Impact of physical activity on academic performance and depression among adolescents

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Abstract

Physical activity has been associated with better academic performance, and with lower levels of depression in adolescents. As depression is related to academic performance the relationship between physical activity and academic performance may be mediated by depression. The present study examined this hypothesis by assigning adolescents to a pedometer based physical activity intervention and assessing depression and academic performance before and after the intervention. The participants were 99, 15-17 years old adolescents from two upper secondary schools in Reykjavík. All participants wore a sealed pedometer for three days to assess their baseline levels of physical activity. During a 15 day intervention period the pedometer was open and participants texted daily the number of steps taken during the day. A median split was performed to divide participants into high (High_PA) and low (Low_PA) physical active groups. Between Subjects Analysis of Covariate revealed that following the intervention, the High_PA group had a higher grade point average than the Low_PA group. No differences were observed in depression hence depression did not mediate the relationship between physical activity and grade point average. The findings indicate that increasing physical activity among adolescents may improve their grade point average.

Útdráttur

Hreyfing hefur verið tengt við aukinni hæfni í skóla og við minni einkennum þunglyndis meðal unglinga. Það að þunglyndi sé tengt við hæfni í skóla, gæti verið að sambandið milli hreyfingar og hæfni í skóla sé til komin vegna þunglyndis. Þessi rannsókn skoðaði þessa tilgátu með því að setja skrefamæla inngrip á unglingana og með því að meta þunglyndi og hæfni í skóla fyrir og eftir inngrip. Þátttakendur voru 99, 15-17 ára unglingar frá tveimur framhaldsskólum í Reykjavík. Allir þátttakendur voru með lokaða skrefamæla í þrjá daga í grunnmælingu á hreyfingu. Meðan á 15 daga inngripstímanum stóð voru skrefamælarnir opnir og sendu þátttakendurnir fjölda skrefa á hverjum degi með textaskilaboðum til rannsóknarmanna. Þátttakendum var skipt eftir miðgildi í mikla (High_PA) og litla (Low_PA) hreyfingar hópa. Dreifigreining fyrir endurteknar mælingar sýndi fram á að eftir inngripið var High_PA með hærri meðaleinkunn heldur en Low_PA. Enginn munur var á milli hópanna í þunglyndi og var því sambandið milli hreyfingar og meðaleinkunnar ekki til komið vegna þunglyndis. Niðurstöðurnar benda á að aukin hreyfing hjá unglingum geti hækkað meðaleinkunn þeirra.

Foreword and acknowledgements

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

It is well established that physical activity has beneficial effects on health, and accumulate evidence suggests that physical activity can also improve cognitive performance among children and adolescents (Singh, Uijtdewilligen, Twisk, Mechelen, & Chinapaw, 2012). It is not clear by which mechanism physical activity improves cognitive function, but as reviewed below, an independent line of research suggests that the relationship might be mediated by the beneficial effects of physical activity in lowering depression.

Several studies have examined the effects of physical activity on academic performance (Biddle, & Asare, 2011; Carlson et. al., 2008; Davis et. al., 2011; Singh, Uijtdewilligen, Twisk, Mechelen, & Chinapaw, 2012; Trudeau, & Shephard, 2008). For example Carlson et. al. (2008) conducted a longitudinal research on children, where they followed 5316 children from kindergarten to the 5th grade. A significant benefit in academic achievement, in both reading and mathematics was observed among girls who spent the most time in physical education (70 – 300 minutes per week). No relationship was found among boys. Carlson et. al. (2008) suggest that the dissimilarities in gender could be because boys have higher baseline levels of fitness than girls, and that boys need more motivation than is provided in physical education. Davis et. al. (2011) randomized 171 obese children into three groups; low dose exercise, high dose exercise and control group. The low dose group had 20 minutes of exercise each day after school and 20 minutes of deskbound activities, such as board games, for 3 months. The high dose group had two 20 minutes bouts of exercise each school day. The children's academic achievement was measured and results showed that in the high dose exercise group cognitive performance improved more than in the other two groups, and the low dose exercise group had better cognitive performance than the control group.

Physical activity has also been associated with lower levels of depressive symptoms (Gallegos-Carrillo et. al., 2012; Jerstad, Boutelle, Ness, & Stice, 2010; Mata, Thompson,

Jaeggi, Buschkuehl, Jonides, & Gotlib, 2012; Toker, & Biron, 2012). For example a longitudinal study, spanning six years, with 496 adolescent girls observed that there was a relationship between regular basis of physical activity and depression (Jerstad, Boutelle, Ness, & Stice, 2010). Only girls were included in the study because (as the authors pointed out) there is a difference between boys and girls regarding both physical activity and depression. Physical activity was measured by having the girls complete a list indicating which physical activities they had participated in more than ten times over the past year. The results suggested that physical activity reduced the risk of the girls developing depressive symptoms during the six year follow up period. Similar findings have been observed in adults. For example, Gallegos-Carrillo et. al. (2012) conducted a longitudinal research where 1047 Mexican adults participated, both male and female, who were free of depression between the years of 1998 – 2000. The participants' lifestyle and health were assessed, that is in how much physical activity they engaged. The participants were divided into three groups depending on how much physical activity they performed each week, that is to say: light, moderate, or vigorous. After six years the participants were assessed again to see whether physical activity prevented depressive symptoms. The results showed that the vigorous physical activity participants group had lower risks of developing depressive symptoms.

Lastly, researches have indicated that depressive symptoms have a negative impact on adolescents' academic performance (Chen, Rubin, & Li,1995; Juvonen, Nishina, & Graham, 2000; Pelkonen, Marttunen, & Aro, 2003; Turner, Thompson, Huber, & Arif, 2012). For example Pelkonen, Marttunen, & Aro (2003) conducted a research to examine the relationship between academic performance and depressive symptoms, in a longitudinal study in Finland. A questionnaire concerning depressive symptoms and perceived academic achievements was administered to 2139 participants at the age of 16, and by a postal questionnaire at the age of 22. The results indicated that females who perceived poor

academic achievement at the age of 16 predicted significantly depression at the age of 22. No association was found in boys.

The above findings raise the possibility that the relationship between physical activity and academic performance may be mediated by depression, but to the best of the authors' knowledge, this has not been directly tested. To address this limitation the present study examined if pedometer intervention would increase physical activity which in turn would improve academic performance, and reduce depression. Pedometer intervention was selected as increasing evidence suggest that it can increase physical activity among adolescents (Bravata, et. al., 2007; Lubans, Morgan, and Tudor-Locke, 2009). In their systematic review of the literature, Lubans, Morgan, and Tudor-Locke (2009) found out that pedometer interventions have been used successfully in a variety of ways to increase physical activity in adolescents. Schneider, et. al. (2004) researched different brands of pedometers to compare them. They used thirteen electronic pedometers, and their research lasted for 24 hours. There were ten males and ten females who participated in that research. The results indicated that Yamax Digi-Walker SW-701, which was used in the present study, among two others seemed to be most suitable for most research purposes.

The following hypotheses were examined. First, increases in physical activity will lead to better academic performance. Second, increases in physical activity will be associated with lower levels of depression. Third, depression will be negatively associated with academic performance. Fourth, depression will mediate the relationship between physical activity and academic performance. As previous researchers have found that physical activity differentially affects academic performance and depression we explored the possibility that the above hypotheses would only apply to girls.

Method

This study was a part of a larger study which focused on physical activity.

Participants

The participants in the present study were students from two upper secondary schools in Reykjavík, Iceland. From each school three classes were randomly selected, where-after participants in those three classes were introduced and engaged to the study. The total sample consisted of 121 adolescents, 41 boys, 62 girls, and 18 adolescents who did not identify their gender. Before data analysis was executed, daily step-counts below the suggested basal-level of steps or 2500 steps/day (Tudor-Locke, Craig, Thyfault, & Spence, 2012) were filtered out from the data. The inclusion criteria were that the participants had to speak Icelandic and had to have a cellphone or to have one to use. Twenty two participants were excluded from the analyses as they had incomplete data on one or more of the main study variables, resulting in 99 participants' who completed all data assessments. The ages of the participants were 15 - 17 years.

Measures

This study used a questionnaire including questions concerning adolescents' exercise, grades, and depression (see appendix B). Academic performance was assessed by asking participants about their grades. The question concerning the grades was „what was your mean grade last semester from the school you were enrolled in, at that time? " Participants were asked about their mean grade in Icelandic, math, English, and Danish. Depression was measured by the Brief Symptom Inventory (BSI) (Derogatis, & Melisaratos, 1983) were each item is measured on a 5-point scale, from "never" to "many times". Questions concerning depression (BSI) were for example: "How often did you feel the following dysphonia, or discomfort over the last three weeks: you thought the future was hopeless". Internal

consistency in the present study was acceptable, or $\alpha = .92$. There were also questions concerning pre-symptoms inventory. Physical activity was assessed by Yamax Digi-Walker SW-701 pedometers at baseline measures and follow up.

Procedure

The researchers went to the two schools which had given their approval to participate in the current study and explained the study to the students in the three randomly selected classes. Informed consent was then acquired from the adolescents who were asked to read it thoroughly and sign if they were interested in participating (see appendix A). Because the adolescents were under the age of 18, their parent also had to provide a signed consent form. Participants were told that they could quit their participation in the study at any time. The adolescents were informed that if they finished all sections of the study they would get four movie tickets as compensation for their participation.

Baseline measures were conducted in each school from the 10th to 14th of September 2012. First, participants received a questionnaire which took approximately 40 minutes to answer. Second, participants' stride length was measured and entered into the pedometers. The pedometer was then sealed and handed to the participants with information on how to wear and use them. All participants received the same instructions, to wear the pedometer for at least 8 hours per day for a minimum of three days, and to change nothing in their everyday physical activity habits. After the baseline measures, or the 17th of September to 5th of October, a three week intervention was conducted. Participants received unsealed pedometers and a short motivational message and were encouraged to take 10,000 to 12,000 steps each day. Participants had to send their number of steps to the researchers every night by a text message. After these three weeks of intervention, follow-up 1 measure was undertaken. The questionnaire was administered again and the pedometer had to be worn sealed for three

days. Follow up 2 was conducted in January 2013. Questionnaires assessing academic performance and depression were administered at both baseline and follow up visit.

Statistical analyses

Based on the impact of the intervention on physical activity the sample was divided into groups of high physical activity (High_PA) and low physical activity (Low_PA). Between subjects Analysis of covariate (Ancova) was used to examine if the High_PA had higher grades and lower depression than the Low_PA. To identify potential covariates, planned comparison was conducted to examine whether the High_PA differ from the Low_PA at the baseline assessment. The procedure recommended by Baron and Kenny (1986) was used to test the second hypothesis, whether the relationship between physical activity and grades was mediated by depression.

Results

Preliminary Analyses

First the average number of steps that the adolescents took during the baseline period and intervention period was computed. Repeated measure ANOVA was conducted to examine if steps changed over time. The results showed that there was a significant increase in steps from baseline to the intervention period $F(1, 98) = 87.03$, $p < .05$. For grades, the results showed that there was also a significant decrease in grades from baseline to the intervention period $F(1, 98) = 189.41$, $p < .05$. However there was not a significant difference in depression from baseline to the intervention period $F(1, 89) = 0.04$, $p > .05$. To identify individuals who increased their physical activity a change score was calculated (i.e., average number of steps during the intervention period minus average number of steps during the baseline period) and two groups formed, based on the median split on the change score or those that had median change score of 2221.4 or higher (High_PA) and those that had a

change score lower than 2221.4 (Low_PA). There were 49 adolescents in the Low_PA, 22 boys, 25 girls, and 2 who did not identify their gender, and 50 in the High_PA, 15 boys, 33 girls, and 2 who did not identify their gender.

Mean and standard deviation for steps, and grade at baseline and for depression and grade at follow up are represented in table 1.

Table 1: Descriptive statistics of how variables affect the groups

	Low change group		High change group	
	M	SD	M	SD
Steps at baseline	7718.06	2812.72	6125.67	1810.03
Grade at baseline	8.12	0.55	8.07	0.68
Grade at follow up 2	6.35	1.26	6.73	1.23
Depression at follow up 1	16.70	15.09	16.13	6.51

When looking at variables which could have differ between the groups the only variable that could have an effect is father's education, as that was nearly different between the two groups ($p = .51$) (see table 2). All other tested variables were not significant.

Table 2: Descriptive statistics of variables that could affect the groups' differential

	Low change group	High change group	P
	%	%	
Sex: girls	53.2	68.8	.12
Sex: boys	46.8	31.2	.12
Fathers education: started or finished high school	53.2	77.6	.51
Mothers education: started or finished high school	66.0	75.5	.32
Parents does not have money for leisure activities of your choice: almost never	89.4	89.6	.57
How often do you participate in physical education in school: two times in week	68.1	42.9	.16
How good is your physical health: good	40.4	44.9	.17

After adjusting for baseline grades, steps at baseline and fathers education, there was a significant differences in grades between High_PA and Low_PA at follow up [F(1, 91) = 4.91, p < .05, partial eta squared=.06] with the high PA group having higher grade point average at follow up compared to the Low PA group.

When the ANCOVA was conducted separately for boys and girls the results showed that there was a significant differences in grades between High_PA and Low_PA at follow up for girls (High_PA; M= 6.61, SD= 1.21, Low_PA; M= 6.30, SD=1.18) [F(1, 53) = 4.17, p < .05, partial eta squared=.07]. However, there was not a significant difference in grades between High_PA and Low_PA at follow up for boys (High_PA; M= 7.00, SD= 1.36, Low_PA; M= 6.42, SD= 1.43) [F(1, 32) = 2.82, p > .05, partial eta squared=.08].

ANCOVA for depression at follow up, controlling for baseline depression and baseline steps, revealed that there was no differences between the High and the Low physical activity groups, F(1, 86) = 0.07, p >.05. When the analyses was conducted separately for gender the result for boys indicated that the High_PA and Low_PA did not differ (High_PA; M= 12.63, SD= 3.41, Low_PA; M= 12.95, SD= 4.08), F(1, 33) = 0.06, p > .05. Similarly, no significant differences were observed for girls, (High_PA; M= 17.71, SD= 7.04, Low_PA; M= 20.29, SD= 20.07), F(1, 53) = 0.44, p > .05.

Depression was not significantly related to the grades at follow up, F(1, 89) = 0.57, p > .05.

The hypothesis, that the relationship between physical activity and grades would be mediated by depression could not be tested as one of the main criteria for evaluating mediation is that the relationship between the independent variable (i.e. physical activity) and the dependent variable (i.e. depression) is significant (Baron and Kenny, 1986). As noted before, that relationship was not significant.

Discussion

The main goal of the present study was to examine whether an intervention aimed at increasing physical activity would be related to higher grade point averages among adolescents and whether the relationship was mediated by depression. The findings supported the first hypothesis that the participants who increased their physical activity during intervention had higher grades at the follow up than the participants who did not increase their physical activity during intervention, even after covariating for grades at baseline, steps at baseline, and father's education. This result is in keeping with previous research, which has shown that higher levels of physical activity is associated with higher grades (Biddle, & Asare, 2011; Singh, Uijtdewilligen, Twisk, Mechelen, & Chinapaw, 2012; Trudeau, & Shephard, 2008). For example, Singh, Uijtdewilligen, Twisk, Mechelen, and Chinapaw (2012) did a systematic review of 14 studies in which children and adolescents participated. They conclude from these studies that as physical activity increases cognitive performance also increase. Our findings, that physical activity was associated with grades only among girls, is consistence with Carlson et. al. (2008) who also found this relationship only among girls. This difference needs to be looked at further perhaps the amount of physical activity needed for an effect in cognitive function is greater for boys than it is for girls as Carlson et. al. (2008) pointed out; maybe boys need more stimulus than girls.

The relationship between physical activity and depression was not significant in this study, which is in contrast with previous studies, who have shown that with increased physical activity depressive symptoms will decrease (Mata, Thompson, Jaeggi, Buschkuehl, Jonides, & Gotlib, 2012; Toker, & Biron, 2012). The relationship has been established both in adolescent girls, (Jerstad, Boutelle, Ness, & Stice, 2010) and in adults (Gallegos-Carrillo et. al., 2012). The reason that other researches has found that physical activity increases depressive symptoms could be that the physical activity have to be vigourus but not just

increased steps. Adolescents need perhaps to have for example 30 minutes of vigourus physical activity and need to sweat to increase depressive symptoms.

The hypothesis that depression would be associated with lower grades was not supported. This is in contrast to what previous studies have shown, which is that there is an association between academic performance and depression (Chen, Rubin, & Li,1995; Juvonen, Nishina, & Graham, 2000; Turner, Thompson, Huber, & Arif, 2012). For example the results of study that Pelkonen, Marttunen, & Aro (2003) performed indicated that among females who perceived poor academic achievement at the age of 16 predicted significantly depression at the age of 22. No association was found in boys.

The hypotheses that depression mediated the relationship between physical activity and academic performance could not be examined, as the relationship between physical activity and depression was not significant. Hence the criteria for testing mediation was not met (Baron, & Kenny, 1986).

A limitation in the current study was that the grades were self reported, and the adolescents might have guessed their grades if they didn't remember it. Another limitation was that the baseline grade was in preliminary school and the follow up grade was in upper secondary school. There is a very large jump for the adolescents from preliminary school to upper secondary school, and that might be the reason why the follow up mean grades are lower than the baseline mean grades.

The strength of this study is that the tool used to increase physical activity was a pedometer, which has shown to be effective in increasing physical activity in both adults (Bravata, et. al., 2007), and in adolescents (Lubans, Morgan, & Tudor-Locke, 2009). Moreover, a goal for steps was set each day, which might have encouraged the participants to reach that goal. The research was simple to implement and it can easily be administered, which is a strength because then it is easy to impersonate, and confirm the findings.

For future research, as indicated before, it would be interesting to look at whether the genders are different from each other, in more detail than this study did. Also, future studies might examine the dose-response association between physical activity and academic performance and determine whether boys need higher dose of physical activity than girls to increase their grades.

The results of this study indicate that a simple pedometer intervention with adolescents might improve grade point average especially among girls. Future studies should examine if boys need more intense exercise intervention to improve their grades. In addition, future studies should examine from whom and through which mechanism physical activity affects cognitive performance.

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Appendix A

Áhrif hreyfingar á líðan og lífsgæði framhaldsskólanema

Upplýsingar til þátttakenda og foreldra/forráðamanna þeirra

Kæri þátttakandi / forráðamaður.

Með þessu bréfi óskum við eftir samþykki þínu fyrir þátttöku þinni / barns þíns í ofannefndri rannsókn. Markmið rannsóknarinnar er að skoða áhrif hreyfingar á líðan og lífsgæði íslenskra framhaldsskólanema. Rannsóknin hefur hlotið styrk úr Rannsóknarnámssjóði og Tækjasjóði Rannís ásamt Nýsköpunarsjóði námsmanna. Áður en þú gefur samþykki fyrir þátttöku barns þíns í rannsókninni viljum við biðja þig um að kynna þér frekari upplýsingar hér að neðan um tilgang og framkvæmd rannsóknarinnar. Vakni einhverjar spurningar má leita til umsjónarmanns rannsóknarinnar og fá nánari upplýsingar. Þátttakendum er frjálst að hætta við þátttöku í rannsókninni á hvaða stigi sem er og án útskýringa.

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Tilgangur rannsóknar:
Markmið þessa verkefnis er að skoða áhrif hreyfingar á líðan og lífsgæði íslenskra framhaldsskólanema. Íslenskar rannsóknir sýna að við upphaf framhaldsskóla eykst þunglyndi og kvíði meðal ungmenna. Á sama tíma dregur úr reglulegri hreyfingu og brottfall úr skipulögðu íþróttastarfi eykst. Um 95% allra íslenskra barna hefja nám í framhaldsskóla en brottfall á fyrsta ári hefur jafnframt mælst um 21%. Íhlutanir sem hafa það að markmiði að auka daglega hreyfingu ásamt því að bæta líðan og lífsgæði ungmenna eru því mikilvægar. Rannsóknir sýna að hreyfing getur dregið úr einkennum þunglyndis og kvíða, bætt líðan og aukið lífsgæði en flestar þessar rannsóknir hafa verið gerðar á fullorðnum. Því vantar

sambærilegar rannsóknir á ungmennum. Íhlutun þessarar rannsóknar, sem nær yfir fjórar vikur, er því ætlað að kanna 1) hvort aukin dagleg hreyfing hjá ungmennum hafi áhrif á vellíðan og lífsgæði þeirra og 2) hvaða þættir eru áhrifaríkastir til að auka hreyfingu.

Um þátttöku í rannsókninni:
Þátttakendur í íhlutuninni eru fyrsta árs framhaldsskólanemar á höfuðborgarsvæðinu og verður þeim raðað tilviljanakennt í mismunandi hópa þar sem hreyfing þeirra verður skoðuð í fjórar vikur með mismunandi aðferðum. Tilgangurinn með þessu er að greina hvaða þáttur íhlutunarinnar hefur mest áhrif, þannig að þegar rannsókninni er lokið getum við hugsanlega mælt með ákveðinni aðferð sem er árangursríkust í að auka daglega hreyfingu unglinga og jafnframt bæta líðan þeirra og lífsgæði.

Þátttakendur eru jafnframt beðnir um að svara spurningalistum fjórum sinnum, þ.e. við upphaf íhlutunar, við lok hennar, mánuði eftir íhlutun og loks þremur mánuðum eftir að íhlutun lýkur. Spurningarnar eru almenns eðlis og snúa fyrst og fremst að líkamlegri og andlegri líðan þátttakenda auk spurninga um bakgrunnsþætti og hreyfingu. Það tekur þátttakendur innan við eina klukkustund að svara spurningalistunum í hvert skipti. Hægt er að fá nánari upplýsingar um innihald spurningalista með því að senda umsjónarmanni rannsóknarinnar póst (birnabaldurs@hr.is).

Við eftirfylgni þremur mánuðum eftir íhlutun verður hluta þátttakenda einnig boðið að taka þátt í fókushópaviðtölum. Þar verða þátttakendur spurðir nánar út í þætti sem tengjast hreyfivenjum þeirra. Einnig verða þátttakendur spurðir út í viðhorf sitt til íhlutunarinnar. Viðtalið tekur um eina klukkustund.

Trúnaður rannsakenda:
Spurningalistar þeir sem verða notaðir í rannsókninni verða auðkenndir með rannsóknarnúmerum en hvorki með nöfnum né kennitölu þátttakenda. Rannsóknargögn verða varðveitt í læstum skáp í Háskólanum í Reykjavík. Engir aðrir en rannsakendur hafa aðgang að gögnunum meðan á rannsókn stendur og verða allar upplýsingar meðhöndlaðar sem trúnaðarmál. Eftir að rannsókn lýkur mun ábyrgðarmaður rannsóknar hafa umráðarétt yfir gögnunum þar til þeim verður eytt, fimm árum eftir lok rannsóknar.

Um rétt þátttakenda:
Til að fá sem nákvæmastar niðurstöður er æskilegt að þátttakendur fylgi þeim fyrirmælum sem þeir fá fyrir íhlutunina eins nákvæmlega og mögulegt er. Einnig er mikilvægt fyrir niðurstöður rannsóknarinnar að öllum spurningum sé svarað samviskusamlega. Ekki er þó nauðsyn að svara spurningum veki þær vanlíðan á einhvern hátt eða ef þátttakandi er óviss um svar sitt. Þátttakendum er frjálst að hafna þátttöku eða hætta í rannsókninni á hvaða stigi sem er og án útskýringa.

Ávinningur og áhætta/óþægindi fyrir þátttakendur:
Markmið rannsóknarinnar er að skoða áhrif hreyfingar á líðan og lífsgæði íslenskra framhaldsskólanema en einnig að auka daglega hreyfingu af meðalákefð í samræmi við almennar lýðheilsuráðleggingar. Því ætti íhlutunin einungis að koma þátttakendum til góða og líklegur ávinningur þátttakenda er bætt líkamleg og andleg líðan. Ekki er fyrirsjáanleg nein áhætta af íhlutuninni fyrir þátttakendur og þeir spurningalistar sem lagðir verða fyrir þátttakendur hafa verið sannreyndir í öðrum rannsóknum. Spurningarnar eru almenns eðlis og snúa fyrst og fremst að líkamlegri og andlegri líðan þátttakenda auk spurninga um bakgrunnsþætti og hreyfingu.

Ef að spurningalistinn vekur upp vanlíðan munum við bjóða þátttakendum aðstoð og ráðgjöf sem felst í einu viðtali við fagaðila, þátttakendum á kostnaðarlausu, þátttakendur geta snúið sér til Sjafnar Ágústsdóttur, sálfræðings hjá Salomon ehf., Bæjarhrauni 6, 220 Hafnarfirði sími: 898-3725.

Rannsakendur mæta til þátttakenda í þeirra framhaldsskóla þar sem mælingar (skrefmælingar og svörun við spurningalistum) verða framkvæmdar á skólatíma eins og kostur er. Rannsóknin hefur ekki neinn kostnað í för með sér fyrir þátttakendur. Allir þátttakendur fá gjöf að rannsókn lokinni sem þakklæti fyrir þátttöku. Ekki eru líkur á að þátttaka í rannsókninni geti skaðað þátttakendur. Þó munu rannsóknaraðilar fylgjast með líðan þátttakenda og grípa til viðeigandi ráðstafana ef þörf er á. Þátttakendur verða ekki tryggðir.

Rannsókn þessi er unnin með samþykki Vísindasiðanefndar og hefur verið tilkynnt til Persónuverndar.

Með kærri kveðju og von um góðar undirtektir,

Heiðdís B. Valdimarsdóttir, ábyrgðarmaður rannsóknar
s. 690-0930 / tölvupóstfang: heiddisb@hr.is

Birna Baldursdóttir, umsjónarmaður rannsóknar
s. 860-8108 / tölvupóstfang: birnabaldurs@hr.is

Ef þú hefur spurningar um rétt þinn / barns þíns sem þátttakanda í rannsókninni eða vilt hætta þátttöku í rannsókninni getur þú snúið þér til Vísindasiðanefndar, Hafnarhúsinu, Tryggvagötu 17, 101 Reykjavík. Sími: 551-7100, fax: 551-1444, tölvupóstfang: visindasidanefnd@vsn.stjr.is.

Eyðublað fyrir upplýst samþykki þátttakenda og foreldra / forráðamanna

Áhrif hreyfingar á líðan og lífsgæði framhaldsskólanema

Markmið rannsóknarinnar er að kanna áhrif hreyfingar á líðan og lífsgæði framhaldsskólanema á Íslandi. Þátttaka í rannsókninni felur í sér íhlutun þar sem þátttakendur veita upplýsingar um hreyfingu og svara spurningalistum.
Ég staðfesti hér með undirskrift minni að ég hef lesið upplýsingarnar um rannsóknina sem mér voru afhentar, hef fengið tækifæri til að spyrja spurninga um rannsóknina og fengið fullnægjandi svör og útskýringar á atriðum sem mér voru óljós. Ég hef af fúsum og frjálsum vilja ákveðið að taka þátt/leyfa barni mínu að taka þátt í rannsókninni. Mér er ljóst að þó ég hafi skrifað undir þessa samþykkisyfirlýsingu get ég/barn mitt hætt við þátttöku í rannsókninni hvenær sem er og án útskýringa.
Mér er ljóst mikilvægi þess að fara vel með skrefmælinn, fara eftir fyrirmælum um notkun hans og skila honum á tilsettum tíma.
Mér er ljóst að rannsóknargögnum verður eytt að rannsókn lokinni og eigi síðar en fimm árum frá úrvinnslu rannsóknargagnanna.

_____ _____

Dags. Undirskrift þátttakanda Kennitala þátttakanda

_____

_____

Dags. Undirskrift foreldris / forráðamanns

Undirritaðar, ábyrgðarmaður og umsjónarmaður rannsóknar, staðfesta hér með að hafa veitt upplýsingar um eðli og tilgang rannsóknarinnar í samræmi við lög og reglur um vísindarannsóknir.

Heiðdís B. Valdimarsdóttir,
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Eyðublað þetta skal vera í tvíriti, eitt þátttakanda/forrráðamann og eitt fyrir rannsakendur.

fyrir

Appendix B

1. **Ert þú strákur eða stelpa?**

☐ Strákur ☐ Stelpa

. **Hver er menntun foreldra þinna / forráðamanna?** (Ef þú ert að mestu alin(n) upp hjá fósturforeldrum, svarar þú fyrir þau). *Merktu aðeins í EINN reit í hvorum dálki, þann sem helst á við.*

	Faðir	**Móðir**
Veit ekki eða á ekki við	☐	☐
Lauk grunnskólaprófi eða minna	☐	☐
Hóf framhaldsskólanám; menntaskóla, fjölbrautaskóla eða iðnskóla	☐	☐
Lauk framhaldsskóla; menntaskóla, fjölbrautaskóla eða iðnskóla	☐	☐
Hóf háskólanám en lauk því ekki	☐	☐
Lauk háskólaprófi	☐	☐

Gerðu grein fyrir því hvort og í hve miklum mæli eftirfarandi aðstæður eiga við hjá þér.

	Nær aldrei	Sjaldan	Stundum	Oft	Nær alltaf
d) Foreldrar þínir hafa ekki ráð á þeirri tómstundastarfsemi sem þú vilt helst stunda (t.d. tónlist eða íþróttir)	☐	☐	☐	☐	☐

. Eftirfarandi spurningar eru um íþróttir og líkamsþjálfun. *Merktu í EINN reit í HVERJUM lið.*

	Nær aldrei	1 sinnum í viku	2 sinnum í viku	3 sinnum í viku	4-6 sinnum í viku	Svo til á hverjum degi
a) Hve oft tekur þú þátt í íþróttum og líkamsþjálfun í skólanum (skyldutímar t.d. leikfimi, sund)?	☐	☐	☐	☐	☐	☐

12. Hversu góð eða léleg er líkamleg heilsa þín? *Merktu aðeins í EINN reit.*

Mjög góð	Góð	Sæmileg	Léleg	Mjög léleg
☐	☐	☐	☐	☐

14. Hver var meðaleinkunn þín á síðustu önn úr þeim skóla sem þú stundaðir nám í, hvort sem það var grunnskóli, framhaldsskóli eða annar skóli? *Merktu í EINN reit í HVERJUM lið.*

	Á ekki við	Undir 4	Um 4	Um 5	Um 6	Um 7	Um 8	Um 9	Um 10
a) Íslensku	☐	☐	☐	☐	☐	☐	☐	☐	☐
b) Stærðfræði	☐	☐	☐	☐	☐	☐	☐	☐	☐
c) Ensku	☐	☐	☐	☐	☐	☐	☐	☐	☐
d) Dönsku (sænsku, norsku)	☐	☐	☐	☐	☐	☐	☐	☐	☐

43. Hversu oft varðst þú var/vör við eftirfarandi vanlíðan eða óþægindi <u>síðastliðnar þrjár vikur</u>?
Merktu í EINN reit í HVERJUM lið.

	Aldrei	Sjaldan	Stundum	Nokkuð oft	Mjög oft
m)Þú varst leið(ur) eða hafðir lítinn áhuga á að gera hluti	☐	☐	☐	☐	☐
n)Þú hafðir litla matarlyst	☐	☐	☐	☐	☐
o)Þér fannst þú einmana	☐	☐	☐	☐	☐
p)Þú grést auðveldlega eða langaði til að gráta	☐	☐	☐	☐	☐
q)Þú áttir erfitt með að sofna eða halda þér sofandi	☐	☐	☐	☐	☐
r)Þú varst niðurdregin(n) eða dapur/döpur	☐	☐	☐	☐	☐
s)Þú varst ekki spennt(ur) fyrir að gera nokkurn hlut	☐	☐	☐	☐	☐
t)Þér fannst þú vera hægfara eða hafa lítinn mátt	☐	☐	☐	☐	☐
u)Þér fannst framtíðin vonlaus	☐	☐	☐	☐	☐
v)Þú hugsaðir um að stytta þér aldur	☐	☐	☐	☐	☐