

**NATURE-RELATED PHYSICAL ACTIVITY MOTIVES AND THEIR
CONNECTION TO EXPERIENCED MENTAL WELLBEING AMONG JYU
STUDENTS**

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ABSTRACT

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The positive effects of physical activity to peoples physical and mental health have been widely researched and confirmed. Also, the research results about nature's positive effects on mental health are widely known. Even though, there are clear, simply achievable benefits for mental health, the amount of mental health problems has increased during the 21st century worldwide, and in Finland. Some recognized reasons for this, are the demands of everyday living and tremendously increased use of digital devices. Also, the urbanized lifestyle has been found to add challenges for people's mental health. Understanding how the positive effects of physical activity and nature could be realized in modern everyday life is important.

The aim of this study was to investigate the physical activity motives of University of Jyväskylä students, and whether their physical activity motives are connected to self-reported mental wellbeing. Nature-related physical activity motivation was special interest in the study.

The data for this research was collected by online questionnaire and it was answered by 330 students. The questionnaire contained six parts: consent form, demographic features, physical activity habits, experienced mental wellbeing, physical activity motivations, and information about mental wellbeing support organizations. Mental wellbeing was measured by using the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS). For measuring the physical activity motivations, Exercise Motivations Inventory (EMI-2) was used as a base and then adjusted to fit the needs of this study.

The most important motivation for University of Jyväskylä students to engage in physical activity was positive health, and the least important reason was health pressure. These results align well with previous studies. The connection between physical activity motives and self-reported mental wellbeing was investigated by multiple regression analysis. The best regression model, including 13 different physical activity motivations, could explain 14,6% of the variation of self-reported mental wellbeing. Significant, positive contributors to the model were nature experience, revitalization, and affiliation. One significant, negative contributor was found, and it was weight management. These results resemble previous studies. However, nature experience as physical activity motivation has not been widely researched.

Limitations of this research concern the participants recruit process. It is likely that only people who are interested and have positive attitude towards physical activity and mental wellbeing chose to answer the questionnaire. Thus, the results should not be generalized. However, the results do confirm the results of previous studies that emphasize the importance of autonomous motivation in engaging physical activity. The role of nature experience as a physical activity motivation should be a topic of further research.

Key words: physical activity motivation, mental wellbeing, self-determination theory, nature experience

TIIVISTELMÄ

Halonen, Anni. 2024. Luontoon liittyvät liikuntamotivaatiot ja niiden yhteys koettuun henkiseen hyvinvointiin Jyväskylän yliopiston opiskelijoilla. Liikuntatieteellinen tiedekunta, Jyväskylän yliopisto, Liikunta- ja urheilupsykologian pro gradu- tutkielma, 39 s, 2 liitettä.

Liikunnan positiivisia vaikutuksia fyysiseen terveyteen, sekä mielenterveyteen on tutkittu ja vahvistettu laajasti ja merkittävästi. Myös tutkimustulokset luonnon positiivisista vaikutuksista ihmisten fyysiselle ja henkiselle hyvinvoinnille ovat tunnettuja. Vaikka nämä positiiviset vaikutukset alkavat olla tunnettuja, on mielenterveyden haasteiden määrä 2000-luvulla kasvanut merkittävästi sekä maailmalla, että Suomessa. Syiksi tähän on nimetty muun muassa nykyelämän vaatimustaso, sekä digitaalisten laitteiden käytön valtava lisääntyminen. Myös kaupungistuneen elämäntyylin on todettu lisäävän mahdollisia haasteita henkiselle hyvinvoinnille. On tärkeää ymmärtää kuinka liikunnan ja luonnon positiiviset vaikutukset terveydelle saataisiin toteutumaan ihmisten elämässä.

Tämän pro gradu -tutkielman tarkoituksena oli selvittää minkälaiset liikuntamotivaatiot ovat tärkeitä Jyväskylän yliopiston opiskelijoille, sekä selvittää Jyväskylän yliopiston opiskelijoiden kokemien liikuntamotivaatioiden yhteyttä heidän kokemaan henkiseen hyvinvointiin. Erityisessä tarkastelussa oli luontoon liittyvä liikuntamotivaatio.

Tutkimuksen aineisto kerättiin verkkokyselyllä, johon vastasi 330 opiskelijaa. Verkkokysely koostui kuudesta osiosta, jotka olivat: suostumussivu, demografiset tiedot, liikuntatottumukset, koettu henkinen hyvinvointi, liikuntamotivaatiot sekä lopetussivu, jossa oli kootusti esillä yhteystietoja mielenterveyttä ja henkistä hyvinvointia edistäviin organisaatioihin. Henkisen hyvinvoinnin mittarina käytettiin Positiivisen mielenterveyden mittaria (WEMWBS). Liikuntamotivaatioiden mittaamiseen käytettiin EMI-2-mittaria, jota muokattiin sopivaksi tämän tutkimuksen tarpeisiin.

Jyväskylän yliopiston opiskelijoiden tärkein liikuntamotivaatio oli positiivinen terveys, ja vähiten tärkeä liikuntamotivaatio oli terveydelliset paineet. Tulokset mukailevat aikaisempien tutkimuksien tuloksia. Liikuntamotivaatioiden ja koetun henkisen hyvinvoinnin yhteyttä tutkittiin regressio analyysillä. Paras malli pystyi ennustamaan 14,6 % koetun henkisen hyvinvoinnin vaihtelusta. Tälle mallille merkittäviä positiivisia vaikuttajia olivat liikuntamotivaatiot: luontokokemus, virkistäytyminen ja yhteen kuuluvuus. Ainoa merkittävä negatiivinen vaikuttaja oli painon hallinta. Tulokset muistuttavat aikaisempien tutkimusten tuloksia, mutta on huomioitava, että luontokokemusta liikuntamotivaationa ei ole tutkittu kovin kattavasti.

Tämän tutkimuksen tulokset eivät ole yleistettävissä, sillä on oletettavaa, että tutkimukseen vastasivat vain henkilöt, jotka ovat kiinnostuneita liikunnasta ja sen positiivisista vaikutuksista henkiseen hyvinvointiin. Tulokset kuitenkin rohkaisevat kannustamaan ihmisiä harrastamaan liikuntaa sisäisten motivaatiotekijöiden innoittamana. Lisäksi luontokokemusta liikuntamotivaationa tulisi tutkia enemmän.

Avainsanat: liikuntamotivaatio, henkinen hyvinvointi, itseohjautuvuusteoria, luontokokemus

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1 INTRODUCTION

The scientifically proven positive connection between physical activity and mental health is evident (Biddle, Gorely, Faulkner, & Mutrie, 2023). This information is intriguing because problems with mental health are globally the biggest reason for years lived with disability (World Health Organization, WHO, 2022). Already in 2017, in the western countries, problems with mental health were the biggest sector in the whole population disease burden (WHO, 2017). Furthermore, the COVID-19 pandemic worsened the situation even more and the most common mental health conditions anxiety and depression, increased as much as by 25% in many countries (WHO, 2022).

Finland is not an exception with the populations' issues with mental health. According to Kansaneläkelaitos (Kela, 2020), the amount of sickness allowances paid due to problems with mental health started to increase rapidly in 2016. In 2019, compared to 2016, the amount of sickness allowances recognized due to mental health problems, had grown 43%. This increase of mental health issues considered all age groups. However, the population groups who experienced most increase in medical leaves because of mental health problems between 2016 and 2019 in Finland, were 16-34 years old men and women, and 34 – 49 years old women. (Kela, 2020). The reasons for the increase in mental health issues were not completely clear. In 2020 Kela explained some of the increase with the growing demands of everyday life and the lowered barrier to communicate and recognize mental health problems. (Kela, 2020).

Kela's (2024) newest report concerning sickness allowances in Finland continues the worrying message. Medical leaves and sickness allowances due to mental health problems have continued to increase. In 2023, compared to 2016, sickness allowances admitted due to mental health issues had increased 78% for women and 53% for men. The population group, that experienced most mental health problems related sickness allowances, is 35-44 years old women. Also, the amount of younger people's mental health problems had continued to increase since 2016. However, the comparison of sickness allowances of people aged 16-34, does not give correct comparison to other age groups since they are not fully in working life and thus are usually not getting sickness allowances from work. (Kela, 2024).

To get a better picture about younger populations mental health, it is beneficial to look at studies concerning students. Studies show that also the Finnish students' challenges with

mental wellbeing have increased rapidly during the 21st century (Kunttu, Pesonen & Saari, 2017). A third of students in Finnish higher education institutions (universities and universities of applied sciences) suffer from problems with mental health (Terveyden ja hyvinvoinnin laitos (THL), 2021). Most common challenges with mental health for Finnish students are depression or anxiety symptoms (THL, 2021). Worryingly, this amount is relatively more than in the whole Finnish adult population. Among Finnish higher education students, the group that experiences most problems with mental health are women studying in universities or universities of applied sciences. (THL, 2021).

The reasons for the increase of reported mental health problems, such as depression and anxiety in different age groups are various (Kela, 2024; THL, 2021). First, the stigma related to communicating and seeking help for mental health problems has diminished (Kela, 2024). Thus, more people are looking for help to their challenges. Another reason for the increase of mental health problems is the increased mental burden of working and studying life in modern society (Kela, 2024; THL, 2021). Also, young people experience that the expectations of them to do well in life are high and this causes a lot of uncertainties. It is assumed that social media adds the comparison, pressure, and uncertainties of young people (Kela, 2024). Digital devices have become a major part of everyday life. This is suspected to affect the physical activity levels in a negative way, and at the same time increase the mental alertness levels and worsen the quality of rest and sleep (Kela, 2024).

During the COVID-19 pandemic social distancing reduced the communality of student groups. It is possible that the increased amount of online teaching leaves the students more alone and struggling with challenges in learning. For some students this can lead to more stress, feelings of loneliness, and possible challenges with mental health. (THL, 2021).

Issues with mental health, are in connection to general health and lifestyle. According to many indicators the physical condition of Finnish people, also students, has been continuously decreasing. Also, problems with sleep and obesity have increased. All these challenges can cause and worsen problems with mental health. (Kela, 2024; THL, 2023 a; THL, 2023 b).

In addition to personal situations and subjective experiences, students can also experience global threats to mental health. They can be for example humanitarian emergencies, social

and economic inequalities, economic downturns, growing climate crisis, and exceptional circumstances such as COVID-19 pandemic was. Global threats are not secluded from each other but instead interact and can follow one another. (Kela, 2024; World Health Organization, 2022).

In addition to the global threats, mental burden of studies and working life, extensive use of digital devices and reduced amounts of physical activity, living in urban environment has been recognized as a possible threat to mental wellbeing in Europe (Penkalla & Kohler, 2014). Typically, urban environments offer less possibilities to see and interact with nature. According to MacKerron and Mourato (2013) people report better subjective wellbeing or happiness when they are in green or natural environment compared to urban environment. White and others (2021) claim that frequent visits and feeling connected to green or blue spaces, in other words natural environments, can benefit mental wellbeing and reduce the experienced mental distress (White et al., 2021). In addition to the positive impacts on mental wellbeing, nature exposure can improve individuals physiological ja social wellbeing (Hartig et al., 2014; de Vries et al., 2003; Abraham, Sommerhalder & Abel, 2010).

The inspiration for the topic of this master's thesis arose from the previously mentioned facts and my own experiences about how different motivations to engage in physical activity affect my physical activity habits and how physical activity affects my experienced mental wellbeing. I am lucky to experience many different motives to engage in physical activity and even more lucky to live in an area where it is easily possible to perform physical activity in beautiful natural surroundings.

2 HEALTH AND MENTAL HEALTH

The current most popular definition of health by World Health Organization (WHO), from 1948, states that health is “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (Badash et al., 2017; World Health Organization, 2023). United Nations created WHO soon after the end of second world war, and this definition of health was created to attain the highest possible levels of health around the world (Jadad & O’Grady, 2008). Historical definitions of health by Hippocrates and Galen had defined health as the balance of bodily fluids and mental and emotional states (Badash et al., 2017). The main difference in WHO’s definition to historical definitions of health is, that health is not seen just as the lack of diseases or ill-being, but health is actual well-being that affects the individual’s quality of life (Badash et al., 2017).

WHO’s definition of health has been criticized of not taking into consideration differences between developed and developing countries (Badash et al., 2017). Also is has been argued that WHO’s definition of health is too ambitious and thus impossible to implement reliably (Badash et al., 2017). Saracci (1997) claims that a state of complete physical, mental, and social well-being describes rather happiness than health. Thus, feeling unhappy could be interpreted as a problem of health. Despite of Saracci’s (1997) questioning, this master’s thesis leans into WHO’s definition of health where mental well-being is included as an essential part of human’s overall health and well-being. Dr. Tedros Adhanom Ghebreyesus, the director general of WHO, states: “Ultimately, there is no health without mental health”, in the World mental health report (2022). (World Health Organization, 2022).

WHO (2022) states, that mental health, as well as the general health, are not binary states. They both exist on a continuum that can include experiences from optimal state of well-being to enormous pain and suffering. It is possible to have a physical or mental health condition, but still experience high level of physical or mental well-being. Physical and mental health will fluctuate according to life’s changing situations and challenges (World Health Organization, 2022). WHO defines mental health as follows:

“Mental health is a state of mental well-being that enables people to cope with the stresses of life, to realize their abilities, to learn well and work well, and to contribute to their

communities. Mental health is an integral component of health and well-being and is more than the absence of mental disorder.”. (World Health Organization, 2022).

In this master’s thesis the definition of mental health by WHO (2022) is used as a guideline. Also, the perspective of positive mental health is an assumption in this master’s thesis. That means, that at the same time a person can have problems with mental health but also experience different aspects of mental wellbeing (Appelqvist-Schmidlechner et al., 2016). This was taken into consideration when choosing the questionnaire to measure self-reported mental wellbeing. The aim of this thesis is not to explore the possible lack of mental illness but to investigate the experienced aspects of mental wellbeing, thus the wording used will be mental wellbeing.

3 NATURE AND POSITIVE EFFECTS ON MENTAL HEALTH

In high-income countries, issues with mental health are the biggest share of the disease burden of the population (WHO, 2017). According to Penkalla & Kohler (2014) in Europe, urban environments are connected to disadvantages for mental health. Mental stress seems to be one of the biggest challenges to human wellbeing in modern societies (White et al., 2021). Thus, understanding how nature and green spaces effect people's health is important in modern urbanized societies (Verheij, Maas & Groenewegen, 2008).

There are multiple intriguing studies about nature's positive effects on people's mental and physiological health. For example, looking at pictures of nature can reduce feelings of anger, aggression, and sadness of a stressed individual more than looking at pictures of urban scenes in a similar windowless room (Ulrich, 1979). In fact, looking at the pictures of urban scenes, seemed to increase the reported feelings of sadness and anger (Ulrich, 1979). Resting in a room with views overlooking nature can reduce blood pressure more than sitting in a room without a view (Hartig, Evans, Jamner, Davis & Gärling, 2003). Green surroundings of home and even the scenery from one's home windows can affect person's physiological health conditions such as hair cortisol levels (Honold, Lakes, Beyer & van der Meer, 2016) and diurnal salivary cortisol levels (Ward Thompson et al., 2012).

Strong evidence base suggests that green or natural environments can improve peoples' well-being in multiple different ways (Hartig, Mitchell, de Vries & Frumkin, 2014; de Vries, Verheij, Groenewegen, Spreeuwenberg, 2003). Nature exposures can affect on psychological, physiological, and social well-being in both short- and long-term. (Hartig et al., 2014; de Vries et al., 2003; Abraham, Sommerhalder & Abel, 2010). Exposure to nature can especially improve people's mental health by affecting attention restoration, reducing stress, increasing positive emotions (Hartig et al., 2014; Abraham, Sommerhalder & Abel, 2010) and vitality (Ryan et al., 2010). Repeated nature visits or constant exposure to nature could partially explain self-reported long-term well-being, for example satisfaction in life. (Hartig et al., 2014).

In the research field of nature's positive effects on human health, the two pioneering theories have been Stress Reduction Theory (SRT) by Ulrich in 1983 and the Attention Restoration Theory (ART) by Kaplan and Kaplan in 1989. They both share the idea that natural green

environments have restorative features that positively impact humans' health. ART highlights mostly to the recovery of cognitive processes (Kaplan, 1995) whereas the SRT emphasizes emotional and physiological recovery responses (Ulrich, 1983). The main ideas of both theories are presented in the following chapters.

3.1 Stress Reduction Theory

SRT explains nature's positive effects on human health by claiming, that natural, restorative environments stimulate stress recovery. People's innate preference for experiencing natural environments, instead of artificial environments, result from evolution (Ulrich, 1983). Ulrich and others (1991) claim that certain visual properties in nature and natural environments, influence people's aesthetical and emotional response and result in reduction of stress through psycho-physiological recovery. (Ulrich et al., 1991).

According to Ulrich and others (1991), physiological measures and verbal information gathered suggests that different kind of outdoor environments have different effects on individual's stress recovery. Ulrich and others (1991) demonstrate that nature results in individual's faster recovery from stress, compared to urban environments. Both, physiological measures, and individual's verbal feedback, speak in the favor of natural environments in stress recovery. According to the verbal feedback, in natural environments people experience better recovery in positive affect, levels of aggression, and fear, than in urban environments. The physiological measures indicating lower stress levels after exposure to natural surroundings, were skin conductance responding (SCR), pulse transit time (PTT) and frontalis muscle tension (EMG). The recovery from stress was notable already after five to seven minutes, which indicates that even short exposures to nature's elements, could improve individuals' quality of life. It is possible that in addition to psychological and physiological components, also behavioral factors are more favorably affected by natural environments than urban environments. (Ulrich et al., 1991).

SRT indicates some factors may affect on how aesthetical people consider certain environments, and thus how the visual properties influence the stress recovery. In western cultures people tend to preferer natural environments that are complex, have structural properties, have even and homogeneous ground surface texture, don't appear threatening, and have water visible. (Ulrich, 1983). However, the cultural differences about experiencing

natures aesthetics have not been widely investigated (Ulrich, 1983). Also, differences in how nature effects the mental health of people with different gender, ethnicity, or socioeconomic position, has not been widely researched (Hartig, Mitchell, de Vries & Frumkin, 2014).

3.2 Attention Restoration Theory

Attention Restoration Theory (ART) is a psychological theory, developed by Rachel Kaplan and Stephen Kaplan in 1989. ART describes that experiencing nature can have restorative effects on cognitive abilities and attentional capacity, improve creativity, and reduce stress (Koprivec, Zbašnik-Senegačnik & Kristl, 2022). The main idea of ART is that the limited cognitive resource of directed attention, can be restored when mind is engaged by nature (Kaplan, 1995).

Kaplan (1995) states that, directed attention means using mental efforts towards different tasks, such as studying, or working. Using directed attention for prolonged times, causes this ability to become tired. Thus, individual becomes mentally fatigued. The consequences of mental fatigue, to mention a few, are reduced ability to solve problems, make decisions, control impulsive behavior, and act when needed. Mental fatigue also awakens negative emotions and slows down perceptions of one's surroundings, social interactions, and own situational capability. (Kaplan, 1995).

Since active, perpetual use of directed attention, is a demand for being effective and productive in society (Kaplan, 1995), restoring one's directed attention, regularly seem like an essential process for effective human life. According to Kaplan (1995) sleeping is a form of recovery for directed attention, however, is it not sufficient. He states that activating the involuntary attention, which is the opposite of directed attention, reduces mental fatigue, in other words, recovers the directed attention. Involuntary attention means attention that does not require any effort (Kaplan, 1995). When involuntary attention is activated, individuals' mind is attracted by some interesting, or intriguing stimuli while the brain is kind of settling back to "default mode network" (Koprivec et al., 2022). The moments when involuntary attention is activated and directed attention is resting, are called restorative experiences (Kaplan, 1995).

According to ART there are four key components that define whether an experience or environment can be restorative. The components are *being away*, *fascination*, *extent*, and *compatibility*. (Kaplan, 1995; Koprivec et al., 2022; Ohly et al., 2016). *Being away* refers to either objective or subjective feeling of disconnectedness from everyday life and its stressors. Physical distance or even a just a conceptual transformation by imagining, can create the stimuli to activate involuntary attention. Enjoyable natural elements such as, forests, mountains, lakes, and coasts typically enable the individual to mentally detach from current, mind occupying thoughts. Mental absence from conscious thinking, worrying or stressing triggers restorative effects. (Kaplan, 1995; Koprivec et al., 2022).

Fascination describes experiencing something special that captures the individuals' involuntary attention, this offers a chance for the directed attention to recover (Kaplan, 1995). According to Kaplan (1995) feeling fascinated through experiencing nature usually emerges undramatically, or softly, by the complexity and beauty of nature. Fascination can be experienced also through "hard" fascination, for example watching motor sports competition (Koprivec et al., 2022). When involuntary attention is engaged by soft fascination, for example sunset, movement of the leaves or sound of water, it is plausible, that individuals' mental fatigue reduces, or they experience mental escape. (Kaplan, 1995; Koprivec et al., 2022).

The key component, *extent*, explains how nature can offer the experience of spaciousness and the feeling that the individual is a part of something greater than themselves (Kaplan, 1995). That means the connection that individual can experience with environment. This connection can relate to being connected to history by experiencing historic artifacts or sceneries, being connected to the environment by being amongst the elements of nature or getting inspired by seeing and experiencing views, sounds, and smells. Extent does not only mean the spaciousness and scale of the natural elements but also the richness of the elements. Thus, also smaller environments can offer extent for example small trails or paths that are designed to look visually larger. Environment can offer the feeling of extent if they offer enough stimuli and scope to be remarkable enough to occupy considerable amount of individuals' attention. (Kaplan, 1995; Koprivec et al., 2022).

Kaplan (1995) states that *compatibility* refers to the characteristics of the environment that fit individuals' interests and purpose. Compatibility also refers to the individuals' abilities that

are needed to fit the environments demands. Thus, to reach the experience of compatibility with nature the individuals' and environments' demands and expectations need to meet each other. In this situation the individual can effortlessly function without having too many demands on her directed attention. (Kaplan, 1995). For example, if an individual is looking for excitement and they are rather fit, climbing up a rocky path could be compatible for this individual. However, if an office worker is longing for a mental break from interpreting stressful numeric charts, staring out of a window, watching clouds pass by, would offer compatibility.

Multiple studies have examined the psychological benefits gained from exposure to green environments based on the ART (Ohly et al., 2016). A systematic literature review by Ohly and others (2016) investigated how experiencing natural and nonnatural environments, affected individuals' attention capacity. Some attention capacity tests, such as Digit Span Test, gave significantly better results for individuals after nature exposure than control group. However, the results from various other attention capacity tests were the opposite, or statistically not significant even though positive connections were found. Ohly and others (2016) stated that it is still unclear, what are the actual mechanisms for attention restoration, and which measure for attention capacity would be most suitable in testing ART.

Another systematic review by Stevenson, Schilhab and Bentsen (2018) investigated further how exposure to natural environments affects attention processes. The use of objective outcome measures was emphasized, and instead of only focusing to attention capacity, they investigated which cognitive domains best describe the elements of directed attention that the ART is based on. They investigated 8 general cognitive domains: working memory, attentional control, visual attention processes, vigilance, cognitive flexibility, impulse control, processing speed and other emerging domains. (Stevenson, Schilhab & Bentsen, 2018).

They found out that working memory, attentional control and cognitive flexibility can be improved by low to moderate effect sizes after nature exposure, compared to the control group. This is possible through the restoration of cognitive processes that are related to directing attention. Stevenson, Schilhab and Bentsen (2018) suggest that when estimating how much directed attention affects different cognitive domains, demand of the cognitive process, direction of the attentional focus and locus of the distraction, would be used as evaluation criteria. (Stevenson, Schilhab & Bentsen, 2018).

These systematic reviews only investigated nature's effects on attention capacity and cognitive domains. Other possible effects, such as improvements in the mood, social contact, recovery from physiological stress, encouragement to exercise and sense of purpose were left out. (Ohly et al. 2016). On the contrary it was impossible to leave out the possible placebo effect of cultural narrative of developed countries, that implies, that nature is good for individual's wellbeing (Stevenson, Schilhab & Bentsen, 2018). Even though, there are different opinions about ART's credibility it is widely used theory in investigating nature's effects on human wellbeing.

4 PHYSICAL ACTIVITY AND POSITIVE EFFECT ON MENTAL HEALTH

As it is well-known, physical activity provides benefits for people's mental and physical health. The evidence of physical activity's benefits to mental health have grown stronger and stronger lately (Biddle, 2016). Physical activity can enhance the experienced mental health and wellbeing, support the treatment or recovery process of a mental illness, and even reduce the risk of experiencing some mental disorders in the future. (Biddle, 2016; Wanjau et al., 2023; Cerin, Leslie, Sugiyama & Owen, 2009). Since physical activity can give such significant benefits for people's mental wellbeing, it is important to understand what kind of physical activity would benefit people the most.

4.1 Leisure time physical activity

Studies have shown that leisure time physical activity is regarded as most beneficial for mental wellbeing when compared to, for example, occupational physical activity (Cerin et al., 2009). Especially leisure time physical activity that involves social interactions, such as spending time with family or friends, improves individuals' experienced mental wellbeing (Appelqvist-Schmidlechner et al., 2020; Cerin et al., 2009; Mason, Curl & Kearns, 2016). Most beneficial effects for mental wellbeing are given by leisure time physical activity that is executed with moderately-vigorous intensity (Cerin et al., 2009). Less intense physical activity, for example easy walking, can also influence individuals' mental wellbeing positively (Mammen & Faulkner, 2013). Seems that any physical activity that the individual is motivated to perform is likely to positively effect mental wellbeing. (Ekkekakis, Hall & Petruzzello, 2005). In addition, more diverse variety of different kinds of leisure time physical activities is connected to better mental wellbeing (Mason, Curl & Kearns, 2016). All in all, people's psychological reactions to physical activity vary individually according to their preferences, cognitive responses (Ekkekakis, Hall & Petruzzello, 2005), and the level of participation to other forms of physical activity (household, occupational, transportation) (Cerin et al., 2009).

The individuals' age and life situation influence how leisure time physical activity affects their mental wellbeing. If adding leisure time physical activity adds persons' experienced time pressure, physical activity will not affect mental wellbeing in an optimal way. This might be the case in a life situation that includes time consuming duties, such as working, caring for

family, and doing physically active household work. Leisure time physical activity that does not add time pressure and is chosen according to personal preferences', effects most positively to mental wellbeing. (Cerin et al., 2009).

4.2 Other types of physical activity

In addition to leisure time physical activity, active transportation, household work and occupational physical activity are important variables in experienced mental wellbeing. Socio-demographic features and amounts of physical activity performed on other domains affect considerably how different types of physical activities influence mental wellbeing. (Cerin et al., 2009).

Physical activity related to household work is something that almost all people must engage with from time to time. This activity also affects people from different socio-demographic groups differently. For example, women who perform high frequencies of occupational physical activity experience household physical activity affecting negatively to their mental wellbeing. Whereas most men do not experience household physical activity affecting their mental wellbeing. Interestingly, older adults experience outdoor household physical activity affecting mental wellbeing very positively. In addition to age and gender, individual's weight can also influence on how they experience physical activity related to household work. (Cerin et al. 2009).

Occupational physical activity seems to be rather neutral in effecting mental wellbeing. According to Cerin and others (2009) physical activity performed at work generally is not related to mental wellbeing. Some exceptions are that high amount of household work combined to physical activity performed at work can influence negatively mental wellbeing of youth and women. Also, adult men who perform vigorous occupational physical activity can experience lowered mental wellbeing. (Cerin et al., 2009).

Physical activity related to active transportation seems to be unrelated to mental wellbeing in most demographic groups (Cerin et al., 2009). Studies of adolescents' active school transport and mental health, show inconsistent results (Jussila et al., 2023). Obese people who do considerable amount of walking for transport reported lower levels of mental wellbeing. This

may be due to the experienced physical discomfort while walking because of needed transportation and not considering walking as leisure time activity. (Cerin et al., 2009).

4.3 Positive effects on mental health

One of the most significant benefits that engaging in physical activity provides for mental health, is the reduced risk to experience depression and anxiety (Wanjau et al., 2023; Scuch et al., 2018; Mammen & Faulkner, 2013). Two most common mental disorders globally are disorders related to depression and anxiety. They sum up to more than 55% of all mental disorders suffered around the world. (WHO, 2022).

Physical activity reduces the risk of development of depression for young, adult, and elderly people (Scuch et al., 2018; Mammen & Faulkner, 2013). This phenomenon seems to be accurate worldwide. The same protective effects of physical activity against depression have been identified in multiple different geographical areas and cultures around the globe (Scuch et al., 2018). Scuch and others (2018) also figured that physical activity very likely gives similar protective features against depression for both, men, and women. This (Such et al., 2018) revokes a previous assumption that gender might modify the benefits of physical activity in inhibiting depression (Mammen & Faulkner, 2013).

It is still unclear which dose of physical activity would be most efficient in diminishing the risk of depression. Some studies indicate that with at least 150 minutes of moderate to vigorous physical activity per week, the risk of experiencing depression can be reduced. However other studies have found that even short walks with average pace can reduce the odds of depression. (Mammen & Faulkner, 2013). Thus, Mammen & Faulkner (2013) state that even low levels of physical activity can reduce the risk of future depression. They recommend maintaining current physical activity amounts over time, and in case of possible current inactivity, starting to engage in physical activity regularly to prevent depression in the future. (Mammen & Faulkner, 2018).

Engaging in physical activity also protects individuals against anxiety disorders and symptoms of anxiety (McDowell, Dishman, Gordon & Herring, 2019; Stubbs et al. 2017). This information is remarkable since, different anxiety disorders are one of the most prevalent

mental health challenges that people struggle and experience disability with (WHO, 2017). Physical activity can be considered as an efficient intervention to ease the symptoms of anxiety for people with anxiety and stress-related disorders (Stubbs et al., 2017). Higher physical activity amounts can also lead to a lower risk of developing anxiety disorders in the future (Wanjau et al., 2023).

In addition to lowering the risk of anxiety and depression disorders, physical activity can reduce the risk of cognitive decline such as dementia and Alzheimer's disease (Hamer & Chida, 2009). Evidence shows that physical activity is especially beneficial for the prevention of Alzheimer's disease (Guure, Ibrahim, Adam & Said, 2017). However, it is still unclear in which stage of a person's life physical activity would create most beneficial protection against cognitive decline (Hamer & Chida, 2009).

On top of reducing the risk of certain mental disorders and supporting the treatment process of them, physical activity can give significant benefits to experienced mental wellbeing. The most familiar, possible positive effects of physical activity on mental wellbeing, are enhanced mood, self-esteem, cognitive functioning and sleep quality. These benefits are likely to occur if the physical activity is performed during leisure time and the nature of the activity is suitable for the individual. (Biddle, 2016).

5 MOTIVES FOR PHYSICAL ACTIVITY

In this section the currently dominant theory of motivation, the self-determination theory (SDT) by Deci & Ryan (1985) is presented, as well as the theory's applicability to physical activity and sports settings. SDT consists of six mini-theories, from which the most referred are presented here. They are the basic needs theory, the cognitive evaluation theory, and the organismic integration theory (Hagger, Hankonen, Chatzisarantis & Ryan, 2020).

The word motivation is familiar to most people, however explanation of the concept of motivation has multiple different versions. Generally used, simple definition of motivation by Sage (1977), in Weinberg and Gould (2011), states that motivation can be described as the direction and intensity of person's efforts. According to Bandura (1977) in Deci and Ryan (1985), motivation means a trigger or source of energy that makes a person function towards the goals that person believes they can perform successfully. Roberts (1992) states that the basic idea of motivation is that a person has a will or need to do something. This process of wanting or needing something, is tightly attached to the social and cognitive processes the person is involved in (Roberts, 1992). Vallerand (2007) defines motivation as: "the internal or external forces producing the initiation, intensity, direction and persistence of human behavior" (Vallerand, 2007). Deci & Ryan state that the behavior of a person is driven by a force that comes either from inside or outside the individual. These forces are affected by social, cognitive, and affective factors the individual is experiencing. (Deci & Ryan, 1985; Ryan & Deci, 2000).

5.1 Self-determination Theory

The idea of SDT is built on basic human needs: feelings of autonomy, relatedness, and competence (Hagger & Chatzisarantis, 2007). According to SDT motivation is a result of multi-phased social, cognitive, and affective processes, and to function optimally and being internally motivated towards a task, a person needs to feel some freedom of choice, capability, and connectedness. (Ryan & Deci, 2000). According to Ryan and Deci (2000) motivation can have different qualities in addition to intensities. They describe that the factor defining the type of motivation, is the amount of self-determination included in the decision-making process of engaging or not engaging into some activity. Ryan and Deci (2000) present

that there is a continuum from fully intrinsic motivation to fully extrinsic motivation. The total lack of motivation is called amotivation. (Ryan & Deci, 2000)

The mini theory of basic needs, states that for human beings to experience wellbeing, life satisfaction, and capability to function optimally, their three psychological basic needs must be met. Those basic needs are autonomy, competence, and relatedness. Autonomy refers to the feeling that the person herself is the initiator of their own actions, and that the individual has a choice in how they behave. Competence means the experience of being capable in executing a task and having control over own performance. Relatedness refers to feelings of being connected to other people, accepted by other people, and experiencing unconditional support from others. (Ryan & Deci, 2000). The satisfaction of these three basic needs dictates what type of motivation towards a certain action the individual forms (Hagger & Chatzisarantis 2007). The social environment around the individual has a major effect on whether there is a possibility to experience need satisfaction. For example, how the parents communicate their children, can create pressure and shaming or understanding of how to recognize own feelings and detect own actions according to them. (Deci & Ryan, 2000).

Cognitive evaluation theory describes the concept of intrinsic motivation and tries to explain which factors increase or decrease persons' experiences of intrinsic motivation (Hagger et al., 2020). Intrinsic motivation refers to situations when individual is participating an activity without perceived or experienced external pressure or reward. In this situation, the individual is experiencing satisfaction from the task itself. When intrinsically motivated, people feel a sense of choice, interest towards the task and capability to perform the task. (Ryan & Deci, 2000). Cognitive evaluation theory states that feelings of autonomy, competence, and perceived feeling of being in control of own behavior are important factors in experiencing intrinsic motivation (Hagger et al., 2020). In social surroundings communication, instructions, feedback, and other interpersonal interactions affect greatly whether a person feels that they, themselves are the initiator of the behavior (internal locus of causality) or whether they are acting to meet the external demands (external locus of causality). (Deci & Ryan, 1985). According to Deci & Ryan (2000) Intrinsic motivation can flourish if the circumstances are beneficial for that (Deci & Ryan, 2000).

Extrinsic motivation refers to a situation where the individual participates an activity because it serves some external purpose or fulfills external requirement (Ryan & Deci, 2000). When

external rewards or punishments are included, the activity becomes a means to reach the end-result, instead of participating the activity itself being the result (Deci & Ryan, 1985). However, individuals do engage in multiple daily activities that have external purpose by their own decision. Extrinsic motivation can have different stages of self-determination. (Ryan & Deci, 2000). For example, a task can be performed to accomplish personally valued goals, such as cutting unhealthy foods from diet, or for avoiding a punishment such as, payment of extra taxes. When an individual is amotivated, they have no will to perform the task, even though some external reinforcement would exist. (Ryan & Deci, 2000).

Organismic integration theory adds details to the description of intrinsic and extrinsic motivation. It especially describes how motivation types differ in the style of regulation and perceived locus of causality. Locus of causality means who or what the individual identifies as the initiator of the action they are performing. (Hagger et al., 2020). According to DeCharms (1986) in Deci & Ryan 1985, when initiation of the action originates from the individual herself, the locus of causality is called autonomous. When some other factor outside of the individual is the original cause of the action the locus of causality is called controlled (Deci & Ryan, 1985). The continuum from fully intrinsic motivation to fully extrinsic motivation contains different forms of self-regulatory styles, which are intrinsic regulation, integrated regulation, identified regulation, introjected regulation and external regulation (Ryan & Deci, 2000). Organismic integration theory also explains how individuals can change their personal approach of a controlled locus of causality into more autonomous, because the individual experiences the activity personally important (Hagger et al., 2020).

The fully intrinsic motivation means that the individual is fully independently regulating their own behavior since they enjoy the task and experience pleasure from performing it. No external reinforcement or reward is affecting the process of performing the task. This is called intrinsic regulation and the locus of causality is perceived as autonomous (Ryan & Deci, 2000).

When the motivation is not fully intrinsic, it is categorized as extrinsic motivation. *Integrated regulation* is the most autonomous type of extrinsic motivation, it can be called also as self-determined extrinsic motivation. This refers to the state where an individual is performing a task, because the task aligns with the individuals needs and values, for example having the habit of helping friends and family members. Functioning with integrated self-regulation has

much in common with intrinsic motivation. However, the main difference is that the task is not performed because of the inherent pleasure of performing it, but because of the outcomes performing the task returns. These outcomes usually help the individual to satisfy their basic psychological needs, for example having close relations to family members fosters the feeling of relatedness. (Deci & Ryan, 2000).

In *identified regulation* the initiation of the action is mostly controlled by the individual, thus the locus of causality is more autonomous than controlled. The individual participates action because of the importance or experienced value of performing the action. For example, the individual might identify that living a healthy life is part of his identity. That is why the individual would regularly engage in exercise, in the means of valuing his health, even though he would not fully enjoy the activity of exercising itself. (Deci & Ryan, 2000; Ryan & Deci, 2000).

Introjected regulation describes a situation where the environment is considered quite controlling and the individual performs tasks because they want to avoid personal guilt that would occur if the external demands would not be met, or they need to assure their self-worth. The individual would try to demonstrate their abilities and accomplish tasks from their initiation even though the perceived locus of causality is external. (Deci & Ryan, 2000).

When the individuals' behavior is controlled by the environment (locus of causality is controlled), the regulation of the process is external and the individual experiences fully extrinsic motivation. In this situation the individual is engaging in action only to avoid external punishments or only because external rewards are promised. (Deci & Ryan, 2000; Ryan & Deci, 2000).

All in all, according to SDT the state of individuals' psychological basic need satisfaction while performing a task, determines what kind of motivation the individual is experiencing towards the task (Deci & Ryan, 2000). When the behavior is experienced to satisfy enough of the psychological basic needs, the individual can experience intrinsic motivation. Experiencing intrinsic motivation further encourages the individual to keep engaging in this certain action. (Deci & Ryan, 2000). On the contrary, when the individual experiences that the psychological basic needs are not met in performing a certain activity, they interpret their engagement in the task is more or less externally controlled. This leads to extrinsic

motivation, that can have different forms depending on the level of self-regulation while performing the task. (Deci & Ryan, 2000).

5.2 Self-determination Theory in physical activity setting

According to Hagger and Chatzisarantis (2008), SDT can be applied into sport and exercise settings. They summarize, that there is strong evidence showing, that autonomous forms of motivation in physical activity, are connected to stronger engagement to exercise behaviors, perceived competence, intentions to exercise in the future, and ability to experience flow state and psychological wellbeing while being physically active. (Hagger & Chatzisarantis, 2008). The mini theory of basic needs also adjusts well into physical activity contexts, since psychological need satisfaction predicts intrinsic motivation also in physical activity settings, and has negative correlation with extrinsic motivation and amotivation (Hagger & Chatzisarantis, 2008).

According to Zhang (2009), self-determined forms of motivation are important in physical activity, since they predict higher enjoyment and effort in physical activity, and higher amount of physical activity (Zhang, 2009). Carroll and Loudimis (2001) state that school children with higher perceived competence in physical activity engage in more leisure time physical activity, both in quantity and intensity, than children with lower perceived competence (Carroll & Loudimis, 2001). Experiencing competence and intrinsic motivation while engaging in physical activity are not only important in childhood but can also affect the persons future. According to Ntounamis (2001) intrinsic motivation experienced, while participating school PE classes predicted positively the students' intention to be physically active also later in life. When students felt pressured (external regulation) to participate in PE classes, they also reported more feelings of boredom (Ntounamis, 2001).

The environmental factors, such as informational feedback, instruction style, rewards, and punishments, together with the personal qualities of the performer, affects the quality of the motivation the performer experiences, the same way in physical activity contexts as in other areas of life. (Hagger & Chatzisarantis, 2008). In physical activity and health behavior settings, autonomy- and need-supportive interventions are commonly used. In these interventions the teachers and coaches, are the social agents that deliver the intervention by promoting autonomy and need-supportive behaviors. Usually, the best way to deliver the

intervention, is to change the behavior of the teachers and coaches themselves towards autonomy-supportive teaching and training styles. (Hagger et al., 2020).

6 PURPOSE OF THE STUDY / RESEARCH QUESTIONS

The purpose of this study was to investigate what kind of motives for physical activity the students of the University of Jyväskylä have and to figure out whether there is a connection between certain physical activity motives and self-reported mental wellbeing.

Research questions:

1. What are the motives of University of Jyväskylä students to engage in physical activity?
2. Among University of Jyväskylä students, to what extent do PA motives predict self-reported mental wellbeing?
 - a. Is the PA motive: nature experience, important in predicting mental wellbeing?
 - b. Do appearance related PA motives predict mental wellbeing?

7 METHODS

7.1 Participants

The participants of this research were students from the University of Jyväskylä. 330 persons answered the survey voluntarily. There was no missing data in any of the cases since all the questions in the questionnaire were obligatory. All questions except for amount of physical activity were multiple choice questions. Thus, only physical activity was tested for possible outliers. This was done by simple box plot. In the box plot three cases clearly stood out from others. In those cases, the amount of physical activity was announced as more than 30 hours per week. These cases were excluded from the analysis with the doubt that they may be typing errors. After the outliers (weekly amount of physical activity announced as more than 30 hours) were extracted from the data, 327 answers were analyzed closer.

81% (265) of the respondents were women, 15,3% (50) were men, 3,1% (10) announced to be other and 0,6% (2) did not want to comment on their gender. 40,7% (133) of the respondents were from the Faculty of Education and Psychology, 34,6% (113) from the Faculty of Mathematics and Sciences, 22% (72) from the Faculty of Sports and Health Sciences and 2,7% (9) of the respondents were from all the other faculties of University of Jyväskylä. Most of the respondents (44,6%) were 22-25 years old, the second biggest age group was 26-29 years old (22%) and third biggest (17,1%) age group was 18-21 years old students. The demographic characteristics of the respondents can be found in table 1.

7.2 Data Collection

The data for this research was collected by an online questionnaire in Webropol. The questionnaire answers were collected between 21st of April and 20th of May 2023. Email request to share the survey link for University of Jyväskylä students, was sent to each faculty's education coordinators or the head of communication of the faculty's student union. Alongside with the request a very short introduction text about the survey was sent. It was informed that completing the survey would take about 10minutes. There were no incentives offered from answering the survey. The link was shared after the first request by some education coordinators and by some student unions, which resulted in that answers to the questionnaire came mainly from three different faculties. Also, the personal contacts of the

researcher were used to share the link to the survey. A reminder request was sent for few faculties student unions after the survey link had been open about two weeks. However, this did not result in any further link shares for students. The final number of responses was 330.

TABLE 1. Demographic characteristics of participants

Gender	n	%
Female	265	81%
Male	50	15,3 %
Other	10	3,1%
Don't want to comment	2	0,6%
Total	327	

Age groups	n	%
18 – 21	56	17,1%
22 – 25	146	44,6%
26 – 29	72	22,0%
30 – 33	24	7,3%
34 – 37	13	4,0%
38 – 41	6	1,8%
42 - 45	4	1,2%
above 45	6	1,8%
Total	327	

Faculties of the respondents	n	%
Faculty of Education and Psychology	133	40,7%
Faculty of Mathematics and Science	113	34,6%
Faculty of Sports and Health Sciences	72	22,0%
Other faculties altogether	9	2,7%
- Faculty of Information Technology		
- Faculty of Humanities and Social Sciences		
- Jyväskylä University School of Business and Economics		
Total amount of response	327	

7.3 Measures

The online questionnaire contained six parts: consent form, demographic features, physical activity habits, experienced mental wellbeing, physical activity motivations, and thank you page with contact information for mental wellbeing support organizations. More specific information about questionnaire measures can be found below and the whole questionnaire in appendix 1.

7.3.1 Demographic features

The participants were asked some of their basic demographic features. They were asked about their gender, age, faculty they study in JYU, whether they are studying full or half-time and if they are working alongside studies. Also, the distance from their home to the nearest location of nature was asked. In addition, the participants were offered a short definition of physical activity and then asked to report how much time approximately, during a regular week, they engage in leisure time physical activities, active transport to/from school or work, physical activity within school or working hours, and necessary activities to take out domestic animals such as dogs.

7.3.2 Mental Wellbeing

Mental wellbeing was assessed by using the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS). WEMWBS was developed in 2007 in Scotland with the funding of NHS Health Scotland and it has been validated for use in multiple different locations, languages, and cultures (Warwick Medical School, 2020). It diverges from many other mental wellbeing questionnaires because it only includes positive aspects of mental health (Stewart-Brown et al, 2009).

In the perspective of positive mental health, mental health and mental illness are not considered as opposite phenomenon to each other. At the same time a person can have problems with mental health but also experience different aspects of mental wellbeing. Measuring positive mental health focuses on the persons reserves of mental energy, such as capability to cope in challenging situations and adapt or change one's surroundings if needed. (Appelqvist-Schmidlechner et al., 2016).

WEMWBS items include both, hedonic and eudaimonic perspectives of mental wellbeing. Hedonic perspective of mental wellbeing means the individuals own, subjective experiences of happiness and life satisfaction. Eudaimonic perspective of mental wellbeing means individuals capability to function psychologically, have good relationships with other people and experience meaningfulness. (Warwick Medical School, 2015).

All 14 items in WEMWBS are positively worded, for example “I’ve been dealing with problems well” and “I’ve been feeling confident”. Responses are measured by Likert scale from one to five which correspond to statements: “None of the time”, “Rarely”, “Some of the time”, “Often” and “All of the time”. (Stewart-Brown et al, 2009). In the questionnaire the participants are asked to choose the value that best describes their experiences during the last 2 weeks. The score of the questionnaire is formed simply by adding the values of all 14 items together. Thus, the score will range between 14 to 70. Lower scores describe lower levels of mental wellbeing, and higher score reflects higher contentment to one’s mental wellbeing. (Stewart-Brown et al, 2009; Warwick Medical School, 2015). WEMWBS was chosen for this study because of its compact structure and already existing validated versions in English and in Finnish. The questionnaire was used in its validated form of 14 items without any changes made.

7.3.3 Physical Activity Motives

The motives for physical activity were measured with an adjusted version of Exercise Motivations Inventory 2 (EMI-2). The original version of Exercise Motivations Inventory (EMI) was developed in 1993 by Markland and Hardy to evaluate people’s participation motives in physical activity and exercise (Markland & Hardy, 1993). The items in EMI were developed to measure exercise motives from the perspective of self-determination theory by Deci and Ryan (Bangor University). In 1997, Markland and Ingledew adjusted the questionnaire to even better measure fitness-related and positive, health-related motives for exercise. They also improved the wording of the items to better include both, people who currently exercise and people who do not currently engage in physical activity. The new version, EMI-2 questionnaire includes 51 items from 14 different physical activity motives. They can be grouped into five main categories that are psychological motives, interpersonal

motives, health-related motives, body-related motives, and fitness-related motives. (Markland & Ingledew, 1997).

For the purposes of this research the EMI-2 was compared against some other physical activity motivation measurement tools such as Motives for Physical Activities Measure - Revised (MPAM-R) by Ryan, Frederick, Lepes, Rubio, and Sheldon (1997) and Physical Activity and Leisure Motivation Scale (PALMs) by Morris and Rogers (2004). EMI-2 was chosen over the other physical activity motives questionnaires since it had most comprehensive range (14) of physical activity motives, the wording of the items was compact but not monotonic and some existing translations to Finnish already existed.

Adjusting EMI-2. The EMI-2 questionnaire original language is English. However, some Finnish translations have been made earlier. Lampinen & Lappalainen (2013) translated the EMI-2 into Finnish for the purposes of their master's thesis data collection. Their version of the translation was used as a base for this study. Some adjustments were made to make the language more fluent and accurate to the original version. The adjustments to the translation were made with a help of fellow student who has two native languages, English and Finnish.

Since the interest of this study was to investigate especially nature-related physical activity motives' connection to mental wellbeing, it was necessary to discover a questionnaire that would also include items measuring nature-related physical activity motives. In the literature review only a few questionnaires that measure nature-related physical activity motives was found. The most relevant was the study by Calogiuri and Elliot (2017), Why Do People Exercise in Natural Environments? Norwegian Adults' Motives for Nature-, Gym-, and Sports-Based Exercise. In their study Calogiuri & Elliot investigated Norwegian adults physical activity motives with a questionnaire that included a motive "Nature experience". The strength of the Nature experience motive was measured with two items "to get fresh air" and to "to experience nature" (Calogiuri & Elliot, 2017). The full questionnaire about motives for physical activity used by Calogiuri & Elliot (2017) however, did not have as versatile motive categories as EMI-2. Thus, only the items referring to nature experience were taken from their study. Based on the research of Calogiuri and Elliot (2017), Attention Restoration Theory (Kaplan, 1995) and Stress Reduction Theory (Ulrich et al., 1991) physical activity motives category "Nature experience" was created with following five items:

- To experience nature and get fresh air

- To feel connected to nature
- Because exercising in nature gives me distance from daily stressors
- To see the beauty of nature
- Because I enjoy experiencing elements of nature while exercising

With altogether 56 items measuring physical activity motivations it was necessary to reduce the number of items to keep the questionnaire fairly short and motivating to answer for the respondents. The motive categories “Nimbleness” and “Ill-health avoidance” from EMI-2 were edited out since those categories were not considered important for the relatively young, student participants. In their master’s thesis Hurskainen (2017) also removed some categories from the EMI-2 questionnaire as they were considered irrelevant for their respondents. Markland (2014) as well as Hurskainen (2017) support this idea of removing some motive categories if they are not regarded important for the participant group.

After having a draft of the whole questionnaire: consent form, demographic features, physical activity habits, experienced mental wellbeing, physical activity motivations and thank you page with contact information for mental wellbeing support, the questionnaire was tested with two test users. They gave corrective feedback about the length of the last part of the actual questions, physical activity motivations. Thus, the motives of physical activity part was taken into another inspection. Since it was relevant for the study to keep multiple different motive categories in the questionnaire the only option was to remove some individual items (Appendix 2). Each item category was examined by the suitability for the respondent group and possible similarity in the items within the same category. At the same time the balance between the amount of items in motive categories was tried to maintain. After the re-evaluation physical activity motive items, the full questionnaire was sent for one more test user and the master’s thesis supervisor.

7.4 Data analysis

The data was analysed with SPSS version 29. First the data was prepared for further analysis. The mental wellbeing WEMWBS score was counted for each case by summing all the scores from 14 different items (Warwick Medical School, 2015). Physical activity motives variables were created by counting a mean from the items of different categories. Also, a sum of

physical activity was counted for each case by adding all different types of physical activities together. The sum of physical activity was explored by simple box plot and three cases with exceptionally high values (sum of PA \geq 30 hours) were excluded from the data.

Then linear regression analysis was run for 327 cases. The mental wellbeing score was set as the dependent variable, and four different independent variable models were tested. The first model included only the physical activity motive nature experience. This was set as the first model, since nature related physical activity motives are the particular interest of this study.

The second model included the physical activity motive nature experience, the distance from home to nature and the amount of leisure time physical activity. For the second model only the leisure time physical activity was added because leisure time physical activity has been reported to be more beneficial to mental wellbeing than other forms of physical activity (Cerin et al., 2009).

For the third model all other forms of physical activity were added, in addition to the variables that the second model included. The other forms of physical activity were active transportation to/from school or work, physical activity within school or work hours and necessary physical activity to take care of domestic animals. In the fourth model all twelve other physical activity motives were included in addition to all previously mentioned variables. This was done to investigate how other physical activity motives, in addition to nature experience, predict self-reported mental wellbeing.

8 RESULTS

8.1 The motives of University of Jyväskylä students to engage in physical activity

Of all 13 physical activity motives Positive Health ranked as the most important with mean 4,18 (table 2). In addition to the highest mean value Positive health had also the highest minimum value, which indicates that all respondents gave at least one of the Positive health items some value. The least important reason to engage in physical activity was Health pressure with the mean 0,79. Health pressure also had the lowest maximum value 4,67, whereas all other physical activity motives' maximum value was 5. This points out that none of the respondents experienced that all items related to Health pressure were fully true for them.

One noticeable value from this table is that in addition to Positive Health, Nature Experience minimum value was not zero. This proposes that all respondents experienced that at least one of the Nature Experience items were at least a bit true for them.

TABLE 2. Means of physical activity motives

PA Motive	N	Min.	Max.	Mean	Std. Deviation
Positive Health	327	0.33	5	4.18	0.94
Revitalisation	327	0	5	3.89	1.08
Stress Management	327	0	5	3.57	1.14
Fitness	327	0	5	3.43	1.31
Enjoyment	327	0	5	3.28	1.35
Nature Experience	327	0.2	5	3.25	1.20
Challenge	327	0	5	2.54	1.48
Appearance	327	0	5	2.35	1.22
Weight Management	327	0	5	2.17	1.48
Affiliation	327	0	5	2.00	1.32
Competition	327	0	5	1.52	1.63
Social Recognition	327	0	5	1.31	1.10
Health Pressure	327	0	4.67	0.79	0.93
Valid N (listwise)	327				

8.2 Predicting self-reported mental wellbeing with regression models

Four different models were created, and linear regression analysis was run. Model summary (table 3) describes that in model 1 physical activity motive nature experience can only explain 3.8% of the variation of the sum of mental wellbeing value. There is not much increase in the models' ability to predict the self-reported mental wellbeing when 'distance from home to nature', 'leisure-time physical activity', 'active transportation', 'physical activity during school or work time' and 'physical activity with a pet' are added to the models. Model 2 can explain 4.5% and model 3 5.2% of the variation of self-reported mental wellbeing. The biggest increase in the models' ability to predict self-reported mental wellbeing happens when all other 12 physical activity motives are added to the model. Model 4 can predict 14.6% of the variation of self-reported mental wellbeing. The Durbin-Watson statistic value 1.758 indicates a slight positive autocorrelation, however it is close enough to 2 so there is no need to reject the regression model (Field, 2009).

TABLE 3. Regression Analysis Model Summary

Model	R	Model Summary								
		R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change	Durbin-Watson
						F Change	df1	df2		
1	.201 ^a	.040	.038	6.80	.040	13.71	1	325	<.001	
2	.232 ^b	.054	.045	6.78	.013	2.28	2	323	.104	
3	.264 ^c	.070	.052	6.75	.016	1.83	3	320	.142	
4	.440 ^d	.194	.146	6.41	.124	3.94	12	308	<.001	1.758

a. Predictors:(Constant), PA Motive Nature Experience

b. Predictors:(Constant), PA Motive Nature Experience, Distance from home to nature, Leisure-time PA

c. Predictors:(Constant), PA Motive Nature Experience, Distance from home to nature, Leisure-time PA, Active transportation to/from school/work, PA in school/work, PA with pet

d. Predictors:(Constant), PA Motive Nature Experience, Distance from home to nature, Leisure-time PA, Active transportation to/from school/work, PA in school/work, PA with pet, PA Motive Weight Management, PA Motive Health Pressure, PA Motive Affiliation, PA Motive Positive Health, PA Motive Social Recognition, PA Motive Stress Management, PA Motive Competition, PA Motive Fitness, PA Motive Appearance, PA Motive Challenge, PA Motive Revitalization, PA Motive Enjoyment

All the models, including the model 4 ($F(326, 18) = 4.109; p < .001$) which is the best model to predict self-reported mental wellbeing, fit well to the data. The descriptions of the different parameters in each regression model can be seen in table 4, the Coefficients. Since the first three models are not very good at predicting the dependent variable, most interesting parameters are picked only from model 4. The predictors that have significant ($p < 0,05$) contribution to the model are physical activity motives: nature experience ($\beta = 0.143, p = 0.022$), revitalization ($\beta = 0.346, p < 0.01$) affiliation ($\beta = 0.14, p = 0.026$) and weight management ($\beta = - 0.139, p = 0.037$) Also, physical activity in school or work is a significant contributor ($\beta = 0.113, p = 0,033$) to model 4.

Physical activity motives nature experience, revitalization, and affiliation as well as physical activity performed at school or work have a positive relationship with dependent variable self-reported mental wellbeing. However physical activity motive weight management is significant contribution to the model 4 but is had negative relationship with self-reported mental wellbeing.

The collinearity statistics show that no problems with multicollinearity exists. The tolerance and VIF values in each parameter of model 4 are within the range of general guidelines (Field, 2009).

TABLE 4: Model 4 descriptions of the parameters

		Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coeff. Beta	t	Sig.	Collinearity Statistics	
		B	Std. Error				Tolerance	VIF
1	(Constant)	46.628	1.088		42.872	<.001		
	PAM_NatureExp	1.161	.314	.201	3.703	<.001	1.000	1.000
2	(Constant)	45.186	1.570		28.783	<.001		
	PAM_NatureExp	1.242	.316	.215	3.934	<.001	.979	1.022
	Distance from home to nature	.014	.647	.001	.022	.982	.984	1.017
	Leisure-time PA	.226	.106	.116	2.125	.034	.978	1.022
3	(Constant)	44.276	1.647		26.880	<.001		
	PAM_NatureExp	1.297	.318	.225	4.080	<.001	.959	1.043
	Distance from home to nature	.034	.648	.003	.052	.958	.971	1.030
	Leisure-time PA	.216	.107	.111	2.026	.044	.964	1.037
	Act. transp. to/from school/work	.172	.190	.049	.905	.366	.995	1.005
	PA in school/work	.482	.230	.114	2.097	.037	.987	1.013
	PA with a pet	-.017	.129	-.007	-.132	.895	.955	1.047
4	(Constant)	42.181	2.108		20.012	<.001		
	PAM_NatureExp	.823	.358	.143	2.297	.022*	.680	1.472
	Distance from home to nature	-.372	.623	-.031	-.596	.551	.945	1.058
	Leisure-time PA	-.032	.125	-.017	-.257	.798	.629	1.591
	Act. transp. to/from school/work	.220	.184	.063	1.197	.232	.954	1.048
	PA in school/work	.478	.224	.113	2.137	.033*	.939	1.065
	PA with a pet	-.050	.124	-.022	-.407	.684	.929	1.076
	PAM_Stress Management	-.645	.498	-.106	-1.296	.196	.390	2.562
	PAM_Revitalisation	2.233	.661	.346	3.377	<.001*	.249	4.015
	PAM_Enjoyment	.014	.565	.003	.024	.981	.217	4.609
	PAM_Challenge	.636	.413	.136	1.540	.125	.335	2.989
	PAM_Social Recognition	-.875	.466	-.139	-1.879	.061	.476	2.102
	PAM_Affiliation	.740	.332	.140	2.232	.026*	.661	1.512
	PAM_Competition	-.195	.332	-.046	-.587	.558	.431	2.319
	PAM_Health Pressure	-.007	.419	-.001	-.018	.986	.831	1.203
	PAM_Positive Health	-.374	.614	-.051	-.609	.543	.378	2.643
	PAM_Strength Endurance	-.201	.437	-.038	-.461	.645	.382	2.619
	PAM_Weight Management	-.648	.309	-.139	-2.099	.037*	.601	1.663
	PAM_Appearance	.420	.468	.074	.896	.371	.385	2.598

a. Dependent Variable: Sum Mental Wellbeing, * significant predictor for the model 4

9 DISCUSSION

9.1 Main findings

The first goal of this master's thesis was to investigate what are the motives of University of Jyväskylä students to engage in physical activity and to figure out how much certain physical activity motives can predict self-reported mental wellbeing.

The results show that three most important motives for the University of Jyväskylä students to engage in physical activity are positive health ($M = 4.18$, $SD = 0.94$), revitalization ($M = 3.89$, $SD = 1.08$) and stress management ($M = 3.57$, $SD = 1.14$). On the other hand, the three least important reasons to engage in physical activity are competition ($M = 1.53$, $SD = 1.63$), social recognition ($M = 1.31$, $SD = 1.10$) and health pressure ($M = 0.79$, $SD = 0.93$).

Some previous studies have found similar results regarding the most important and least important physical activity motivations. Egli and others (2011) studied the physical activity motives of US college students with EMI-2 questionnaire. They state that positive health was the most popular physical activity motive ($M = 3.86$, $SD = 1.03$) and that health pressure was the least important physical activity motive ($M = 1.950$, $SD = 1.33$). Also, social recognition was ranked second to last ($M = 2.37$, $SD = 1.32$) and competition ($M = 2.79$, $SD = 1.51$) the fourth least important reason to engage in physical activity. Roberts, Reeves, and Ryrle (2015) studied UK-based university students' motivations for leisure time physical activity. They were particularly interested in the differences of different age and gender groups motivations. However, their overall sample shows that most popular reason to perform leisure time physical activity for both genders was positive health ($M = 2.95$, $SD = 0.85$) and least preferred reason to engage in physical activity was health pressure ($M = 0.87$, $SD = 0.85$).

The results of this master's thesis are not completely comparable to the studies of Egli's and others (2011), and Reeves and others (2015) because in this master's thesis the EMI-2 questionnaire was adjusted. Whereas Egli and others (2011) and Reeves and others (2015) used the original EMI-2 questionnaire. Also, the participants age was different, for example only 17.1% of the participants in this master's thesis were 18-21 years whereas, 63.8% were under 20 years in Egli's and others research. Anyhow, we can conclude that regardless of the alterations to EMI-2 in this sample, the most and least important motives of University of

Jyväskylä students to engage in physical activity are similar than in other studies concerning the physical activity motives of students.

Previous studies show that different physical activity motives have different effects on peoples' experiences about their mental health (Doré et al., 2022). Thus, the second aim of this study was to analyze whether certain physical activity motives that University of Jyväskylä students have, can predict their self-reported mental wellbeing. The regression model that includes all different physical activity motives, amount of physical activity and distance from home to nature was found to predict experienced mental wellbeing better than regression models including only the amount of physical activity, distance from home to nature and one physical activity motive, nature experience. This information indicates that physical activity motives can explain some of the changes in self-reported mental wellbeing. In the model that best predicts self-reported mental wellbeing, significant positive contributors were physical activity motives: nature experience, revitalization, and affiliation.

The positive connection between nature related physical activity motives and self-reported mental wellbeing is interesting since this connection has not been researched before. It is likely that experiencing nature related physical activity motives results in more physical activity accomplished in nature (Calogiuri & Elliot, 2017). This would further confirm that combining nature exposure and physical activity can be very beneficial for individuals' mental wellbeing (Pretty et al., 2005). Calogiuri and Elliot (2017) state that people often report that they exercise in nature because it is convenient. It is possible that one of the psychological basic needs, autonomy (Ryan & Deci, 2000), is fulfilled better, when people can engage in physical activity in nature according to their own schedule and without commands from instructor. Previous studies show that if physical activity motives support autonomous motivation, they may have positive impacts on individual's affective wellbeing (White et al., 2018).

Revitalization was found to be another significant positive contributor to the regression model that could predict small part of the self-reported mental wellbeing. Previous studies have found that psychological physical activity motives in EMI-2 questionnaire, that are stress management, revitalization, and enjoyment, are usually some of the top reasons to engage in physical activity (Egli et al., 2011; Rodrigues et al., 2022). Thus, it is natural that some of

these motives are significant contributors to the model that predict self-reported mental wellbeing.

It may have been interesting to also investigate whether nature experience and revitalization were connected to each other in the data of this research. In the theories that explain nature's beneficial effects on mental wellbeing, aspects of recovery and revitalization are important. ART describes how experiencing nature recovers individual's cognitive processes (Kaplan, 1995) and SRT explains that nature recovers person's emotional states (Ulrich, 1983).

Physical activity motives related to social reasons have been found to predict mental health directly and positively (Doré et al., 2022). The results of this master's thesis confirm the previous findings. The results show that affiliation, feeling connected to others, as a motive for physical activity, positively contributes to self-reported mental wellbeing. This result is also well aligned with the principals of self-determination theory. Feeling connected to other people is a psychological basic need that has to be met for person to experience wellbeing. (Ryan & Deci, 2000).

Appearance and weight management are categorized as body related physical activity motives in EMI-2 questionnaire (Markland & Ingledew, 1997). In the best regression model of this research, weight management was the only physical activity motivation to significantly, negatively, contribute to self-reported mental wellbeing. This information aligns well with previous studies, since physical activity motivations that express the willingness to change one's appearance are often connected to controlled motivation (Doré et al., 2022). Frederick and Ryan (1993) state that body-related motivations to perform physical activity, are associated with lower self-esteem and higher probability of anxiety and depression symptoms (Frederik & Ryan, 1993). However, body-related physical activity motivaties can also lead to more regular participation to exercise, which can positively affect on mental wellbeing (Frederik & Ryan, 1993).

9.2 Strengths and limitations

One main strength of this study was the satisfactory sample size of 330. This amount results in about 2,2% of the University of Jyväskylä students' population. For the purposes of

master's thesis this self-collected sample meets the required level. However, further refining and shortening the questionnaire, may have resulted in even more responses.

Second strength is the structure and contents of the questionnaire form. Most important parts of the questionnaire: mental wellbeing and physical activity motivations, relied on well-known and widely used questionnaires. The physical activity motivations questionnaire EMI-2 was adjusted since Markland (2014) one of creators of the questionnaire, confirms that some motivation categories can be removed from the questionnaire if they are not important for the participant group. The motivation nature experience was carefully considered based on existing theories and then added to the questionnaire. It can be considered that the questionnaire form of this research is a reliable way to measure the most important physical activity motivations of the respondents and their experienced motivations connection to self-reported mental wellbeing.

Previously Doré and others (2022) conducted a study about physical activity motivations and their connection to mental wellbeing. Their data collection questionnaires were also widely used questionnaires which use likert scale. They analyzed the connection between physical activity motivations and mental wellbeing with regression analysis. Thus, the chosen data analysis method seems to be a reliable way to analyze connection between physical activity motivations and self-reported mental wellbeing. However, the narrow use of data and not comparing different demographic groups motives to each other leave the results of this study shallow.

One limitation of this study relates to the recruitment of the participants. Since the participants were recruited through email and voluntary participation, it is likely that only people who are interested in physical activity and mental wellbeing participated. Also, it is likely that the people who answered are experiencing such good mental wellbeing that they have energy and capability to answer. This means that the results of this study are not valid concerning all students in University of Jyväskylä or students in Finland.

Another possible limitation is the timing of the data collection. In Finland different times of the year create different challenges to people's mental wellbeing. Data collection in April-May, near the time that students summer holidays begin, can give very different results than data collected in mid-winter during the darker season.

Limitations also exist in the interpretation of the data analysis. The data analysis skills of the researcher are very limited and thus only very basics of the results are analysed.

9.3 Suggestions for the future

It seems that research topics related to mental health and nature are getting more popular. It would be interesting to use the data from this research in a more diverse way. The data collected for this master's thesis could give more scientific value, if the differences in physical activity motives between different demographic groups would be compared. It could also be interesting to find out whether people who are physically more active than others, experience different physical activity motives in different order of importance. Since one third of Finnish students have challenges with mental health, understanding their physical activity habits and motivations for physical activity should be a topic of further research.

Also investigating the role of nature experience as a physical activity motive is recommended, because more and more people are living and performing exercise in urban environments. If the evidence is strong enough, it could lead to political decisions that favor nature conservation for example in community planning and planning of residential buildings.

9.4 Conclusion

Previous research (Doré et al., 2022; Frederik & Ryan, 1993; White et al., 2018) and the results found in this master's thesis suggest that in planning physical activity settings and interventions and their advertising, it is important to understand different physical activity motivations effects on mental wellbeing. It is more recommended to attract people to engage in physical activity for health reason, social aspects and psychological reasons since these reasons are more likely to compliment autonomous motivation. The autonomous forms of motivation are more likely to result in stronger intentions and engagement towards physical activity as well as better mental wellbeing while engaging physical activity (Hagger & Chatzisarantis, 2008). All in all, physical activity motivations that represent autonomous forms of motivation are more likely to predict better mental wellbeing. (Doré er at., 2022; White et al., 2018). Emphasizing nature experience as a motivation for physical activity is important, since strong evidence base suggest that spending time and exercising in nature has multiple positive effects on human health (Hartig et al., 2014; de Vries et al., 2003; Abraham,

Sommerhalder & Abel, 2010). Especially in urban environments, it would be important to familiarize children and young to engage in physical activity in nature or natural settings. This way, they could notice or learn that going to nature or natural setting can inspire them to engage in physical activity.

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APPENDIX 1. The questionnaire form

1. Introduction and consent form

Hi! I am a degree student in University of Jyväskylä. I study the Master's Degree Programme in Psychology of Physical Activity, Health and Wellbeing. The aim of this questionnaire is to collect data for my master's thesis. Thank you for participating!

Questionnaire is anonymous. It is targeted for University of Jyväskylä students, and it contains questions about your:

- demographic features
- physical activity
- experienced mental wellbeing
- motives for physical activity

By answering these questions, you may become more aware of the state of your mental wellbeing. Information about support for mental wellbeing is provided at the end of the questionnaire.

Answering takes about 7-10 minutes.

- I have read and understood the provided information above
- I understand that I am participating voluntarily, and I can stop answering at any time of the questionnaire if I wish to

2. Demographic Features

Gender

- Female
- Male
- Other
- I don't want to answer

Age: 18-21,22-25, 26-29, 30-33, 34-37, 38-41, 42-45, above 45

Faculty I study in JYU:

Faculty of Humanities and Social Sciences

Faculty of Information Technology

Jyväskylä University School of Business and Economics

Faculty of Education and Psychology

Faculty of Sports and Health Sciences

Faculty of Mathematics and Science

I study

- Full time
- Part time

I work

- Full time
- Part time
- Not working

The distance to nearest location of nature (park, paths surrounded by greenery, forest, lake, or other natural spaces) **from my home is**

- less than 0,5km
- 0,6 – 1km
- 1,1 – 2 km
- more than 2 km

3. Physical activity

Physical activity is an activity that increases your heart rate, makes you get out of breath some of the time and can make you sweat. Some examples of physical activity are brisk walking, running, biking, dancing, skateboarding, swimming, basketball, and football.

For how much time (hours and minutes) through the course of a regular week, do you engage in activities that increase your breathing or make you sweat?

How much of this time was approximately spent undertaking following activities

- Leisure activities:
- Active transport to/from work or school:
- Physical activity within school or work hours:
- Necessary activities to take out dog or other domestic animal:

4. Mental wellbeing

Below you find sentences about thoughts and emotions. Please tick the box that best describes your experience of each item over the last 2 weeks.

	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future					
I've been feeling useful					
I've been feeling relaxed					
I've been feeling interested in other people					
I've had energy to spare					
I've been dealing with problems well					
I've been thinking clearly					
I've been feeling good about myself					
I've been feeling close to other people					
I've been feeling confident					
I've been able to make up my own mind about things					
I've been feeling loved					
I've been interested in new things					
I've been feeling cheerful					

5. Physical activity motivations

Below you can find statements concerning reasons why people might exercise. **Please read each statement carefully and choose the box that best describes you.** Remember we want to know why you personally choose to exercise or might choose to exercise, not whether you think the statements are good reasons for anybody to exercise.

Personally, I exercise (or might exercise)...

0 = Not at all true for me

5= Very true for me

	0	1	2	3	4	5
Because it makes me feel good						
To experience nature and get fresh air						
To help me look younger						
To show my worth to others						
To give me space to think						
To have a healthy body						
To build up my strength						
Because I enjoy the feeling of exerting myself						
To spend time with friends						
Because my doctor advised me to exercise						
Because I like trying to win in physical activities						
To feel connected to nature						
To give me goals to work towards						
To lose weight						
Because I find exercise invigorating						
Because it helps to reduce tension						
Because I find exercising satisfying in and of itself						
Because exercising in nature gives me distance from daily stressors						
To have a good body						
To compare my abilities with other peoples'						
Because I want to maintain good health						
To increase my endurance						
To enjoy the social aspects of exercising						
To help prevent an illness that runs in my family						
Because I enjoy competing						
To see the beauty of nature						
To help control my weight						
To recharge my batteries						
To gain recognition for my accomplishments						
To help manage stress						

To feel more healthy						
To get stronger						
Because I enjoy experiencing elements of nature while exercising						
To help recover from an illness/injury						
To develop personal skills						
Because exercise helps me to burn calories						
To look more attractive						
To develop my muscles						
Because I feel at my best when exercising						
To make new friends						
Because I find physical activities fun, especially when competition is involved						
To measure myself against personal standards						

6. Conclusion

Thank you for participating!

If you need advice or support related to your own (or somebody else's) mental wellbeing, please refer to the contacts below:

Mieli Ry: <https://mieli.fi/en/>

Mieli Ry Crisis Helpline: +358 9 2525 0116

FSHS: Finnish Student Health Service → <https://www.yths.fi/en/frontpage/>

JYU Student Compass is a well-being and life-skills program offering practical tools for enhancing psychological and emotional wellbeing, addressing motivation challenges, adjustment, stress-related issues, and promoting overall well-being →

<https://ok.jyu.fi/en/landing>

APPENDIX 2.

Adjusting the original EMI-2: original and removed items with reasoning

Psychological physical activity motives

Stress Management

- 6. To give me space to think
- 20. Because it helps to reduce tension
- 34. To help manage stress
- ~~46. To release tension~~ → Similarity to item 20.

Revitalisation

- 3. Because it makes me feel good
- 17. Because I find exercise invigorating
- 31. To recharge my batteries

Enjoyment

- 9. Because I enjoy the feeling of exerting myself
- 23. Because I find exercising satisfying in and of itself
- ~~37. For enjoyment of the experience of exercising~~ → Complicated wording & translation into Finnish
- 48. Because I feel at my best when exercising

Challenge

- 14. To give me goals to work towards
- ~~28. To give me personal challenges to face~~ → Similarity to item 14. & complicated translation into Finnish
- 42. To develop personal skills
- 51. To measure myself against personal standards

Interpersonal motives

Social Recognition

- 5. To show my worth to others
- 19. To compare my abilities with other peoples'
- 33. To gain recognition for my accomplishments
- ~~45. To accomplish things that others are incapable of~~ → Somewhat similar to item 19.

Affiliation

- 10. To spend time with friends
- 24. To enjoy the social aspects of exercising
- ~~38. To have fun being active with other people~~ → Challenging wording & translation into Finnish
- 49. To make new friends

Competition

- 12. Because I like trying to win in physical activities
- 26. Because I enjoy competing
- ~~40. Because I enjoy physical competition~~ → Similarity to item 26.
- 50. Because I find physical activities fun, especially when competition is involved

Health-related motives

Health Pressure

- 11. Because my doctor advised me to exercise
- 25. To help prevent an illness that runs in my family
- 39. To help recover from an illness/injury

~~III Health Avoidance~~ → Category somewhat not relevant to target group

- ~~2. To avoid ill health~~
- ~~16. To prevent health problems~~
- ~~30. To avoid heart disease~~

Positive Health

- 7. To have a healthy body
- 21. Because I want to maintain good health
- 35. To feel more healthy

Body-related motives

Weight Management

- ~~1. To stay slim~~ → Assumption about respondents' body
- 15. To lose weight
- 29. To help control my weight
- 43. Because exercise helps me to burn calories

Appearance

- 4. To help me look younger

18. To have a good body

~~32. To improve my appearance~~ → Similarity to item 44.

44. To look more attractive

Fitness-relates motives

Strength & Endurance

8. To build up my strength

22. To increase my endurance

36. To get stronger

47. To develop my muscles

~~Nimbleness~~ → Category somewhat not relevant to target group

~~13. To stay/become more agile~~

~~27. To maintain flexibility~~

~~41. To stay/become flexible~~