression (F=40.543, p<.001). With females reporting higher scores for both on average.

When exploring further sports participation among adolescents, using six measures of frequency during the week, from never, to almost every day, the pattern that emerges is close to being uniform among those who participate to some degree every day, see. That said, there is very little variability in sports participation variable when measured with six categories, (F=0.712, p=.615). As a consequence, when trying to identify the difference between level of depression in relations to sports participation among the genders, a significant difference is not detected. However, when collapsing two categories, using a four category measure of sports participation, never, one or two times, three or four times, and more than five times, see, the difference between the

sports participation and depression emerges at a significant level ($F=13,525$, $p<.001$). Having established that girls are more prone to find themselves depressed and anxious compared to boys, as a stand-alone independent variable, the beneficial effect of sports participation is not picked up by the MANOVA, under the six category measure. However, using a four category measure, which is more sound, especially in relation to how much exercise is needed for the individual to improve their physical well-being, MANOVA indeed finds a significant difference between the groups, associating less depression and anxiety with more physical activity. The categories are set up as: 1) I don't participate at all, 2) ones or twice a week, measuring low participation which may not have the necessary impact of the physical well being needed to feel the difference 3) three to four times a week, which is considered enough to gain physical fitness and 4) more than five times a week, signally very active sports participation and therefore fitness.

Table 1

Descriptive statistics of the mean levels of dependent variable gender and sports participation, standard deviation and independent variable depression and anxiety

	Sports participation	Gender	Mean	Std. Deviation	N
Anxiety	Almost never	Boys	1.9255	2.14781	376
		Girls	2.9020	2.32016	500
		Total	2.4829	2.29801	876
	1-2 times per week	Boys	2.0244	2.32994	82
		Girls	3.0536	2.18446	112
		Total	2.6186	2.29414	194
	3-6 times per week	Boys	1.9401	1.92435	284
		Girls	2.6245	2.14958	245
		Total	2.2571	2.05835	529
	Almost every day	Boys	1.8400	1.74319	125
		Girls	2.7586	2.14566	87
		Total	1.9273	1.96657	212
	Total	Boys	2.8347	2.03674	867
		Girls	2.4003	2.24629	944
		Total	6.6702	2.19527	1811
Depression	Almost never	Boys	10.2660	7.21648	376
		Girls	8.7226	8.40384	500
		Total	6.9756	8.10965	876
	1-2 times per week	Boys	8.8571	7.18965	82
		Girls	8.0619	7.48790	112
		Total	5.0775	5.63630	194
	3-6 times per week	Boys	6.2306	5.73649	284
		Girls	4.6080	7.19863	245
		Total	7.2299	6.52064	529
	Almost every day	Boys	5.6840	5.52691	125
		Girls	7.2299	6.33503	87
		Total	5.6840	5.99835	212
	Total	Boys	5.8800	6.61909	867
		Girls	9.1186	7.88576	944
		Total	7.5682	7.48192	1811

Table 2

Shows value, F and significance for gender and sports participation

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai´s Trace	.481	835.164b	2.000	1802	.001
Sports participation	Pillai´s Trace	.028	8.565	6.000	3606	.001
Gender	Pillai´s Trace	.032	29.448b	2.000	1802	.001
Sports participation*Gender	Pillai´s Trace	.003	1.020	6.000	3606	.410

Table 3

Shows Box´s M for equality for multivariance matrices

Box´s M	103.728
F	4.912
df1	21
df2	1487260.393
Sig.	.001

Table 4

Shows tests of between-subjects effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Anxiety	392.85	7	56.122	12.147	.001
	Depression	7024.31	7	1003.5	19.187	.001
Intercept	Anxiety	6876.23	1	6876.2	1488.4	.001
	Depression	61984.41	1	61984.4	1185.2	.001
Sports participation	Anxiety	12.08	3	4.062	0.871	.001
	Depression	2079.25	3	693.08	13.3	.455
Gender	Anxiety	246.26	1	246.26	53.3	.001
	Depression	2120.43	1	2120.4	40.5	.001
Sports participation * Gender	Anxiety	8.13	3	2.71	0.586	.624
	Depression	176.67	3	58.89	1.126	.337
Error	Anxiety	8329.91	1803	4.62		
	Depression	94298.02	1808	52.301		
Total	Anxiety	19157.00	1811			
	Depression	205052.00	1811			
Corrected Total	Anxiety	8722.76	1810			
	Depression	101322.33	1810			

Discussion

In this study I have aimed to establish whether there is a significant correlation between sport participation and anxiety, on one hand, and sport participation and depression, on the other hand. The working hypothesis is that too much sport participation may be associated with higher anxiety and depression among adolescents. The results indicate a bi-modal pattern of adolescents in participating in any type of sports, either they seem not to participate at all or they are heaveily engaged in their sport's participation. In fact, very few were found to be in the middle, or modestly participating in sport's activities. My findings show that sport participation has a significant and positive effect on pscyhological well-being of people in this age group,

16 years of age. Namely, those adolescents who participated heavily in sports are significantly associated with lower levels of depression compared to those who did not. However when measuring the correlation between sports paricipation and anxiety, I fail to find any assocation among the two.

According to Levene´s test, the variance of different sports participation in regards to anxiety and depression, is equal.

My analysis also shows that there is a difference between the genders when it comes to both depression and anxiety. Whereas girls are more prone to feeling depressed and anxious then boys are. However, boys are at the same time more likely to participate in organized sports activities than girls. These results support the findings of Steptoe & Butler, (1996) who have found a positive and significant relationship between emotional well being and extended sport participation among adolescents. Slutzky & Simpkins, (2009) found in their research that the more often adolescents participated in sports each week, the better mental health enjoy as a result. That is also supported in other research, such as Whitelaw, Teuton, Swift, & Scobie, (2010) who found correlation between physical activity and mental well being.

The difference between the genders in regard to having experienced anxiety or depression, I find in my study, is also akin to the findings of other researces. According to (Leadbeater, Kuperminc, Blatt, & Hertzog, 1999),

boys show more external behavior and girls more internal behavior, while girls tend to report more depression (Angold & Rutter, 1992).

It should be noted that boys reported higher sport participation in my study, hence the true cause of higher reported depression among girls is in fact lack of exercise, as several papers have shown including Leadbeater et al., (1999) and Trost, Pate, Dowda, Saunders, & al, (1996). Research also looking at body image in relation to

sports participation indicates that girls who are active in sports do have better body image than those how are sedentary (Abbott & Barber, 2011). On top of that girls with low body image are less likley to participate in sports (Slater & Tiggemann, 2011).

Limitations and further researches

The current study had some limitations that have to be addressed. The study was self-measure questionnaire. It can be difficult for adolescents to answer questions about their own mental health. Perhaps they have not answered accurately about their feelings for it can be a sensitive subject. That might be the same for sport participation, even if it might not be as sensitive as depression and anxiety. No measure was done on whart type of sport is practiced, whether it is a group sports or an individual sport. It would interesting to see if the same results appeaar regarding the gender difference if depression and/or anxiety would be the same beetween different sports.

According to Box´s M (p<.001) the covariances are not significantly different and the null hypothesis is rejected. For that reasons the assumption of homoscedasticity is upheld. In my study the sample is large, for that reason the significance can be trusted.

The question that can be asked is why do boys show more external behavior compared to girls, and girl´s tendencies to report more internal behavior? Could that have an affect on their mental well being like depression and anxiety? Perhaps boys express their emotions by getting physical or talk more about their feelings. It may be so that girls suppress their emotions and are therefore likelier to experience depression and anxiety. Body image seems to be larger issue for girls than boys and that seems to have large impact on their sport participation, that should be looked at further. If body image stops girls from participating in sports, and sports can have good affect on mental well

being, such as depression and anxiety. More focus is needed on these things in public policy and public health initiatives.

Further reserch is needed to establish the causal relationship here. A longitudinal study, repeated measures on the same individual may shed further light on the interaction between sports participation and mental health, and or gender and mental health.

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