Relationships between youth sports participation and mental health in young adulthood among Finnish males

Kaija Appelqvist-Schmidlechner, PhD, Adjunct professor, Senior researcher (Corresponding author)

National Institute for Health and Welfare / Centre for Military Medicine

P.O Box 30, 00271 Helsinki, Finland

Kaija.appelqvist@thl.fi

Tel. +358 29 524 7275

Jani Vaara, PhD, Researcher

National Defence University

The Department of Leadership and Military Pedagogy

Helsinki, Finland

Jani.vaara@mil.fi

Arja Häkkinen, PhD, Professor

University of Jyväskylä, Health Sciences / Central Hospital of Central Finland, Department of Physical Medicine and Rehabilitation

Jyväskylä, Finland

Arja.hakkinen@jyu.fi

Tommi Vasankari, MD, Professor, Director

UKK institute for Health Promotion

Tampere, Finland

Tommi.vasankari@ukk.fi

Juha Mäkinen, Professor

National Defence University, The Department of Leadership and Military Pedagogy

Helsinki, Finland

Juha.makinen@mil.fi

Matti Mäntysaari, MD, Adjunct professor

Centre for Military Medicine

Helsinki, Finland

Matti.mantysaari@mil.fi

Heikki Kyröläinen, PhD, Professor

University of Jyväskylä, Department of biology of Physical Activity

Jyväskylä, Finland /

National Defence University, The Department of Leadership and Military Pedagogy

Helsinki, Finland

Heikki.kyrolainen@jyu.fi

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

The authors have no conflict of interests

Abstract

There is a growing body of evidence that higher level of physical activity is associated with a better state of mental health. Less is known about the relationships between youth competitive sports and mental health in the adulthood. The aim of the study was to examine whether retrospectively assessed sports participation (SP) and competitive sports (CS) at the age of 12 years is associated with mental health (mental well-being as well as mental distress) and health behaviour in young adulthood among males.

The study sample consisted of 680 males aged between 20−35 years. The data were gathered with self-administered questionnaires in 2015 in Finland. Mental well-being was measured with The Short Warwick-Edinburgh Mental Well-Being Scale and mental distress with five items of SF-36 scale.

SP at the age of 12 is associated with better mental health in young adulthood, with both mental well-being (OR=1,86, 95 % CI 1.11−3.11) as well as mental distress (OR=0.61, 0.41−0.90). Age, years of education and current physical activity were controlled. Higher level of intensity of SP or the level of CS in childhood was associated with lower level of mental distress in adulthood. No association was found between the level of CS in childhood and mental well-being in adulthood. Further, the study showed that youth SP can present a higher risk for increased alcohol consumption and use of snuff and tobacco in adulthood.

Despite negative outcomes related to health behaviour, the findings provide support for the association between youth sports participation and mental health outcomes in adulthood among males.

KEYWORDS: Mental health, sports participation, health behaviour, prevention, childhood

Background

Mental health problems accounts for a large and growing share of ill health in high-income countries measured in disability adjusted life years (World Health Organization 2008; Palfrey et al. 2005). According to estimations from the OECD, around 5 % of the working-age population has a severe mental health condition, and a further 15 % is affected by a more common mental health condition causing significant socio-economic cost (Focus on health 2014). The authors of the World Happiness Report (Clark et al. 2017) found that mental illness was the strongest predictor of misery in three rich countries, even stronger than poverty. However, mental health is more than the absence of mental disorder. Positive mental health bases on an assumption that focusing only on mental disorders does not give the whole picture of the state of mental health. Positive mental health is a human resource that can be used and strengthened in order to protect against mental health problems. (Keyes & Simoes 2012, Vaillant 2012). Identifying protective factors that prevent mental health problems is necessary to widen the knowledge of how to develop optimal preventive interventions.

There is a growing body of evidence, that higher level of physical activity is associated with better mental well-being (Waller et al. 2016; Kettunen 2015; Richards et al. 2015; Jonsdottir et al. 2010; Mikkelsen et al. 2010; Babiss & Gangwisch 2009), and that physical activity among children and young people is favourably associated with physical, psychological, social and cognitive health indicators (Hagel 2016; Poitras et al. 2016; Kremer et al. 2014; Toseeb et al. 2014; Eime et al. 2013; Merkel 2013; Vankim & Nelson 2013; Brown & Blanto 2002; Barber et al. 2001). Several prospective studies have provided evidence on association between physical activity and mental well-being indicating that low physical activity during adolescence is a risk factor for poor mental health in adulthood (Hoegh Puolsen et al. 2016; Sabiston et al. 2016; Åberg et al. 2014 and 2012; Jewett et al. 2014; Yang et al. 2010). There is also a growing body of evidence that physical activity interventions have beneficial effects across several physical and mental-health outcomes (Dunn & Trivedi 2001; Penedo & Dahn 2005). A recent systematic review based on longitudinal studies by Mammen and Faulkner (2013) pointed out that physical activity could be preventive in the onset of depression. Despite growing number of studies reporting positive effects of physical activity and sports participation, some studies report negative outcomes indicating sports participation to be related to higher level of alcohol consumption (Clark et al. 2015; Kwan et al. 2014; Lisha &

Sussman 2010; Sher & Rutledge 2007; Fredricks & Eccles 2006; Hoffman 2006; Barber et al. 2001).

Besides the association between the level of physical activity and mental well-being, the role of involvement in organized sport activities in childhood, on the state of well-being later in life, is an important topic of health-related research. In Finland, sport club activities play a dominant role in the leisure-time activities of young people. Among children aged 7 to 14 years, 49 % of girls and 61 % of boys participate in sport club activities at least once a week (Myllyniemi & Berg 2013). Organized sport activities have been seen to have the possibility to offer opportunities to young people to become involved with peers in a prosocial context, which promotes their social skills. Further, in organized sport activities children have the possibility to interact with adult role models and receive social support (Eccless et al. 2003). The benefits of organised youth sport activities are well-known (Hagel 2016; Sabiston et al. 2016; Jewett et al. 2014; Eime et al. 2013; Yang et al. 2010; Babiss & Gangwisch 2009; Fredricks & Eccles 2006). However, very little is known about the relationships between youth competitive sports and mental health in adulthood.

The aim of the present study was to 1) examine whether regularly participating in a sports clubs at the age of 12 years is associated with mental health (positive mental health as well as mental distress) in young adulthood, 2) whether experience of competitive sports in childhood have an association with mental health in young adulthood, and 3) is regular participation in sports, in childhood (retrospectively assessed), associated with health behaviour in adulthood.

In this study, sports participation is understood as any type of structured physical activity, both competitive and non-competitive by nature. Competitive sport is understood as taking part in organized physical activities that are competitive by nature, including also recreational sport if this includes competition. The level of competition can, logically, vary.

Materials and methods

The study sample consisted of young adult Finnish men who were called up to military refresher training. They voluntarily participated in the study prior to their military refresher training course organized around Finland in 2015. Of the 1106 invited reservists, 823 participated in the courses and 792 in the study. 112 were excluded from the analysis of the

present study: 15 of them were females and 97 were over 35 years old. Thus, the study sample consisted of 680 men, age between 20-35 years (mean±SD age 26±4 years).

The reservists were informed about the study in the call up letter to the refresher course. All examinations were performed and the data were gathered at the beginning of the refresher course. Written informed consent was received from all study participants. The ethical approval for the study was granted by the Central Finland Health Care District, and the Headquarters of the Finnish Defence Forces gave a permission to conduct the present study. Health behaviour and psychosocial well-being were measured with a self-administered questionnaire.

Mental well-being was measured with the short version of Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS) (Stewart-Brown et al. 2009; Tennant et al. 2007). SWEMWBS includes seven positively phrased items indicating positive mental health. Respondents rate their feelings over the previous two weeks from 1 (none of the time) to 5 (all of the time) on the following questions: "I've been feeling optimistic about the future", "I've been feeling useful", "I've been feeling relaxed", "I've been dealing with problems well", "I've been thinking clearly", "I've been feeling close to other people" and "I've been able to make up my own mind about things". Weighted sum score was calculated higher score indicating better mental well-being. The scale was used in four refresher training courses only and, therefore, the sample size related to analysis with SWEMWBS was 362. In all other measures the sample size was 680.

Mental distress was measured with the following five items of SF-36 scale (Ware & Sherbourne 1992): How much of the time during the last 4 weeks 1) have you been a very nervous person, 2) have you felt so down that nothing could cheer you up, 3) have you felt downhearted and blue, 4) have you feel worn out and 5) did you feel tired. The response scale was 6=all of the time, 5=most of the time, 4= a good bit of the time, 3= some of the time, 2=a little of the time and 1=none of the time. A sum score was calculated higher score indicating higher rate of mental disstress.

Sports participation in the childhood was measured with the question “How often did you participate in training or other structured sports activity at the age of 12?” The responses were 1=not at all, 2=once a month, 3=2-3 times a month, 4=1-2 times a week, 5=3-4 times a week and 6=5 times a week or more. For the analysis, the responses 2 and 3 were combined.

Competitive sports in childhood were measured with the question “If you participated in competitive sports in childhood, at which level did you compete?”. The responses were 1=I didn’t participate in competitive sports, 2=school, 3=sports club, 4=district, 5=national and

6=international. For the analysis, responses 2-3 and 5-6 were combined. In addition, dichotomized variable was recoded (1=participated in competitive sports, 0=didn't participate in competitive sports).

Self-reported leisure time physical activity (LTPA) was determined from responses to a single question "Which of the following definitions best describe your leisure time physical activity habits? (Think of the last 3 months and consider all leisure-time physical activity that lasted at least 20 minutes per session")" with six response categories: 1=less than once a week, 2=no vigorous activities, but light or moderate physical activity at least once a week, 3=brisk physical activity once a week, 4=vigorous activity twice a week, 5= vigorous activity three times a week and 6= vigorous activity at least four times a week. For further analysis, a dichotomized variable was computed (1=at least three times a week brisk physical activity, 0=less physical activity a week).

Health behaviour of study participants was determined with the following variable: smoking (yes/no), using snuff (yes/no) and binge drinking (at least once a week more than 6 units of alcohol at once, yes/no)

Statistical analysis

Data were analysed with IBM SPSS Statistics 24 software. Means and standard deviations (SD) of mental health variable were calculated in different response categories related to participating in a sports club / competitive sports at the age of 12. The association between mental well-being / mental distress and sports activity in childhood was tested using Kruskal Wallis and Mann Whitney -tests. The association between sports activity in the childhood and health behaviour in young adulthood were tested using dichotomized variables in Chi square -tests. Binary logistic regression models were calculated (method: enter) to explain the impact of other background variable in the relationship between high positive mental health and high mental distress with childhood sports activity. With the help of quartiles group of high positive mental health (SWEMWBS score more than 24,10) and high mental distress (sum score more than 27) were formed for these models. Age, years of education (9 years of less, 10-12 years, 13-15 years, 16 years or more) and present leisure time physical activity (No brisk physical activity, activity 1-2 times a week, activity at least 3 times a week) were used as covariates. The level of significance was set at 0.05.

Results

Of the study participants, three out of four (74 %) reported participation in a sports club at the age of 12. Among one third (36 %) of respondents, the participation had been quite intense with at least 3-4 times a week. Two of thirds (66 %) reported to have experiences with competitive sports at the age of 12. One third (34 %) had competed at least at district, national or international level (Table 1).

Table 1. Characteristics of the study population presented as a relative distribution from a total number participants

Sports participation in childhood seemed to be associated with higher mental well-being in young adulthood (Table 2, $F=0.446$, $p<.05$, $df=360$). However, the level of intensity of participation did not seem to play a role. Further, no significant association was found between competitive sports in childhood and mental well-being in adulthood. However, sport participation in the childhood seemed to positively associate with mental health when it comes to mental distress. Mental distress was lower among those who had participated in a sports club at the age of 12 years ($Z= -2.391$, $p<.05$) and among those who had experiences with competitive sports ($Z=-2.792$, $p<.01$). The higher the level of intensity of sports participation ($p<.001$, $X^2=25.857$, $df=4$) or the level of competitive sports ($X^2=8.592$, $p<.05$, $df=3$) the lower the experiences with mental distress in adulthood.

Table 2. Association between sports activity at the age of 12 and mental well-being / mental distress in young adulthood.

Binary logistic regression was performed to detect the association between childhood sports participation / childhood competitive sports and current positive mental health / mental distress. Age, education and the present leisure-time physical activity were included in the model (Table 3). Positive mental well-being was positively associated with age, education and childhood sports participation, but not with childhood competitive sports or present leisure-time physical activity. Mental distress was negatively associated with childhood

sports participation or competitive sports in the childhood as well as present physical inactivity, but not by age or years of education.

Table 3. Binary logistic regression models for high positive mental health and high mental distress

The use of snuff (p=.001) was less common and brisk physical activity at least 3 times a week (p<.001) more common among those who participated in a sports club at the age of 12 years. Competitive sports in childhood was associated with the use of snuff (p<.001), binge drinking (p=.011) and physical activity in the adulthood (p<0.001). Use of snuff and brisk physical activity at least 3 times a week was more common among those with experiences with competitive sports at the age of 12. However, those with experiences of competitive sports at the age of 12 were more likely to have experiences with binge drinking (more than 6 drinks) at least once a week in adulthood.

Table 4. Health behaviour in young adulthood among study participants with or without participation in sports club / competitive sports in childhood at the age of 12.

Discussion

The results of the present study indicated that sports participation at the age of 12 years is associated with better mental health in young adulthood among men, with both positive mental health as well as mental distress. This was also the case when controlling the impact of age, education and present leisure time physical activity. These findings are in line with previous research (Brunet et al. 2013; Flotnes et al. 2011; Sagatun et al. 2007), even if partly contradictory results related to the genders have been reported. Some studies have found an association only among girls (Hoegh Poulsen et al. 2016), whereas the studies by Sagatun et al (2007) and Flotnes et al (2011) indicated that the level of physical activity have more influence on the development of mental health among boys compared with girls. Besides mental health benefits, previous research provides evidence that physical activity in childhood has the potential to improve self-regulation, life skills and pro-social behaviour

(Clark et al. 2015) as well as educational achievement and cognitive function (Eccles et al. 2003).

The level of intensity of sports participations in the childhood did not seem to affect the state of mental health in later life from the perspective of positive mental health. This finding was somewhat unpredictable as the large European study by Richards et al. (2015) found a dose-response association between physical activity volume and happiness. The findings of the present study suggest that childhood sports participation, despite of the intensity, could be a protective factor for mental health in later life. This may be related to the possibilities provided by youth sports participation for sense of social inclusion, possibilities to form peer relations and to learn social skills. However, the intensity of sports participation played a role in terms of mental health problems. According to the findings, higher level of intensity of sports participation in childhood was associated with lower level of mental distress in adulthood. This finding will be supported by several studies (Sabiston et al. 2016; Jewett et al. 2014; Brunet et al. 2013; Yang et al. 2010; Babiss & Gangwisch 2009; Miller & Hoffman 2009; Sagatun et al. 2007) indicating association between higher level of physical activity in childhood and lower level of mental health problems in later life.

An interesting finding was the association between the level of competitive sports in childhood and mental health in young adulthood. The higher the level of competitive sports in childhood, the lower was the level of mental distress in adulthood among study participants. This finding may be explained by the experience that competitive sports teaches children valuable life skills and this may prepare them for to handle challenges and pressures of daily life. Sports provide an opportunity for developing friendships and learning developmental skills across all domains (Merkel 2013). Competitive athletes learn goal setting, bringing their best effort, to use coping strategies to handle with nervousness and anxiety involved with competitions and to adjust individual state of arousal, teaching commitment and building self-esteem which is beneficial for mental health in later life. This finding is also supported by the study of Pyle et al. (2003) on university students, indicating that competitive athletes report fewer mental health problems compared with recreational athletes.

Those young men who had experiences with competitive sports in childhood reported higher consumption of alcohol and sniff compared with those without competitive sports in childhood. This finding draws support from several studies indicating that youth sport

participation can protect against the use of illicit drugs, but presents a higher risk of increased alcohol consumption (Clark et al. 2015; Kwan et al. 2014; Lisha & Sussman, 2010; Sher & Rutledge 2007; Fredricks & Eccles 2006; Hoffman 2006; Barber et al. 2001). The authors of a systematic review of longitudinal studies by Kwan et al. (2014) pointed out that this risk effect of sports participation may be related to peer-group interaction and / or a culture of drinking that is associated with many sport events. Alcohol consumption is seen to be a socially acceptable form of celebration especially in team sports. Sports participation in childhood did not seem to affect smoking in young adulthood. However, it had an association with physical activity in later life. The findings showed that physical activity in adulthood was higher among those with sports participation in childhood.

Besides alcohol-related negative outcomes reported in some studies, the multiple health benefits for children who participate in organized physical activity are well documented. The findings of the present study provide initial support for the association between youth participation in competitive sports and mental health outcomes in adulthood.

Limitations

Some methodological issues with regard to the present study should be considered. First, with a cross-sectional design, this study provided data on childhood sports participation retrospectively only with one time point. However, there is a high drop-out rate in sports participation during adolescence, especially at the age of 14-15 years. According to a Finnish report by Myllyniemi and Berg (2013), while 61 % of boys at their age of 7 to 9 years participate in sport club activities at least once a week. This percentage drops to 32 % in the age group of 15 to 19 years. Longitudinal data would be needed to detect changes in physical activity or sports participation over time. However, gathering data retrospectively seemed to work out.

Second, it would have been interesting to gather more specific data on involvement in sport activity in childhood including unorganized sport activity and overall health-related physical activity in childhood. Further, sports participation was assessed by a number of times in a week, not by hours of physical activity.

Third, SWEMWBS is an established measure for mental well-being (Bianco 2012; Castellvi et al. 2014). However, the sum score indicating mental distress using items of SF-36 has not

been validated in previous research. Furthermore, despite of statistical significant results it is difficult to estimate the clinical significance of the findings.

Fourth, data on childhood living conditions and socio-economic background of the parents would have been necessary to detect important confounding variables that affect mental health in later life.

Despite the limitations noted, the study provides important data on the relationship between childhood sports participation and mental well-being in later life among young males, although a target group is commonly difficult to reach in surveys related to mental health. Finland has compulsory military service, and the reservists who were invited to participate in the study can be seen as a geographically representative sample of Finnish young men, although Northern and Southern Finland were slightly over-represented. Further, one notable strength of the study was that mental health was measured from the perspective of mental well-being as well as from the perspective of mental health problems.

Conclusions and implications for future studies

The results indicated that sports participation at the age of 12 years is associated with better mental health in young adulthood in males, with respect to both positive mental health and mental distress. According to the findings, the higher the level of competitive sports in childhood, the lower was the level of mental distress in the adulthood among study participants. No association was found between the level of competitive sports in childhood and positive mental health in adulthood. Further, the study showed that youth sports participation can present a higher risk for increased alcohol consumption and use of snuff in adulthood.

Despites these negative outcomes related to health behaviour, the present findings provide a support for the association between youth sports participation and mental health outcomes in adulthood. Promotion of policies to increase participation in organized sports activities may be of benefit to a public health strategy to promote not just physical health but also mental health. It is important that all children are provided with same opportunities to take part in structured sports activities. This may be particularly important for children with greater psychosocial needs. It is important to address the change in habits of sports participation during adolescence to promote mental well-being in later life. Many adolescents skip being

physically active after the age of 15 years, and thus the drop-out rate in sports participation in this age group is high.

Implications for future studies

Due to methodological limitations in the present study, it is not possible to conclusively state that youth sport participation carries clear positive effects on mental health later in life in males. Longitudinal study design testing causality, and data on variable causing potential bias would be needed to understand the causal relationships between youth sport participation and mental health in adulthood. Further, the impact and role of sports coaches in promotion of well-being and positive development would be an interesting topic for future studies.

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