



**The University of Rome “Foro Italico”
The German Sport University, Cologne
The University of Southern Denmark, Odense
The Norwegian School of Sport Sciences, Oslo
The University of Vienna**

**European Master in Health and Physical Activity
(Laurea Magistrale Internazionale in Attività Fisica e Salute) LM 67- I
(30 ECTS)**

**“The relationship between
physical activity and
health related quality of life
among people with mental
disorders”**

Beate Osgjerd Rekve

**Beate Osgjerd Rekve
Candidate**

Marit Sørensen

**Marit Sørensen
Supervisor**

Academic Year 2013-2015

Abstract

Background: Mental disorders are among the largest public health issues globally and the prevalence is growing. Physical inactivity is increasing worldwide and people with mental disorders are often less physically active compared to the general population despite the known health benefits of physical activity. Mental disorders and reduced physical activity level can further negatively influence the Health Related Quality of Life (HRQOL). Existing research support the positive relationship between physical activity and various components of HRQOL among the general population as well as among individuals with mental disorders, however, more research is needed.

Objective: To examine the relationship between physical activity and various components of HRQOL among people with mental disorders from a Fountain House.

Method: Data was obtained from a cross-sectional survey. All active members from one Fountain House in Norway were asked to participate in the study. Physical activity was measured with the IPAQ-short, Leisure time physical activity (LPA) and Stages of change for physical activity questionnaires. The SF-12 Version 2.0 was used to measure the HRQOL. The statistical analyses conducted were the Chi-square test, independent T-test, one way ANOVA, Pearson's correlation, and Multivariate regression.

Results: A total of 87 participants (20-70+years) from one Fountain House in Norway were included in this study. Significant associations between all the physical activity measures and the Physical Component Summary (PCS) were found. Physical activity could explain 27 % of the variance in the PCS. The IPAQ was the physical activity measure with the highest association to the HRQOL, and the only measure that could explain a significant variance in the PCS. The Mental Component summary (MCS) had no significant association with any of the physical activity measures.

Conclusion: The positive relationship between physical activity and HRQOL is confirmed in this study. However the findings have limited clinical significance. Therefore more research is needed and the causality and other unresolved issues.

Acknowledgements

My bachelor degree in the program “Physical activity and health” gave me new insight how physical activity, social integration and outdoor life can be related to health and well being. Integrated in the study was a course in mental health, physical activity and outdoor life, which increased my interest within the field. Being a master student in the program ”European master in health and physical activity” has reinforced my interest within this field. Access to professors from all over Europe has provided knowledge from different perspectives, and discussion with professors and colleagues have increased my knowledge and perspective. As well the internships in Cologne and Denmark as the year in Rome have provided me great experiences and new friendships. I have achieved personal growth and learned a lot about myself and about other cultures. The period of writing my thesis has been challenging and exciting. It has given me the opportunity to examine a topic that I find very interesting, and have increased my interest for the topic even more.

First of all I would like to thank all the participants for taking time answering the questionnaires. Without them this thesis would be impossible to carry out.

I would like to thank my supervisor, Professor Marit Sørensen, for providing guidance and constructive feedback trough the process and for opening up the opportunity to work within this field.

Professor Yngvar Ommundsen, thank you for help with analysis and statistics, and also for guidance and support through the whole process.

My family and friends, thank you so much for giving me a helping hand, motivation and support whenever needed. A special thanks to my boyfriend, Jon, for help and motivation throughout the whole process and cheering me up when it was most needed.

Abbreviations

QOL	Quality of Life
HRQOL	Health Related Quality of Life
IPAQ	International Physical Activity Questionnaire
MET	Metabolic Equivalent of Task
LPA	Leisure time Physical Activity
PCS	Physical Component Summary
MCS	Mental Component Summary

List of tables

Table 1: <i>Descriptive data. The distribution of age, gender, marital status, housing and mental disorders in the sample (n=87).</i>	36
Table 2: <i>The mean HRQOL from the PCS and MCS and the physical activity level from the physical activity measures.</i>	38
Table 3: <i>The associations between the different physical activity measures and the two HRQOL summary scores.</i>	39
Table 4: <i>Summary of Multiple Regression Analyses for IPAQ (MET- minutes per week walking+ moderate physical activity), LPA (winter and summer) and stages of change predicting the Physical Component Summary score(PCS) of HRQOL.</i>	40

Table of contents

Abstract	1
Acknowledgements	2
Abbreviations	3
List of tables	4
1.0 Introduction	8
1.1 The overall aim of the study	9
1.2 Conceptual clarifications	10
1.3 Structure of the thesis.....	10
2. 0 Theoretical background	11
2.1 Mental disorder.....	11
2.1.1 Definitions of mental disorder	11
2.1.2 Characteristics of mental disorders.....	11
2.1.3 Diagnosing mental disorders.....	12
2.1.4 Prevalence of mental disorders	12
2.1.5 Risk factors and prevention of mental disorders.....	13
2.1.6 Treatment and services for people with mental disorders	13
2.2 Physical activity	14
2.2.1 Definitions of physical activity.....	14
2.2.2 Physical activity recommendations.....	15
2.2.3 Physical activity and mental disorders.....	16
2.3 Quality of life (QOL)	17
2.3.1 Defining QOL	18
2.3.2 Health related quality of life (HRQOL).....	19
2.3.3 Research on HRQOL	20
2.4 The relationship between physical activity and HRQOL in the general population ..	21
2.5 The relationship between physical activity and HRQOL in the population with mental disorders	22
2.6 The relationship between physical activity and HRQOL in members of a Fountain House	23

2.7 The current study	24
Aims of the study	25
3.0 Method	26
3.1 Design	26
3.2 Sample	26
3.3 Designing the questionnaire	27
3.4 Measuring instruments	28
3.4.1 Measures for physical activity level	28
3.4.2 Measures for Health Related Quality of Life (HRQOL)	31
3.4.3 Descriptive background	32
3.6 Procedure	33
3.7 Statistical analyses	34
3.8 Ethics	34
4.0 Results	36
4.1 Descriptive statistics of the sample	36
Levels of physical activity and HRQOL.....	37
4.2 The association between physical activity and HRQOL	39
4.3 The relative importance of physical activity variables in explaining the variation in HRQOL	40
5.0 Discussion	41
5.1 The association between physical activity and HRQOL	41
5.2 The relative importance of physical activity variables in explaining the variation in HRQOL	42
5.3 Possible explanations for the relationship between physical activity and HRQOL ...	43
5.3.1 The research design.....	43
5.3.2 Health factors	43
5.3.3 The sample	44
5.3.4 Measures	45
5.3.5 Physical activity	46
5.3.6 Health related quality of life (HRQOL).....	47
5.3.7 Other factors.....	48
5.5 Methodological considerations	49

5.6 Summary and suggestions for further research	51
6.0 Conclusion	54
References.....	55
Appendix.....	64

1.0 Introduction

Mental disorders are among the largest public health issues globally and the prevalence is growing (World Health Organisation (WHO), 2014). The risk of mortality and morbidity from chronic physical diseases, such as cardiovascular diseases, is higher among the population with mental disorders compared to the rest of the general population (Bingham, 2009; Kilbourne, Morden, Austin, Ilgen, McCarthy, Dalack, Blow, 2009; Roshanaei-Moghaddam & Katon, 2009). Unhealthy lifestyles, sedentary behaviour and adverse effects from medications are often related to mental disorders and can lead to higher risks of mortality and morbidity (Roshanaei-Moghaddam & Katon, 2009). Persons with physical diseases or injuries also have an increased possibility for additional mental disorders (Martinsen, 2004; Rickhardson, Faulkner, McDevitt, Skrinar, Hutchinson & Piette, 2005).

Globally, especially in highly developed countries, the overall physical activity level of the population is decreasing despite the well known health benefits of physical activity (WHO, 2010; 2015). Insufficient physical activity can increase the risk for morbidity (WHO, 2015), and the fourth major risk factor for premature mortality is suggested to be physical inactivity (WHO, 2010). People with mental disorders are often less physically active compared to the general population (Daumit et al., 2005; Schmitz, Kruse & Krugler, 2004; Sosial- og helsedirektoratet, 2000). The prevalence and risk of developing mental disorders are also higher among people who are less physically active, or inactive, than people who are more physically active (Faulkner & Carless, 2006; Kjellman, Martinsen, Taube & Andersson, 2008; Martinsen & Taube, 2009a; 2009b; Prochazka, Bu & Martinsen, 2009; Sosial- og helsedirektoratet, 2000; Wiles, Haase, Gallacher, Lawlor & Dewis, 2007). Mental disorders and reduced physical activity level can further negatively influence the Health Related Quality of Life (HRQOL), a measure on well-being and health (Schmitz et al., 2004) (see chapter 1.1 and 2.3.2).

Medical health care systems have for decades treated the body (physical health) separately from the mind (mental health), even though there is increasing knowledge and strengthened understanding of the interconnection between these two for the overall treatment of health (Bingham, 2009). The treatments of mental disorders are often psychiatric therapy, medications or a combination of both (Martinsen, 2004). However, the current global health care system are

inadequate with treating everyone with mental disorders due to the high cost of such treatments and the high prevalence of mental disorders (Martinsen, 2004; WHO, 2014). Alternative ways of handling the prevalence of mental disorders and improving people's HRQOL needs more research, which makes a study on the relationship between physical activity and HRQOL among people with mental disorders relevant.

An extensive literature search was conducted on the field. Existing research support the positive relationship between physical activity and the various components of HRQOL for the population in general (Bize, Johnson & Plotinkoff, 2007; Brown, Balluz, Heath, Moriarty, Ford, Giles & Mokdad, 2003; Laforge, Rossi, Prochaska, Velicer, Leversgue & McHorney, 1999; Rejeski, Brawley & Shumaker, 1996; Shibata, Oka, Nakamura, Muraoka, 2007; Tessier et al., 2007; Vuillemin et al., 2005; Wendel-Vos, Schuit, Tijhuis, Kromhout, 2004). This is also supported in available research on individuals with mental disorders (Alexandratos, Barnett & Thomas, 2012; Pelletier, Nguyen, Bradley, Johnsen & McKay, 2005; Rosenbaum, Tiedemann, Sherrington, Curtis & Ward, 2014; Schmitz et al., 2004). However, most of the research has been examining the physical activity and HRQOL on populations with chronic diseases, the elderly or other specific population groups (Rejeski et al., 1996). There is a need for more research and evidence on the physical and mental health components of HRQOL related to physical activity, and the use of physical activity for promoting HRQOL in groups of the population with mental disorders (Martinsen & Taube 2009a, 2009b; Fox, Boutcher, Faulkner & Biddle, 2000; Penedo & Dahn, 2005).

1.1 The overall aim of the study

Due to the need for more knowledge in this area, the overall aim of this study was:

To examine the relationship between physical activity and various components of HRQOL among people with mental disorders from a Fountain House. This group of the population are assumed to be different compared to the rest or the people with mental disorders due to their membership of a "working community" (see 2.6), and is therefore interesting to examine further. The specific aims of this study will be presented in 2.7.

1.2 Conceptual clarifications

To clarify the use of certain terms to be explored in this thesis, the following terms and definitions are briefly outlined below.

Term	Definition
Mental disorder	<i>“... a syndrome characterized by clinically significant disturbance in an individual’s cognition, emotion regulation, or behaviour that reflects a dysfunction in the psychological, biological, or developmental process underlying mental functioning. Mental disorders are usually associated with significant distress or disability in social, occupational, or other important activities.”</i> (American Psychiatric Association, 2013, p.20). Norwegian literature commonly uses the term <i>“psykiske lidelser”</i> in line with this definition.
Physical activity	<i>“...any bodily movement produced by skeletal muscles that result in energy expenditure”</i> (Caspersen, Powell & Christenson, 1985, p.126).
Quality of life (QOL)	<i>“..an individuals’ perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns”</i> (WHO, 1997, p.1).
Health Related Quality of Life (HRQOL)	<i>“...those aspects of overall quality of life that can be clearly shown to affect health- either physical or mental”</i> (Centers for Disease Control, 2000, p.6).
Fountain House	A “working community” for people with mental disorders. The term “working community” describes the practice in recovery and the framework of a contemporary, therapeutic intervention for people with mental disorders (Clubhouse International, 2015a).

1.3 Structure of the thesis

The thesis is divided into five parts. First, to build a theoretical background and to emphasize the aims of the study, relevant existing research will be presented followed by the aims of the study. Further, chapter 3 will present the choice of methodology and research design, and the results will be presented in chapter 4. In chapter 5, the results will be discussed in relation to relevant existing research. Finally the conclusion will be presented.

2.0 Theoretical background

Physical activity and its relationship with HRQOL will be discussed in this thesis. These terms will be presented in this chapter followed by an overview of some of the existing knowledge and gaps in research.

2.1 Mental disorder

This thesis are examining individuals with mental disorders in Norway. Mental disorder will be defined to further explain background information concerning people with mental disorder.

2.1.1 Definitions of mental disorder

Mental disorder has many different definitions, such as; distress, dyscontrol, disadvantage and disability. The definition of mental disorders however, depends on the situation (American Psychiatric Association, 2013). “Psychiatric disorder”, “mental health problems”, “mental disorders”, “mental illness” and “poor mental health” are used interchangeably and can be understood as the same terms. The term “mental disorder” will be used in this thesis as most relevant research have used this term and this definition encompass the mental disorders examined. The most recent definition of mental disorder, published by the Diagnostic and Statistical Manual of Mental disorders fifth edition (DSM-5), which can be found in chapter 1.1, is a revision and a new version of the definition from DSM-IV (American Psychiatric Association, 2013). This definition is similar to the definition by ‘International Classification of Disease and Related Health Problems’ (ICD-10) (WHO, 1992), and can therefore be comparable. However the latter definition does not completely separate normal and pathological symptom expression because it lacks clinically useful measurements of severity and clear biological markers (American Psychiatric Association, 2013). Therefore the definition by DSM-5 will be in focus in this thesis.

2.1.2 Characteristics of mental disorders

Mental disorders can often be associated with passivity, lack of initiative, loneliness and socially isolation. Furthermore, an unhealthy lifestyle, with inactivity and poor diet, and a lack of motivation for physical activity can also be typical characteristics (American psychiatric association, 2013). Individuals with mental disorders do often take medications which can cause

problems in combination with physical activity. These characteristics might be associated with their reduced HRQOL. However, the characteristics and symptoms of the different mental disorders are varying (American Psychiatric Association, 2013). The individual experience of the disorders also varies to a large extent among individuals with different mental disorders and also among individuals with the same mental disorder (Mental health conditions, n.d).

2.1.3 Diagnosing mental disorders

The ICD- 10 is one of the most used classification tools for mental disorders in Europe (WHO, 1992). This is similar and can be compared to the DSM-5, used in America and the rest of the world. The DSM-5 is a classification system which categorizes the populations' mental disorders. This is an overview of statistics, the causes of the disorders and research concerning the optimal treatment approaches, and it provides an improved understanding of the mental disorders and the treatment of the mental disorders (American Psychiatric Association, 2013). Depressive disorders, anxiety disorders, eating disorders, schizophrenia spectrum and other psychotic disorders are some examples of mental disorders (American Psychiatric Association, 2013).

2.1.4 Prevalence of mental disorders

In 2020 it is estimated that mental disorders will represent 15 % of the burden of all diseases globally (WHO, 2001). Norwegian studies indicate that approximately 50% of the Norwegian population will be affected by a mental disorder during their lifetime (Mykletun, Knudsen & Mathiesen, 2009). The prevalence of mental disorders during one year in Norway is approximately one third of the population (Mykletun et al., 2009). This is similar to the prevalence in other European countries (Nes & Clench-Aas, 2011). However, it is possible that this high prevalence is because some of those with mental health problems, not in line with the definition of mental disorder, have been classified with mental disorders. Most individuals in the world either have family members with mental disorders or experience mental disorders themselves (Kringlen, Torgersen & Cramer, 2001). A recent study found that the global prevalence of people meeting the criteria for a mental disorders at some time during their life is 29, 2 % (Steel, Marnane, Iranpour, Chey, Jackson, Patel, Silove, 2014), which is lower than the Norwegian and European life-time prevalence. The prevalence of depression have increased in the past decades and is today the most common mental disorder and one of the main causes of disability both in Norway and worldwide (WHO, 2014; Mykletun et al., 2009). Furthermore,

depression is expected to be the greatest burden of disease in the western part of the world in 2020 (WHO, 2004).

2.1.5 Risk factors and prevention of mental disorders

Mental disorders can be partly genetically determined and do often start early in life (Mykletun et al., 2009). However, environmental factors, such as chronic diseases and physical activity level, are crucial for the development of mental disorders. These factors can act as triggering factors on the already existing vulnerability. Mental disorders can become chronic or relapse during a lifetime without treatment (Mykletun et al., 2009). For these reasons it is important to identify and develop actions towards the risk and protection factors in the environment to prevent the development of mental disorders. Mental disorders cannot always be prevented, but many of the consequences of mental disorders, such as physical inactivity and low HRQOL, can be prevented with different treatment strategies to a greater degree than they are today (Mykletun et al., 2009).

2.1.6 Treatment and services for people with mental disorders

The types of treatment and services vary between individuals with mental disorders. Some need more specific help a short period of time due to acute mental problems. Others need help for a longer period of their life due to their complex mental disorders (Sosial- og helsedirektoratet, 2005). Medications and psychosocial therapy (such as cognitive therapy and psychodynamic therapy), are the most common treatments for mental disorders globally (Dalgard, 2008).

However, these treatments are expensive, and due to the large prevalence of mental disorders, this can have a significant impact on the economy globally (Martinsen, 2004; WHO, 2014). As a consequence and due to the high threshold for seeking help, many of the persons with mental disorders do not receive help (WHO, 2014). Some of the persons with mental disorders avoid seeking help because of the adverse side-effects of medications, low expectations of the psychological therapy (Martinsen, 2004), and the poor quality treatment (WHO, 2014). Therefore other treatment options and services have been developed (Sosial- og helsedirektoratet, 2005).

Cognitive therapy in groups, facilitation of jobs and employment offers, help with education, institutionalized help, social activities and support, physical activities, and residential care homes are some examples of the services that can be offered by municipal initiatives. These services can

be cost effective and alternative strategies in combination with medications or psychosocial therapy for the recovery of mental disorders (Sosial- og helsedirektoratet, 2005).

The Fountain Houses

One type of a municipal initiative are called Fountain Houses, also called Clubhouses, which is a “working community” for people with mental disorders. Concepts of belonging and membership are more in focus in the Fountain Houses than the treatment as indicated by the use of the word “working community”. It is voluntarily to become a member, and the members are offered optional ways of recovery. The members can choose to work within different disciplines that are essential to run the house, for example within communications, education, reception, or wellness. Each member can decide themselves how much they want to work and what they want to work with. They can contribute with their talents, learn new skills, access opportunities, regain confidence and socialize. Help with employment or education opportunities are also offered to the members. Some Fountain Houses offer physical activities such as walking groups and some sport classes with different focus areas (Clubhouse International, 2015a). In 1948 the first Clubhouse, “Fountain House”, started up in New York, and this organization is rapidly growing all over the world. Today the number of clubhouses is over 300 globally (Clubhouse International, 2015b) and in Norway there were eight Fountain Houses in 2012 (Fontenehus Norge, 2012). This positive development has opened the opportunities and possibilities in society for people with mental disorders.

2.2 Physical activity

To further examine the physical activity level among people with mental disorders in specific, some background information about physical activity will be explained.

2.2.1 Definitions of physical activity

The definition by Caspersen, Powell & Christenson (1985), as presented in 1.1, is a well known, accepted, and often used definition in research and literature. WHO defines physical activity as; “*Any bodily movement produced by skeleton muscles that requires energy expenditure– including activities undertaken while working, playing, carrying out household chores, travelling, and engaging in recreational pursuits* ” (WHO, 2015). Both these definitions are broad and include most of the physical activities and bodily movements. In this thesis the definition from Caspersen

et al. (1985) will be used due to its simple and at the same time broad definition, because it includes all types of bodily movements and physical activities. Physical activity is an umbrella term consisting of multiple terms such as; sports, exercise, recreation, play, work and physical education. Intensity, frequency and duration are determining variables for the physical activity level (Caspersen et al., 1985). Exercise and physical activity are often used interchangeably. Nevertheless, the term exercise is subcategory of physical activity, with a specific goal and is often performed repeatedly over a longer period of time (Caspersen et al., 1985).

2.2.2 Physical activity recommendations

“A best buy, but a tough sell” is suggested by Ekkekakis, Parfitt & Petruzella (2011), as the exercise paradox nowadays. This means that physical activity is well known to promote health in numerous ways, but the promotion of physical activity is still difficult (Ekkekakis et al., 2011). As an example, the physical activity level globally is decreasing despite the knowledge of the health benefits of physical activity (WHO, 2008; Hallal, Andersen, Bull, Guthold, Haskell & Ekelund, 2012). Physical activity can be a strategy to maintain and improve the health. This is well documented both nationally (Anderssen & Strømme, 2001), and internationally (Penedo & Dahn, 2005). Therefore national recommendations for physical activity have been developed, in order to improve the health in the population (Helsedirektoratet, 2014).

A recent study by Hallal et al. (2012) collected data from combined populations from 122 countries. This study indicated that 31 % of the world’s population was physically inactive according to the recommendations from WHO (WHO, 2010). The same study found that 34, 8% of the European population are deemed physically inactive (Hallal et al., 2012). The Norwegian recommendations for physical activity are based on the Nordic Nutrition Recommendations (Helsedirektoratet, 2014), and are similar to the recommendations from the WHO (WHO, 2010). In the adult population aged 18-64 years, at least 150 minutes of moderate intensive physical activity per week, or at least 75 minutes of vigorous activity per week, or a combination of moderate and vigorous intensity activity is recommended. The physical activity bouts should be of at least 10 minutes in duration. Moderate physical activity for 300 minutes per week or 150 minutes of vigorous physical activity or an equivalent combination of both, are recommended for additional health benefits. Two or more days per week of muscle strengthening activities involving major muscle groups are also recommended (Helsedirektoratet, 2014). Anderssen &

Andersen (2004) found that 37,4 % of the women and 56,0% of the men met the Norwegian recommendations for physical activity according to self-reported questionnaires (IPAQ-short). A more recent study found that only 31 % of the Norwegian adult population were meeting these recommendations, according to objective measurements (accelerometers) (Hansen, Kolle & Anderssen, 2014).

2.2.3 Physical activity and mental disorders

Physical activity level among people with mental disorders

Daumit et al. (2005) found that the physical activity level among people with mental disorders are in general lower than the rest of the population. This has been confirmed both globally (Schmitz et al., 2004), and in Norway (Sosial- og helsedirektoratet, 2000). Symptoms of mental disorders and side-effects from medications are examples of factors that might reduce the physical activity level of the people with mental disorders (Sosial- og helsedirektoratet, 2000).

Benefits of physical activity for people with mental disorders

Improved well-being, mood states, body image, stress mastering, self perceptions and positive self-image are some examples of the well documented benefits of physical activity for people with mental disorders (Bingham, 2009; Fox et al., 2000; Martinsen & Taube, 2009a; Rickhardson et al., 2005; WHO, 2015; Schmitz et al., 2004; U.S. Department of Health, 1996). Physical activity can improve secondary outcomes of mental disorders, such as social isolation (Rickhardson et al., 2005). Additionally physical activity can reduce health threatening habits, such as overweight and smoking, and promote positive life habits (Faulkner & Carless, 2006). Physical activity has minimal, adverse side-effects and its benefits can be long lasting compared to medications (Martinsen, 2004). Furthermore, the physical health is remarkably improved by physical activity, which can affect mental health (Faulkner & Carless, 2006; Fox et al., 2000; Martinsen, 2004). The positive benefits of physical activity on depression are well documented (Martinsen, 2004). For severe mental disorders, such as schizophrenia and paranoid disorder, physical activity can be included in traditional therapy and have many positive effects; however physical activity alone is usually not enough (Martinsen & Taube, 2009b). Studies show that, the physical activity should most preferably be combined with other treatments such as medications

or psychiatric therapy for people with mental disorders in general (Kjellmann, Martinsen, Taube & Andersson, 2008; Teychenne, Ball & Salmon, 2008).

The feeling of taking part in something meaningful, being more aware of the body are examples of indirect benefits of physical activity that can be related to positive experiences and self-esteem, self- image and autonomy of the individual. Physical activity can also promote positive benefits in terms of joy, fun and excitement and give a distraction from daily life and problems (Carless & Faulkner, 2003). Although the benefits of physical activity are many and undisputed, it can be used as a method for coping with emotional problems yet at the same time it can be abused (Biddle et al., 2000; Scabo, 2000). However, this will not be emphasized in this thesis due to the rare cases and the low impact compared to the positive effects of physical activity.

Physical activity can be a cost effective health promoter for people with mental disorders compared to medications and psychological therapies, as the individual itself can maintain the physical activity as it is simple and can be performed anywhere. This is unlike the psychotherapy and medications, with a specified endpoint (Bingham, 2009). Physical activity also differs from medications and other psychotherapies due to its ability to improve health and well-being. In addition it has a potential to help persons with mental disorders in dealing with their disorders (Bingham, 2009). Physical activity can also be combined with medication or psychotherapy and gives a treatment opportunity for a broad group of people with mental disorders (Martinsen 1998; Schmitz et al., 2004). However, a major problem in practice is to facilitate physical activity for this group (Daumit et al., 2005; Faulkner & Carless, 2006; Sosial- og helsedirektoratet, 2000).

2.3 Quality of life (QOL)

Campell, Converse & Rodgers (1976) describe QOL as “... *a vague and ethereal entity, something that many people talk about, but which nobody very clearly knows what to do about*” (p.471). With this they mean that in order to understand this term, it has to be made concrete (Campell et al., 1976). The term QOL has become popular and more integrated in health research today compared to a few decades ago (Næss, Mastekaasa, Moum & Sørensen, 2001). Finding a general and operational definition for the term is challenging because most of the scientists, health workers, advertisers and the rest of the general population have the term in their

vocabulary, yet the individual definition, use, meaning and understanding of the term varies a lot (Kerce, 1995).

QOL has in some cases been measured and understood as the amount of lived years. Nevertheless, this should be differentiated from QOL (Ventegodt, 1995). As an example, people in the industrialized world live longer than the rest of the world's population, but this does not guarantee that the extra amount of lived years are years with a good QOL (McAuley & Morris, 2007). QOL cannot be observed directly because it concerns the individual experience regarding feelings and evaluations of pleasure, engagement and love and to positively evaluate one's own life, satisfaction of own life, self respect and the meaning with life (Næss et al., 2001). The concept therefore has to be investigated through an indicator of QOL. The situation, setting and context the term has been used, and the individual life history, can determine the concrete meaning and understanding of the term (McAuley & Morris, 2007; Barovsky, 2011; Wallander, 2001).

2.3.1 Defining QOL

QOL is a multi-dimensional concept, including physical, psychological and social functioning (Kerce, 1995). Health status, physical functioning, psychosocial adjustment, well-being, life satisfaction and happiness have all been used interchangeable for QOL (Ferrans, 2005). QOL can be defined both as a subjective and an objective term, which makes the definitions vary (Barovsky, 2011). The socio-economic welfare indicator is regarding the material and objective sides of life, while the subjective term is more about the psychological welfare indicator of QOL (Næss, 1987). However, Næss et al. (2001) defines QOL as a subjective and psychological phenomenon, and not as a material and objective term. This definition is a psychological concept related to the positive and negative experiences of the individual's life. The positive and negative affective experiences are measurements of the individuals feelings, either happiness or despair (Næss et al., 2001). The cognitive experience is a third component included in the subjective QOL, which is based on the individuals' thoughts, perceptions, and evaluations. According to Næss et al. (2001), the QOL is high when the individuals' conscious cognitive and affective experiences are positive and low when these experiences are negative. The external conditions do only have an indirect impact on the quality of life through the consequences it has for individual experiences and other people's experiences according to Næss et al. (2001). WHO's definition

(see 1.1) covers well-being in different areas such as: physical, mental, level of independency, social relations, surroundings, spiritual, religion, and personal beliefs (WHO, 1997).

To sum up, a universally accepted definition of QOL does not exist (Kerce, 1995; McAuley & Morris, 2007; Barovsky, 2011; Wallander, 2001). The term QOL is an umbrella term and even though it may appear to have a definition, the unique individual experience linked to QOL will vary because of the individual's experiences, values and needs, and cultural background (Næss et al., 2001). This causes confusion, and therefore a precise definition when reporting data on this subject is needed to properly explain and understand the reasons for high or low quality of life (Næss et al., 2001).

2.3.2 Health related quality of life (HRQOL)

QOL and HRQOL have often been used interchangeably by researchers (Barovsky, 2011; Guyatt, Feeny & Patrick, 1993; Rejeski et al., 1996). Nevertheless, indicators of QOL often include income, freedom and quality of the environment which is more distant from health and medical concerns. QOL mainly refers to the general population and focuses less on the medical and health aspects of life. HRQOL is a more specific definition which often excludes these indicators of QOL mentioned above because they are not considered as affecting health, and includes more health and medical factors. HRQOL is primarily developed to refer to the medically or psychiatrically ill population and to measure the impact of disease and illness on one's daily life and satisfaction in life (Guyatt et al., 1993). WHO defines health as: *"a complete state of physical, mental and social well-being and not merely the absence of disease or infirmity"* (WHO, 2001). This is the most commonly quoted definition of health, but it is often considered as utopian and unrealistic. With this definition, no one would be healthy for a reasonable time. However, this definition is important because it includes something more than just the absence of disease or infirmity and it includes several dimensions of health. There are three central dimensions in the definition of health: the physical, mental and social, all influencing each other (Hjort, 1986). This definition can be related to general health, mental and functional status along with the QOL (Guyatt et al., 1993).

Similar to QOL, one general definition of HRQOL has not yet been developed. However, there is agreement that HRQOL is a multidimensional concept including the individual subjective

experience, the individual feelings and satisfaction of the physical, mental and social functioning, and the aspects contributing to the individual's health and well-being (Bize et al., 2007; Guyatt et al., 1993; Næss et al., 2001; Rejeski et al., 1996; Wahl & Hanestad, 2004). It is usual to divide the HRQOL into two summary component scores, the Mental Component Summary (MCS) and the Physical Component Summary (PCS). These can further be divided into eight sub-scales (Ware, Kosinski, Turner-Bowker & Gandek, 2002), which will be further explained in 3.4.2. These scores of HRQOL have been used frequently by researchers to understand the health status and the health related aspects of QOL in the population (Bize et al., 2007; Guyatt et al., 1993; Rejeski et al., 1996; Wahl & Hanestad, 2004; WHO, 2006).

To sum up, the HRQOL term is defined and understood variously in different contexts and by many different researchers. This thesis will focus on the health related aspects of QOL, and therefore the HRQOL definition (see 1.1) will be in focus. A HRQOL aspect was chosen due to the group examined and the aims of this study (2.7). It is important to include all components which can influence the HRQOL, such as the individual subjective feelings and experiences of the physical, mental, and social aspects of health. This is obtained by using the HRQOL definition (Biddle & Mutrie, 1991).

2.3.3 Research on HRQOL

The first major American QOL study was carried out in 1957 by Gurin, Veroff & Feld with an orientation towards mental health and the participants' happiness. After this study, many have followed (Campbell, Converse & Rodgers, 1976). Gandek et al. (1998) presented the HRQOL in nine countries. They found that the general Norwegian population had a mean PCS score of 50, 3 (SD=8, 8) and the mean MCS score was 50, 6 (SD= 9,9) with the scale going from 1 to 100. A higher score indicates a higher HRQOL (Ware et al., 2002). This is similar to the standard U.S scores with a mean PCS and MCS of 50 (SD=10), and it also correlated to the scores for the rest of the countries included in this study. Studies have found that in general, HRQOL scores including PCS and MCS, are higher for men than for women (Lodge & Kaasa, 1998; Schmitz et al., 2004; Vuillemin et al., 2005; Wendel-Vos et al., 2004). However some exceptions have been found in some of the subscales of HRQOL, where women score higher than men or where there are no significant differences between genders (Schmitz et al., 2004; Wendel-Vos et al., 2004).

People with mental disorders seem to have a lower HRQOL when comparing to healthy controls, and the MCS seem to be particularly influenced by mental disorders (Alonso et al., 2004).

2.4 The relationship between physical activity and HRQOL in the general population

The focus and interest on the relationship between HRQOL and physical activity in research has increased the last decades (Bize et al., 2007). Physical activity has shown a positive relationship to HRQOL in the general adult population, and the evidence and literature in this field is continuously growing (Brown et al., 2003; Bize et al., 2007; Tessier et al., 2007; Viullemin et al., 2005; Wendel-Vos et al., 2004).

A review by Bize et al. (2007) showed that most cross-sectional studies supported the positive associations of physical activity on the HRQOL. The cohort studies and randomized controlled trials included in this review could not draw any conclusions regarding the association between HRQOL and physical activity because of the poor and insufficient quality of the research (Bize et al., 2007). The cross-sectional studies in this review found a positive association between physical activity and mainly the PCS of HRQOL. The MCS had a larger association to physical activity in the cohort studies. Other studies found similar association between both components of HRQOL and physical activity (Bize et al., 2007). A cohort study by Wendel-Vos et al. (2004) confirms the significant positive associations between the Leisure time Physical Activity (LPA) and the PCS from their cross-sectional analyses. However, the longitudinal analyses of the same study found an association between the MCS and physical activity over time (Wendel-Vos et al. 2004). A cohort study by Tessier et al. (2007) found that the MCS had a higher association to changes in physical activity than the PCS over three years. Wendel-Vos et al. (2004) found that the changes in LPA could not contribute to a significant variability in the PCS and MCS scores after excluding extreme values from the regression analyses. Another study found, nevertheless, that physical activity could contribute to a significant variability in the MCS for women ($\beta = 0,23$, $p < 0,01$), but not for men and also not for the PCS (Tessier et al., 2007). A large cross-sectional study by Brown et al. (2003) confirms also that the significant associations between physical activity and HRQOL were only found for the PCS. Shiabata et al. (2007) studied the association between physical activity level and HRQOL among a group of the Japanese adult population. They confirm that the group meeting the recommendations for physical activity had significantly higher

PCS ($p < 0,01$), than those who were insufficiently physically active according to the recommendations. The subscales related to the mental component of HRQOL had a lower association to physical activity level (Shiabata et al., 2007).

A cross-sectional study by Vuillemin et al. (2005) examined the association between leisure time physical activity (LPA) and HRQOL in a French population and supports the significant associations for the PCS. The same study found a significant, although, a lower association between the MCS score and LPA, and the LPA could explain significant variance for both the HRQOL component scores (Vuillemin et al., 2005).

Laforge, Rossi, Prochaska, Velicer, Leversgue & McHorney (1999) used the stages of change for exercise to measure the physical activity. They found that exercise adaption was associated with self-perceived HRQOL, mostly in the PCS score of HRQOL. The same study, suggested also that a longer period of time in physical activity could have a higher association to the mental aspects of HRQOL (Laforge et al., 1999). Laforge et al. (1999) reported that the stages of change for exercise could explain 28% of the variance in the both the PCS and the MCS of the HRQOL (Laforge et al., 1999).

2.5 The relationship between physical activity and HRQOL in the population with mental disorders

Less research has been conducted for the population with mental disorders regarding the association between physical activity level and HRQOL compared to the general population of the world. However, research on this field is growing (Faulkner & Carless, 2006). A review by Alexandratos et al. (2012) with articles published from 1998 to 2009, presented several positive effects of physical activity and its impact on mental health for people with severe mental disorders. Some of the positive outcomes of physical activity were the meaningful use of time, increased individual feeling of self-worth, increased empowerment, improved social interaction, and social support. These positive outcomes were suggested to be positively associated with HRQOL (Alexandratos et al., 2012). Another, more recent, systematic review and meta-analysis by Rosenbaum et al. (2014) included thirty-nine randomized controlled trials mainly studying physical activity interventions for people with mental disorders. They found that the mental

health and the HRQOL were improved after physical activity interventions for the participants with mental disorders (Rosenbaum et al., 2014). These mentioned reviews were, however, including a low number of studies measuring the HRQOL, some of the included studies found no significant improvements in the HRQOL of the participants, and the studies had a low number of participants in general (Alexandratos et al., 2012; Rosenbaum et al., 2014). Schmitz et al. (2004) is an example of a large cross-sectional survey confirming that the HRQOL is lower among people with mental disorders compared to the general population. This study found that physical inactivity was negatively associated with HRQOL among the participants with mental disorders. The participants with mental disorders with a higher level of physical activity had higher scores in all dimensions of the HRQOL compared to the physically inactive individuals with mental disorders. Therefore they support the promotion of physical activity in mental health care (Schmitz et al., 2004). Schmitz et al. (2004) found that 17- 21 % of the variance in the PCS could be explained by physical activity, and physical activity could explain a marginally amount of variance in the MCS (4 - 9 %) for all the diagnose groups.

The HRQOL appear to be associated with physical activity through the improved psychological well-being and physical functioning for the individuals with poor health (U.S. Department of Health, 1996). However, the lack of quality research and findings based on low numbers of participants remind us that the relationship between physical activity and HRQOL among people with mental disorders needs more research (Alexandratos et al., 2012; Rosenbaum et al., 2014).

2.6 The relationship between physical activity and HRQOL in members of a Fountain House

There is a lack of research on the relationship between physical activity and HRQOL among members of Fountain Houses or other Clubhouses. As this group of the population are members of a “working community”, they are expected to have a different physical activity level and HRQOL than the people with mental disorders that are not. This was expected because they have voluntarily integrated in a social “working community”. Being part of a social community has shown positive associations to the physical activity level and health (U.S. Department of Health, 1996). The members of the Fountain Houses are seeking help and receive help from professionals to reach some of their goals in life. Being member of a “working community” can increase their

confidence in life, which may increase the self-esteem and further on increase the physical activity level and HRQOL (U.S. Department of Health, 1996). The volunteer membership may indicate that the members are ready for responsibility and are heading back to work life and a social community, which possibly can improve their HRQOL. The social support and experience of being useful may increase the HRQOL (Biddle et al, 2000).

Research on this group of the population with mental disorders is therefore of interest, to examine if the relationship between these variables is different in this group of the population compared to the general population and also compared to other people with mental disorders. One study by Pelletier et al. (2005) indicates that this specific population is less physically active and has a higher risk of physical co-morbidities than the general population. Integrating exercise into the culture of the Clubhouses was one of the goals with the Genesis Wellness Program as developed by Pelletier et al. (2005). This study implemented a structured physical exercise program for members of a clubhouse and found that this program was successfully implemented for these participants. The findings support physical activity as a health promoter and its positive association with the mental, physical, and social health. The same study found that both the PCS and MCS scores of the HRQOL improved after physical exercise, nevertheless, only the Mental Health subscale was significantly improved. The rest of the improvements were not significant as suggested by the authors to be due to the small sample size of only 17 participants (Pelletier et al., 2005).

2.7 The current study

The majority of published research supports the positive relationship between physical activity and HRQOL among adults with mental disorders (Alexandratos et al., 2012; Pelletier et al., 2005; Rosenbaum et al., 2014; Schmitz et al., 2004). However, more research is needed to support these findings (Biddle et al., 2000; Sørensen, 1998). In this study I found it interesting to examine this association among people with mental disorders that are members of a Fountain House, because this group of the population was expected to differ from the rest of the population with mental disorders as explained in 2.6.

Aims of the study

Based on previous research and the relevant background information gathered the aim of this study is:

- *To study the association between the physical activity level and the health related quality of life (HRQOL) among people with mental disorders from a Fountain House in Norway.*
- *To examine the relative importance of physical activity on various components of HRQOL among people with mental disorders from a Fountain House in Norway.*

3.0 Method

To plan and conduct this study a relevant methodological approach and research design was chosen. A quantitative research design was used in this study where cross-sectional data was collected with questionnaires. This choice was based on what kind of data and information was needed and what kind of data that was possible to collect.

3.1 Design

A quantitative research design was chosen because it can measure the incidence of various components in a sample, and examine the relationship among variables, by testing out objective theories (Creswell, 2009). This requires a quantitative researcher to examine the aims of the study by collecting numerical data from the sample (Thomas, Nelson & Silverman, 2011). The numerical data collected were further statistically analyzed. The quantitative research design was therefore considered as an appropriate design for the aims and sample size of this study. This design was also considered timesaving and easy to administer (Thomas et al., 2011). A survey providing cross-sectional data, collected at one point in time was chosen in this study. The cross-sectional survey was easy to conduct to examine the aims of the study, and was considered as an inexpensive and convenient strategy for this study.

3.2 Sample

All active members from one Fountain House in Norway were invited to participate in the study. At the time of data collection, the number of registered active members in this Fountain House was 270. Being an active member means that they had been attending the Fountain House within the last 90 days. On a daily basis, approximately 58 members were attending. The inclusion criteria were that the participants were over the age of 18, and members of this Fountain House, regardless of what kind of mental disorder they had.

The selection of this sample group was mainly because this Fountain House had already contacted The Norwegian School of Sport Science (NIH) for help in registering the physical activity level of their members. Since the study was designed to examine the physical activity level and the HRQOL among people with mental disorders from a Fountain House, this served as a convenient choice to collect data for the study.

A relatively large sample size was preferable to increase the statistical power of the research and it is more representative to the entire population being studied, and increase the possibility to obtain useful and significant results. This would help to increase the possibility of obtaining useful, and significant results and also strengthen the collected data's validity and reliability (Thomas et al., 2011).

3.3 Designing the questionnaire

The questions relevant for this study were part of a larger survey (Appendix 3). The data included in this study were based on questionnaires regarding the physical activity level, HRQOL and some descriptive background information. The International Physical Activity Questionnaire short form (IPAQ-short), Leisure time Physical Activity (LPA) and stages of change for physical activity were used to measure the physical activity level. Three measures on physical activity level were used to strengthen the construct validity of the results, and to examine if these measures differed in explaining the variability in the HRQOL. The standard 12-Item Short Form Health Survey version 2.0 (SF-12v2) was used to measure the HRQOL (Appendix 3). To make the questionnaire more understandable for the participants and due to the limitation of time, some slight modifications to some of the original questionnaires were made. These modifications were implemented to increase the participants' motivation to answer and increase the response rate. All questions regarding the same topic were grouped together to ease the following work procedures with analyzing and statistics. The questionnaires were designed in order to match the theoretical assumptions and provide the researcher the relevant information to answer the aims of the study, in order to validate the study (Creswell, 2009). The instrument should be also reliable, which can be obtained when the test procedure is consistent and precise, and repeated trials provides consistent and stable responses (Creswell, 2009).

The questionnaire contained closed-ended questions, where a fixed limited set of answers were given. In this way it was easier for the participants to answer the questionnaire, and it makes the coding, analysis, and statistics easier. Closed-ended questionnaires are also easier to compare with other studies. However, closed-ended questions can be difficult to formulate relevant and reasonable for the participant and for the aim of the study. Furthermore, the ability to collect

additional information about other aspects of the variables can be reduced, which was taken into account for.

3.4 Measuring instruments

The variables of this study were expressed and operationalized through self-administered questionnaires (Appendix 3), in order to be measured. A questionnaire survey was preferable because it is objectively assessing the data, making it easier to interpret the results. Self-administered questionnaires can in many cases also be easy to handle and administer, timesaving, and inexpensive (Thomas et al., 2011).

3.4.1 Measures for physical activity level

The physical activity level can be measured objectively and subjectively. Objective measurements can estimate the physical activity level directly with measurements such as an accelerometer. Subjective measurements, such as interviews or questionnaires as used in this study, measure indirectly the physical activity level (Dale, Welk & Matthews, 2002). The first six questions were selected from three different questionnaires, and focused on different indicators of the physical activity level.

International Physical activity Questionnaire (IPAQ)

The International Physical Activity Questionnaire short form (IPAQ- short) is measuring the type, frequency, and intensity of physical activities that have been performed the last 7 days and have lasted at least 10 minutes consistently. Only questions about frequency and duration of walking and moderate physical activity were included, and these were the same variables asked in the original Norwegian IPAQ- short by Anderssen & Andersen (2004) (question 3-4, Appendix 3). The questions about vigorous activity were considered as not relevant because high intensive activities are performed to a low degree among people with mental disorders (Daumit et al., 2005; Schmitz et al., 2004; Sosial- og helsedirektoratet, 2000), and were therefore excluded. The questions which applied to sitting time were also not considered relevant and were excluded because we were only interested in measuring the physical activity level. The responses were provided in days and minutes, and converted into a total sum of minutes per week used in the process of analyze. The two indicators of physical activity (moderate physical activity and walking) were summarized and translated into a continuous variable (Metabolic Equivalent of

Task (MET) - minutes per week) which is further explained in IPAQ (2005). A higher score of MET- minutes per week were indicating a higher physical activity level. The participants were categorized in high-, moderate-, and low physical activity level. The high (≥ 3000 MET-minutes per week) and moderate (600-3000 MET-minutes per week), were the categories of those meeting the Norwegian recommendations for physical activity.

The IPAQ-short has been used frequently to measure the population's physical activity level globally (Craig, Marshall, Sjöström, Bauman, Booth, Ainsworth & Oja, 2003). A 12 country validity testing (including Norway) found that this questionnaire was reliable and valid to measure the prevalence of physical activity in national population studies for adults aged 15 to 69 years (Craig et al., 2003). The IPAQ-short has also been tested for validity in adults with schizophrenia, and it has comparable validity as for the general population (Faulkner, Cohn & Remington, 2006). These validity studies are relevant to validate the IPAQ questionnaire to the participants of this study. However, no previous studies were found that excluded the vigorous physical activity, which was the third original criterion to make a sum score of the physical activity level in total MET-minutes per week. This reduced MET- minutes per week score have to be considered when comparing the results with other studies calculating the total MET-minutes per week score with all three criteria. Despite the modifications of the IPAQ-short, the part of the questionnaire used in this study is considered valid and reliable to the sample of this study. The results are also considered comparable to the other studies using IPAQ-short, when the modifications are kept in mind and discussed.

Leisure time physical activity (LPA)

The participants were asked to answer one of the multiple choices that best described their average weekly leisure time physical activity (LPA) level the last year (question 2, Appendix 3). The answer alternatives ranged from low physical activity level; 1) "Read or watch TV or other sedentary activities" to high physical activity level; 4) "Exercise hard or take part in competitive sport regularly and several times a week".

This measure has frequently been used and validated by the National Institute of Public Health (Graff-Iversen, Anderssen, Holme, Jenum & Raastad, 2008). Graff-Iversen et al. (2008) asked for the average week during the last year. In this study, we found it interesting to examine whether

there was a difference in the LPA during the summer compared to the winter. Therefore summer and winter were included as two separate values for the LPA. Alternative 2 differed slightly from the original questionnaire. Graff- Iversen et al. (2008) described alternative 2 as; “walk, cycle or move about in some other way at least 4 h per week– including commuting to work and Sunday walks”. The last part; “...- including commuting to work and Sunday walks” was excluded in option 2 of the questionnaire of this study. This was done to shorten down the text; the question still maintained its integrity.

Stages of change for physical activity

Prochaska & Diclemente (1983) developed the original stages of change model, with an intention to assess the readiness of changing the smoking behaviour. This model has been used and validated by Marcus & Simkin (1993) to measure the readiness for change in exercise. The model by Marcus & Simkin (1993) with slighter modifications was used in the questionnaire of this study (question 1, Appendix 3), however the meaning of the stages remained the same as in previous literature (Marcus & Simkin, 1993; Reed, Velices, Prochaska, Rossi & Marcus, 1997). The stages of change for physical activity consists of 2 parts; the physical activity intention and the physical activity behaviour (Kosma & Ellis 2010).

The question used was “Are you regularly physically active?”. Regular physical activity was defined as; “*moderate intensive physical activity which is an intensity where you breathe somewhat harder than normal, lasted for 30 minutes each day and were performed on most days of the week*” also used by Gorczynski, Faulkner, Greening & Cohn (2010). The participants were asked to classify themselves into the stage that best described their physical activity intention or behavior. The five stages they could pick included: (1) “No, and I have no intention to start with physical activity” (pre-contemplation), (2). “No, but I’m thinking about starting with physical activity” (contemplation), (3) “No, but I have a plan to start being physically active” (preparation), (4) “Yes, but for less than 6 months” (action), (5) “Yes, and I have been so for longer than 6 months” (maintenance). The use of a 5-choice response to measure stages of change for physical activity has been supported by Reed et al. (1997). According to Kosma & Ellis (2010) objectively measured levels of physical activity seem to correlate almost linearly to the stages of change scale for people with physical disabilities. The scores in the metabolic

equivalent scores (MET- hours/ day) were increasing almost linearly across the stages of change (Kosma & Ellis, 2010).

3.4.2 Measures for Health Related Quality of Life (HRQOL)

Examples of indicators to investigate and collect data on the HRQOL include: observation of the person, use of existing registers, interviews, and questionnaires. Self-reported questionnaires are often the most cost efficient, practical and easiest measures used to collect data on HRQOL (Næss et al., 2001). The standard 12-item Short Form Health Survey version 2 (SF-12v2) is a questionnaire measuring subjectively the participants' experience of HRQOL in the past four weeks (Ware et al., 2002). This questionnaire has been translated to Norwegian by Lodge, Kaasa, Hjerstad & Kvien (1998). This Norwegian version of SF-12v2, has been applied in this study to indicate the participants' subjective experience of HRQOL (question 14-20, Appendix 3). The SF-12 is a generic multipurpose questionnaire, and the 12 items are taken from the SF-36, a larger questionnaire including 36 items (Ware et al., 2002).

The SF-12 has frequently been used in previous research to measure the current perceived mental and physical components of health. The 12 items are divided into eight different subscales; Physical Functioning (PF), Role Limitations related to Physical health (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role Limitations related to Emotional Health (RE) and Mental Health (MH) (Gandek et al., 1998; Ware et al., 2002). The eight subscales were scored and summarized with algorithms into two standardized summary scores; Physical Component Summary (PCS) and Mental Component Summary (MCS). These subscales and component summary scores were conducted with a SF-12v2 norm based scoring algorithm syntax in SPSS, a scale on a range from 0-100 (Ware et al., 2002). These are standard, U.S.- derived, scoring algorithms and are recommended because many countries have also used the same scoring algorithms and to be able to compare the average scores with other average scores of SF-12v2 and SF-36 from similar studies. The mean of both the HRQOL components are 50 (SD=10) in the general U.S. population by using the standard algorithms. In order to use the syntax to calculate these standard scores, the alternatives of the present questionnaire had to be identical to the original SF-12v2. Since the General Health and Bodily Pain subscales had been given the opposite scoring alternatives compared to the original version of SF-12v2, these were

reversed before they were calculated in the syntax to get the correct scores and algorithms. For each question the responses were given on a Likert scale ranging from 1- 3 or 1- 5, and the participants were asked to give one answer, closest to how they felt.

One example of a modification was: the Bodily Pain subscale in question 18 saying “During the past four weeks, how much did pain interfere with your daily life?” Whereas the original question from the Norwegian version of SF-12v2 read: “During the past four weeks, how much did pain interfere with your normal work including both work outside the home and housework?” Despite the small modifications, the questions regarding HRQOL kept their integrity and were considered valid and comparable to other studies using the SF-12v2 and SF-36 as a HRQOL measure.

The SF-36 health survey has been widely used internationally to measure the HRQOL and has exhibited good validity and reliability globally (Ware & Gandek, 1994). Nine countries, including Norway, have validated SF-12 against the already validated SF-36. This study show good validity and reliability of SF-12 and it has been frequently applied to measure the HRQOL. The same study support that these measurements can be compared with high validity (Gandek et al. 1998). The Norwegian version of SF-12 was also validated by Lodge et al., (1998). The SF-12 has also been well validated and tested for reliability among people with mental disorders, and show good validity and reliability (Ware & Gandek, 1994). These validation studies are of importance for the use of SF-12 in this study.

3.4.3 Descriptive background

The last part of the questionnaire contained some closed-ended questions in Norwegian asking for background information about the participants gender, age, marital status, living situation, and finally if they had a diagnosed mental disorder, and if so, which category of mental disorder. The mental disorders were divided into six categories: affective disorders, anxiety disorders, psychosis, drug or substance abuse or addiction, personality or behavioural disorders and other mental disorders. These groups are broad categories, containing most of the mental disorders from the DSM-5, but they are not as specific as in the DSM-5 manual by the American psychiatric association (2013). However, specific diagnoses of mental disorders lie outside the scope of this thesis and will not be discussed in great detail. When dividing the diagnoses into categories the anonymity of the participants was maintained to a higher degree, then when

dividing them into specific diagnoses.

3.6 Procedure

The study started with a meeting with one employee from the Fountain House, which became the contact person for the study. The structure of the questionnaire was discussed to make sure both parties, the Fountain House, and personnel from the Norwegian School of Sports Sciences (NIH), had what they wanted to be included in the questionnaire. A pilot test was conducted by five members of the Fountain House, to make sure all questions were understandable. Concerning the feedback and responses from this pilot test, some modifications were made by personnel from NIH (concrete examples in chapter 3.4.1 and 3.4.2). After these modifications the questionnaire was considered to contain all the necessary questions to answer the aims of the study, to be understandable for the participants, and was approved by the Fountain House.

The process with handing out and collecting the questionnaires (Appendix 3) occurred from 9. February, 2015 to 17. March, 2015 and took place at one Fountain House in Norway. The contact person was responsible to contact the members, advise them to answer the questionnaires, to hand out and collect the questionnaires. This contact person was available during the implementation of the questionnaires if the participants had problems understanding the questionnaire. The participants received oral and written information before participation, and had to sign an informed consent form before the project started. Together with the signed informed consent, the questionnaires were collected immediately after completing them.

After two weeks, 43 members had responded to the questionnaire. Due to the probability of a low response rate, the Fountain House also sent out 160 questionnaires to the home addresses of selected members in order to increase the responses. Those 160 were chosen because they were the active members the Fountain House had home addresses for. These questionnaires along with a signed informed consent should be sent back to the Fountain House in an enclosed, addressed, pre-paid envelope, or delivered personally to the Fountain House. The informed consents were only available for the contact person of the Fountain House because the student should only have access to anonymous data. Completed questionnaires were delivered to the student with a corresponding identity number to obtain the participant's anonymity. The student was available the whole period if the participants or contact person had any questions.

3.7 Statistical analyses

All data was registered in Statistical Package of Social Science (IBM SPSS Statistics, Version 21). The processing of data and analyzing in SPSS was done to examine the aims of the study. * $P < 0,05$ and ** $p \leq 0,05$ was set as level of significance.

Descriptive statistics (frequencies and mean scores) were assessed for the different demographic variables. Chi-square test for the categorical variables, and independent-samples T-test or a one-way ANOVA for the continuous variables were used to examine whether there were significant differences in the variables across groups (gender, age, marital status, housing and diagnose categories). Pearson's correlation analyzes were performed to analyse the associations between the dependent variables (HRQOL) and the independent variables (physical activity level).

Linear multiple regression analyses were used to analyze the relationship between the variables and to identify the relative importance of the independent variables in explaining the variance of the dependent variables.

3.8 Ethics

The researcher is responsible for taking care of the participants' ethical rights and the ethics of the research in general. Personal information about the participants' mental disorder, sex and age was collected and therefore it was considered necessary to report the project to the Norwegian Social Science Data Services (NSSD). The NSSD approved the study at December, 2014 (Appendix 1). Since the Fountain House was the responsible agent for the data collection, they kept the personal data, and only anonymous data were sent to the personnel from NIH, this study was approved.

The participants signed an informed consent form, which consisted of two parts; information about the study and the consent form (Appendix 1). The informed consent provided information about the project, the nature of the study, and that they could resign from the study whenever they wanted to. If some participants decided to resign after being included in the study, this should be noted by the student, and they should be excluded. It was clarified that this study should be voluntarily, and that all information would be anonymous. The informed consent had to be signed by the participant in order to include the participant in the data material. When the informed consent is signed, the researcher appears as professional, the participants might feel committed to

the study and they get the sense of that it is safe to participate in the study according to anonymity.

4.0 Results

4.1 Descriptive statistics of the sample

A total sample size of 87 active members from one Fountain House in Norway participated in the study indicating a participation rate on 32, 2 % of the active members.

Table 1: *Descriptive data. The distribution of age, gender, marital status, housing and mental disorders in the sample (n=87).*

Demographic variables		Total N (%)
Age	20-40 years	27 (31,0)
	41-60 years	49 (56,3)
	61-70+ years	11 (12,7)
	Total	87 (100)
Gender	Men	43 (49,4)
	Women	42 (48,3)
	Transsexual	2 (2,3)
	Total	87 (100)
Marital status	Alone	58 (66,7)
	In a relationship	28 (32,3)
	Total	86 (100)
Housing	Living together with someone	29 (33,3)
	Living alone	56 (64,4)
	Living in an institution	2 (2,3)
	Total	87 (100)
Diagnosis	Affective disorder	27 (31,0)
	Anxiety disorder	34 (39,1)
	Psychosis	20 (23,0)
	Drug, substance abuse or addiction	4 (4,6)
	Personality- or behavioural disorder	15 (17,2)
	Other mental disorders	11 (12,6)
	Had a diagnose, but did not want to specify it	10 (11,5)
	Did not have a diagnosis	4 (4,6)
Total	87 (100)	

The distribution of the different groups; age, gender, marital status, housing, and categories of mental disorders of the participants are shown in Table 1. Originally the questionnaire consisted of eight age groups ranging from less than 20 to 70+ years. After collecting the data three age groups (20-40, 41-60 and 61-70+) were chosen to obtain an overall overview and were considered as appropriate for these participants to give meaningful information. The most frequent categories of disorders were anxiety disorders among women and affective disorders among the men. The other diagnoses were approximately equally divided between men and women. The number of participants responding two or more categories of diagnosed mental disabilities was 24 (27,6 %) (not shown in table).

Levels of physical activity and HRQOL

The mean values for the two components of HRQOL and the physical activity level from the IPAQ, leisure time physical activity (LPA) for winter and summer and the stages of change measures can be found in Table 2. Moderate physical activity contributed with 577 and walking contributed with 1062 of the MET-minutes per week of walking+ moderate physical activity. Participants that answered “do not know” or “not sure” on the IPAQ question about how much time they spent each day on walking and moderate activity were excluded from the data analysis, this concerned 11 and 13 of the participants from walking and moderate physical activity respectively. A total of 65,1 % of the sample were meeting the Norwegian physical activity recommendations of at least 600 MET- minutes per week (data not shown). After studying the results from the LPA level for summer and winter, many of the participants had answered two alternatives. These responses were coded with the lowest alternative due to the results from IPAQ indicating a possible over-reporting of the physical activity level. This was done to include as much data from as many participants as possible. The three measures for physical activity as used in this study differ. However, the correlation between these three were reasonable and significant ($p < 0,05$) (Table 2). These moderate correlations can increase the construct validity and give a more precise indication of the total physical activity level.

Table 2: *The mean HRQOL from the PCS and MCS and the physical activity level from the physical activity measures.*

Variable	Measure	N (%)	Min-max	Mean (SD)
HRQOL	PCS (1-100 scale)	84 (96,6)	22,6-69,6	46,0 (10,4)
	MCS (1-100 scale)	84 (96,6)	1,2-60,9	36,1 (13,3)
PA level	IPAQ (MET-minutes/ week)	66 (75,9)	0-8505	1667,5 (1717,0)
	LPA Summer			
	1,0	29 (33,3)		
	2,0	33 (37,9)		
	3,0	11 (12,6)		
	4,0	6 (6,9)		
	Total	79 (90,8)		
	LPA Winter			
	1,0	52 (59,8)		
	2,0	23 (26,4)		
	3,0	3 (3,4)		
	4,0	4 (4,6)		
	Total	82 (94,3)		
	SOC for PA			
1. Pre-contemplation	6 (6,9)			
2. Contemplation	13 (14,9)			
3. Preparation	15 (17,2)			
4. Action	8 (9,2)			
5. Maintenance	45 (51,7)			
Total	87 (100)			

Note. HRQOL = Health Related Quality of Life, PCS= Physical Component Summary, MCS= Mental Component Summary, PA= Physical Activity, IPAQ=International Physical Activity Questionnaire MET= Metabolic Equivalent of Task, LPA= Leisure time Physical Activity, SOC=Stages of Change , SD= Standard Deviation.

A chi- square test and a one-way ANOVA excluding the participants answering the two last categories of the diagnoses (because they did not have or did not wanted to state their diagnosis), found no significant differences between the categories of disorders in any of the physical activity variables. The chi-square tests, one-way ANOVA, and independent T-tests found no

significant differences between the age, gender, marital status and housing in any of the physical activity measures. The differences in gender and marital status in the Mental Component Summary (MCS) were not significant (data not shown). However, the mean Physical Component Summary (PCS) were significantly higher for men (48,5) compared to women(43,5) ($t=2,15$, $p<0,05$). For marital status: “alone” compared to “in a relationship”, the mean PCS was significantly higher ($t=2,25$, $p<0,05$).

4.2 The association between physical activity and HRQOL

As shown in Table 3, the PCS scores had a weak to moderate association with all measures of physical activity. The IPAQ had the highest association and the stages of change had the lowest association to the PCS. The MCS score were not significantly associated with any of the physical activity measures.

Table 3: *The associations between the different physical activity measures and the two HRQOL summary scores.*

	1	2	3	4	5	6	7
1. Stages of change	-						
2. LPA W	0,475**	-					
3. LPA S	0,348**	0,733**	-				
4. LPA W + S	0,446**	0,921**	0,939**	-			
5. IPAQ (MET-minutes/week)	0,443**	0,475*	0,629**	0,619**	-		
6. MCS	0,044	0,051	0,158	0,120	0,111	-	
7. PCS	0,242*	0,309*	0,244*	0,292*	0,337**	0,298**	-

Note. LPA= Leisure time Physical Activity, W=winter, S=summer, IPAQ=International Physical Activity Questionnaire, MET= Metabolic Equivalent of Task, MCS=Mental Component Summary, PCS= Physical Component Summary, Values are mean \pm SD * = $p<0,05$. ** = $p<0,01$ (2-tailed).

An independent sample T-test found that the participants meeting the Norwegian recommendations for physical activity (≥ 600 MET-minutes per week) had a significantly higher

PCS score ($t=2,43$, $p < 0,05$) than those who did not meet the recommendations (<600 MET-minutes per day). This difference was not significant for the MCS.

4.3 The relative importance of physical activity variables in explaining the variation in HRQOL

Table 3 shows that 27 % of the variability in PCS can be explained by all the physical activity measures together. The only variable contributing to a significant variability in the PCS was the IPAQ measure on physical activity ($\beta = 0,38$, $p < 0,05$). The same was done for separately LPA winter and LPA summer, and they both show the same, therefore the total LPA were summarized in one summary score. Since Pearson's correlation analysis found no significant relationship between the physical activity variables and the MCS (Table 2), no regression analysis was conducted to examine the relationship between the variables of physical activity and the MCS.

After controlling for age, gender and marital status, housing and diagnosis groups, no significant differences between groups were found in the regression analysis. Therefore the group differences have not been shown in the analysis.

Table 4: Summary of Multiple Regression Analyses for IPAQ (MET- minutes per week walking+ moderate physical activity), LPA (winter and summer) and stages of change predicting the Physical Component Summary score (PCS) of HRQOL.

Variable	β	Total R^2	T	p -value
L PA W+S	0,09		0,52	n.s.
Stages of change	0,12		0,93	n.s.
IPAQ (MET-min/week)	0,38	0,27	2,38	$p < 0,05$

Note. LPA W+S= Leisure time Physical Activity in winter and summer summarized, IPAQ= International Physical activity Questionnaire, MET= Metabolic equivalents of the walking+ moderate physical activity minutes per week, n.s. = not significant.

5.0 Discussion

In this part of the thesis, the relationship between physical activity and HRQOL among adults with mental disorders will be discussed and compared in relation to previous research on this area. The main results show significant and positive association between all the physical activity measures and the HRQOL for the Physical Component Summary (PCS), but this was not significant for the Mental Component Summary (MCS). The physical activity measure with the highest association to the PCS was the IPAQ measure (measured in MET-minutes per week). The physical activity measures together accounted for 27 % of the variability in the PCS and had no significant relative importance for the MCS. The only physical activity measure explaining a significant variance in the PCS was the IPAQ measure.

5.1 The association between physical activity and HRQOL

The finding that physical activity was positively associated with HRQOL corresponds with previous studies in the general adult population of the world (Bize et al., 2007; Brown et al., 2003; Laforge et al., 1999; Shibata et al., 2007; Tessier et al., 2007; Vuillemin et al., 2005; Wendel-Vos et al., 2004). This positive association has also been found in previous studies on groups with mental disorders (Alexandratos et al., 2012; Rosenbaum et al., 2014; Schmitz et al., 2004). However, which component summary score of the HRQOL that is most associated with physical activity varies between the different studies.

This study found that the PCS was significantly higher among the participants meeting the recommendations for physical activity compared to the participants who did not meet the recommendations. This has been confirmed by Brown et al. (2003), Shiabata et al. (2007) and Vuillemin et al. (2005). The MCS had a lower, but still significant, association to physical activity level in the study by Shiabata et al. (2007). Shiabata et al. (2007) found that a lower percentage (27, 5% men and 21, 8% of the women) of the participants were meeting the recommendations for physical activity level than this study. However, the recommendations were much higher (23 MET-hours per week, corresponding to 1380 MET-minutes per week), which is more than double of the Norwegian recommendations on 600 MET-minutes per week. This might have influenced the relationship between the variables. Despite the differences in the method used by previous

mentioned studies (Brown et al., 2003; Vuillemin et al., 2005; Shiabata et al., 2007) and the present study, a positive association between those meeting the recommendations for physical activity and various components of HRQOL was found. This can strengthen the use of recommendations for physical activity.

5.2 The relative importance of physical activity variables in explaining the variation in HRQOL

This study found that 27 % of the variability in the PCS could be explained by all the physical activity measures together. The IPAQ was the only physical activity variable that revealed significant contribution to the explained variance in the PCS. These findings confirm previous research on individuals with mental disorders, where the physical activity explained more variance in the PCS than in the MCS (Schmitz et al., 2004).

The LPA measure did not contribute to a significant variability in either the PCS or the MCS in this study. This is confirmed in a study by Wendel-Vos et al. (2004) on the general population using the LPA measure to explain the variance in HRQOL. Another longitudinal study has found that changes in the LPA did contribute to a significant change in the MCS for the women, but not for men (Tessier et al., 2007). Vuillemin et al. (2005) found that the LPA could significantly explain the variance of both the HRQOL component scores.

The stages of change for physical activity could also not explain a significant variance in the HRQOL in this study. The stages of change for physical activity have in previous research been found to explain variance in both the PCS and the MCS of the HRQOL (Laforge et al., 1999). However, Laforge et al. (1999) did not report the beta values of the two HRQOL scales and the physical activity level. Their results can therefore not report the significance of the physical activity in explaining the variance in the HRQOL.

5.3 Possible explanations for the relationship between physical activity and HRQOL

The explanations for the results on the relationship between physical activity level and HRQOL are not clear. However, in this chapter, some possible explanations will be discussed.

5.3.1 The research design

One explanation of the results on the relationship between the HRQOL and physical activity can be the cross-sectional design of the study. Previous research using different research designs have found various results (Bize et al., 2007; Wendel-Vos et al., 2004; Tessier et al., 2007). According to Bize et al. (2007), cross-sectional studies show that physical activity was consistently associated to the PCS of HRQOL, and the longitudinal studies show a positive association mainly to the MCS of HRQOL. The randomised controlled trials and the cohort studies included in this review were, however, considered low in quality to conclude with changes over time (Bize et al., 2007). Wendel-Vos et al. (2004) also supported the significant positive association between the LPA and the PCS from their cross-sectional analyses. The longitudinal analyses of the same cohort study, confirm that a measure of the physical activity over months or years was needed to influence the MCS. A longitudinal study by Tessier et al. (2007) supports the positive association between LPA and the MCS over time. Therefore it might be expected that the MCS would have had a stronger association with physical activity if a longitudinal study were conducted.

5.3.2 Health factors

Another explanation on the relationship between physical activity and HRQOL is suggested to be the structure of health which is complex and affected by diverse variables (Gockhman, 1988). The health problems (especially the mental health problems among the participant of this study) might be more related to the HRQOL, than the physical activity level. On the basis of the results of this study, especially when considering the non-significant association and the low relative importance between the MCS and physical activity, this can be confirmed. Physical activity level can be indirectly related to the HRQOL through the physical and mental health condition. This is supported by Thrane (1999) saying that the general health have a stronger effect on subjective well-being than physical activity, and that the health is more crucial for the well-being for people with health problems compared to people without health problems (Thrane, 1999). The participants of this study had a low HRQOL, which might be related to their physical activity

level as well as their mental disorder. Rosenbaum et al. (2014) reviewed studies that found strong and significant reductions of depressive and schizophrenic symptoms as a result of physical activity. They suggest that these improvements in the mental disorders are possible reasons for the increased HRQOL of the participants (Rosenbaum et al., 2014).

Andersen & Strømme (2001) suggest that the physical functioning, such as muscle strength and endurance, can be improved by physical activity. Furthermore, these improvements in physical health can reduce the negative impact from the daily activities due to a poor physical functioning, and improve a person's overall health (Andersen & Strømme, 2001). These are important factors for the PCS of the HRQOL (Ware et al., 2002) and might explain the high association between physical activity and the PCS. Injuries and physical diseases, not assessed in this study, may also increase the risk of additional mental disorders (Martinsen, 2004; Rickhardson et al., 2005). This can further be related to the physical activity level as well as the HRQOL, which again can affect the relationship between these variables.

5.3.3 The sample

The results of this study might be affected by the sample studied, such as the participants' mental disorders and the sample size. A stronger association between physical activity and HRQOL might be found in groups with a lower HRQOL, and the physical activity might have a higher relative importance on the PCS than the MCS for people with mental disorders, as also assumed by Schmitz et al. (2004).

Other factors might be more crucial to explain a variance in the MCS for the people with mental disorders. Schmitz et al. (2004) suggest that the characteristics of the mental disorders, such as the unhealthy lifestyle with inactivity and poor diet, and the lack of motivation for physical activity can be associated with the reduced HRQOL. The groups of participants in previous studies vary and can therefore have affected the results. For example some studies examine participants from the general population, while others examine participants with mental disorders. Therefore a comparison between these different studies has to be done with caution. Tessier et al. (2007) and Vuillemin et al. (2005) are examples of studies on the general population without mental disorders, where the participants reported a higher HRQOL than the sample of the present study, which might be reasons for the different findings compared to the present study. Members

of a Fountain House were expected to have a different physical activity level and HRQOL compared to the rest of the population with mental disorders (explained in 2.6). The results from this study, as well a previous study by Pelletier et al. (2005) confirm this. Pelletier et al. (2005) was a pilot study, and the only study found, that reported an association between exercise and HRQOL among members of a “working community”. This study supports the significant positive associations between the Mental Health subscale and physical activity. The other subscales had no significant association, which might be due to the small sample size (17 participants). The results of this present study, as well as many studies in included reviews, were based on relatively small sample sizes (Alexandratos et al., 2012; Rosenbaum et al., 2014). This can increase the risk of errors in the results. The non-significant relationship can be due to type 2 errors, which might occur with small sample sizes, where the researcher concludes that there is no significant relationship when there actually is a significant relationship. Hence, the results have to be interpreted with caution and studies with larger sample size are needed on this group of the population.

5.3.4 Measures

Due to the lack of standardization and consistent use of measurements of physical activity and HRQOL, a comparison of studies had to be done with caution. This might explain the different findings from the different studies. The IPAQ measure (MET-minutes per week) was the measure with the highest association to the PCS. It was also the only measure that could explain a significant variance in the HRQOL when compared in a multiple regression analysis against the LPA and stages of change for physical activity. This might be due to IPAQ being a more precise and accurate measure of physical activity where the intensity, frequency and the duration of the physical activity are measured. Previous cross-sectional studies confirm this positive relationship between physical activity, measured with IPAQ, and HRQOL (Brown et al, 2003; Shiabata et al., 2007). The results from Brown et al. (2003) and Shiabata et al. (2007) cannot directly be compared with this present study due to the differences in use of the IPAQ. Although, they found results consistent to the results of the present study. The LPA measure excludes physical activities other than the LPA, such as occupational activities and household activities, and these are possible reasons why this measure had a lower association and relative importance to the HRQOL than the IPAQ measure of this study. The stages of change measure of this study had a

positive and significant association with the PCS as well. This significant association is confirmed by Laforge et al. (1999) examining exercise adaption with the stages of change. However, the stages of change for physical activity was the measure with the lowest association to HRQOL when compared to the IPAQ and LPA measure, and it did not contribute to a significant variance in the HRQOL in this study. This measure is mixing the physical activity intention and behaviour (Kosma & Ellis, 2010) and can therefore be inappropriate to measure the physical activity level, which may have affected the relationship to the HRQOL.

A study on a population with mental disorders found a positive association between physical activity and both components of HRQOL (Schmitz et al., 2004). Nevertheless, the physical activity level measure was different than in the present study. Schmitz et al. (2004) used a scale ranging from 0. "No physical exercise" to 4. "Regularly more than 4 hours/ week". Exercise is a sub-category of the physical activity and will probably influence the responses given regarding physical activity level (Laforge et al., 1999). The "exercise" term excludes other physical activities such as leisure time physical activity (LPA) and active transport, which is a possible reason for the high number of physically inactive participants in the study by Schmitz et al. (2004). This high number of physically inactive participants in the study by Schmitz et al. (2004) compared to this study may explain the different results.

5.3.5 Physical activity

Whether the physical activity level is reasonable might explain the relationship to the HRQOL. A total of 65, 1% of the participants in this study met the Norwegian recommendations for physical activity of at least 600 MET- minutes per week from Helsedirektoratet (2014), which is high compared to data from the general population (Anderssen & Andersen, 2004; Hansen et al., 2014). Since this study had excluded the vigorous physical activity component, which originally is included in the total MET-minutes per week, the total MET- minutes per week score was expected to be reduced. However, it was decided not to include the vigorous physical activities from the IPAQ, because this option was not expected to have a significant impact on the results. Research has shown that people with mental disorders have a lower physical activity level than the general population (Daumit et al, 2005; Schmitz et al, 2004; Sosial- og helsedirektoratet, 2000). Nevertheless, the participants of this present study reported higher physical activity level

than the general population from a study by Anderssen & Andersen (2004). This might be partly caused by their membership in a “working community”, the probability that the sample were based on the members with the highest physical activity level, and the tendency of over-reporting of self-reported physical activity level, as confirmed by other studies (Craig et al., 2003; Anderssen & Andersen, 2004).

The recommendations for physical activity differ in different studies. The recommendations for physical activity in the study by Anderssen & Andersen (2004) were 30 minutes per day of at least moderate physical activity, which is higher and less achievable than the recommendations used in this study (2.2.2). These differences can possibly also partly explain the high physical activity level among the sample of this study compared to the general population. Daumit et al. (2005) found that the proportion of persons with mental disorders meeting the recommendations was approximately the same as the proportion of the general population, which was caused by their high level of walking. The present study confirms this high level of walking among persons with mental disorders. The intensity of the physical activity might be also an explanation on the relationship between physical activity and HRQOL.

The participants in the study by Laforge et al. (1999) reported low levels of the stages of change for exercise measure, and high levels in the HRQOL scores, while the participants of the present study reported high levels of physical activity according to the stages of change for physical activity measure and relatively low levels of HRQOL. Differences in reported level of physical activity (stages of change) and HRQOL might be a reason for differences in explained variance of HRQOL in this study compared to the study by Laforge et al. (1999).

5.3.6 Health related quality of life (HRQOL)

The MCS and the PCS of HRQOL was lower among the participants of this study compared to the general Norwegian population (Gandek et al., 1998). The mean MCS was the score which differed most from the mean values of the general Norwegian population. Previous studies confirm that people with mental health problems have a lower HRQOL (especially the MCS) compared to the general population (Alonso et al, 2004). People with mental disorders might have a tendency to report their HRQOL pessimistically, and the subjective interpretation of own health can vary with their actual underlying health problem (Mykletun & Knudsen, 2009). Hence,

this may affect the relationship between physical activity and HRQOL.

A low score the MCS of HRQOL can partly imply that the mental health has caused problems with accomplishing desired tasks such as: conducting activities less carefully than usual, that bodily pain has interfered with normal work and everyday life, that the person has not felt calm and peaceful, had low energy levels and has felt downhearted and blue. For these reasons it was expected that the MCS would be lower for the sample of this study with mental disorders, compared to those without mental disorders. On the other hand, the participants of this study were members of a “working community”, and it could be expected that they had a higher HRQOL than other persons with mental disorders which is supported in previous research (Pelletier et al., 2005) (also explained in 2.6).

The mean PCS was the only HRQOL score that was significantly higher for men than women. A similar study by Vuillemin et al. (2005) confirms this. A cohort study by Wendel-Vos et al. (2004) found that the men had higher scores of all subscales of HRQOL than the women except for the General Health, that was higher in women (Wendel- Vos et al, 2004). This has been confirmed by Schmitz et al. (2004), reporting that both component scores of the HRQOL were higher among the men than the women. The reason for this might be that men are more satisfied with their HRQOL and their general well being. This might be a possible reason for the association between physical activity and HRQOL also was higher for men than for women in this study.. However this contradicts that the individuals with a lower HRQOL have a higher association to physical activity as assumed by Schmitz et al. (2004). The scores of the individuals “in a relationship” had significantly lower mean PCS (42,1) than the individuals in a relationship (mean=47,6). These differences in the PCS between groups (gender and marital status) might also be caused by type 1 errors, meaning that there was found a significant difference that is not actually present.

5.3.7 Other factors

Researchers suggest that the physical activity level can indirectly have an association with HRQOL including: a distraction from other problems in life, increased self-efficacy and self-esteem, feelings of mastery and confidence, and improvements in the general lifestyle. The psychosocial mechanisms can also be associated to the HRQOL (such as the social network and support) (Biddle et al, 2000). A higher self-esteem through physical activity might improve the

self-reported HRQOL. Some examples of physiological mechanisms from physical activity can be the increase in endorphins, noradrenalin and central serotonin levels (Schmitz et al, 2004; Biddle et al., 2000). These factors were not controlled for in this study.

Another and maybe the most obvious and easiest explanation on the significant relationship between the physical activity level and the PCS can be that this component reflects a higher sensitivity and responsiveness to vary with physical activity than the MCS, as confirmed by Brown et al. (2003).

5.5 Methodological considerations

This study has some significant and important findings. However, methodological considerations have to be considered when interpreting the results. A quantitative research design cannot convey the broad, holistic and relative perspective of HRQOL and physical activity and it lacks detailed information, because the data is based on a numerical dataset (Thomas et al., 2011). Nevertheless, qualitative research makes the chance of bias lower due to the objective data and analysis (Creswell, 2009).

The cross-sectional design cannot convey the causal relationship between variables (Thomas et al, 2011). This limitation was reduced by asking for previous thoughts, experiences and behaviour (i.e. recalling HRQOL the last four weeks and physical activity level the last week and year), as done in previous studies (Gandek et al., 1998; Anderssen & Andersen, 2004). However, it can be challenging to remember and recall the exact duration and frequency of physical activities, especially the physical activities with lower intensity (walking and moderate physical activities), and physical activities short in duration. It can also be challenging to recall the HRQOL the past four weeks. This can cause recall bias (Solberg & Anderssen, 2002). The IPAQ –short only includes activities lasting for more than 10 minutes, in an attempt to avoid this recall bias for the shorter duration activities. A reason for this is that bouts of at least 10 minutes are required to achieve health benefits according to scientific evidence (Solberg & Anderssen, 2002). Another bias is that many report physical activity only as recreational activities and do not regard the daily activities and activities during work as part of their physical activity level. To define the exact

intensity of the specific physical activity can also be challenging, because the individual feeling of intensity is varying (Solberg & Anderssen, 2002).

Since this study was conducted in the winter season in Norway, other results might be expected if it was conducted in the summer. The darker time of the year with shorter days and colder weather, typically for the winter season in Norway, might have influenced the reported physical activity level and the HRQOL among the participants, which again possibly have influenced the results. The leisure time physical activity (LPA) measure referring to the winter had a significantly stronger association to the PCS than the LPA measure referring to the summer; this was not found for the MCS. Nevertheless, we cannot conclude if it is the physical activity or the time of the year that is determining the HRQOL from a cross-sectional study.

Subjective self-reported questionnaires are often less precise and accurate than objective measures which might cause over or under reporting (Solberg & Anderssen, 2002). As an example, social desirable manners can influence the response of the questionnaires (Solberg & Anderssen, 2002). The findings from this study show a higher percentage of participants reporting that they met the recommendations for physical activity level than objectively measured physical activity level among the general population (Hansen et al., 2014), even though, previous studies have found that the physical activity level among people with mental disorders is lower than the rest of the general population without mental disorders (Daumit et al, 2005; Schmitz et al, 2004; Sosial- og helsedirektoratet, 2000). This can support the over-reporting of the physical activity level in this study. The HRQOL cannot be measured objectively, because it concerns the subjective mental, social and physical function and the satisfaction of this level of function (Rejeski et al., 1996). Self-reported questionnaires have been frequently used in research and are valid and reliable in measuring physical activity (Craig et al., 2003; Graff-Iversen et al., 2008; Marcus & Simkin, 1993) and HRQOL (Gandek et al., 1998; Næss et al., 2001). Wahl & Hanestad (2004) consider the self-reported questionnaires as the best method in research on QOL. Additionally, self reported questionnaires are time and cost effective, because many participants can respond at the same time. Participants can answer the questionnaires in their own individual tempo, questionnaires require minimal amount of stress for the participant and they are modifiable for special populations (Thomas et al., 2011).

Some of the questions were modified from the originally derived questions which might have influenced the results. This has to be taken into consideration when comparing the results to studies using the original versions. Nevertheless, the final questionnaire was thus considered as appropriate in covering the aims of this study and also valid and reliable since the questions still maintained its integrity.

Due to the small sample size (n=87) and participation rate, the results cannot be generalized to this specific group of the population. The small sample size can have caused unknown biases and might have been too small to obtain significant results. The sample size and results derived from this study should consequently not be generalized for all members of a Fountain House in Norway. This small sample size might be due to the difficulty of recruiting persons with mental disorders in a study (Alexandratos et al., 2012). Despite these drawbacks, the analysis and findings were still relevant and the results can therefore be applied to further research on this area. A larger sample size could have enhanced the level of significance, the statistical power, the validity and the reliability of the results. We unfortunately did not have data on the individuals that did not want to participate in the study, which most likely are the individuals with the lowest HRQOL scores and lowest physical activity level, more information is needed on those members.

The instruments, scoring, testing and participants can all provide errors in the data, which might affect the results. As an example the participants' mood, physical activity, health, memory and motivation can vary across time, creating errors. The researcher can also make errors with interpreting the results into the statistical program (Thomas et al., 2011). To increase the reliability, any obvious errors were reduced by checking through the dataset and frequency tables for meaningless values. No meaningless or extraordinary values were found. However, there can still be some errors in the data material, which has to be assumed.

5.6 Summary and suggestions for further research

From the findings of this study and previous studies we can assume that physical activity can be positively related to the HRQOL in individuals with mental disorders as also supported in previous relevant research among participants with and without mental disorders. Previous studies support that also the MCS is positively related with physical activity over time (Bize et

al., 2007; Wendel-Vos et al., 2004; Tessier et al., 2007). Other factors are also expected to be related with the low HRQOL among the people with mental disorders. However, the threshold for being a member of the Fountain house might not be as high as other treatment services for people with mental disorders because the membership does not require a diagnosed mental disorder. Therefore the support, encouragement of physical activity for the members can be an important health promoter for the HRQOL. Other factors can act as mediators for the relationship between physical activity and HRQOL among members of a Fountain House, such as the self-esteem, self-efficacy, physical fitness, social network and support, physical impairment, motivation, their mental disorders or other personal characteristics, and needs further research. Factors other than the physical activity might explain more of the variance in the HRQOL and needs more research. Further research should also examine which intensity, frequency and volume of physical activity that is most related to the HRQOL in persons with mental disorders (Rosenbaum et al., 2014).

The use of three measures for physical activity can reveal the relative importance of each measure for physical activity in explaining the variance in HRQOL. None of the previous studies used three different activity measures to examine the relative importance of physical activity on HRQOL, and consequently could not comprehensively explain the relative importance of these measures for explaining the variance in HRQOL, which can be suggested for further research.

Previous studies used a variety of methods, different criteria for their measurements, and have examined various groups of the population, and could therefore not directly be compared to the results of this study. Due to several limitations in design, sample size and measuring instruments in this study, as well as in previous research, there is still a need for more research to strengthen the findings on the relationship between physical activity and HRQOL. Researchers note that the findings of previous literature has to be interpreted with caution due to the lack of validation of the measures, inadequate randomisation procedures and high dropout rates (Vuillemin et al., 2005; Wendel-Vos et al., 2004). Further research should preferably combine objective (such as physical activity monitors) and subjective instruments for measuring physical activity, and focus on valid, reliable and consistent measuring instruments for both physical activity and HRQOL. It is uncertain whether the quality of life is decreased as a result of physical inactivity among the people with mental disorders or if the physical inactive behaviour is a result of functional

impairment and low quality of life (Schmitz et al., 2004). Research regarding the longitudinal effects of physical activity on HRQOL for people with mental disorders, are needed to examine the cause and effect relationship between these variables. To obtain representative findings, further research should also include larger sample sizes to generalize the results.

6.0 Conclusion

This study has examined the association between physical activity and various components of HRQOL, and examined the relative importance of physical activity variables in explaining the variation in HRQOL among adults with mental disorders from a Fountain house in Norway.

There were significant associations between all the physical activity measures and the Physical Component Summary (PCS) of the HRQOL. The participants meeting the recommendations for physical activity had a significantly higher PCS score than those who did not meet the recommendations, supporting the use of recommendations for promoting health in this group of participants. Physical activity could explain 27 % of the variance in the PCS. The IPAQ was the physical activity measure with the strongest association to the HRQOL, and also the only measure that could explain a significant variance in the PCS. The Mental Component summary (MCS) of the HRQOL had no significant associations with any of the physical activity measures.

References

- Alexandratos, K., Barnett, F. & Thomas, Y. (2012). The impact of exercise on the mental health and quality of life of people with severe mental illness: A critical review. *British Journal of Occupational Therapy*, 75(2), 48–60.
- Alonso, J., Angermeyer, M. C., Bernert, S., Bruffaerts, R., Brugha, T. S., Bryson, H. ... Vollebergh, W. A. M. (2004). Disability and quality of life impact of mental disorders in Europe: Results from the European Study of the epidemiology of mental disorders (ESEMeD) project. *Acta Psychiatrica Scandinavica*, 420, 38–46.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA.: American Psychiatric Association.
- Anderssen, S. A. & Andersen, L. B. (2004). *Fysisk aktivitetsnivå i Norge 2003: Data basert på spørreskjemaet "International Physical Activity Questionnaire"*. Oslo: Sosial- og Helsedirektoratet.
- Anderssen, S. A. & Strømme, S. B. (2001). Fysisk aktivitet og helse: anbefalinger. *Tidsskrift for den Norske Lægeforening*, 121, 2037-2041.
- Barovsky, I. (2011). *Quality: Its Definition and Measurement As Applied to the Medically Ill*. Springer Science & Business Media. Retrieved at 26. May, 2015 from <https://books.google.no/books?hl=no&lr=&id=cr1c4zjMiEAC&oi=fnd&pg=PA2&dq=Quality:+Its+Definition+and+Measurement+As+Applied+to+the+Medically+Ill.&ots=HPmVn2GIPY&sig=Zzg9wxt1MRDXbgrPD5Q5m6zaWkA#v=onepage&q=Quality%3A%20Its%20Definition%20and%20Measurement%20As%20Applied%20to%20the%20Medically%20Ill.&f=false>
- Biddle, S. J. H., Fox, K. R., Boutcher, S. H. & Faulkner, G. E. (2000). The way forward for physical activity and the promotion of psychological well-being. In: S. J. H. Biddle, K. R. Fox & S. H. Boutcher (Ed.), *Physical activity and psychological Well-being* (p. 154-168). London: Routledge.
- Biddle, S. J. H. & Mutrie, N. (2001). *Psychology of physical activity: Determinants, well-being and interventions*. London: Routledge.
- Bingham, P. B. (2009). *Physical Activity and Mental Health Literature Review*. Minding our bodies. Retrieved at 1. April 2015 from http://www.mindingourbodies.ca/sites/default/files/mob_literature_review_0.pdf
- Bize, R., Johnson, J. A. & Plotnikoff, R. C. (2007). Physical activity level and health-related quality of life in the general adult population: A systematic review. *Preventive Medicine*, 45(6), 401–415.

- Brown, D. W., Balluz, L. S., Heath, G. W., Moriarty, D. G., Ford, E. S., Giles, W. H. & Mokdad, A. H. (2003). Associations between recommended levels of physical activity and health-related quality of life. Findings from the 2001 Behavioral Risk Factor Surveillance System (BRFSS) survey. *Preventive Medicine*, 37, 520-528.
doi:10.1016/S0091-7435(03)00179-8
- Campbell, A., Converse, P. E. & Rodgers, W. L. (1976). *The quality of American Life: Perceptions, Evaluations, and Satisfaction*s. New York: Russel Sage Foundation.
- Carless, D. & Faulkner, G. (2003). Physical Activity and Mental Health. In: J. McKenna & C. Riddoch (Ed.), *Perspectives on Health and Exercise* (p. 61 – 82). New York: Palgrave Macmillian.
- Caspersen, C. J., Powell, K. E. & Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. *Public health reports*, 100(2), 126.
- Centers for Disease Control and Prevention. (2000). *Measuring healthy days: Population assessment of health-related quality of life*. Retrieved at 06. May 2015 from <http://www.cdc.gov/hrqol/pdfs/mhd.pdf>
- Clubhouse International. (2015a). *What is a clubhouse?* Retrieved at 10. April 2015 from <http://www.iccd.org/whatis.html>
- Clubhouse International. (2015b). *History*. Retrieved at 10. April 2015 from <http://www.iccd.org/history.html>
- Craig, C. L., Marshall, A. L., Sjöström, M., Bauman, A., Booth, M., Ainsworth, B. E. & Oja, P. (2003) International Physical Activity Questionnaire: 12- Country Reliability and Validity. *Medicine & Science in Sports and Exercise*, 35(8), 1381-1395.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. Los Angeles: Sage.
- Dale, D., Welk, G. J., Mathhews, C. E. (2002). Methods for assessing physical activity and challenges for research. In: G. J. Welk (Ed.), *Physical activity assessments for health related research* (p. 19-34). Champaign, IL: Human Kinetics.
- Dalgard, O. S. (2008). Del 1: Hos hvem har pasientene søkt hjelp, og hva slags behandling har de fått? In: *Levekårsundersøkelsen, 2005. Psykiske problemer og behandling* (p.9-29). Oslo: Nasjonalt Folkehelseinstitutt. Retrieved at 27. March 2015 from <http://www.fhi.no/dav/a1fde18b92.pdf>
- Daumit, G. L., Goldberg, R. W., Anthony, C., Dickerson, F., Brown, C. H., Kreyenbuhl, J. ... Dixon, L. B. (2005). Physical activity patterns in adults with severe mental illness. *Journal of Nervous & Mental Disease*, 193, 641–646.

- Ekkekakis P., Parfitt, G., & Petruzzello, S. J. (2011). The pleasure and displeasure people feel when they exercise at different intensities. *Sports Medicine*, 41(8), 641-671.
- Faulkner, G. & Carless, D. (2006). Physical activity in the process of psychiatric rehabilitation: Theoretical and methodological issues. *Psychiatric Rehabilitation Journal*, 29(4), 258-266.
- Faulkner, G., Cohn, T. & Remington, G. (2006). Validation of a physical activity assessment tool for individuals with schizophrenia. *Schizophrenia research*, 82(2), 225-231.
- Ferrans, C. E. (2005). Definitions and conceptual models of quality of life. In: J. Lipscomb, C.C. Gotay, C. Synder (Ed.), *Outcomes Assessment in Cancer*. New York: Cambridge University Press.
- Fontenehus Norge. (2012). *Årsmelding 2012*. Retrieved at 22. April 2015 from <http://fontenehus.no/fontenehus-norge/arsmelding>
- Fox, K. R., Boutcher, S. H., Faulkner, G. & Biddle, S. J. H. (2000). The way forward for physical activity and the promotion of psychological well-being. In: S. J. H. Biddle, K. R. Fox, & S. H. Boutcher (Ed.), *Physical activity and psychological Well-being* (p. 1-45). London: Routledge.
- Gandek, B., Ware, J. E., Aaronson, N. K., Apolone, G., Bjorner, J. B., Brazier, J. ... & Sullivan, M. (1998). Cross-validation of item selection and scoring for the SF-12 Health Survey in nine countries: results from the IQOLA Project. *Journal of clinical epidemiology*, 51(11), 1171-1178. doi:10.1016/S0895-4356(98)00109-7
- Gorczyński P, Faulkner G, Greening S, Cohn T. (2010). Exploring the construct validity of the transtheoretical model to structure physical activity interventions for individuals with serious mental illness. *Psychiatric Rehabilitation Journal*, 34(1), 61-64.
- Graff-Iversen, S., Anderssen, S. A., Holme, I. M., Jenum, A. K. & Raastad, T. (2008). Two short questionnaires on leisure-time physical activity compared with serum lipids, anthropometric measurements and aerobic power in a suburban population from Oslo, Norway. *European Journal of Epidemiology*, 23(3), 167-74.
- Guyatt, G. H., Feeny, D. H. & Patrick, D. L. (1993). Measuring Health-Related Quality of Life. *Annals of International Medicine*, 118, 622-629.
- Hallal, P. C., Andersen, L. B., Bull, F. C., Guthold, R., Haskell, W. & Ekelund, U. (2012). Global physical activity levels: surveillance progress, pitfalls, and prospects. *The Lancet*, 380, 247-257.

- Hansen, B. H., Kolle, E., Anderssen, S. A. (2014). *Fysisk aktivitetsnivå blant voksne og eldre i Norge Oppdaterte analyser basert på nye nasjonale anbefalinger i 2014*. Oslo:Helsedirektoratet.
- Helsedirektoratet. (2014). *Anbefalinger om kosthold, ernæring og fysisk aktivitet*. (Rapport. IS-2170). Oslo: Helsedirektoratet.
- Hjort, P. F. (1986). Fysisk trening- bare for de friske? In: J, Haldorsen (Ed.), *Psykiatri og fysisk aktivitet* (p. 11-23). Oslo: Universitetsforlaget AS.
- IPAQ. (2005). *Guidelines for data processing and analysis of the international physical activity questionnaire (IPAQ) short and long forms*. Retrieved at 10. January from: http://www.ipaq.ki.se/dloads/IPAQ%20LS%20Scoring%20Protocols_Nov05.pdf
- Kerce, E. W. (1995). *Quality of life: Meaning, measurement, and models (NPRDC-TR- 92-15)*. San Diego: Navy Personnel Research and Development Center. Retrieved at 15. March 2015 from <file:///C:/Users/per.VESTSKOG/Downloads/ADA250813.pdf>
- Kilbourne, A. M., Morden, N. E., Austin, K, Ilgen, M., McCarthy, J. F., Dalack, G. & Blow, F. C. (2009). Excess heart-disease-related mortality in a national study of patients with mental disorders: identifying modifiable risk factors. *General Hospital Psychiatry, 31*(6), 555-563.
- Kjellmann, B., Martinsen, E., Taube, J. & Andersson, E. (2008). Depresjon. In: R, Bahr (Ed.). *Aktivitetshåndboken- Fysisk aktivitet i forebygging og behandling* (p.275-285). Oslo:Helsedirektoratet.
- Kosma, M. & Ellis, R. (2010). Establishing Construct Validity of a Stages-of-Change Algorithm for Physical Activity. *American Journal of Health Promotion, 25* (2), 11-20.
- Kringlen, E., Torgersen, S. & Cramer, V. (2001). A Norwegian psychiatric epidemiological study. *American Journal of Psychiatry, 158* (7), 1091-1098.
- Laforge, R. G., Rossi, J. S., Prochaska, J. O., Velicer, W. F., Leversgue, D. A. & McHorney, C. A. (1999). Stage of regular exercise and health-related quality of life. *Preventive Medicine, 28*(4), 340-360. [doi:10.1006/pmed.1998.0429](https://doi.org/10.1006/pmed.1998.0429).
- Loge, J. H. & Kaasa, S. (1998). Short Form 36 (SF-36) health survey: normative data from the general Norwegian population. *Scandinavian Journal of Public Health, 26*(4), 250-258.

- Loge, J. H., Kaasa, S., Hjerstad, M. J. & Kvien, T. K. (1998). Translation and performance of the Norwegian SF-36 Health Survey in patients with rheumatoid arthritis. Data quality, scaling assumptions, reliability, and construct validity. *Journal of clinical epidemiology*, 51(11), 1069-1076.
- Marcus, B. H. & Simkin, L. R. (1993). The stages of exercise behavior. *Journal of Sports Medicine & Physical Fitness*, 33, 83-88.
- Martinsen, E. W. (1998). Psykiatrisk forskning på fysisk aktivitet- en oversikt. In : T, Moe, N, Rettestøl, M, Sørensen (Ed.), *Fysisk aktivitet- en ressurs I psykiatrisk behandling* (p.50-68). Oslo: Universitetsforlaget AS
- Martinsen, E. W. (2004). *Kropp og sinn. Fysisk aktivitet og psykisk helse*. Bergen: Fagbokforlaget.
- Martinsen, E. W. & Taube, J. (2009a). Avhengighet og misbruk. In: R. Bahr(Ed.), *Aktivitetshåndboken- Fysisk aktivitet i forebygging og behandling*. Oslo: Helsedirektoratet.
- Martinsen, E. W. & Taube, J. (2009b). Schizofreni. In: R. Bahr(Ed.), *Aktivitetshåndboken- Fysisk aktivitet i forebygging og behandling*. Oslo: Helsedirektoratet.
- McAuley, E. & Morris, K. S. (2007). State of the Art Review: Advances in Physical Activity and Mental Health: Quality of Life. *American journal of lifestyle medicine*, 1(5), 389-396.
- Mental Health Conditions (n.d). *National Alliance on Mental Illness*. Retrieved at 24. April 2015 from <https://www.nami.org/Learn-More/Mental-Health-Conditions>
- Mykletun, A., Knudsen, A. K. & Mathiesen, K. S. (2009). *Psykiske lidelser i Norge: et folkehelseperspektiv*. Oslo: Nasjonalt folkehelseinstitutt.
- Mykletun, A. & Knudsen, A. K. (2009). *Tapte arbeidsår ved uførepensjonering for psykiske lidelser. En analyse basert på FD-trygd*. Oslo: Nasjonalt Folkehelseinstitutt. Retrieved at 8. May 2015 from <http://www.fhi.no/dav/47c13ed7e1.pdf>
- Nes, R. B., & Clench-Aas, J. (2011). *Psykisk helse i Norge: Tilstandsrapport med internasjonale sammenligninger*. Oslo: Nasjonalt Folkehelseinstitutt Retrieved at 8. Mai 2015 from <http://www.fhi.no/dokumenter/960011f100.pdf>
- Næss, S. (1987). *Quality of life research: Concepts, methods, and applications*. Oslo: Institute of Applied Social Research.
- Næss, S. (1999). Subjective approach to Quality of Life. *Feminist Economics*, 5(2), 115-118.

- Næss, S., Mastekaasa, A., Moum, T. & Sørensen, T. (2001). *Livskvalitet som psykisk velvære*. Norsk institutt for forskning om oppvekst, velferd og aldring.
- Pelletier, J. R., Nguyen, M., Bradley, K., Johnsen, M. & McKay, C. (2005). A study of a structured exercise program with members of an ICCD Certified Clubhouse: Program design, benefits, and implications for feasibility. *Psychiatric Rehabilitation Journal*, 29, 89-96.
- Penedo, F. J. & Dahn, J. R. (2005). Exercise and well-being: a review of mental and physical health benefits associated with physical activity. *Current opinion in psychiatry*, 18 (2), 189-193.
- Prochaska, J. O. & Diclemente, C. C. (1983). Stages and processes of self-change of smoking: toward an integrative model of change. *Journal of Consulting Clinical Psychology*, 51, 390-395.
- Reed, G. R., Velicer, W. F., Prochaska, J. O., Rossi, J. S. & Marcus, B. H. (1997). What makes a good staging algorithm: examples from regular exercise. *American Journal of Health Promotion*, 12 (1), 57-66. doi: <http://dx.doi.org/10.4278/0890-1171-12.1.57>
- Rejeski, W. J., Brawley, L.R. & Shumaker, S. (1996). Physical activity and health-related quality of life. *Exercise and Sports Science*, 24, 71-108.
- Rickhardson, C. R., Faulkner, G., McDevitt, J., Skrinar, G. S., Hutchinson, D. S. & Piette, J. D. (2005). Integrating physical activity into mental health services for persons with serious mental illness. *Psychiatric Services*, 56(3), 324-331.
- Rosenbaum, S., Tiedemann, A., Sherrington, C., Curtis, J. & Ward, P. B. (2014). Physical activity interventions for people with mental illness: a systematic review and meta analysis. *The Journal of clinical psychiatry*, 75(9), 964-974.
- Roshanaei-Moghaddam, B. & Katon, W. (2009). Premature mortality from general medical illnesses among persons with bipolar disorder: a review. *Psychiatric services*, 60(2), 147-156.
- Scabo, A. (2000). Physical activity as a source of psychological dysfunction. In: S. J. H. Biddle, K. R. Fox, & S. H. Boutcher (Eds.), *Physical activity and psychological Well-being* (pp. 130-168). London: Routledge.
- Schmitz, N., Kruse, J. & Kugler, J. (2004). The Association between Physical Exercises and Health-Related Quality of Life in Subjects with Mental Disorders: Results from a CrossSectional Survey. *Preventive Medicine*, 39(6): 1200–1207.
- Shibata, A., Oka, K., Nakamura, Y., & Muraoka, I. (2007). Recommended level of physical activity and health-related quality of life among Japanese adults. *Health and Quality of Life Outcomes*, 5, 64-68.

- Solberg, M. & Anderssen, S. A. (2002). *Utarbeidelse av målemetoder for måling av fysisk aktivitet- Utvikling og Validering av spørreskjema for ungdom og voksne*. Oslo: Norwegian School of Sport Sciences.
- Sosial- og helsedirektoratet. (2000). *Fysisk aktivitet og helse: Anbefalinger*. Retrieved at 18. February 2015 from <https://helsedirektoratet.no/Lists/Publikasjoner/Attachments/717/Fysisk-aktivitet-og-helse-anbefalinger-IS-1011.pdf>
- Sosial- og helsedirektoratet. (2005). *Psykisk helsearbeid for voksne i kommunene: beskrivelse av fagfeltet, råd og veiledning, overordnede rammer*. Oslo: Sosial- og helsedirektoratet.
- Steel, Z., Marnane, C., Iranpour, C., Chey, T., Jackson, J.W., Patel, V. & Silove, D. (2014). The global prevalence of common mental disorders: a systematic review and meta analysis 1980-2013. *International Journal of Epidemiology*, 43(2):476-93.
- Tessier, S., Vuillemin, A., Bertrais, S., Boini, S., Bihan, E., Oppert, J. M. ... Briancon, S. (2007). Associations between leisure-time physical activity and health-related quality of life changes over time. *Preventive Medicine*, 44(3), 202-208. doi:10.1016/j.ypmed.2006.11.012
- Teychenne, M., Ball, K. & Salmon, J. (2008). Physical activity and likelihood of depression in adults: a review. *Preventive Medicine*, 46, 397-411.
- Thomas, J. R., Nelson, J. K. & Silverman, S. J. (2011). *Research methods in physical activity* 6th ed.ampaign IL: Human Kinetics.
- Thrane, C. (1999). Fysisk aktivitet, helse og subjektivt velvære. *Tidsskrift for Samfunnsforskning*, 40, 283-309.
- U. S. Department of Health and Human Service. (1996). *Physical activity and health: a report of the Surgeon General*. Atlanta: Centers of Disease Control and Prevention. Retrieved at 1. May 2015 from https://books.google.no/books?hl=no&lr=&id=WZZPc1FmL7QC&oi=fnd&pg=PA3&dq=social+network+can+increase+physical+activity+level+among+people+with+mental+disorders&ots=5WGfYZRk0j&sig=gIKZrMxafdhSEPP7100LUJTl7zM&redir_esc=y#v=onepage&q&f=false
- Ventegodt, S. (1995). *Måling af livskvalitet- Fra teori til praksis*. København: Forskningscenterets Forlag.
- Vuillemin, A., Boini, S., Bertrais, S., Tessier, S., Oppert, J. M., Hercberg, S. ... Briancon, S. (2005). Leisure time physical activity and health-related quality of life. *Preventive Medicine*. 41, 562-569.

- Wahl, A. K. & Hanestad, B. R. (2004). *Måling av livskvalitet i klinisk praksis: en innføring*. Bergen: Fagbokforlag.
- Wallander, J. L. (2001). Theoretical and developmental issues in quality of life for children and adolescents. In: H. M. Koot & J. L. Wallander (Eds.), *Quality of life in child and adolescent illness: Concepts, methods, and findings* (p. 23–48). East Sussex, England: Brunner-Routledge.
- Ware, J. E., & Gandek, B. (1994). The SF-36 Health Survey: development and use in mental health research and the IQOLA Project. *International Journal of Mental Health*, 23(2), 49-73.
- Ware, J. E., Kosinski, M., Turner-Bowker, D. M. & Gandek, B. (2002). *User's Manual for the SF-12v2® Health Survey With a Supplement Documenting SF-12® Health Survey*. Lincoln, RI: QualityMetric Incorporated. Retrieved at 1. May 2015 from http://opencourses.emu.edu.tr/pluginfile.php/8472/mod_resource/content/1/SF-12v2%20Manual.pdf
- Wendel-Vos, G. C. W., Schuit, A. J., Tjshuis, M. A. R. & Kromhout, D. (2004). Leisure time physical activity and health-related quality of life: Cross-sectional and longitudinal associations. *Quality of Life Research*, 13, 667-677.
- WHO. (1992). *International statistical classification of diseases and related health problems: 10th revision*. Retrieved at 26. January, 2015 from http://www.who.int/classifications/icd/ICD10Volume2_en_2010.pdf?ua=1
- WHO. (1997). *WHOQOL: Measuring Quality of Life*. Retrieved at 2. May from http://www.who.int/mental_health/media/68.pdf
- WHO. (2001). *The world health report 2001: Mental health: New understanding, new hope. The world health Report*. Geneva, Switzerland:WHO. Retrieved at 16. February 2015 from http://apps.who.int/iris/bitstream/10665/42390/1/WHR_2001.pdf?ua=1
- WHO. (2004). *Global strategy on Diet, Physical activity, and Health*. Retrieved at 6. February 2015 from http://apps.who.int/iris/bitstream/10665/43035/1/9241592222_eng.pdf?ua=1
- WHO. (2010). *Global recommendation on physical activity for health*. Retrieved at 5. February 2015 from http://whqlibdoc.who.int/publications/2010/9789241599979_eng.pdf
- WHO. (2014). *Media centre: Mental disorders*. Retrieved at 16. January from <http://www.who.int/mediacentre/factsheets/fs396/en/>

WHO. (2015). *Media Centre: Physical activity*. Retrieved at 16. February 2015 from <http://www.who.int/mediacentre/factsheets/fs385/en/>

Wiles, N. J., Haase, A. M., Gallacher, J., Lawlor, D. A. & Lewis, G. (2007). Physical activity and common mental disorder: results from the Caerphilly study. *American Journal of Epidemiology*, 165, 946- 954.

Appendix

Appendix 1: Informed consent

Appendix 2: Approval from NSSD

Appendix 3: Questionnaire

Forespørsel om deltakelse i forskningsprosjektet

”Fysisk aktivitet, motivasjon og livskvalitet blant medlemmer på Fontenehuset ”

Bakgrunn og formål

Fontenehuset ønsker å kartlegge det fysiske aktivitetsnivået hos medlemmene sine, og å kartlegge ønsker og behov medlemmene har i forhold til fysisk aktivitet. De har derfor kontaktet Norges idrettshøyskole og de har i samarbeid utarbeidet et prosjekt som begge kan dra nytte av. Norges idrettshøyskole i Oslo ønsker videre å undersøke om det er en sammenheng mellom fysisk aktivitet, motivasjon og livskvalitet blant medlemmer av Fontenehuset.

En masterstudent ved Norges idrettshøyskole er i gang med å skrive masteroppgave. Tema er fysisk aktivitet, motivasjon og livskvalitet blant personer med psykiske lidelser og studenten vil dermed dra nytte av dette fellesprosjektet i arbeidet med sin masteroppgave.

Hva innebærer deltakelse i studien?

For å gjennomføre dette fellesprosjektet er vi avhengig av at Fontenehusets medlemmer er villig til å besvare et spørreskjema. Spørsmålene vil omhandle ulike aspekter av fysisk aktivitet, motivasjon og livskvalitet.

Hva skjer med informasjonen om deg?

Alle personopplysninger vil bli behandlet konfidensielt. Det er kun ansatte ved Fontenehuset som vil ha tilgang til personopplysninger. Alle andre opplysninger vil bli anonymisert (erstatter navn med et anonymt nummer) av ansatte ved Fontenehuset før det blir overlevert til Marit Sørensen, professor ved Norges Idrettshøyskole og Beate Osgjerd Rekve, masterstudent, som skal analysere data. Navneliste og kodingsnøkkel vil forbli hos Fontenehuset, og ingen vil kunne gjenkjennes i publikasjon av data.

Prosjektet skal etter planen avsluttes i løpet av mai, 2015. Personopplysninger hos Fontenehuset vil destrueres i løpet av vinteren, 2015. Data vil bli lagret anonymisert, og kun veileder og masterstudent ved Norges Idrettshøyskole vil ha tilgang til datamaterialet. Fontenehuset vil få en rapport med sammenfatning av resultater i etterkant. Ingen opplysninger skal kunne spores til enkeltpersoner.

Frivillig deltakelse

Det er frivillig å delta i studien, og du kan når som helst trekke ditt samtykke uten å oppgi noen grunn. Dersom du trekker deg, vil alle opplysninger om deg bli slettet og dette vil ikke få innvirkning på ditt forhold til ansatte eller andre ved fontenehuset.

Dersom du har spørsmål til studien, ta kontakt med:

Student: Beate Osgjerd Rekve , e-post: beateor@student.nih.no , tlf: 97588006.

Veileder: Marit Sørensen.

Eller ansatt på Fontenehuset: Linda Bakås Råmunddal.

Studien er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneste AS.

Samtykke til deltakelse i studien

Jeg har mottatt informasjon om studien, og er villig til å delta

(Signert av prosjektdeltaker, dato)

Appendix 2: Approval from NSSD

Norsk samfunnsvitenskapelig datatjeneste AS
NORWEGIAN SOCIAL SCIENCE DATA SERVICES



Harald Hårfagres gate 29
N-5007 Bergen
Norway
Tel: +47-55 58 21 17
Fax: +47-55 58 96 50
nsd@nsd.uib.no
www.nsd.uib.no
Org.nr. 985 321 884

Marit Sørensen
Seksjon for coaching og psykologi
Norges idrettshøgskole
Postboks 4014 Ullevål Stadion
0806 OSLO

Vår dato: 18.12.2014

Vår ref: 41098/3/LT/LR

Deres dato:

Deres ref:

TILBAKEMELDNING PÅ INNSENDT MELDESKJEMA

Vi viser til mottatt meldeskjema 08.12.2014 for prosjektet:


41098 Sammenheng mellom fysisk aktivitet, motivasjon og livskvalitet hos mennesker med psykiske lidelser

Det vises til telefonsamtale med prosjektleder Beate Osgjerd Rekve 16.12.2014 hvor det opplyses at det er Fontenehuset som vil være behandlingsansvarlig institusjon og at prosjektleder kun vil få tilgang til anonymiserte opplysninger.

På bakgrunn av dette avslutter personvernombudet videre saksbehandling, da prosjektet da ikke vil være meldepliktig.

Ta gjerne kontakt dersom noe er uklart.

Vennlig hilsen


Katrine Utaaker Segadal


Lis Tenold

Kopi: Beate Osgjerd Rekve, Thorleifs Alle 13 d, 0489 OSLO

Avdelingskontorer / District Offices:

OSLO: NSD, Universitetet i Oslo, Postboks 1055 Blindern, 0316 Oslo. Tel: +47-22 85 52 11. nsd@uio.no

TRONDHEIM: NSD, Norges teknisk-naturvitenskapelige universitet, 7491 Trondheim. Tel: +47-73 59 19 07. kyrre.svarva@svt.ntnu.no

TROMSØ: NSD, HSL, Universitetet i Tromsø, 9037 Tromsø. Tel: +47-77 64 61 53. solvi.anderssen@uit.no

Fontenehuset

i samarbeid med



Spørreundersøkelse

om

fysisk aktivitet

Representanter fra Fontenehuset

Marit Sørensen,
Professor

Anders Farholm
Stipendiat

Beate Osgjerd Rekve
Master student

Kort informasjon

Det finnes ikke rette eller gale svar i dette spørreskjemaet. Det er dine erfaringer og meninger vi ønsker. Prøv å svare så åpent og ærlig du kan. På forhånd takk!

HVOR FYSISK AKTIV ER DU?

Fysisk aktivitet er aktiviteter du gjør i hverdagen, som f.eks. husarbeid, hagearbeid, aktivitet på jobb, rask gange, sykling, idrett og annen trening.

Med regelmessig fysisk aktivitet mener vi at du:

- puster mer enn vanlig
- holder på til sammen 30 min hver dag
- er i aktivitet nesten hver dag

1. Er du i regelmessig fysisk aktivitet?

Kryss av for det utsagnet som passer best for deg.

- Nei, og jeg har ingen hensikt om å starte med fysisk aktivitet.....
- Nei, men jeg har vurdert å begynne å være fysisk aktiv.....
- Nei, men jeg har en plan om å begynne med fysisk aktivitet.....
- Ja, men i mindre enn 6 måneder.....
- Ja, og jeg har vært det i over 6 måneder.....

2. Hvor fysisk aktiv er du på fritiden?

Sett kryss i den ruten som beskriver fritiden din best det siste året. Sett et kryss for vinter og et for sommer.

	Vinter	Sommer
Leser, ser på TV eller annen stillesittende aktivitet	<input type="checkbox"/>	<input type="checkbox"/>
Spaserer sykler eller beveger deg på annen måte <u>minst 4 timer i uka</u>	<input type="checkbox"/>	<input type="checkbox"/>
Driver mosjonsidrett, tyngre hagearbeid eller lignende <u>minst 4 timer i uka</u>	<input type="checkbox"/>	<input type="checkbox"/>
Trener hardt eller driver konkurranseidrett regelmessig og <u>minst 3 ganger i uka</u> .	<input type="checkbox"/>	<input type="checkbox"/>

3. Hvor mange av de siste 7 dagene har du gått minst 10 minutter i strekk?

_____ dager (0-7 dager)

Hvor lang tid brukte du vanligvis på å gå disse dagene?

_____ timer per dag

_____ minutter per dag

Vet ikke / usikker

4. Hvor mange av de 7 siste dagene har du vært i middels anstrengende aktivitet?

Middels anstrengende aktivitet betyr at det er mer krevende enn vanlig gange og at det får deg til å puste litt mer enn vanlig. Som f. eks å bære lette ting, sykle eller jogge.

_____ dager (0-7 dager)

Hvor lang tid brukte du vanligvis på middels anstrengende aktivitet disse dagene?

_____ timer per dag

_____ minutter per dag

Vet ikke / usikker

5. AKTIVITETER PÅ FONTENEHUSET

Deltar du i:

- | | Ja | Nei | Ukjent med tilbudet |
|---------------------------------|--------------------------|--------------------------|--------------------------|
| • Torsdagstrim på treningshuset | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Hvis nei, hvorfor ikke? _____

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| • Aktiv på dagtid (gratis trening mellom 9- 14) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|

Hvis nei, hvorfor ikke? _____

- | | | | |
|----------------|--------------------------|--------------------------|--------------------------|
| • Medvandrerer | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|----------------|--------------------------|--------------------------|--------------------------|

Hvis nei, hvorfor ikke? _____

- | | | | |
|------------------|--------------------------|--------------------------|--------------------------|
| • Tur i lunsjen? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|------------------|--------------------------|--------------------------|--------------------------|

Hvis nei, hvorfor ikke? _____

6. HVA SLAGS FYSISKE AKTIVITETSTILBUD KUNNE DU TENKE DEG Å BENYTTE I REGI AV FONTENEHUSET?

Kryss av for alt du kunne tenke deg å delta i.

Aktivitet	Kryss av
Turgåing	
Skitur	
Slalom/snowboard	
Sykkeltur	
Vannaktivitet	
Aerobic	
Ballspill	
Styrketrening/ sirkeltrening	
Zumba	
Boksing	
Dans	
Yoga	
Annet (beskriv under)	

Beskriv:

7. HVOR VIKTIG ER DE FØLGENDE FORHOLD FOR AT DU SKAL DELTA I AKTIVITETSTILBUD?

Sett kryss.

	Ikke Viktig	Lite viktig	Litt viktig	Svært viktig
Avstanden til Fontenehuset	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lett tilgjengelig kollektivtilbud	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noen å trene sammen med	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tidspunkt på dagen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annet? Beskriv:.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

.....

8. Når på dagen ville du helst trene? Morgen/formiddag
 Ettermiddag
 Helg

9. FORVENTNINGER TIL FYSISK AKTIVITET

Hvordan kjenner du deg igjen i disse utsagnene? Sett ring rundt tallet.

Jeg føler meg trygg på at jeg kan være/ er i fysisk aktivitet...	Ikke sant	Noe sant	Nesten helt sant	Helt sant
1. ...selv om jeg har bekymringer og problemer	1	2	3	4
2. ...selv om jeg ikke føler at jeg lykkes med en gang	1	2	3	4
3. ...selv om jeg føler meg anspent	1	2	3	4
4. ...selv om de rundt meg ikke er spesielt fysisk aktive	1	2	3	4
5. ...selv om jeg har det travelt	1	2	3	4
6. ...selv om jeg må gjøre flere forsøk før det har blitt en vane for meg å være fysisk aktiv	1	2	3	4
7. ...selv om det ikke er en vane ennå	1	2	3	4
8. ...selv om jeg er deprimert...	1	2	3	4
9. ...selv om det ikke er noen rundt meg som støtter meg i å være fysisk aktiv	1	2	3	4
10. ...selv om jeg er sliten	1	2	3	4
11. ...selv om jeg ikke merker fremgang med en gang	1	2	3	4
12. ...selv om jeg er stresset	1	2	3	4

10. RESULTATER AV Å DRIVE FYSISK AKTIVITET

Hvordan kjenner du deg igjen i disse utsagnene? Sett ring rundt tallet.

Hvis/ når jeg er i regelmessig fysisk aktivitet...(sett ring rundt tallet)	Ikke sant	Noe Sant	Nesten helt sant	Helt sant
1. ...vil jeg føle meg bedre etterpå	1	2	3	4
2. ...vil jeg påvirke min vekt i ønsket retning	1	2	3	4
3. ...vil jeg få bedre fysisk helse	1	2	3	4
4. ...vil jeg bli mer attraktiv	1	2	3	4
5. ...vil jeg leve et mer balansert liv	1	2	3	4
6. ...vil livskvaliteten min bli bedre	1	2	3	4
7. ...vil jeg få bedre psykisk helse	1	2	3	4
8. ...vil andre gi meg mer anerkjennelse	1	2	3	4
9. ... vil andre personer sette pris på viljestyrken min	1	2	3	4

11. STØTTE FRA ANDRE

Hvem gir deg støtte til å være fysisk aktiv?

Sett ett eller flere kryss.

- Familie.....
- Venner.....
- Behandlingspersonell.....
- Ansatte på Fontenehuset i Oslo.....
- Medlemmer på Fontenehuset i Oslo..
- Meg selv.....
- Andre (beskriv nedenfor).....

Beskriv:.....

12. HVA SLAGS STØTTE ER VIKTIG FOR DEG FOR Å VÆRE FYSISK AKTIV?

Sett ring rundt tallet.

	Ikke viktig	Lite viktig	Litt viktig	Svært viktig
1. At folk viser mye omtanke for min situasjon	1	2	3	4
2. At jeg får muligheter til å velge former for fysisk aktivitet	1	2	3	4
3. At folk er der når jeg trenger dem	1	2	3	4
4. At jeg blir oppmuntret	1	2	3	4
5. At folk uttrykker tillit til at jeg klarer å være fysisk aktiv	1	2	3	4
6. At folk lytter til hvordan jeg tenker å gjøre ting som vedrører min fysiske aktivitet	1	2	3	4
7. At jeg får hjelp til å ordne opp i praktiske problemer	1	2	3	4

13. HVORFOR VELGER DU Å VÆRE FYSISK AKTIV, ELLER IKKE?

Sett ring rundt tallet.

	Ikke sant	I liten grad sant	Verken sant eller usant	Litt sant	Svært sant
1. Jeg er/vil være fysisk aktiv fordi andre sier at jeg bør være det	1	2	3	4	5
2. Jeg får dårlig samvittighet hvis jeg ikke er fysisk aktiv	1	2	3	4	5
3. Jeg verdsetter gevinstene av å være fysisk aktiv	1	2	3	4	5
4. Jeg ser ingen grunn til å være fysisk aktiv	1	2	3	4	5
5. Det er viktig for meg å være i regelmessig fysisk aktivitet	1	2	3	4	5
6. Jeg skjønner ikke hvorfor jeg skulle bruke tid på å være fysisk aktiv	1	2	3	4	5
7. Jeg liker å være i fysisk aktivitet	1	2	3	4	5
8. Jeg synes det er viktig å legge ned innsats i være i regelmessig fysisk aktivitet.	1	2	3	4	5
9. Jeg føler press fra andre for å være fysisk aktiv	1	2	3	4	5
10. Jeg blir glad og tilfreds hvis jeg er i fysisk aktivitet	1	2	3	4	5

HVORDAN ER HELSEN DIN?

14. Hvordan du oppfatter din egen helse?

Stort sett, vil du si at din helse er (sett et kryss):

Dårlig Nokså god God Meget god Utmerket

15. Opplever du at helsen din begrenser deg når du gjør moderate aktiviteter eller går opp trappen? Sett ring rundt tallet.

	Ja, begrenser meg mye	Ja, begrenser meg litt	Nei, ikke i hele tatt
Moderate aktiviteter, som å flytte på et bord, støvsuge, gå en tur eller drive hagearbeid	1	2	3
Gå opp trappen flere etasjer	1	2	3

16. I løpet av de siste 4 ukene, hvor ofte har din fysiske helse ført til at du har opplevd følgende problemer?

Sett ring rundt tallet.

	Hele tiden	Mesteparten av tiden	Noe av tiden	Litt av tiden	Ikke noe av tiden
Utrettet mindre enn du hadde ønsket	1	2	3	4	5
Vært hindret i å utføre visse typer arbeid eller gjøremål	1	2	3	4	5

17. I løpet av de siste 4 ukene, hvor ofte har din psykiske helse ført til at du har opplevd følgende problemer?

Sett ring rundt tallet.

	Hele tiden	Mesteparten av tiden	Noe av tiden	Litt av tiden	Ikke noe av tiden
Utrettet mindre enn du hadde ønsket	1	2	3	4	5
Gjennomført aktiviteter mindre grundig enn vanlig	1	2	3	4	5

18. I løpet av de siste 4 ukene, hvordan har smerter påvirket hverdagen din?

Sett et kryss.

Svært mye Mye En del Litt Ikke i det hele tatt

19. De neste spørsmålene omfatter hvordan du har følt deg og hvordan har du hatt det de siste 4 ukene?

Sett ring rundt tallet.

	Hele tiden	Mesteparten av tiden	Noe av tiden	Litt av tiden	Ikke noe av tiden
Har du følt deg rolig og harmonisk?	1	2	3	4	5
Har du hatt mye overskudd?	1	2	3	4	5
Har du følt deg deprimert og nedfor?	1	2	3	4	5

20. I løpet av de siste 4 ukene, hvor ofte har din fysiske og/eller psykiske helse hindret deg i å delta på sosiale aktiviteter?

Sett et kryss.

Hele tiden Mye av tiden En del av tiden Litt av tiden Ikke noe av tiden

LITT INFORMASJON OM DEG

Til slutt ønsker vi litt informasjon om deg for å kunne undersøke om fysisk aktivitet varierer med alder, kjønn, boituasjon og psykisk helse.

20. Er du mann eller kvinne? Mann Kvinne Trans

21. Hvor gammel er du?

Mindre enn 20 år	<input type="checkbox"/>	41-50 år	<input type="checkbox"/>
20-25 år	<input type="checkbox"/>	51-60 år	<input type="checkbox"/>
26-30 år	<input type="checkbox"/>	61-70 år	<input type="checkbox"/>
31-40 år	<input type="checkbox"/>	over 70 år	<input type="checkbox"/>

22. Hva er din sivile status?

Alene (singel, enkemann, enke, skilt, separert, etc)
I et forhold (gift, samboer, kjæreste, etc)

23. Hva er din bosituasjon?

Bor sammen med noen (familie, venner, barn etc)
Bor alene.....
Bor på institusjon.....

24. Har du en diagnostisert psykisk lidelse, i så fall hvilken? Sett et kryss.

- Affektive lidelser.....
- Ulike angstlidelser
- Ulike psykose lidelser.....
- Psykiske lidelser relatert til bruk av rusmidler....
- Personlighet og atferdsforstyrrelser.....
- Andre psykiske lidelser.....
- Ønsker ikke å oppgi noen diagnose.....
- Nei, den er ikke diagnostisert.....

Se her for eksempler på diagnoser som hører hjemme i de ulike gruppene

Affektive lidelser

- Manisk episode
- Bipolar affektiv lidelse
- Depressiv periode
- Mild/moderat depresjon
- Alvorlig depresjon
- Dystymi
- Tilbakevendende Depressiv lidelse

Ulike angstlidelser

- Fobiske angstlidelser
- Panikklidelser
- Sosial angst
- Tvangslidelse
- Posttraumatisk stresslidelse
- Dissosiativ lidelse

Ulike psykose lidelser

- Schizofreni
- Schizotyp lidelse
- Paranoide psykose
- Schizoaffektiv lidelse
- Ikke-organiske psykoser
- Akutte og forbigående psykoser

Psykiske lidelser relatert til bruk av rusmidler

- Alkohol
- Legemidler
- Narkotika
- Tobakk
- Flere stoffer

Personlighet og atferdsforstyrrelser

- Personlighetsforstyrrelser
- Impuls og vaneforstyrrelser
- Blandede og andre personlighetsforstyrrelser

Andre psykiske lidelser

Psykiske lidelser eller diagnoser som ikke passer i de andre gruppene.

TAKK FOR HJELPEN!