

Physical Activity Counseling and Prescription in Psychiatry:  
Swedish Mental Health Professionals'  
Clinical Practices, Attitudes, and Knowledge

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science at  
George Mason University

By

Madeleine Jennysdotter Olofsgård  
Bachelor of Science  
Stockholm University, 1992

Director: Dr. Ellen Rodgers, Associate Dean  
College of Education and Human Development

Summer Semester 2009  
George Mason University  
Fairfax, VA

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## DEDICATION

This is dedicated to my two true loves, Felicia and Markus, who have taught me to be brave, curious and patient. You never stop believing in your mom; you are the most amazing children in the universe.

## ACKNOWLEDGEMENTS

I would like to thank my husband for keeping all aspects of life up and running while I was pursuing a second career. I also would like to thank Jill Taube, SLL, who gave me an exciting new friendship and the opportunity to become deeply involved in Swedish psychiatry; my advisor Dr. Ellen Rodgers, for her guidance, reviews, and endless editing - turning my study into meaningful research; Dr. Mary Schumann for her encouragement, knowledge, and limitless support; and Dr. Shane Caswell for being a valuable committee member. In addition, I would like to thank all researchers, from all corners of the world, who helped me understand the intricacies of research.

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## ABSTRACT

### PHYSICAL ACTIVITY COUNSELING AND PRESCRIPTION IN PSYCHIATRY: SWEDISH MENTAL HEALTH PROFESSIONALS' CLINICAL PRACTICES, ATTITUDES, AND KNOWLEDGE

Madeleine Jennysdotter Olofsgård, MS

George Mason University, 2009

Thesis Director: Dr. Ellen Rodgers

Physical activity as an intervention for mental health and disorders is gaining increasing attention. The intent of this exploratory study was to investigate the levels of Swedish mental health professionals' physical activity counseling, their use of counseling methods, as well as their attitudes toward and knowledge about this therapy. A non-experimental, cross-sectional survey design was used to structure the descriptive and correlational assessment of the 529 participating professionals working in the Stockholm County Council Healthcare Division. Nearly all participants used physical activity at least sometimes as an adjunctive therapy for the purpose of treating and preventing mental disorders. Physical activity counseling was found to be correlated with the use of counseling methods, attitudes, and knowledge. Further, there were significant differences among types of care and professions with regard to key study variables (Frequency, Behavior, Attitudes, and Knowledge of physical activity counseling). Implications for future research and practice are noted.

## CHAPTER 1

### INTRODUCTION

#### Physical Activity Counseling in Psychiatry

Worldwide, the prevalence of mental- and behavioral disorders is growing, accompanied by the increasing cost of healthcare, medication and loss of working days (Carless & Faulkner, 2003; National Board of Health and Welfare [NBHW], 2008; World Health Organization [WHO], 2005). In established market economies, such as the United States and European countries, mental illness is the second largest contributor to the total disease burden, with depression being the leading cause of disability (U.S. Department of Health and Human Services [HHS], 1999; WHO, 2004). The burden on fiscal budgets and the increased suffering faced by the mentally ill and their families warrant public action. They further merit an increased focus on the promotion of behaviors that positively impact mental health and psychological well-being, as well as the active search for effective therapies and interventions for the prevention and treatment of mental disorders (Carless & Faulkner, 2003; European Commission [EC], 2006; WHO, 2004; WHO, 2005).

One such intervention is the use of physical activity, which may offer a comparatively cheap (Daley, 2008) and effective preventive and treatment alternative, not only for mental disorders such as depression, but for the accompanying somatic comorbidities (Carless & Faulkner, 2003; Kjellman, Martinsen, Taube, & Andersson,

2008; Mental Health Foundation [MHF], 2005). Physical activity is generally thought of more positively by the public than either pharmacotherapy or psychotherapy (Cox, 2007; MHF, 2005; Smith, 2006). Patients also perceive it to have fewer to no negative side-effects (Cox, 2007; MHF, 2005; Smith, 2006). Physical activity may, therefore, be more easily accepted by patients than traditional treatments (Jorm et al., 2000; Ormel et al., 1994).

Healthcare professionals in both primary and secondary care have opportunities to recommend their patients to be more physically active and to counsel physical activity for the treatment or prevention of somatic diseases and mental disorders. Although extensive research has been conducted about physical activity counseling and prescription in primary care (Douglas, Torrance, van Teijlingen, Meloni, & Kerr, 2006; Faskunger, Leijon, Ståhle, & Lamming, 2007; Kallings, 2008; Lawlor, Keen, & Neal, 1999; Swedish Council on Technology Assessment in Health Care [SBU], 2007; Taylor, 2003; Ploeg et al., 2007; Williams, Hendry, France, Lewis, & Wilkinson, 2007), little is known about the use of physical activity as a therapeutic alternative for patients in psychiatric care. The levels of mental health professionals' physical activity counseling clinical practices, attitudes, and knowledge were therefore the primary focus of this study.

### *Justifications for the Use of Physical Activity in Psychiatry*

Efforts to study physical activity and its potential therapeutic effects on mental disorders in general and depression in particular have produced a growing body of literature (Daley, 2008; Dunn, Trivedi, Kampert, Clark, & Chambliss, 2005; EC, 2006; Harris, Cronkite, & Moos, 2006; MHF, 2005; National Heart Foundation of Australia [Heart Foundation], 2007; National Institute for Health & Clinical Excellence [NICE],

2009; Stathopoulou, Powers, Berry, Smits, & Otto, 2006). Based on antidepressants' variation in effectiveness, safety, side-effects, relatively high cost, and treatment completion rates, its value as a first-line treatment for mild and moderate depression has been questioned (MHF, 2005). Moreover, psychological treatments, such as Cognitive Behavioral Therapy (CBT), which have been proven effective, may not only be expensive but more importantly, a scarce alternative (MHF, 2005; NBHW, 2009). Even if physical activity counseling utilizes exercise-referral schemes or supervised training groups, this treatment may still be less expensive than other alternatives (MHF, 2005). Therefore, mental health and primary care professionals need to have access to other treatment alternatives for their patients.

Results from epidemiological studies indicate that physical activity may prevent the occurrence of mental illness as physically active individuals tend to have a lower risk of becoming depressed or experiencing anxiety, and they may face fewer relapses of recurrent depression (Carless & Faulkner, 2003; Goodwin, 2003; Hassme'n, Koivula, & Uutela, 2000; Jorm, Christensen, Griffiths, & Rodgers, 2002; National Heart Foundation, 2007). Contemporary research has confirmed the effective therapeutic effect that physical activity has on mental disorders, where depression is the most researched disorder, and the reported effect size, response rate and remission rate from physical activity therapies are comparable to that of other more traditional treatments, such as medication, psychotherapy and cognitive behavioral therapy (Blumenthal et al., 2007; Craft & Perna, 2004; Daley, 2008; Dunn, Trivedi, Kampert, Clark, & Chambliss, 2005; Harris et al., 2006; Kjellman, Martinesen, Taube, & Andersson, 2008; MHF, 2005; Stathopoulou et al., 2006). Results from physical activity intervention studies

suggest physical activity may be used as the only therapy or in combination with other traditional treatments.

Another essential aspect of mental illness is the connection to somatic comorbidities, which may be treated or improved with physical activity (NBHV, 2009). Faulkner and Biddle (2002) argue that the positive effect that physical activity has on physical health and its ability to reduce the risk of morbidity and mortality, as well as to counteract medical side-effects is a justification in itself to include physical activity in rehabilitation of mental disorders. Further, exercise not only reduces negative effects of mental health problems (e.g., anxiety, depression, and stress) and increases self-efficacy and vigor, a patient may be distracted from worries and problems (i.e., breaking dysfunctional thoughts), which, in turn, will affect mental health (Cox, 2007; NBHW, 2009, Stathopoulou et al., 2006). Hence, physical activity promotes mental health and it may be used to elicit health gains in patients with mental disorders (Carless & Faulkner, 2003; Daley, 2008; NICE, 2009).

#### *Physical Activity Counseling and Prescription*

Physical activity counseling and prescription have been discussed extensively for the last decade as a means for preventing or treating somatic diseases and mental disorders predominantly in primary care settings. Studies show that the majority of patients listen to their primary care physicians with regard to lifestyle behavior guidance, such as diet and physical activity (Faskunger et al., 2007). Still, commitment to follow physical activity advice and the motivation to comply with physical activity interventions are major challenges faced by the patient and the healthcare provider (Daley, 2008). To address these barriers and facilitate the promotion of physical activity, governmental entities or healthcare organizations in countries such as the

United States, England, Australia, Canada, Scandinavian countries, and New Zealand have implemented methods to promote and counsel physical activity in their healthcare systems (Leijon et al., 2008; Swedish National Institute of Public Health [SNIPH], 2008a). This is also true for Sweden.

Starting in 2001 with the project “Sweden on the Move 2001”, national efforts were made to find a method to help healthcare professionals promote and prescribe physical activity for both healthy and ill individuals, an effort that resulted in the development of Physical Activity on Prescription - FaR®. FaR® is governed by individual counties and their own councils (SNIPH, 2008b) and has increased in popularity and use within primary care units. In 2007, all 21 counties in Sweden prescribed physical activity (Faskunger et al., 2007).

Lately, a number of publications have addressed the need to extend the knowledge of physical activity counseling in general, and the FaR®-method in particular in Swedish healthcare. Studies about patient compliance with FaR®-prescriptions in primary care settings have reported significant increases in physical activity levels over at least six months. Researchers suggest, therefore, that physical activity prescription can be used as a conventional treatment in primary care settings (Kallings, 2008; Kallings, Leijon, Hellenius, & Ståhle, 2008). In addition, a series of student theses and reports have explored primary care professionals’ attitudes toward physical activity counseling, as well as the prevalence of this treatment alternative in general, and written prescription in particular (Appendix A). Unfortunately, less attention has been given to the psychiatric care sector, mental health professionals’ clinical practice of physical activity counseling, and their attitudes toward and knowledge about this treatment alternative.

### *Physical Activity Counseling and Prescription in Psychiatry*

In Sweden, 20 to 40 percent of the population reports suffering from mental ill-health (NBHW, 2008), of which 10-15% may be in need of psychiatric care (NBHW, 2005). With an annual cost of 16 billion SEK in 2006, Swedish psychiatric care accounts for 10 percent of all healthcare costs (NBHW, 2008). This cost has increased, as has the cost of sick pay for mental disorders and the subsidization of psychopharmacological treatments for adults and adolescents (Engdahl & Ossowicki, 2007; NBHW, 2008; Nording, 2009) as, in particular, depression, anxiety, sleep problems and other nervous-related disorders have increased among the population at large, though most dramatically among adolescents (NBHW, 2008; SBU, 1999).

Mental disorders not only account for the second largest diagnostic group receiving sick pay in Sweden, they also generate the longest periods of sick-leave, averaging 319 days for women (*Mdn* = 96) and 287 for men (*Mdn* = 101). In international comparison<sup>1</sup>, Swedes take significantly longer periods of sick-leave, with depression and stress-related syndromes among the major causes (Ossowicki, 2007).

The burden of mental disorders is particularly onerous for Stockholm, the capital of Sweden, and its surrounding communities, since urban areas tend to have a higher prevalence of mental illness and a greater proportion of individuals with need for resource-intense psychiatric care (NBHW, 2008). The Stockholm County Council (SLL) is Sweden's largest county and offers services in healthcare and public transportation to more than 1.9 million inhabitants. In January, 2007, SLL issued obligated guidelines for prescription of physical activity, stating that FaR® shall be used by all care providers

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<sup>1</sup> Data from the Medical Disability Advisor (MDA), which comprises cases from companies, organizations, and social security systems from 30 countries, mostly from the United States.



within SLL as a treatment alternative for the purpose of preventing and treating diseases (Stockholm County Council [SLL], 2007). In addition, the Health and Medical Services Act, §3a, specifies that when there is more than one scientifically proven and reliable treatment alternative available, the county councils are responsible for giving patients the opportunity to choose preferred treatment (Government Offices of Sweden, 2008).

While efforts to introduce FaR® in SLL's psychiatric healthcare have been recently initiated, there is reason to suspect that physical activity counseling methods and routines are not as widely used in psychiatry as in primary care settings (J. Taube, personal communication, July 9, 2008). It is, therefore, necessary to obtain more information on the current use of physical activity counseling and prescription in psychiatry, counseling-related methods, and whether the introduction of FaR® in SLL's mental healthcare system has had any effect on the acceptance and use of this method.

Finally, it is also essential to identify variables that influence mental health professionals' clinical practices with regard to physical activity counseling and prescription. According to the PRECEDE-PROCEED model, developed by Green and Krueter and adapted to the promotion of physical activity by Taylor (2003), a number of factors that emerge during interactions among patients, healthcare providers and the healthcare system, influence the promotion of physical activity in primary care settings. Reinforcing factors, which presumably also exist within psychiatric care, affect patients during their visit and involve the healthcare providers' attitude, interest, personal physical activity behaviors, motivation, knowledge, competence, experienced barriers, and expectations of patient compliance. Enabling factors, on the other hand, explain the availability of resources, referrals, rules, protocol and service structures, which may

have an impact on the patient's access to health service. This study has extended these enabling factors to include type of care, operation and profession, as they may influence healthcare professionals' counseling practices.

By analyzing the effects of the aforementioned reinforcing and enabling factors, efforts can be made to develop interventions that would have the greatest positive impact on physical activity counseling-related behaviors among healthcare professionals. Although studies have investigated the effects of some of these factors in primary care settings, little research has been conducted within psychiatry.

In summary, this work centers on filling the need for more knowledge about physical activity counseling and prescription in psychiatry. Expanding upon the existing base of knowledge about physical activity counseling and prescription in primary care settings, a survey of mental health professionals' knowledge, attitudes, and clinical practice of physical activity counseling and prescription was conducted.

#### Statement of the Problem and Research Questions

The purpose of this exploratory study was to investigate Swedish mental health professionals' clinical practices, attitudes, and knowledge related to physical activity counseling and prescription. Few studies, if any, have been conducted on the use of physical activity counseling in Swedish psychiatry, in general, and Physical Activity on Prescription (FaR®) in particular. Therefore, the intent of this study was to assess physical activity counseling among mental health professionals in Stockholm County Council (SLL).

The following research questions (RQ) guided this study:

- RQ<sub>1</sub>: How often do mental health professionals counsel (verbal advice or written prescription) physical activity and what are their perceived reasons for such counseling practice?
- RQ<sub>2</sub>: Which methods and procedures are used by mental health professionals in counseling physical activity as a treatment and preventive therapy for mental disorders and somatic diseases?
- RQ<sub>3</sub>: What are mental health professionals' attitudes toward using physical activity in prevention and treatment of mental disorders?
- RQ<sub>4</sub>: Which barriers are experienced by mental health professionals with regard to physical activity counseling and prescription, and what factors would encourage them to increase the prevalence in their counseling practices?
- RQ<sub>5</sub>: How knowledgeable do mental health professionals perceive themselves to be about the effects of physical activity on mental disorders and somatic diseases?
- RQ<sub>6</sub>: Do mental healthcare professionals use the recommended prescription-method, Physical Activity on Prescription (FaR®) and its related knowledge manual Physical Activity in Prevention and Treatment of Diseases (FYSS), and how do they perceive their usefulness?

### Hypotheses and Key Variables

A series of specific hypotheses were proposed to inferentially assess interrelationships among key variables based on those suggested in previous research. In line with the initial purpose of this study, analyses of the interrelationships among demographics, knowledge, attitudes, level of personal physical activity, and frequency

of physical activity counseling/prescription were conducted. Specifically, it was hypothesized that:

H<sub>1</sub>: Self-reported personal physical activity level, measured as MET-minutes per week, will be directly and positively related to:

- i. Frequency of physical activity counseling and prescription;
- ii. Behavior of physical activity counseling and prescription;
- iii. Attitude toward physical activity counseling and prescription; and
- iv. Knowledge about the effects of physical activity on diseases and disorders.

H<sub>2</sub>: There will be a significant difference between medical and non-medical professionals, as well as among the six professional classifications of personnel having the authority to prescribe physical activity (i.e., physicians, psychologists, psychotherapists, nurses, occupational therapists, and physical therapists) with regard to:

- i. Frequency of physical activity counseling and prescription;
- ii. Behavior of physical activity counseling and prescription;
- iii. Attitude toward physical activity counseling and prescription; and
- iv. Knowledge about the effects of physical activity on diseases and disorders.

H<sub>3</sub>: There will be a significant difference between mental healthcare professionals working with general psychiatry and those with psychoses, as well as between inpatient and outpatient settings with regard to:

- i. Frequency of physical activity counseling and prescription;
- ii. Behavior of physical activity counseling and prescription;
- iii. Attitude toward physical activity counseling and prescription; and
- iv. Knowledge about the effects of physical activity on diseases and disorders.

H<sub>4</sub>: There will be a significant difference among the six different operations in SLSO Psychiatry with regard to:

- i. Frequency of physical activity counseling and prescription;
- ii. Behavior of physical activity counseling and prescription;
- iii. Attitude toward physical activity counseling and prescription; and
- iv. Knowledge about the effects of physical activity on diseases and disorders.

In H<sub>1</sub>-H<sub>4</sub> the dependent variable “Frequency of physical activity counseling and prescription” describes how often participants counsel physical activity in a clinical setting. The variable comprises how often physical activity is: (a) discussed, (b) counseled (verbal and written advice), (c) counseled for the purpose of preventing mental disorders, (d) counseled for the purpose of treating mental disorders, and (e) counseled for somatic diseases.

The second dependent variable was operationalized as the “Behavior of physical activity counseling and prescription” comprising methods and procedures used in physical activity counseling practices. Specifically, the following variables were included: (a) documentation of patient’s current physical level, (b) documentation of patient’s physical activity advice, (c) counseling method (d) discussion of motivation, (e) referral procedures, (f) follow-up on physical activity advice, and (g) physical activity advice content.

“Attitude toward physical activity counseling and prescription” is defined as participants’ own belief about their attitudes toward working with physical activity in prevention and treatment of mental disorders. The variable constitutes participants’ overall attitudes toward physical activity counseling, how strongly they experience barriers to counseling patients on physical activity, and whether they believe their

management and colleagues are supportive of this work. All items are self-reported. Additionally, the dependent variable “Knowledge about the effects physical activity has on diseases and disorders” is defined as the self-reported knowledge about the effects that physical activity has on mental disorders, as well as somatic diseases.

### Extent of the Study

#### *Delimitations*

This study was delimited to licensed mental health professionals in Healthcare Provision, Stockholm County (SLSO), Sweden. Although mental health professionals working in other parts of Sweden are expected to have comparable attitudes, knowledge and clinical practices, findings of this study have limited generalizability beyond the psychiatric branch in SLSO.

Other delimitations of this study were as follows:

1. Participating mental health professionals’ personal physical activity was assessed subjectively using a questionnaire. Such self-reported measurements have been found to over- or underestimate physical activity levels in a population as compared to direct measures, such as pedometers or accelerators (Prince et al., 2008). Additionally, self-reported measurements are also associated with recall and response bias (Prince et al., 2008). For the purpose of this study the short version of the International Physical Activity Questionnaire (IPAQ) was selected due to its frequent use in population studies and its acceptable validity and reliability (Brown, Trost, Bauman, Mummery, & Owen, 2004; Ekelund et al., 2006). The IPAQ is a multiple domain instrument, which evaluates physical activity in four different domains, including leisure time, domestic and gardening, work, and transportation activities. This instrument may contribute to an even

greater overestimation than use of tools that assess leisure time activity alone (Bauman et al., 2009).

2. All measurements of attitude, knowledge, and behaviors were delimited to self-reported questions, selected and designed for the purpose of this survey.

#### *Limitations*

1. Employees at SLL were involved in development of the instrument and research questions. In no way has the researcher agreed to any changes that would contradict scientific rational or oppose the will of the researcher.
2. The questionnaire was sent out to all mental health professionals actively working at SLSO by December 1, 2008. The email-list was created and provided by SLSO's Supportive Personnel group and was generated based on their accessible data. Any flaws or inaccuracies in the list were outside the control of the researcher.
3. Collection of primary data was undertaken by a survey company chosen by personnel at SLL. Hence, any decisions related to data collection, such as survey-method (on-line vs. paper copy questionnaire), mailing-method (electronic vs. postal mail), reminder-methods (electronic vs. postal mail), were outside the control of the researcher. Moreover, primary data were initially stored at the survey company before submission to the researcher, thus any inaccuracies in data processing and tabulation are outside the control of the researcher.
4. Subjects were expected to be honest about their responses since most of the information given is not of a sensitive matter. However, self-reported attitudes, knowledge, and behaviors may have been affected if the participating subjects felt

uncomfortable discussing them or did not correctly recall their behaviors or activities.

5. The survey was regarded as lengthy by some respondents, which may have impacted the willingness of subjects to complete the questionnaire or to read the questions carefully.
6. The response rate may have been impacted by the large number of surveys conducted in healthcare units and the busy schedule faced by the majority of healthcare professionals.
7. The results may have been impacted if those responding had a positive attitude toward physical activity counseling and counseled physical activity, while non-respondents comprised non-counseling professionals with a more negative attitude toward physical activity counseling.

### Definitions

Several terms with varying degrees of special meaning are used frequently in this study. Within the context of this investigation, the following commonly used terms have been defined. As well, a list of acronyms used throughout is included in Appendix B.

**Comorbidity:** Two or more coexisting medical conditions or unrelated disease processes (Mosby's Dictionary of Medicine, 2006).

**Mental disorders:** Health conditions that are "characterized by alterations in thinking, mood, or behavior (or some combination thereof) associated with distress and/or impaired functioning" (HHS, 1999, p. 5).



**Mental health:** A “state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (WHO, 2005, p. XIX).

**Mental health problems:** A collective term for “signs and symptoms of insufficient intensity or duration to meet the criteria for any mental disorders” (HHS, 1999, p. 5).

**Mental ill-health:** A classification of conditions comprising both mental disorders (e.g., depression and psychoses), and mild mental problems (e.g., fear, anxiety, and sleeping problems) that cause personal suffering but do not qualify as a mental/psychiatric diagnosis (NBHW, 2005).

**Mental illness:** All diagnosable mental disorders, collectively (HHS, 1999, p. 5).

**Physical activity:** Physical activity includes all bodily movements which increase metabolism. This definition takes into account all types of muscle activity, such as walking, chores, gardening, physical efforts at work, recreational spare time, exercise, and training (Faskunger et al., 2007).

**Physical activity discussion, discuss (SV; diskussion, diskutera):** Discussion of physical activity is defined as having a general health promoting conversation with the patient about the benefits of physical activity and how important it is to maintain health promoting levels of physical activity throughout life. The purpose of the discussion is to inform without giving any direct individualized advice or guidance to the patient. Discussion is therefore regarded as the basic level of interaction between the healthcare professional and the patient.

**Physical activity counseling, counsel [SV; rådgivning, rådgiva, Swedish term used in questionnaire; “ordinera”, “ge råd”]:** Such counseling is defined as the provision “of advice and guidance to a patient by a health professional” (Venes, 2001). During the dialogue between two equal partners, advice, as well as the healthcare professional’s opinions and instructions are given to the patient (SBU, 2007; Stedman’s Medical Dictionary, 2005). The advice can be verbal or written (prescription) and should be individualized with regard to the patient’s mental health disorder or somatic disease. The advice should include mode, frequency, duration, intensity, length of the program, and restrictions, but the content may vary in detail and specificity.

**Physical activity prescription, [SV: förskrivning,]:** Prescription in this study is defined as “a written direction or order for dispensing and administering physical activity (drugs) (Venes, 2001). Hence, when the result of a physical activity counseling session with a patient results in written advice, it will be defined as a prescription. The physical activity prescription should include mode, frequency, duration, and intensity of the prescribed physical activity.

**Psychiatric disorder:** See Mental Disorder.

**To prescribe physical activity:** To “recommend a remedy for use in the treatment of a disorder” (Dox, Melloni, B., Eisner, & Melloni, L., 2002). The directions given can be “either orally or in writing..... to be used in the treatment of any disease” (Stedman’s Medical Dictionary for the Health Professions & Nursing, 2005). The Swedish word “Ordinera”, which has been used in the Swedish version of the questionnaire, has the same meaning as “prescribe”. However, “counseling physical activity” has replaced the word “Ordinera” in the English version of the survey, as this word is more frequently used in studies written in English.

## CHAPTER II

### LITERATURE REVIEW

The purpose of this review is to document existing literature related to physical activity counseling and prescription practices utilized by healthcare professionals, in general, and those working in psychiatry in particular. Pertinent research focusing on healthcare personnel attitudes toward and knowledge about physical activity counseling, as well as those factors that affect their behavior (i.e., personal physical activity behaviors, profession, type of care, and geographic operations) are also reviewed. Although the purpose of this study is not to analyze the therapeutic effect of physical activity on mental health, a brief review of the current literature documenting such effects is provided.

#### Physical Activity, Mental Health, and Mental Disorders

##### *Physical Activity and the Promotion of Mental Health*

Although mental health and mental disorders commonly are used in the same context and ways of promoting mental health and preventing mental disorders overlap each other, the two concepts may be differentiated (Carless & Faulkner, 2003; WHO, 2005). Mental disorders “are health conditions that are characterized by alterations in thinking, mood, or behavior (or some combination thereof) associated with distress and/or impaired functioning” (HHS, 1999, p. 5). Mental health, however, is not merely the absence of mental illness, but the ability to enjoy life and to deal with negative life events (Carless & Faulkner, 2003). Mental health is “a state of well-being in which the

individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (WHO, 2005, p. XIX). Therefore, it is suggested that a mentally ill person can, despite his/her mental disorder, achieve positive mental health. Hence, any therapy that promotes mental health in individuals with mental disorders should be considered without “being overly fixated on treatment or prevention” (Carless & Faulkner, 2003, p. 62).

Substantial research has been conducted and has confirmed the positive relationships among regular physical activity, mental health, and quality of life (including psychological well-being, positive mood, self-esteem, self-efficacy, physical self-perceptions, and vigor in the general population) (Carless & Faulkner, 2003; Cox, 2007, Stathopoulou et al., 2006). Healthy individuals may also use exercise as a coping method in order to immediately experience psychological benefits by managing stressful events and problems that disturb their everyday life and enhancing their positive mood (Cox, 2007).

The positive relationships among physical activity, mental health, and quality of life have also been found in mentally ill persons. Carless and Faulkner (2003) suggest that physical activity improves quality of life in mentally ill individuals by improving both their physical health and their mental well-being, thus helping them to manage the stress emerging from their mental disorders. Faulkner and Sparkes (1999) believe this improvement in quality of life may be even more important when a complete remission from the mental disorder is not realistic (as cited in Carless & Faulkner, 2003). Schmitz, Kruse, and Kugler (2004) analyzed the German National Health Interview and Examination Survey (GHS) and found a positive correlation between physical activity

and health-related quality of life among adults with affective, anxiety, and substance dependence disorders. A positive correlation between exercise and stress relief was similarly reported by Harris et al., (2006) in their 10-year cohort study among initially depressed individuals; exercise reduced concurrent depression and helped in relieving stress from medical conditions and negative life events.

Persons in the general population have also reported a stronger feeling of social integration, compared to individuals with low physical activity levels (less than 2/week or inactive) (Hassmén et al., 2000). This may have an important effect on mentally ill persons as social integration and coherence are important conditions for mental health and further enhance psychological well-being. Many individuals with mental disorders struggle with social isolation, which may be reduced with physical activity when performed in groups (Carless & Faulkner, 2003; NBHW, 2009).

#### *Physical Activity and its Protective Properties*

Whether physical activity has protective properties against subsequent mental disorders has been hard to establish. This kind of epidemiological research struggles with isolating physical activity as being the main cause of preventing mental health problems in physically active populations. However, a number of epidemiological and clinical studies and reviews have found that individuals who exercise more at baseline have less symptoms of mental health problems later in life and that less physically active individuals are at much greater risk of developing mental health problems, such as depression, compared with those that are physically active (Goodwin, 2003; Harris et al., 2006; Hassmén et al., 2000; Kjellman et al., 2008). Physical activity may also have protective properties in mentally ill populations, decreasing the risk of future relapses

of depression during the first year and thereafter (Kjellman et al., 2008; National Heart Foundation, 2007).

Paffenbarger, Lee, and Leung (1994) investigated the prevalence of depression among a large number of Harvard alumni with a 23-27 years follow-up period. The researchers concluded that physically active individuals and sport players had a lower incidence of diagnosed depression. This finding was later confirmed in a large-scale population-based study in Finland, in which Hassmén et al. (2000) reported that individuals who exercised at least two to three times a week, 20-30 minutes of moderate intensity, experienced less depression, anger, stress and cynical distrust than those who exercised less or not at all. With regard to anxiety disorders, a large American population study in 2003 reported that physically active individuals suffered less from anxiety, panic attacks, social phobia, specific phobia and agoraphobia. However, relationships between physically active individuals and a reduced risk of developing affective, substance use, or psychotic disorders were not supported in this study (Goodwin, 2003).

#### *Physical Activity and its Therapeutic Properties*

Contemporary research has confirmed the therapeutic effect that physical activity has on mental disorders, depression in particular, and the reported effect sizes, response rates, and remission rates from physical activity therapies are comparable to that of other more traditional treatments, such as medication, psychotherapy, and cognitive behavioral therapy (Blumenthal et al., 2007; Cox, 2007; Craft & Perna, 2004; Daley, 2008; Dunn et al., 2005; MHF, 2009; Stathopoulou et al., 2006). Further, physical activity has few side-effects, which is not true for antidepressants. Therefore, persons taking antidepressants are more likely to leave treatment early because of these side

effects (NICE, 2009), which has a great impact on compliance and the success of the interventions. Physical activity may also provide immediate and acute mental benefits and lessen other symptoms related to depression, such as fatigue and cognitive functioning that may persist with antidepressant treatments (Daley, 2008).

Importantly, the evidence for the link between physical activity and reduced depression has been rated as “strong” by U.S. Department of Health and Human Services in their recent “Physical Activity Guidelines for Americans” (2008). The Department of Health in the UK (2004) also encourages the use of physical activity, recommending physical activity as a treatment alternative; “Physical activity is effective in the treatment of clinical depression and can be as successful as psychotherapy or medication, particularly in the longer term” (The Department of Health, 2004, p. 58).

The number of controlled studies with improved research design that have addressed methodological weaknesses has increased. Additionally, a number of reviews and meta-analyses have been recently published, of which some employ strict inclusion criteria for studies (Daley, 2008; Mead et al., 2008; Stathopoulou et al., 2006). Stathopoulou et al. (2006) reported that physical activity can be a powerful monotherapy in treating clinical depression, in general, and moderate depression in particular in their meta-analysis of 11 exercise treatment studies across samples with clinically depressed individuals. The authors’ analysis of randomly controlled trials (RCTs) yielded a very large effect size ( $g = 1.39, 95\%$ ;  $d = 1.42, 95\%$ ) for physical activity intervention for depressed individuals over control conditions, such as no treatment (5 studies), lower level exercise (3), meditation/relaxation (1), health education (1) and treatment as usual (1).

Among studies in the above mentioned meta-analysis, Dunn et al. (2005) reported that exercise, reflecting public health dose recommendations (17.5 kcal/kg/week), is an effective mono-therapy for men and women with mild to moderate depression. After 12 weeks of exercise, patients in the exercise group had reduced their depression scores by 47%, compared to the control group (no treatment) who had reduced their scores by 30%.

The British National Institute for Health and Clinical Excellence (NICE) (2009), in draft guidelines for treatment of depression in adults, recommended structured physical activity programs, individual guided self-help based on Cognitive Behavioral Therapy (CBT) principles, or Computer-based Cognitive Behavioral Therapy (CCBT) for low intensity psychosocial interventions for people with persistent minor and mild to moderate depression. The preferred treatment should be guided by the individual's preference.

NICE's analyses found that physical activity was more effective in reducing depression symptoms than no-physical activity control, although the effect was reduced at follow-up. However, when comparing physical activity with antidepressants, psychosocial and psychological interventions, NICE found the results from their 25 included studies to be inconclusive. There was some evidence that unsupervised physical activity was more effective than antidepressants, but the data suggested that there may be no difference in outcomes for anti-depressants and physical activity. In contrary, Babyak et al. (2000) determined that depressed patients who received physical activity as a monotherapy were significantly more likely to reach partial or full recovery from their depression at 6-month follow-up, and to be less likely to use anti-



depressants in the future compared to those who received pharmacotherapy alone or a combination of the two.

Due to the lack of studies with acceptable methodological quality, follow-ups and long term effects, comparable populations, and physical activity interventions, results of this research have been questioned and data difficult to interpret (Daley, 2008; Lawlor, & Hopker, 2001; NBHW, 2009; NICE, 2009). Researchers and clinicians have therefore been cautious to draw conclusions about how effectively physical activity treats depression. Recommendations stated in recent reports and reviews include the use of physical activity in combination with other treatments, such as CBT, interpersonal therapy, and pharmacotherapy, while awaiting the outcomes of more controlled, well designed trials (Daley, 2008; NBHW, 2009; Stathopoulou et al., 2006).

This, more precautionous approach, has also been adopted by The National Board of Health and Welfare in Sweden, which in February 2009, released preliminary guidelines for depression and anxiety interventions. It is stated that the scientific evidence of using physical activity in treatment of depression is not sufficient, although physical activity may be beneficial for patients with mild to moderate depression and may be offered as a complement to the first- and second line of treatments, such as computerized cognitive behavioral therapy (CCBT). With regard to anxiety, some scientific results have been found, but the effect of physical activity was estimated by The National Board of Health and Welfare to be small, resulting in an exclusion of physical activity as a documented treatment alternative for anxiety.

Results from studies using physical activity in adjunction with psychopharmacologic treatments support the above recommendations, as physical activity is beneficial when used together with antidepressants, improving depressive

symptoms and scores (Blumenthal et al., 2007; Brenes et al., 2007; Knubben et al., 2007; Stathopoulou et al., 2006). Knubben et al. determined that inpatient participants who were treated with both antidepressants and physical activity (walking) experienced a significantly greater reduction in their depression scores compared to the placebo group's treatment with antidepressants and relaxation exercises. The trial, however, lasted for only ten days. In contrast, Blumenthal et al. (2007) reported that although participants receiving antidepressants, group exercise intervention, or home-based exercise programs tended to have higher remission rates than the placebo group (who received placebo pills), no significant differences were noted among groups.

Besides depression, preliminary findings concerning alcohol and drug abuse, anxiety, schizophrenia, and eating disorders have been reported. Stathopoulou et al. (2006) concluded in their review that despite the lack of well-designed and controlled studies among clinical populations with mental disorders other than depression, exercise may have a significant effect on alcohol cravings and consumption, specific thought and body satisfaction in bulimia patients, exercise abuse in residential eating-disorder patients, weight gain in anorexic women, depressed mood and anxiety in binge eating disorder and anxiety symptoms.

#### *Physical Activity and Somatic Comorbidities*

Another important aspect of mental illness is the connection to somatic comorbidities; mentally ill individuals are commonly burdened with poor physical health and chronic disease (Carless & Faulkner, 2003; Martinsen & Taube, 2008). Depressed individuals are usually exposed to both somatic and mental comorbidities, which is a threat to patients' health. Physical activity offers reduction in the risk of major somatic diseases (NBHW, 2009) and, from a wider health perspective, physical

activity is crucial for the general health of patients with mental disorders. Physical activity improves patients' cardiovascular fitness, immune system, bones, muscles and joints, among others, giving them health, endurance, strength, flexibility and coordination (Henriksson & Sundberg, 2008). Maybe even more importantly, physical activity may reduce the risk of premature mortality by up to 20-30% (MHF, 2005).

### Physical Activity Counseling

The documented positive relationship between physical activity and physical and mental health has contributed to the advancement of methods for use by healthcare providers to promote physical activity. Common methods include, but are not limited to, counseling, physical activity on prescription, exercise referral schemes, supervised group or individual training, and theoretically-based behavioral interventions (Kallings, 2008; SBU, 2007). Counseling is a dialogue between a patient (personal expert) and a healthcare provider (professional expert), who advises and guides the patient to make certain actions. Physical activity counseling is considered to be effective and useful by patients (Frank, Breyan, & Elon, 2000; Pinto, Goldstein, DePue, & Milan, 1998; SBU, 2007).

In their systematic review of methods to promote physical activity, the Swedish Council on Technology Assessment in Health Care found that clinical counseling increases levels of physical activity by 12-50% for at least six months after the advice is given. An additional effect of 15-50% may be obtained if counseling is combined with other behavioral interventions, such as goal setting, written physical activity prescription, individually tailored physical activity regimen, pedometer use, or maintenance of a physical activity journal (SBU, 2007; U.S. Preventive Services Task Force [USPSTF], 2002). However, studies in this area vary greatly in terms of design

and outcome. For example, “counseling” may comprise brief directed advice to a passive patient or extensive counseling in combination with other interventions. Other difficulties across counseling studies are low response rates, small samples, and differences in circumstances under which the primary care professionals worked (Puig Ribera, McKenna, & Riddoch, 2005; SBU, 2007).

### *Physical Activity Counseling in Primary Care*

#### *Practice of Physical Activity Counseling in Primary Care*

Attitudes, knowledge, and practice with regard to physical activity counseling in primary care settings have been investigated internationally for the past several decades. The most recently published studies have identified that the majority of primary care professionals, such as GPs and nurses, believe health promotion is an important part of their work and that promoting physical activity is a key component in primary care. It has been found that as many as 90% of primary care providers promote physical activity (Douglas, Torrance et al., 2006; Lawlor et al., 1999; Puig Ribera et al., 2005; Ploeg et al., 2007).

One of the primary care providers’ roles is to increase physical activity in the general population in order to decrease ill-health (Lawlor et al., 1999). Hence, primary healthcare providers may hold general discussions with their adult patients about the importance of moderate physical activity. In Douglas, Torrance et al. (2006), 62% of GPs, 88% of Health Visitors<sup>2</sup> (HV) and 90% of practice nurses (PN) were either likely or very likely to advise all healthy adult patients on moderate exercise. This result corresponds to other studies from primary care practices. For example, Puig Ribera et

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<sup>2</sup> A profession in the UK, which has the role of promoting health in an entire community and comprises qualified nurses or midwives.

al. (2005) reported that the majority of personnel (88%) promoted physical activity in consultation, of which nurses were greater users of physical activity counseling (93.5%) than physicians (84.1%). However, other results have been reported. For example, Ploeg et al. (2007) reported that only half of the GPs (47%) discussed physical activity with ten or more patients per week.

Healthcare professionals may also counsel physical activity for specific medical conditions. Almost all GPs and NPs in Douglas, Torrance et al. (2006) counseled physical activity for common medical conditions, such as overweight, hypertension and diabetes. GPs were even more likely to discuss physical activity if they perceived it as relevant to a patient's medical condition. This is in accord with respondents in Lawlor et al. (1999), who reported being more prone to counsel physical activity when the advice could be linked to the patient's present problems. Seventy-seven percent "Always" advised physical activity for overweight people, and 56% for ischemic heart disease but only 8% did it "Always" for all their patients, ill and healthy.

#### *Physical Activity Counseling in Swedish Primary Care*

Physical activity is promoted in many different ways in Swedish healthcare. Common methods include referrals to providers within the healthcare system (e.g., physical therapists and supervised group-training), verbal advice, and written prescription (Leijon et al., 2008). Today, over 80% of the country's healthcare units have established routines or programs which guide healthcare providers in how to discuss physical activity with their patients (NBHW, 2008). This is compared to only 50% having established routines or programs in 2003. At that time the most common method among those units that had routines was verbal advice (96%), followed by physical activity prescription (69%) and referrals (50%) (Faskunger et al., 2007).

As previously mentioned, an additional increase of 15-50% in levels of physical activity can be obtained if counseling is combined with other behavioral interventions, such as a written physical activity prescription (SBU, 2007; USPSTF, 2002). FaR® is a Swedish nationwide prescription method for physical activity, which issues a written prescription including the recommended dosage of physical activity (type of activity, frequency, duration and intensity). FaR® is distinguished from other promotion methods used by the healthcare system in that patients are referred to providers outside the healthcare system; when a patient receives FaR®, the healthcare professional will together with the patient decide if the prescribed activity will be either performed with the help of supervised FaR®-tailored exercise, regular activities and programs offered by the fitness and sport industry, or carried out by the patient him/herself without supervised training (i.e., walking, recreational physical activities, and cycling). All licensed personnel included in the Medical Register are allowed to prescribe physical activity (Faskunger et al., 2007).

FaR® began in 2001 as a pilot project with two specific objectives. Firstly, routines and methods for prescribing physical activity were to be developed (Kallings & Leijon, 2003). Secondly, rate of patient compliance and how a more physically active lifestyle affected patients' quality of life and other variables were studied (Kallings et al., 2007). One of the many lessons learned from this pilot project was that FaR® should be tailored to regional conditions, yet remain within the frame of established guidelines. In addition, the concept was to be approved by and established among all professionals involved (Faskunger et al., 2007). This may take time, resources and efforts, particularly in establishing networks with the fitness and sport industry.

A number of Swedish undergraduate theses have been undertaken to study the implementation of FaR® in primary care settings. Although the studies' sample sizes have been small and the instruments rarely validated, the results may be used as indicators of trends and may be generalized to their specific geographic areas. Fortunately, several such studies have been conducted in the geographic and organizational areas of this study, Stockholm County Council. Results of these studies indicated that almost all primary care professionals discussed, recommended, or prescribed physical activity at some level, and as many as 56-69% did it often or every day. Eighty-seven to ninety-eight percent gave verbal advice and 12-65% also gave written prescriptions (Berglund & Olin; 2005; Sandberg, 2005; Sandberg, Ekblom, & Eckerman, 2007). The majority of the participating primary care professionals had a positive attitude toward working with physical activity in prevention (97-100%) and treatment of diseases (93-100%), and almost 70% believed FaR® was a good prescription method (Berglund & Olin; 2006, Sandberg, 2005; Sandberg et al., 2007).

#### *Physical Activity Counseling in Psychiatry*

Few studies have been conducted about mental health professionals' practice of, attitude toward, and knowledge of physical activity counseling and prescription. Conducted research varies greatly in design, purpose, and result, but numerous findings are relevant for physical activity counseling within psychiatry.

Two early studies focusing on mental health professionals were conducted by Barrow, English, and Pinkerton (1987) among psychologists, and Burks and Keelev (1989) among psychotherapists. Barrow et al. reported that as many as 93% of the psychologists studied would recommend exercise to their patients, of which 53% would do it occasionally, 30% routinely, and 10% would do it all the time. Burks and Keelev

found similarly positive responses among their subjects, where 83% had prescribed exercise to one or more clients. The psychologists recommended, however, exercise with a frequency of “sometimes” which ranked lower then, for example, drug use recommendations. Reasons for prescribing exercise included combating depression and reducing anxiety and tension. The four mental disorders for which the participants rated exercise as being most helpful were major depression, anxiety, psychological factors affecting physical conditions, and adjustment disorders. Although a high percentage of the participants in both of the aforementioned studies were likely to prescribe physical activity or had done so, the majority (58%) in Barrow et al. recommended physical activity never or only occasionally, which is comparable to findings from Burks and Keelev.

In contrast to the findings of primary care studies reviewed previously, Phongsavan, Merom, Bauman; and Wagner (2007) determined that only 51% of their participating Australian psychotherapists thought physical activity counseling was part of their jobs. Despite that few (14%) of the subjects believed that their patients would not benefit from physical activity advice and only 12% agreed that physical activity is important for chronic somatic health problems but not for managing mental illness, less than half (40%) of the respondents had recommended physical activity to their patients at some level.

The Mental Health Foundation (2005) confirmed the low frequency of healthcare providers using physical activity for mental disorders. Although the study surveyed primary care practitioners, the purpose was to examine their use of exercise referrals and attitudes toward physical activity counseling for depression. Despite their search for alternatives to antidepressants, only 5% of participating general practitioners (GP)



used exercise referrals as one of their three most common treatment alternatives to mild or moderate depression. Astonishingly few (15%) of those who said they had access to exercise referral schemes (42%) used the referrals fairly frequently.

With regard to inpatient mental healthcare, Faulkner and Biddle (2002) stated that promotion of physical activity, exercise, and sports has had a long tradition in institutional psychiatric care in the United Kingdom (UK), as it has offered a way to handle patients' energy, sleep problems and physical frustrations. As in Sweden, the larger psychiatric institutions (e.g., large psychiatric hospitals and sites for recreation and vocation) in the UK have now been replaced with smaller units; still exercise and sports continue to be part of the treatment program for inpatient care. Results from Faulkner and Biddle's interviews with mental health nurses revealed that all participants were extremely positive with regard to physical activity in inpatient settings and had, at some level, promoted physical activity, some unplanned and infrequently, others every day of the week. The form of advice ranged from unstructured encouragement to extensive counseling about benefits, barriers and goals related to the patients and their diseases. Participating nurses did not, however, regard physical activity as a therapeutic tool, but more as a distraction to boredom and a way to structure the patients' day. Further, participants believed exercise to be a lifestyle choice, and considered it their patients' responsibility to be physically active.

### *Factors Affecting Physical Activity Counseling*

There are a number of interesting factors essential to how physical activity counseling is perceived by healthcare professionals and their patients, and how successfully physical activity therapies are used. It is therefore important to understand those factors and take them into account when promoting physical activity counseling.

According to the PRECEDE-PROCEED model, developed by Green and Krueter and adapted to the promotion of physical activity within primary care by Taylor (Taylor, 2003), a number of factors influence counseling and prescription of physical activity. These factors include: (a) Enabling factors: health- and medical care (e.g., prescription forms, information material, provided training, opportunities to work-out during the work day, referrals); (b) Pre-disposing factors: patient (e.g., their experienced barriers, motivation, experience of exercise, and personal medical background); and (c) Reinforcing factors: personnel (e.g., their interest, personal physical activity behaviors, motivation, knowledge, competence, experienced barriers, and attitude) (Taylor, 2003). Consequently, varied healthcare professional characteristics determine the promotion of physical activity for patients. These factors/characteristics are pertinent to this survey with regard to the investigation of mental health professionals' behavior.

#### *Personal Physical Activity*

In 1984, Clever and Arsham (as cited in Abramson, Stein, Schaufele, Frates, & Rogan, 2000) recommended physicians to enhance their own exercise habits in order to improve the effectiveness of their exercise counseling. Studies have since reported a positive relationship between healthcare professionals' personal physical activity levels and their use of physical activity counseling (Abramson et al., 2000; Frank, Bhat Schelbert, & Elon, 2003; Puig Ribera et al., 2005; McEntee & Halgin, 1996). Although some researchers have based their conclusions on relatively small samples and on responses from physically active individuals who apparently are positive to physical activity counseling, it is evident that professionals that exercise prescribe physical activity to a greater extent than their more inactive colleagues (Abramson et al., 2000, Frank et al. , 2003; Puig Ribera et al., 2005; McEntee & Halgin, 1996).

McEntee and Halgin (1996) examined the attitudes of psychotherapists and their personal physical activity. Respondents were found to exercise between one and three times per week, and the frequency of exercise was found to be positively related to how beneficial they believed exercise was to psychological functioning and the likelihood of recommending physical activity therapy for a specified case vignette. Abramson et al. (2000) analyzed both primary care physicians' aerobic exercise habits and their strength training routines and concluded that physicians who exercised were more likely to counsel physical activity with their patients. They also found that participants own exercise preferences reflected the type of exercise they recommended. Specifically, subjects who were aerobic exercisers were more likely to counsel their patients about aerobic exercise, with corresponding results for subjects that strength trained.

One of the larger studies in this field was conducted by Frank et al. (2003) among female American physicians. The researchers also confirmed that those physicians who complied with then-current physical activity recommendations (i.e., a minimum of 30 minutes at least three times per week), were more likely to discuss exercise with their patients at every visit. The exerciser also reported greater confidence in exercise counseling and had more extensive training in subjects related to physical activity counseling. Compliance with physical activity recommendations was also found to be related to positive health practices among participating physicians, such as fewer "bad physical health days/month", fewer "bad mental health days/month", less stress, and better general health status. Women physicians who exercised vigorously at least three times per week reported an even higher self-confidence in exercise counseling.

### *Knowledge and Attitude*

Self-efficacy with respect to counseling patients on physical activity is an important reinforcing factor in Taylor's (2003) model of physical activity promotion in primary care. According to Bandura (1997), in order for self-efficacy to develop, an individual must experience success and master the task through practice (as cited in Cox, 2007). Knowledge may be a factor that increases one's confidence and capability to reach this success. In addition, a positive correlation between educational training and the prevalence of physical activity promotion has been found (McDowell, McKenna, & Naylor, 1997; Ploeg, et al., 2007). Lack of knowledge and training are also often mentioned as barriers to physical activity counseling (Puig Riberia et al., 2005).

The aforementioned study by Lawlor et al. (1999) reported that over 75% of participating GPs believed they had sufficient knowledge to give advice about physical activity and nearly as many correctly reported levels of physical activity needed to achieve health benefits. These results are supported by Douglas, Torrance et al. (2006), who found that the majority (66%) of study primary care participants considered themselves as having sufficient knowledge to counsel physical activity. However, only 13% of GPs, 9% of health visitors and 7% of nurses in this study correctly described current national physical activity recommendations. This finding may indicate that healthcare professionals perceive themselves as having greater knowledge than they actually have.

Attitude has shown to be a determinant of behavior; primary care providers who hold a more positive attitude toward physical activity are more proactive in raising issues related to physical activity (Taylor, 2003). In inpatient settings, the accordance

of professionals' beliefs and attitudes with an alternative treatment, such as physical activity, is essential for how popular the treatment will become (Faulkner & Biddle, 2001b). This notion is supported by McEntee and Halgin (1996), who found that those psychotherapists who held general beliefs that exercise was beneficial to psychological functioning were more likely to recommend exercise when presented with a vignette describing an individual with symptoms of mild depression, anxiety and stress.

Attitude, among managers in particular, has also been reported as a critical component in the development of a more health promoting and holistic perspective within healthcare (Healthcare Provision, Stockholm County [SLSO], 2007a).

Unfortunately, a positive attitude does not always affect desired behavior. In a three year panel study, Ploeg et al. (2007) investigated Australian GPs' knowledge, confidence, perceived role, and frequency of talking to patients about physical activity. After statewide campaigns and interventions to increase awareness of physical activity in general practice, the authors found that, after three years, almost all GPs believed it was their role to help patients increase their physical activity levels. Regardless of these encouraging results, there was no change in the frequency of discussing physical activity with patients in 2000.

### *Profession*

Physical activity counseling studies have focused on different types of professionals, and the findings, including frequencies of physical activity counseling, prescription, and attitude, have varied among professions (Douglas, Torrance, et al., 2006, Douglas, van Teijlingen et al., 2006; Jorm, Morgan, & Wright, 2008; Puig Ribera et al., 2005). Primary care nurses, such as practice nurses (PN) and health visitors (HV), have reported being more likely to give general physical activity advice to their

apparently healthy adult patients than general practitioners (GP) (Douglas et al., 2006; Puig Ribera et al., 2005). On the other hand, GPs and PNs gave advice more often for specific medical conditions than HVs. Further, GPs regarded a lack of time as a greater barrier than PNs and HVs, and more GPs believed that a financial incentive might change clinical practice with respect to physical activity.

Jorm and colleagues have conducted several large-scale studies about interventions for mental disorders among healthcare professionals and the Australian public (Jorm, Korten, Jacomb, Rodgers, & Pollitt, 1997; Jorm et al., 2008). Although physical activity counseling has not been the primary focus in these studies, it has been used as one treatment alternative for several mental disorders. In comparisons among psychiatrists, psychologists, GPs, and mental health nurses, several of the traditional treatments for both schizophrenia (e.g., antipsychotic agents and admission to psychiatric ward) and depression (e.g., antidepressants, counseling, and CBT) were similarly perceived as useful (Jorm, Korten, Jacomb, Rodgers, et al., 1997). However, psychiatrists tended to report psychological and lifestyle interventions, physical activity being one of them, as less likely to be helpful than GPs and psychologists. Forty-eight percent of GPs, 33% of psychiatrists and 51% of psychologists reported physical activity as likely to be helpful for schizophrenia, and 79%, 55% and 87% for depression respectively ( $p < 0.01$ )<sup>3</sup>. Ten years later, the authors found that psychiatrists, compared to GPs, still reported being less likely to believe that physical activity was helpful for depression. This significant difference was also found for GPs and mental health nurses (Jorm et al., 2008).

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<sup>3</sup> Due to the large sample size, contingency coefficient (CC) was calculated for all significant differences ( $p < 0.01$ ).

### *Type of Care*

It seems reasonable to believe that type of care (inpatient or outpatient) and type of disorder may also affect the prevalence of physical activity counseling and prescription. A traditional division of mental disorders and related care is: (a) Inpatient care where the medical treatment is provided in a hospital or other facility with at least one overnight stay; (b) Outpatient care where the patient is not hospitalized but is treated in a doctor's office, clinic or day center; (c) General psychiatric disorders, where depression, anxiety, eating disorders, stress-syndromes, and affective disorders are treated; and (d) Psychoses care, which involves schizophrenia and other psychotic disorders. The organization of psychiatric care has undergone a transformation, where the resources have been reallocated from inpatient to outpatient care (NBHW, 2008). Obviously, inpatient care focuses on treating patients who need to be hospitalized and monitored, i.e., the severity of the disorders are greater than in outpatient settings. Further, access to physical activity may be limited within inpatient care settings, where lack of access to outside recreation and sport facilities further limits options of physical activity therapy options. It would therefore be reasonable to believe that differences in the use of physical activity therapies exist between in- and outpatient care.

With regard to differences based on type of disorder, the relationship between depression, which is treated in general psychiatry, and physical activity has amassed a larger body of research than psychotic diseases, such as schizophrenia (Stathopoulou et al., 2006). For example, depression was the only psychiatric diagnosis included in the first version of FYSS (YFA, 2003). Availability of research and guidelines may have had an impact on the prevalence of using physical activity as a component in a treatment plan for depression. On the other hand, physical activity has been part of

inpatient settings and psychotic patients' daily routine for a long time (Faulkner & Biddle, 2002). Psychotic patients also struggle to a greater extent with somatic diseases (Carless & Faulkner, 2003), which have a long tradition of being prevented or treated with physical activity. The severity of disorder may also affect the choice of treatment plan where psychoses commonly have more severe cases than general psychiatry.

### *Geographic Operations*

It is suggested that management teams in healthcare operations may differ in their level of interest in physical activity prescription. This presumption is based on differing responses to inquiries made by the Stockholm County Council's FaR®-project team to professionals in several psychiatric regions about their interest in obtaining more information and education about physical activity prescription (J. Taube, personal communication, July 9, 2008). Moreover, the demographic characteristics of inhabitants, such as race, health-status, income, social class and education, differ across Stockholm County (Hälso- och sjukvårdsnämndens förvaltning, 2007). These pre-disposing factors are expected to influence the physical activity counseling situation and the outcome (Taylor, 2003). Environmental factors such as being able to afford home equipment, and having access to exercise facilities, bike paths, footpaths, health clubs, and swimming pools are associated with physical activity (Humpel, Owen, & Leslie, 2002). One may presume that these factors vary across SLSO healthcare areas as demographic characteristics differ.

Finally, differences in organizational models between and within counties exist (Butor, 2006). For example, the cooperation between primary care and psychiatry in the six operations in Stockholm County Council (SLL) is heterogeneous in terms of which professions are employed, where they are located, and how available competence in



psychology is within primary care settings. Moreover, discrepancies in routines, financial situations, and communication have been found between primary care and psychiatry in SLL (Butor, 2006). Hypothetically, the aforementioned differences may also be found between the six geographic psychiatric operations (i.e., North, Northwest, Northeast, South, Southwest, and Southeast).

#### Summary

In summary, research about clinical practices of, attitudes toward, and knowledge about physical activity counseling and prescription in primary care settings has been conducted. Less focus has been placed on psychiatric care. With an increasing proportion of individuals diagnosed with mental health problems and a need for alternative treatments for mental disorders, more knowledge is needed. Ongoing attempts to introduce the use of physical activity in Stockholm County Council psychiatric care operations justify the need to conduct a widescale study among mental health professionals. The varied factors influencing physical activity counseling and prescription that have been discussed in this chapter will be studied.

## CHAPTER III

### METHODOLOGY

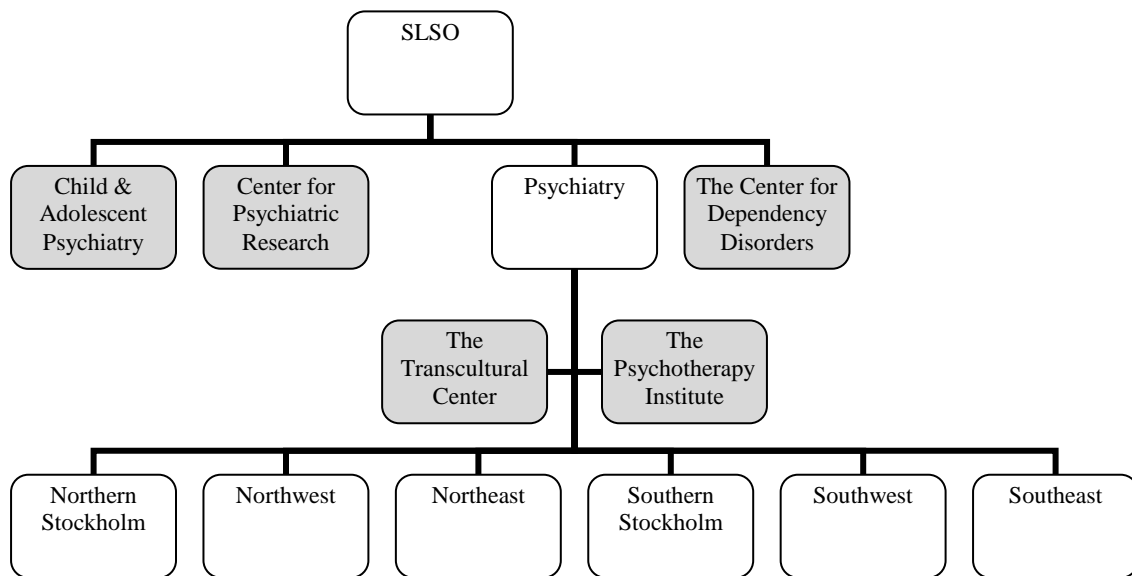
A non-experimental, cross-sectional survey design was used to assess descriptive and correlational elements of SLSO mental health professionals' physical activity counseling and prescription. Within this chapter are presented a description of the population and sample, instrumentation, external and internal validity, data collection method, ethical issues, and data analysis.

#### Population and Sample

This study focused on licensed mental health personnel working with psychiatric care in Healthcare Provision, Stockholm County (SLSO), Sweden. SLSO is part of Stockholm County Council (SLL) and operates council-owned healthcare and medical care outside council-owned emergency hospital wards in 25 municipalities and 17 city districts in and around Stockholm, making SLSO one of Sweden's largest healthcare providers. There are approximately 13,000 employees at 800 units, providing service to 1.6 million inhabitants (Healthcare Provision, Stockholm County, 2007b).

The target population consisted of all mental health professionals that are authorized to prescribe physical activity and who actively work with adult patients in SLSO psychiatry. In psychiatric care settings these professionals include licensed physicians (licensed physicians, physicians in specialist training, and psychiatrists [specialized physicians]), psychologists, occupational therapists, physical therapists, nurses, and psychotherapists. SLSO branches related to psychiatric care are Child and

Adolescent Psychiatry, Center for Psychiatric Research in Stockholm, Psychiatry, and The Center for Dependency Disorders in Stockholm (see Figure 1). Those practitioners engaged in branch Psychiatry were included in the study as this branch provides adult psychiatric care.



*Note.* Organizations in white have been included in this study. Psychiatry Center Södertälje has been added to the six geographic operations since this study.

*Figure 1. Organizational chart of psychiatric care within Health Care Provision, Stockholm County (SLSO).*

SLSO Psychiatry comprises eight units including six geographic operational areas and two county-wide services: The Institute of Psychotherapy, a specialized unit for psychotherapy, and The Transcultural Centre, a knowledge centre providing training, consultation, and supervision for personnel working with asylum seekers and refugees (Healthcare Provision, Stockholm County, 2007b). This study focused on the six geographic operational areas: Northern Stockholm Psychiatry, Psychiatry Northwest,

Psychiatry Northeast, Psychiatry Southwest, Psychiatry Southeast, and Psychiatry Southern Stockholm.

In SLSO, each of the six operations is further divided into sections, representing different types of services within psychiatry. The Center for Eating disorders in Stockholm, located in Northern Stockholm Psychiatry was excluded. Each section is subsequently divided into physical work-units that operate SLSO's adult psychiatric care. Work-units that are related to documentation, research, development, and education, were excluded as those work-units do not work directly with patients. Neither were highly specialized care units, such as electroconvulsive therapy (ECT), internet-psychiatry, nor light therapy included.

It was decided that a complete census would be the most suitable method for data collection as: (a) full access to a complete sampling frame was available through the SLSO Office of Supportive Personnel; (b) the target population consisted of considerable stratification of individuals by operations, classifications of care (sections), work-units, and professions; (c) large "invitation lists" (samples), assumable over 1,000 sampled subjects, are suggested to be associated with lower response rates (Hamilton, 2003); and (d) the email list provided in December 2008 by the SLSO Office of Supportive Personnel initially included the entire target population with only minor exceptions (i.e., those that may have not been suitable personnel, such as night workers, administrative staff and individuals who did not have any contact with patients were also invited to participate).

When all non-related sections and work-units were removed (36 individuals), the target population consisted of 1,690 mental health professionals across the six operations (1,693 in December 2008) (see Table 1). Email addresses for only 1,634 of

the total number were obtained in December 2008 from the SLSO Office of Supportive Personnel. Eleven addresses were incorrect, leading to an accessible population of 1,623 mental health professionals within SLSO Psychiatry.

Table 1

*Number of employees within SLSO geographical operations*

Operations	Employees	%
North	510	30%
Northwest	311	18%
Northeast	176	11%
South	238	14%
Southwest	297	18%
Southeast	158	9%
<i>Total</i>	<i>1,690</i>	<i>100%</i>

*Note.* Statistics are based on data per August, 2008

The 1,690 professionals included in the target population were physicians, psychologists, psychotherapists, physical therapists, and occupational therapists, working in general psychiatric or psychoses outpatient or inpatient clinics, urgent care facilities, affective clinics, neuropsychiatric clinics, gero-psychiatric clinics, and care departments for forensic psychiatry (see Table 2)<sup>4</sup>.

<sup>4</sup> Population data was obtained from SLSO in August and December 2008. A new position “manager” had been extracted from each of the six professions in the December data to create a category of its own (86 individuals). However, managers should be considered as a position and not a profession since most managers also denote one of the above six professions (2 non-licensed managers responded and were included in analyses).

Table 2

*Number of employees within professional classifications by age and gender*

Profession	Total	Total	Age (years)		Gender (percent)	
	N	%	Female	Male	Female	Male
Nurse	838	50%	48	47	79%	21%
Occupational Therapist	54	3%	47	44	86%	14%
Physical Therapist	32	2%	49	49	81%	19%
Physicians	472	28%	44	43	60%	40%
Psychologist	260	15%	44	43	71%	29%
Psychotherapist	34	2%	57	57	72%	28%
<i>Total</i>	<i>1,690</i>	<i>100%</i>	<i>48</i>	<i>47</i>	<i>72%</i>	<i>28%</i>

*Note.* Statistics for age and gender are based on data per December 1, 2008

Each work-unit was classified as general psychiatric inpatient clinic, general psychiatric outpatient, psychoses inpatient, or psychoses outpatient clinic (see Table 3). Classifications were made with the help of information on operation websites and by calling the clinics directly and asking about their psychiatric care services. Unfortunately, there were substantial differences among the operations in terms of how they categorized and listed their clinics and personnel. Some operations had work-units, which only worked with one type of care while other operations worked with integrated care, consequently providing both in- and outpatient care and/or general psychiatric and psychoses care.

Table 3

*Number of employees by type of care*

Type of Care	Percent	Type of Care	Percent
Outpatient General Psychiatry	24%	Inpatient General Psychiatry	14%
Outpatient Psychoses	9%	Inpatient Psychoses	13%
Outpatient Integrated	14%	Inpatient Integrated	6%
<i>Total Outpatient</i>	<i>47%</i>	<i>Total Inpatient</i>	<i>33%</i>
ST - Physicians	7%		
Psychoses Integrated	2%		
General Psychiatry Integrated	0%		
All Integrated	9%		
Neuropsychiatry	2%		
<i>Total Integrated and Other</i>	<i>20%</i>		

### Instrumentation

A survey instrument (Appendix B) was compiled for use in this study and based, in part, on those used in previous international studies and Swedish undergraduate theses. The questionnaire was divided into six sections (seven sections in the Swedish version). Although the questionnaire was intentionally informative, action was taken to avoid revealing desired behavior of physical activity counseling and prescription.

The first section contained one vignette, which described a patient who experienced symptoms related to depression. Subjects were asked to indicate how likely it was that they would recommend any of the suggested therapies, physical therapy being one of them. Section two comprised questions about the subjects' clinical

practice of physical activity counseling. Items were ordered chronologically, following conceivable steps taken by a mental health professional during a patient visit (i.e., documentation of patient's current physical activity behavior, frequencies of discussions and counseling of physical activity, counseling methods, components of the advice, documentation of the advice, motivational methods, physical activity referrals, and follow-ups). The third section comprised seven items measuring subjectively reported knowledge about and attitudes toward physical activity counseling and prescription. Section four contained questions about the prescription-method Physical Activity on Prescription FaR®, followed by section five, which comprised demographic questions and participants' personal physical activity levels. The Swedish version of the questionnaire ended with section six, which inquired about the Action Plan of Overweight and Obesity 2004 (HPÖ). HPÖ was not within the scope of this thesis and is therefore not discussed nor included in the English version of the questionnaire.

As previously noted, the survey instrument was developed by the researcher specifically for this study. Each individual instrument item was either developed by the researcher, or, after permission from the authors, adapted from a number of published international studies or Swedish undergraduate theses (Appendix A). Items originally used in published international studies will be described, where applicable. Validity testing of each scale, as well as the whole instrument is described below.

### *Translation*

It was determined that a translation with three interrelated steps would be most suitable for this survey: (a) translation from Swedish to English with consideration of cultural aspects, (b) back translation from a reviewed English version to a Swedish version, and (c) reliability and validity testing of the final English version (Sperber,



Devellis, & Boehlecke, 1994; International Physical Activity Questionnaire [IPAQ], 2008). For the purpose of this study, initial translation from Swedish to English was completed based on recommendations by Sperber et al. (1994), IPAQ (2008), and Hunt and Bhopal (2004). Step (b) and (c) in the translation process were outside the scope of this study but should be considered if the English version of the questionnaire will be used in other studies.

A “decentered” process was utilized where the two language versions of the questionnaire were developed reciprocally, making correction of awkward and unclear meanings in the original Swedish version possible (Sperber et al., 1994). All items originally from studies written in English were translated to Swedish by the bilingual researcher, except for the vignette which was translated by a bilingual psychiatrist. All items originally from studies written in Swedish were translated from Swedish to English by the researcher, thus creating two language versions of the questionnaire. Secondly, the English version was reviewed by the American thesis advisor to ensure correct meaning of the items. Thirdly, the complete Swedish version of the questionnaire was translated to English and reviewed by a team of bilingual individuals (Hunt & Bhopal, 2004), creating a second English version of the questionnaire. The two English versions were thereafter compared by the researcher to distinguish any differences that should be addressed. Based on Hunt and Bhopal’s recommendations, cross-cultural concerns were also addressed with monolingual individuals in order to find the correct meaning and definitions of words and questions. For example, correct use of disorders (mental disorder, mental disease, mental ill-health, psychiatric disorder and psychiatric disease) and counseling methods (advising, recommending, counseling, and prescribing) were chosen. Lastly, review of the two language versions of the

questionnaire were conducted in conjunction with the validity testing by the American thesis committee, as well as the American and Swedish validation expert groups.

Special considerations were taken with regard to scales used both in the Swedish and the English versions of the questionnaire.

### *Questionnaire*

#### *Section 1 – Vignette*

The selected vignette described a patient with depressive symptoms. The intention of the vignette was twofold. Firstly, it measured mental health professionals' likeliness of recommending physical activity when considering it with other alternative treatments, such as pharmacological therapy and psychotherapy. Secondly, the vignette served as an interest enhancing introduction, with a patient case that appealed to participants clinically. The original vignette was modified to reflect Swedish circumstances and translated to Swedish by a Swedish psychiatrist. The English version constitutes a translated version of the Swedish. Responses were measured on a 0-5 point scale, ranging from "Yes, Definitely" to "No, Definitely not", with the neutral position of "Maybe". "Don't Know" was also provided.

The vignette was initially created by Jorm et al. and varied, yet similar versions have been used in several studies in Australia, surveying healthcare professionals (i.e., psychiatrists, psychologists, mental health nurses, and General Practitioners [GP]) and the Australian public (Jorm, Korten, Jacomb, Christensen, Rodgers, & Pollitt, 1997; Jorm, Korten, Jacomb, Rodgers et al., 1997; Jorm, Wrigth, & Morgan, 2007; Jorm & Wright, 2007; Jorm et al, 2008). The vignette was written to meet ICD-10 (International Classification of Diseases) and DSM-IV (Diagnostic and Statistical Manual of Mental Disorders) diagnostic criteria for major depression but with the minimum number of

symptoms required for a diagnosis. However, the authors have underscored that the vignette was initially developed for the lay person and are therefore inconclusive, not allowing for complex answers (Jorm et al., 2008; Jorm, Korten, Jacomb, Christensen et al., 1997). Another problem with the vignette was that no other diagnostic tests are described, such as lab tests for somatic causes or other psychological and/or psychiatric diagnostic tests.

The original vignette has been used to determine, among other factors, respondents' perception of the helpfulness of different interventions. Discrepancies among professions, as well as among parents, youth, and healthcare professionals have been previously reported. In this study a female person "Ana" (Swedish version: "Anna") was described in the vignette. Earlier research by Jorm, Korten, Jacomb, Rodgers, et al. (1997) has reported that gender of the individual described in the vignette does not significantly affect responses.

### *Section 2 – Practice of Physical Activity Counseling*

Clinical practice of physical activity counseling was assessed using two scales: the Frequency of Physical Activity Counseling scale, and Behavior of Physical Activity Counseling scale (methods and routines), as well as by requesting information about diagnoses treated with physical activity, and participants' perceived reasons for their counseling practices.

The majority of previous national and international studies and Swedish theses about physical activity counseling report prevalence of physical activity counseling (Abramson et al., 2000; Barrow et al., 1987; Bengtsson & Svensson, 2006; Berglund & Olin, 2005; Douglas, Torrance et al., 2006; Douglas, van Teijlingen et al., 2006; Frank et al., 2003; Hagberg, Danesjö-Gustafsson, Johansson, & Modin, 2007; Kallings &

Leijon, 2003; Larsson, Linnros, & Svensson, 2005; Lawlor et al., 1999; McEntee & Halgin, 1996; Phongsavan et al., 2007; Puig Ribera et al., 2005; Sandberg, 2005; Sandberg et al., 2007; Ploeg et al., 2007). Unfortunately, definitions and scales have been used inconsistently, making comparisons difficult. Prevalence has been nominally expressed, “Yes. I do counsel/prescribe physical activity”; ordinally estimated using self-reported frequencies (i.e., “Always” – “Never”); and intervally estimated using numbers of prescriptions. For the purpose of recognizing the need for clear definitions and more uniform scales, participants in this study were asked to report how often they discuss and counsel physical activity (two levels of using physical activity in prevention and treatment) and to report the frequencies on an ordinal scale; once computed became interval.

Frequency of Physical Activity Counseling was measured with a 5-item scale developed for this study. Scores were obtained with a 5-point Likert type scale, ranging from 1 = never to 5 = always, where 5 indicated a high frequency of physical activity counseling. The frequency scale indicated how often the subjects: (a) generally discussed physical activity with their patients, (b) counseled physical activity for their patients, (c) counseled physical activity for the purpose of preventing mental/psychiatric disorders and conditions, (d) counseled physical activity for the purpose of treating mental/psychiatric disorders and conditions, and (e) counseled physical activity for somatic diseases and conditions.

Two subsequent items investigated for which mental disorders/conditions and somatic diseases/conditions physical activity was counseled. Five mental health disorders were specified (“Mild to moderate Depression”, “Severe Depression”, “Schizophrenia”, “Stress” and “Anxiety”). They are the only mental disorders described

in FYSS and were therefore assumed to be the most common disorders to be treated with physical activity (YFA, 2008). For each specific disorder, respondents also indicated if the physical activity was prescribed as an adjunctive treatment (together with other treatments) or as a mono treatment (instead of other treatments). The suggested somatic disorders are also described in FYSS and are the most common disorders for which primary care professionals counsel and prescribe physical activity (Berglund & Olin, 2005; Sandberg, 2005; Kallings, 2008).

Perceived reasons for discussing and/or counseling physical activity were assessed by asking participants to select all reasons that applied. Specific reasons listed were based on suggestions made during the pilot study and those from previous studies by Abramson et al. (2000) and McEntee and Halgin (1996). Abramson and his colleagues studied American primary care physicians and frequencies of their personal exercise habits and counseling practices. McEntee and Halgin (1996) surveyed American psychotherapists' reasons for discussing or not discussing exercise with their clients and the correlation between their counseling practice and personal aerobic exercise habits.

Behavior of Physical Activity Counseling was measured with a nine-item scale developed for this study. Six items used a 5-point frequency scale, ranging from 1 = never to 5 = always; where 5 indicated a high frequency of using the recommended and/or obligated physical activity counseling methods and routines. The behavior scale solicited information about the following routines and methods: documentation of patients' current level of physical activity; counseling method (verbal advice, different forms of written prescription, and referrals [Note: options specified in FYSS, p.49 and Swedish undergraduate theses, see Appendix A]); content of the advice (mode,

frequency, duration, intensity, program duration, and restrictions); documentation of the advice, motivational method (clinical knowledge, general counseling, motivational interviewing [MI], Social Cognitive Theory [SCT], and Transtheoretical Model [TTM]); referral routines (no referrals, and referrals within or outside the healthcare system); and follow-ups (oneself [next visit, phone call, or email], or other in the team). Motivational methods and the content of the advice, which is based both on the specification required in a complete physical activity prescription according to the FaR®-model (Kallings & Leijon, 2003) and by NICE guidelines for depression in adults (NICE, 2009), were developed for the purpose of this study. Variations of the remaining behavior items have been used in previous studies and theses, but with different wording and scales (Berglund & Olin, 2005; Dohrn, 2008; McEntee & Halgin, 1996; Nordlander, 2006; Phongsavan et al., 2007; Sandberg et al., 2007).

### *Section 3 – Attitudes and Knowledge*

Attitude toward physical activity counseling was estimated using a scale comprising five items, high scores indicating a positive attitude toward using physical activity in prevention and treatment for mental disorders. The scale included three statements, with which participants were asked to indicate their agreement on a 5-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree. The statements inquired about the subjects' belief that their colleagues and clinic management were supportive of physical activity counseling, and whether they had experienced any barriers which interfered with or prevented them from counseling physical activity. If participants experienced barriers, they were asked for specifics. Two questions inquired about the subjects' attitude toward using physical activity in prevention and treatment of mental disorders, ranging from 1 = very negative to 5 = very positive. Variations,

with different wording and scales, of the five items have been previously used in international studies (Abramson et al., 2000; Douglas, Torrance et al., 2006; Douglas, van Teijlingen et al., 2006; Puig Ribera et al., 2005; Lawlor et al., 1999) and Swedish undergraduate studies and reports in primary care settings (Berglund & Olin, 2005; Dornh, 2007; Sandberg, 2005).

Knowledge was assessed as to how subjects would rate their knowledge about the effects (therapeutic/preventive) of physical activity on mental disorders, and the effects (therapeutic/preventive) of physical activity on somatic diseases and conditions. These were scored using a 5-point Likert-type scale, ranging from 1 = poor/no to 5 = excellent knowledge. The knowledge questions were based in part on one used by Phongsavan et al. (2007) in a pilot study of Australian mental health therapists' attitudes toward physical activity counseling ( $N = 51$ ). The original wording "Would you rate your knowledge about the potential therapeutic effects of physical activity/exercise on mental health as...." was changed to "How would you rate your knowledge about the effects (therapeutic/preventive) of physical activity on mental disorders?"

#### *Section 4 - Physical Activity on Prescription - FaR®*

Questions related to participants' use (frequency) of, knowledge about, and attitude toward the prescription-method FaR® and its related manual FYSS were assessed in section four with an 11-item scale developed for the purpose of this study. Specifically, frequencies of FaR® and FYSS were evaluated on 5-point frequency scale, ranging from 1 = never to 5 = always, where 5 indicated high frequency. Participants were also asked to report those factors which would facilitate the progress of counseling physical activity at their workplace (Berglund & Olin, 2005; Sandberg, 2005).

With regard to knowledge, four items assessed participants level of knowledge about FaR® and FYSS on 5-point Likert-type scale, ranging from 1= poor/no knowledge to 5= excellent, their familiarity with FaR®'s mandatory guidelines, as well as how they got in contact with FaR®.

Attitudes toward FaR® and FYSS were measured with five statements on a 5-item Likert scale, with scores ranging from strongly disagree to strongly agree, high scores on the scale (5) indicated a positive attitude (strongly agreeing) toward FaR® and FYSS. Participants were asked to indicate their agreement with having sufficient competence to use FaR®, if they believe FaR® is a good prescription-method, and if they believe FYSS is a good prescription-tool when they prescribe physical activity. Two items, whether participants experienced any barriers when using FaR® and FYSS, were reverse scaled, where higher scores (5) indicated strong disagreement. Two items further asked what kind of barriers subjects encountered; of which one was an open-ended question (barriers to using FYSS). Section four comprised both items developed for the purpose of this study and variations of the questions previously used in Swedish undergraduate theses and reports (Berglund & Olin, 2005; Dornh, 2007; Sandberg, 2005, Sandberg et al., 2007).

#### *Section 5 - Background*

Eight demographic characteristics were collected from all subjects. Age, gender, profession, years in practice, and personal physical activity levels have been suggested to influence knowledge, attitude and clinical practice of physical activity counseling among general practitioners (Abramson et al., 2000; McEntee & Halgin, 1996; Barrow et al., 1987; Frank et al., 2003; Douglas, Torrance et al., 2006; Puig Ribera et al., 2005; McDowell et al., 1997). Moreover, differences in prevalence, attitude and knowledge



between SLSO Psychiatric Operations (North, Northwest, Northeast, South, Southwest, and Southeast) and type of mental healthcare (outpatient general psychiatric care, inpatient general psychiatric care, outpatient psychotic care, and inpatient psychotic care) were suggested in the proposed hypotheses. Participants were also asked to report with which diagnoses they worked.

Personal physical activity levels were assessed with the short form of the International Physical Activity Questionnaire (IPAQ). IPAQ was developed with the aim of standardizing measures of self-reported personal physical activity in a population. The questionnaire was initially designed for use with adults between the age of 15 and 69 years old, which corresponds to this study's population. The short form of IPAQ provides separate scores on walking, moderate-intensity and vigorous intensity activities, as well as total scores for all activities. The IPAQ result can be used to assign participants categorically to "Low", "Moderate", and "High" activity levels (nominal variable), or to assess intervally (interval/continuous variable). The fourth item on the IPAQ short-form evaluates sedentary behavior (sitting) but it was excluded in this study as sedentary behaviors are not included in the recommended calculations of levels of physical activity (IPAQ, 2005).

The IPAQ short form has been the subject of extensive testing and is used internationally in national and regional population studies (Bauman et al., 2009; Hagströmer, Oja, & Sjöström, 2006). Criterion-related validity, tested with an accelerometer, has been found to be acceptable ( $\rho = 0.3$ ) (Bauman et al., 2009); however, the instrument significantly overestimates self-reported time spent in physical activity (Ekelund et al., 2006). Based on this potential overestimation and the skewed distribution of activity levels/energy expenditures in national or large population data

sets (IPAQ, 2005), no assumption of normality may be made. As such, continuous variables are recommended to be presented as median minutes/week or median MET-minutes/week (IPAQ, 2005). The IPAQ questionnaire has acceptable levels of test-retest reliability (intra-class correlations range 0.7-0.8) (Bauman et al., 2009) and moderate reliability for assessing total minutes of activities (0.68 intra-class correlations) (Brown et al., 2004).

Cleaning of data and calculations were performed according to IPAQ's protocol (IPAQ, 2005). The number of days was multiplied by reported duration for each intensity level of physical activity (vigorous, moderate, and walking) and thereafter converted to MET-minutes/week by multiplying total number of minutes by 8.0, 4.0, and 3.3, respectively. Participants' total physical activity score was thereafter obtained by summing all MET-minutes/week. Total MET-minutes/week was used to categorize participants into three groups (low, moderate and high).

#### *Validity and Reliability Testing of the Questionnaire*

Unless otherwise mentioned, none of the above published international studies or Swedish undergraduate theses, have reported validity or reliability of their survey instruments. The intention in this study was therefore to undergo a thorough validity testing of the entire questionnaire, as well as internal-consistency reliability testing for proposed scales.

Validity refers to the degree to which an instrument measures the specific topic or concept it is supposed to measure (Gay, Mills, & Airasian, 2006). Consequently, an important aspect of validity is that the correct interpretation of the result will be done and for which population the interpretation is valid. The interrelated types of validity are content validity, criterion-related validity, construct validity, and consequential

validity. This study focused on content validity testing as this would ensure that included items were relevant to this study's intended content area (physical activity counseling and prescription in psychiatry). Reliability is the extent to which "a test consistently measures whatever it is measuring" (Gay et al., 2006, p. 139). Due to the informative nature of the questionnaire, the subjects may have been influenced by the information and the individual items included in the survey instrument, affecting the relevance of different test-retest procedures and order-of-item testing. Therefore, the most important reliability testing for this study's questionnaire was internal consistency reliability for items included in the proposed scales.

Content validity, defined as "the degree to which a test measures an intended content area" (Gay et al, 2006, p 134), was established using expert review of the entire survey instrument. Four Swedish experts in psychiatry, working in both clinic (SLSO) and academic (Aker University Hospital, Oslo) settings, reviewed the entire questionnaire and evaluated whether each item was relevant to and covered by the proposed research questions. The Swedish expert panel was also asked to consider the number of items in the questionnaire, and the clarity and wording of instructions and questions. Four American experts with expertise in health and behavior research (The National Institute of Mental health), psychology, methodology (academic), and exercise science/athletic training (academic), similarly validated the instrument.

The final validity test was conducted with an online survey pretest group. The pretest group consisted of seven subjects from the target population, three more than recommended by Gay et al. (2006, p. 169), who were sent the final draft version of the online questionnaire. Internal consistency reliability was tested with Cronbach Alpha for the included scales: Frequency of Physical Activity Counseling Scale, Behavior of

Physical Activity Counseling Scale (methods and routines), Attitude toward Physical Activity Counseling Scale, and Knowledge of Physical Activity Scale.

#### Internal and External Validity

Despite suggested validity testing and carefully arranged procedures, cross-sectional self-reported questionnaires may allow factors that negatively affect internal and external validity. Subjects were expected to be honest about their responses, as most of the information given was not of a sensitive matter. Further, anonymity and confidentiality were insured. However, self-reported frequencies of behavior, such as physical activity counseling, could be affected if participating subjects perceived one behavior to be the “correct” behavior. Further, routines and methods used by mental health professionals could be incorrectly reported if participants did not recall them properly. Measures of self-reported personal physical activity are frequently subject to low validity and reliability. Selecting a standardized and well tested instrument (i.e., IPAQ), with acceptable validity for self-reported physical activity levels, was therefore a major concern (IPAQ, 2005).

The survey was lengthy (10-15 minutes to complete), with a large number of questions, which may have impacted the willingness of subjects to complete the questionnaire or to read the questions carefully. However, 10-12 minutes is suggested to generally be an appropriate time frame to complete a survey; longer questionnaires may also be designed if actions have been taken to compensate for the longer time (Cox, 2008). Factors, which have been suggested by Cox and were considered in the design of this survey, include an attractive questionnaire, pre-notifications, and a compelling cover letter underscoring the significance of the study.

Furthermore, actions to improve the expected response rate were taken as health professionals have a very busy schedule with little time for participating in surveys. Survey methods (online survey), prizes and other incentives, as well as informing the sample about the study's significance were all utilized as intended to lower the risk of external threats.

#### Procedures for Data Collection

Prior to submitting the study to the Human Subjects Review Board at George Mason University, the questionnaire (Appendix B) was sent out via email together with information about the study and the required content validity testing to the Swedish expert group. After comments were received and appropriate minor alterations were done, the questionnaire was translated from Swedish to English and sent via email to the American expert group for their review.

Thereafter, the final paper copy questionnaire was submitted to the survey company. When the web design of the questionnaire was completed, the online questionnaire was tested by the researcher and the Swedish advisor in order to confirm its correctness. Any flaws were documented and sent to the survey company for them to correct. When the final test-version of the online questionnaire was issued, it was sent out to the pilot-test group for final testing. A work unit, conveniently selected by the Swedish advisor, participated in pretesting of the online survey. Five of the six different professions included in the current study were represented in the pilot-testing group. No issues with wording of questions or instructions, or technical problems were reported to the researcher. The pilot-testing group was also encouraged to note issues related to the questions being lengthy or subject to errors of omission or commission

(i.e., specific items that had been left out or which were not relevant to the research questions). Only one comment was reported relative to the length of the questionnaire.

A link to the final online version was sent together with a cover letter in January 2009 (Appendix E) to all participants that were included on the email address list (based on the population by December 1, 2008) provided by the SLSO Office of Supportive Personnel through the Swedish advisor. The cover letter, which was the body text in the email, explained the importance and nature of the study, the confidentiality of information, the meaning of voluntarily participation, and the policy of anonymity with contact information. The participants were also informed about the prizes that the researcher and the Swedish advisor were able to obtain before the survey period started (FaR® course, FYSS manual, and personal training). Tabulation and frequencies of collected data were reported and made accessible online by the survey company during the whole primary data collection period. The first reminder (Appendix F) was sent out one week into the survey period to those participants that had not submitted the complete survey, followed one week later with an extra reminder to all managers within SLSO Psychiatry. A third and final reminder (Appendix F), was sent out three weeks into the survey period. After six weeks of data collection, the survey was closed and all email addresses from the data file were removed before any analyses were conducted. Winners were thereafter randomly selected among all respondents.

#### Ethical Issues

This study, including the collection of data by Textalk AB, Mölndal, was approved by the Human Subjects Review Board at George Mason University. The nature of the study was explained in the cover letter (Appendix E), which clearly informed the participants that they entered the study and completed the questionnaire

voluntarily. Participants' completed and submitted online questionnaires vouched for consent to participate. No foreseen harm to the participants was found since there has been no personal interaction with researchers or others involved. Furthermore, the participants' aggregated results were analyzed and displayed in summary format, without revealing individual results. Additional actions were taken in order to fulfill requirements for confidentiality; specifically, no email addresses were included in the file provided by the survey company and downloaded by the researcher. Access to collected data has been limited to the researcher's Swedish advisor.

### Data Analyses

Primary data, provided by the survey company in an Excel file, was tabulated and adapted for data analyses. Manipulation of data was performed with recoding of reverse scales, calculations of age, and total sums of included scales, as well as data processing of IPAQ questions. The Excel file was imported to SPSS Statistics 17.0 (SPSS Inc., Illinois, USA), and was used for calculation of all descriptive and inferential statistics.

#### *Descriptive Data Analyses*

Descriptive statistics were performed to address all research questions (RQ) and to compare representation of respondents to the population. Frequencies were calculated for the entire sample, as well as all defined subgroups, i.e., operation, type of care, and profession. Personal physical activity level responses were initially analyzed in the interval (continuous) format, and subsequently condensed to low, moderate, and high levels. Based on potential overestimation of physical activity levels and the skewed distribution of activity levels/energy expenditures in national or large population data sets (IPAQ, 2005), no assumption of normality was made. As such, median minutes/week or median MET-minutes/week for continuous variables were

computed. Non-parametric Kruskal-Wallis analyses were performed in order to compare physical activity levels among professions. Tamhane's T2 post hoc analyses were used to subsequently identify intergroup differences. Four scales (i.e., Frequency, Behavior, Attitude and Knowledge) were constructed and descriptively analyzed.

#### *Inferential Data Analyses*

The independent variable in H<sub>1</sub>, personal physical activity level, was computed as a total of MET-minutes per week, creating an interval (continuous) variable. A series of correlations, with P-values set to 0.05, was calculated with Spearman rho ( $r_s$ ) to test the hypothesized relationships among personal physical activity and key study variables; Frequency, Behavior, Attitude and Knowledge (Appendix D). Spearman rho ( $r_s$ ) was selected based on the above mentioned non-normality of the physical activity level distribution.

A series of independent sample *t*-Tests was used to assess H<sub>2</sub> by comparing differences between medical (physicians and nurses) and non-medical (psychologists, psychotherapists, work therapists, and physical therapists) mental health professionals with regard to key variables. Further differences among the six (ungrouped) professions with regard to key variables were calculated using one way analyses of variance (ANOVA) with post hoc Scheffé tests.

To test H<sub>3</sub>, that type of care (general psychiatric care and psychoses care, as well as outpatient and inpatient care) would differ with regard to key study variables (Appendix D), independent sample *t*-Tests were calculated. Further analyses were undertaken by dividing type of care into four subgroups: outpatient general psychiatric, inpatient general psychiatric, outpatient psychoses and inpatient psychoses care.



Analyses were repeated utilizing a series of one way analyses of variance (ANOVA) with post hoc Scheffé tests.

To test H<sub>4</sub>, that participating operations (North, Northeast, Northwest, South, Southwest, and Southeast) would differ with regard to key study variables (Appendix D), one way analyses of variance (ANOVA) with post hoc Scheffé tests were used.

#### *Internal Consistency Reliability*

Evaluation of consistency among items in the four proposed scales (i.e., Frequency of Physical Activity Counseling, Behavior of Physical Activity Counseling Attitude toward Physical Activity Counseling, and Knowledge about Physical Activity Counseling) was determined using Cronbach alpha. Acceptable coefficients were set to  $r = .70$ .

## CHAPTER IV

### RESULTS

This chapter will describe study results with a detailed profile analysis of respondents and their representation of the target population. Descriptive analyses are used to answer the six research questions specified in the problem statement, including variables such as clinical practices of, perceived attitudes toward, and self-rated knowledge about physical activity counseling. Inferential analysis of data relationships and hypothesis testing will also herein be presented.

#### Non-respondent Analysis

In order to account for potential non-response biases in this large scale survey of licensed mental health professionals in SLSO, a series of analyses were conducted. Specifically, characteristics of the overall population (i.e., age, gender, profession, type of care and geographic operation) were compared to the 529 respondents. Secondly, early respondents, who all responded on the first day, were compared to these completing the online survey after a third reminder was sent out.

#### *Comparison of Population and Sample*

A web-based survey was distributed via email to 1,634 mental health professionals working for SLSO, of which 1,141 individuals indicated receipt of the survey by following the attached link. The web survey was completed by 529 participants, for an overall response rate of 33%. Of the 529 submitted surveys, two were completed by non-licensed supervisors. These were retained in analyses, as

supervisors were determined to have a direct impact on their personnel. A response rate of 33% is fully in line with the expected average response rate of 30% for online surveys (The University of Texas at Austin – Division of Instructional Innovation and Assessment, 2007). Other studies conducted in the same subject area have attained response rates between 25% and 74% (Abramson et al., 2000; Douglas, Torrance, et al., 2006; Lawlor et al., 1999; McEntee & Halgin, 1996; Phongsavan et al., 2007; Ploeg et al., 2007; Puig Ribera et al., 2005). However, the majority of the referenced studies have been mail surveys, which normally have a greater response rate than online surveys (The University of Texas at Austin – Division of Instructional Innovation and Assessment, 2007; Aday & Cornelius, 2006), further validating the acceptable response rate in this study.

Further, it is suggested that large sampling frames, assumable over 1,000 sampled subjects, are associated with lower response rates (Hamilton, 2003). The email list provided in December, 2008, by the SLSO Office of Supportive Personnel initially included the whole target population as well as others who were deemed to have little, if any, physical activity counseling-relevant patient contact (e.g., night workers, managers, and administrative personnel). Although efforts were made to exclude sections and work-units that apparently were not able to counsel physical activity (see Chapter 3, Population) the email list still included, for example, nurses working at night ( $n = 124$ ). The night personnel were not expected to respond to the questionnaire and the result indicates that only six chose to do so. Further, a “relatively low rate (35% to 50%) may be representative if you are able to show that the demographic variables in the returns and those of the population are similar” (Cox, 2008, p. 76). Study respondents were, in fact, largely representative of the population, which may, as Cox

notes, be the result of sending the initial survey to nearly all individuals in the population.

The population of licensed mental health professionals may be described based upon profession, age, gender, geographic operation, type of care (TOC), and the type of diagnosis respondents treat. Of the 529 subjects, 224 (42%) were nurses, 126 physicians (24%) (of which of 11 were also psychotherapists), 106 psychologists (20%), 22 physical therapists (4%), 29 occupational therapists (6%), 20 psychotherapists (4%) and 2 indicating other specializations (< 1%) (see Table 4). This distribution, by profession, is representative of the target population.

Table 4

*Distribution of professions by population and respondents*

Profession	Population <sup>a</sup> N = 1,690		Respondents N = 529	
	n	%	n	%
Nurse <sup>b</sup>	838	50%	224	42% <sup>b</sup>
Occupational Therapist	54	3%	29	6%
Physical Therapist	32	2%	22	4%
Physician	472	28%	126	24%
Psychologist	260	15%	106	20%
Psychotherapist	34	2%	20	4%
Other	0	0%	2	0%
<i>Total</i>	<i>1,690</i>	<i>100%</i>	<i>529</i>	<i>100%</i>

<sup>a</sup> Calculations for the population are based on statistics from August 2008, before supervisors were extracted into their own category.

<sup>b</sup> Nurses working nights are included in these numbers. If the 124 night nurses are removed from calculations, 46% of the professionals are nurses.

Subjects also comprised 124 males (24%) and 405 females (76%) with a mean age of 48 ( $SD = 10.31$ ) and 49 ( $SD = 10.29$ ) years respectively. They had been in practice for an average of 16.71 years ( $SD = 11.22$ ). These characteristics were similarly representative (see Table 5).

Table 5

*Distribution of age and gender by population and respondents*

Profession	Population <i>N</i> = 1751				Respondents <i>N</i> = 524			
	Age (years)		Gender (%)		Age <sup>a</sup> (years)		Gender (%)	
	Female	Male	Female	Male	Female	Male	Female	Male
Nurse	48	47	79%	21%	50	48	84%	16%
Occupational Ther	47	44	86%	14%	47	40	93%	7%
Physical Therapist	49	49	81%	19%	50	47	86%	14%
Physician <sup>b</sup>	51	52	58%	42%	47	46	54%	46%
Physician ST <sup>b</sup>	38	36	63%	37%	-	-	-	-
Psychologist	46	44	72%	28%	47	49	80%	20%
Psychotherapist	57	57	72%	28%	56	59	85%	15%
Other					59	61	50%	50%
<i>Total</i>	48	47	72%	28%	49	48	76%	24%

*Note.* Population related statistics for age and gender are based on data per December, 1, 2008

<sup>a</sup> Missing values = 5

<sup>b</sup> Population-based statistics separate physicians and physician-STs. Sample-based age includes both physicians and physician-STs.

The youngest participant in the sample was 25 years of age and the oldest 70 years. The largest age group was 50-59 years ( $n = 170$ ; 32%), comparable to the population ( $n = 528$ ; 30%) (see Table 6).

Table 6

*Distribution of age groups by population and respondents*

Age	Population <sup>a</sup> <i>N</i> = 1751		Respondents <sup>b</sup> <i>N</i> = 524	
	<i>n</i>	%	<i>n</i>	%
Under 30	86	5%	18	3%
30-39	368	21%	102	20%
40-49	478	27%	144	28%
50-59	528	30%	170	32%
Over 60	291	17%	90	17%
<i>Total</i>	<i>1751</i>	<i>100%</i>	<i>524</i>	<i>100%</i>

<sup>a</sup> Population related statistics for age is based on data per December 1, 2008<sup>b</sup> Missing values = 5

Respondents employed within all six operations in the sample were fully representative of the target population (see Table 7). The largest operation, North Stockholm Psychiatry, was represented by 159 (30%) participants, with 105 (20%) working for Psychiatry Northwest, 53 (10%) for Psychiatry Northeast, 69 (13%) for Psychiatry South Stockholm, 97 (18%) for Psychiatry Southwest, and 46 (9%) for Psychiatry Southeast.

Table 7

*Comparisons of operations between population and respondents*

Operations	Population <sup>a</sup> <i>N</i> = 1,566		Respondents <i>N</i> = 529	
	<i>n</i>	%	<i>n</i>	%
North	510	30%	159	30%
Northwest	311	18%	105	20%
Northeast	176	10%	53	11%
South	238	14%	69	13%
Southwest	297	18%	97	18%
Southeast	158	9%	46	9%
<i>Total</i>	<i>1,690</i>	<i>100%</i>	<i>529</i>	<i>100%</i>

<sup>a</sup> Calculations for the population are based on statistics from August 2008.

Respondents were asked to select with which type of care (TOC) they worked (psychotic outpatient, psychotic inpatient, urgent/emergency/mobile team, psychotherapy unit, forensic, general psychiatric outpatient, general psychiatric inpatient, and neuropsychiatric care). Responses were collapsed to the same categories used to define the target population (i.e., Outpatient General Psychiatry, Outpatient Psychoses, Outpatient Integrated, Inpatient General Psychiatry, Inpatient Psychoses, Inpatient Integrated, ST-Physicians, Psychoses Integrated, General Psychiatry Integrated, All Integrated, and Neuropsychiatry) (see Table 8). However, population-based data represents the TOC with which each care unit operates while collected responses indicate the TOC with which each participant engages. Consequently, differences between population and respondents are inevitable as an individual can work with one TOC, while the whole care unit may offer, for example, integrated care.

This may explain some of the discrepancies between the respondents and the target population; in particular the high share of general psychiatric outpatient care and the lower number employed in integrated care in the respondent group.

Table 8

*Distribution of type of care (TOC) by population and respondents*

Type of Care (TOC)	Population <sup>a</sup> N = 1,690		Respondents <sup>b</sup> N = 529	
	<i>n</i>	%	<i>n</i>	%
Outpatient General Psychiatry	408	24%	237	45%
Outpatient Psychoses	144	9%	60	11%
Outpatient Integrated	241	14%	19	4%
<i>Total Outpatient</i>	<i>793</i>	<i>47%</i>	<i>316</i>	<i>60%</i>
Inpatient General Psychiatry	232	14%	66	13%
Inpatient Psychoses	214	13%	32	6%
Inpatient Integrated	100	6%	23	4%
<i>Total Inpatient</i>	<i>546</i>	<i>33%</i>	<i>121</i>	<i>23%</i>
ST - Physicians	118	7%	40	8%
Psychoses Integrated	35	2%	5	1%
General Psychiatry Integrated	6	0%	10	2%
All Integrated	175	10%	17	3%
Neuropsychiatry	17	1%	11	2%
Other			9	1%
<i>Total Integrated and Other</i>	<i>351</i>	<i>20%</i>	<i>92</i>	<i>17%</i>
<i>TOTAL</i>	<i>1,690</i>	<i>100%</i>	<i>529</i>	<i>100%</i>

<sup>a</sup> Population data are based on TOC provided by work units (August 2008)

<sup>b</sup> Respondent data are based on TOC with which each professional works



The majority of the sample worked with outpatient care (60%), general psychiatric outpatient care being the largest TOC (45%). Twenty-three percent reported working with inpatient care and integrated (in- and outpatient TOC) was indicated by 6%. Integrated care is in this study defined as care settings who offer more than one specific care across inpatient and outpatient care and for diagnoses across general psychiatry and psychoses. As a whole, more responses were received from subjects working with general psychiatric outpatient care (45%) compared to its representation in the population (24%). Further, a smaller share of the sample worked with psychotic inpatient care (6%) than the population (13%). Analyses between different types of care will be based on the aforementioned suggested inpatient care, outpatient care, and integrated care designations. Integrated care also includes ST-physicians<sup>5</sup> as they alternate between workplaces, as well as “Other”, who could not be defined as belonging to any TOC. Those subjects who worked with neuropsychiatry but did not specify in which care setting are also included in integrated care.

Participants worked with individuals noted as having many different mental diagnoses (see Table 9), depression being the most prevalent (79% of the cases). Other common mental disorders were personality disorders (78%), anxiety disorders (75%), and affective disorders (67%). Forty six percent worked with Schizophrenic patients. No corresponding population-based data could be obtained.

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<sup>5</sup> Physicians in psychiatric training to become psychiatrist

Table 9

*Summary of mental disorders treated by respondents (N = 529)*

Disorder	Responses
Depression	79%
Personality Disorders	78%
Anxiety Disorder	75%
Affective Disorders	67%
Neurological Disorders	61%
Stress Disorders	59%
Sleep Disorders	57%
Schizophrenia	46%
Abuse Disorders	39%
Eating Disorders	36%
Other	5%

#### *Initial versus Late Respondents*

Non-respondent bias analyses were conducted by comparing demographics (i.e., gender, profession, type of care, and operations) of initial responders (i.e., the first 50 completing the questionnaire during the survey period) and late responders (i.e., the last 50 subjects to respond). Late respondents, who did not submit their questionnaires until after the third reminder, were determined to be likely representative of those that did not respond at all. The comparison of the first 50 participants who completed the questionnaire and the last 50 revealed differences solely by profession and TOC (see Table 10).

Table 10

*Comparisons of demographics between initial and late respondents*

	Initial Respondents		Late Respondents	
	(n = 50)	%	(n = 50)	%
<i>Gender</i>				
Male	14	28%	8	16%
Female	36	72%	42	84%
<i>Professions</i>				
Occupational Therapist	4	8%	2	4%
Psychologist	16	32%	4	8%
Nurse	11	22%	32	64%
Physical Therapist	1	2%	3	6%
Physicians	18	36%	9	18%
<i>Operations</i>				
Northern	17	34%	17	34%
Northeast	5	10%	6	12%
Northwest	11	22%	4	8%
Southern	4	8%	8	16%
Southeast	4	8%	2	4%
Southwest	9	18%	13	26%
<i>Type of Care</i>				
Outpatient	29	58%	19	38%
Inpatient	7	14%	24	48%
Integrated	14	28%	7	14%

The first 50 respondents were predominantly psychologists (32%) and physicians (36%) while nurses were late to respond; 64% of the last 50 participants were nurses. Analyses also indicated that professionals working in outpatient settings were first to reply while follow-up efforts elicited responses from those working in inpatient care. The results correspond to the overall response rate from out- and inpatient settings

where inpatient professionals were not as well represented in the sample as outpatient employees. The last reminder efficiently captured inpatient professionals and nurses, increasing representativeness of the sample. No significant differences were found between early and late responders with regard to mean values on the four scales (i.e., Frequency, Behavior, Attitude and Knowledge of physical activity counseling) (see Table 11).

Table 11

*Comparisons of clinical practices, attitudes, and knowledge between initial and late respondents*

Scale	Initial Respondents			Late Respondents			<i>t</i>	<i>p</i>
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>		
Frequency of Physical Activity Counseling Scale	50	16.40	4.07	50	16.30	4.01	.12	.90
Behavior of Physical Activity Counseling Scale	47	22.00	5.14	47	20.51	5.21	1.40	.17
Attitude towards Physical Activity Counseling Scale	50	19.08	2.43	50	18.86	2.86	.42	.68
Knowledge about Physical Activity Scale	50	7.70	1.31	50	7.68	1.11	.08	.93

<sup>a</sup> Summated score ranging from 5 to 25, where 5 = low level of counseling frequency and 25 = high

<sup>b</sup> Summated score ranging from 6 to 34, where 6 = low use of counseling methods and routines and 34 = high

<sup>c</sup> Summated score ranging from 5 to 25, where 5 = highly negative towards counseling and 25 = highly positive

<sup>d</sup> Summated score ranging from 2 to 10, where 2 = poor/none knowledge and 10 = very good

## Descriptive Analyses

This subsection describes respondents' personal physical activity habits, evaluation of the six aforementioned research questions, as well as scale construction.

### *Personal Physical Activity*

In line with the IPAQ data processing protocol, 68 participants were excluded from the personal physical activity analyses due to missing data ("Don't Know") (IPAQ, 2005). Remaining data were cleaned to identify outliers and minimum values (activities for a minimum of 10 continuous minutes) (IPAQ, 2005). IPAQ also recommends truncating all minutes spent in walking, moderate, and vigorous activities to not exceed more than 180 minutes a day, permitting a maximum of 21 hours of each of the three different activities (IPAQ, 2005). This rule creates a more normalized distribution of activity levels, which are usually skewed in national or large population data sets (Hagströmer et al., 2006; IPAQ, 2005). Consequently, the rule prevents misclassifying individuals as "High" active (IPAQ, 2005). Truncation was performed for categorical variables (low, moderate, and high activity levels), as well as for continuous variables used in correlation analyses. Descriptive analysis of personal physical activity is presented in this study as median minutes, as it is suggested that continuous variables measuring physical activity should be presented as median minutes/week or median MET-minutes/week given the non-normal distribution of energy expenditure in many populations (IPAQ, 2005).

The participating professionals were physically active for a total of seven hours per week ( $Mdn = 420$  min) by walking and being moderately to vigorously physical active (see Table 12). The subjects walked (low activity) four hours a week. In addition, the participants performed moderate levels of physical activity, such as riding

the bike, swimming, and performing moderate construction work and gardening for one hour per week and 60 minutes of vigorous physical activity. Respondents' weekly activities were converted to Metabolic Equivalent (MET-minutes)<sup>6</sup>, which considered the intensity of the physical activity performed. When measured in MET-minutes, vigorous activity contributed more to the total energy expenditure (MET) per week than moderate activity. However, low activity (i.e., walking) was the most commonly performed activity, providing the highest energy expenditure (792 MET minutes per week).

Table 12

*Summary of respondents' personal physical activity levels (IPAQ) (N = 461)*

		Days per week	Min/Week	MET min/Week
	<i>N</i>	<i>Mdn</i>	<i>Mdn</i>	<i>Mdn</i>
Low Activity	461	7.0	240.0	792.0
Moderate Activity	461	1.0	60.0	240.0
Vigorous Activity	461	1.0	60.0	480.0

Physical therapists reported the highest levels of physical activity defined as MET-minutes per week (*Mdn* = 2,493), while physicians showed the lowest levels of activity (*Mdn* = 1,490) (see Table 13). A series of Kruskal-Wallis tests was computed, showing a significant difference in weekly physical activity among the six professions

<sup>6</sup> A metabolic equivalent (MET) of 3.5 ml of oxygen per kilogram of body weight per minute is directly proportional to the energy one expends during physical activity.

( $H = 18.986$ ,  $df = 6$ ,  $p = .004$ ). Tamhane's T2 analysis revealed significant differences between nurses ( $Mdn = 2,092.50$ ) and psychologists ( $Mdn = 1,750.00$ ) ( $p = .007$ ). The expected significant differences between physical therapists and other professionals (based on median values) were not found. This may be, in part, due to the low number of responding physical therapists ( $n = 19$ ).

Table 13

*Summary of personal physical activity (Metabolic Equivalent min/week) by profession*

Profession	<i>n</i>	<i>Mdn</i>
Nurse	188	2092.5
Physical Therapist	19	2493.0
Physicians	113	1489.5
Psychologist	96	1750.0
Psychotherapist	20	1639.5
Occupational Therapist	23	2146.0
Other	2	1311.0
<i>Total</i>	<i>461</i>	<i>1866.0</i>

Computed MET-minutes per week were thereafter categorized into three different subgroups of physical activity levels: “Low”, “Moderate”, and “High” (see Chapter 3, Method, p. 55). The majority (86%) of study participants reported moderate levels of physical activity, of those 165 (36%) were highly physically active while only 14% were categorized as “Low”. Compared to a national sample (Bauman et al., 2009), the participating mental health professionals were more physically active than the general population (see Table 14).

Table 14

*Comparisons of personal physical activity levels by national population and study participants*

Level	Population ( <i>N</i> = 1,254)	Respondents ( <i>N</i> = 461)
Low	23.9%	14.3%
Moderate	37.3%	49.9%
High	38.8%	35.8%

### *Research Question Testing*

This subsection includes the results of descriptive analyses of survey data addressing each research question. Inferential analyses were also used to illuminate relationships among key variables.

#### *Research Question One<sup>7</sup> – Prevalence of Physical Activity Counseling*

*Vignette.* When presented with a case study about a depressed 30 year old woman, participants likelihood of recommending various therapies (i.e., pharmacological, counseling [supportive], psychotherapy, physical therapy, psychosocial support, and electroconvulsive therapy [ECT]) were scored on a scale, ranging from 0 to 5, where 0 = don't know, 1 = no, definitely not, 2 = no, not likely, 3 = maybe, 4 = yes, likely, and 5 = yes, definitely (see Table 15). Eighty-three percent of respondents were likely to recommend physical activity as a treatment alternative and another 13% would maybe consider it as an alternative.

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<sup>7</sup> How often do mental health professionals counsel (verbal advice or written prescription) physical activity and what are their perceived reasons for such counseling practice?



Table 15

*Summary of recommended therapies for the vignette patient*

	<i>N</i>	Yes, definitely	Yes, likely	Maybe	No, not likely	No, Definitely not	Don't Know
Pharmacological	510	10%	33%	30%	9%	2%	16%
Counseling	494	35%	38%	15%	7%	3%	2%
Psychotherapy	472	12%	19%	37%	21%	3%	8%
Physical activity	517	45%	38%	13%	2%	0%	2%
Psychosocial support	457	14%	20%	29%	28%	5%	4%
ECT	460	1%	1%	9%	23%	48%	18%

The second most likely therapy to be recommended by subjects was supportive counseling (73%). With regard to pharmacological treatment, 43% were likely to recommend it and only 10% would definitely recommend drugs, in comparison to the 45% who would definitely recommend physical activity. Participants were the least likely to recommend ECT (2%). The vignette was written in general terms and did not include references to lab results for somatic issues, an omission noted by participants. Many of the subjects reported that somatic examination and ordering lab tests for somatic problems is the first action, before any treatments could be considered. Many suggestions by subjects concerned lifestyle behaviors - “First and last, to feel better one needs sleep, be outdoor and move around, as well as a proper diet” or different types of therapy (e.g., CBT, bibliotherapy, and occupational therapy) and alternative treatments (e.g., activity group at the clinic, creative activities, mindfulness, yoga, massage, and

light therapy). Some respondents also suggested that the patient should get in contact with a primary care professional.

*Prevalence of discussing and counseling physical activity.* One key variable in this study was the prevalence of physical activity counseling among SLSO mental health professionals (see Table 16). It was determined that subjects who did not counsel physical activity but “at the least” discussed it were likely to be more receptive to future physical activity counseling interventions than professionals who never discussed or worked with physical activity. A distinction between holding general health promoting deliberations with a patient (i.e., Do you discuss physical activity with your patients?) and giving individualized physical activity advice (i.e., Do you counsel physical activity [verbal or in written] with your patients?) was elicited in the questionnaire. The frequency of discussing and counseling physical activity was scored on a scale, ranging from 1 to 5, where 1 = never, 2 = seldom, 3 = sometimes, 4 = often, and 5 = always.

Table 16

*Summary of discussing and counseling physical activity*

	Never (1)	Seldom (2)	Sometimes (3)	Often (4)	Always (5)	<i>N</i>	<i>M</i>
Discussing PA	2%	4%	27%	52%	15%	529	3.75
Counseling PA	5%	9%	31%	49%	6%	529	3.43
Counseling PA Prevention of Mental Disorders	5%	17%	39%	34%	5%	504	3.18
Counseling PA Treatment of Mental Disorders	4%	10%	34%	45%	7%	504	3.41
Counseling PA Somatic Diseases	21%	21%	30%	25%	3%	504	2.66

All of SLSO licensed mental health professionals (98%) discussed physical activity with their patients, with 67% doing it often or always ( $M = 3.75$ ). Female professionals tended to discuss physical activity more frequently with patients than their male counterparts; 69% of participating women and 61% of men often or always discussed physical activity with their patients, but the difference was not significant. Ninety-five percent of the subjects ( $M = 3.43$ ) counseled their patients on physical activity at some level and more than one-half (55%) of those subjects did it often or always (see Figure 2).

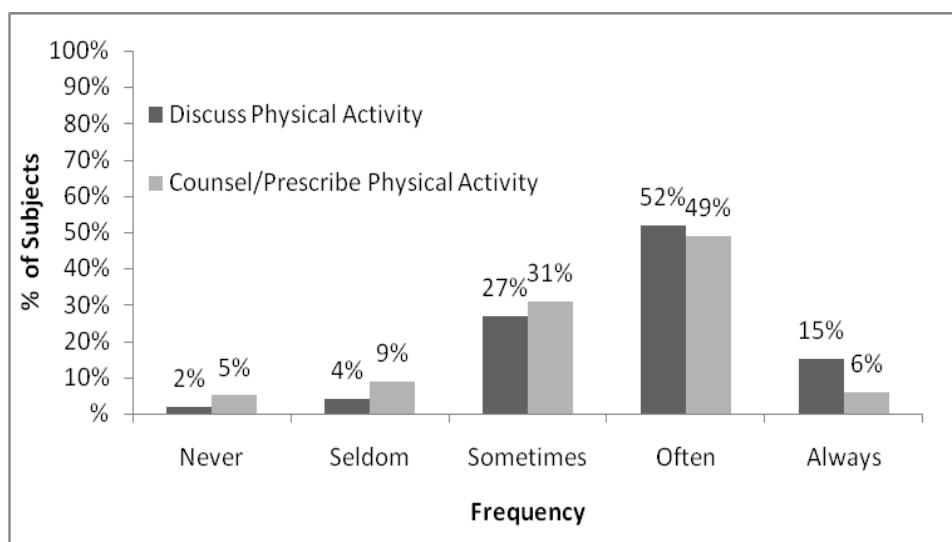
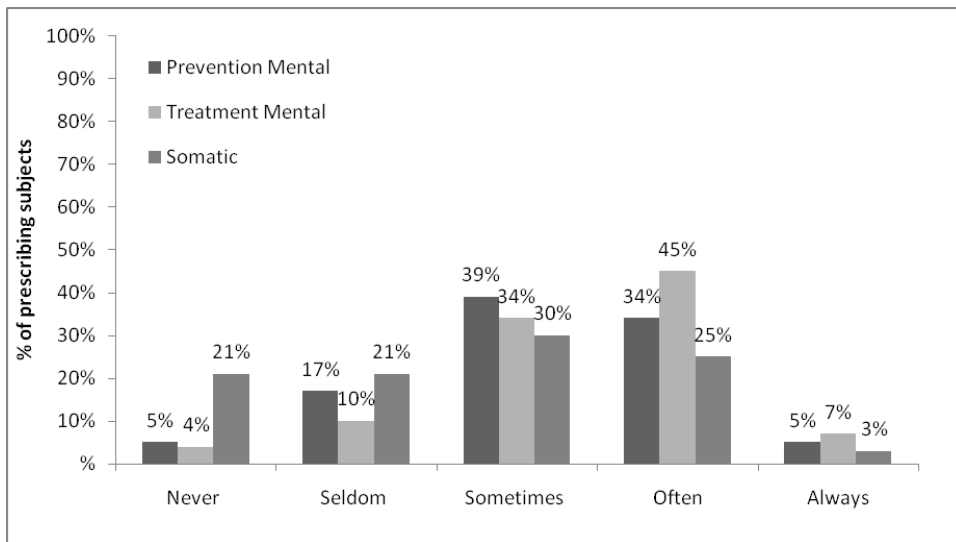


Figure 2. Frequency of discussing and counseling physical activity ( $N = 529$ ).

*Prevalence of counseling physical activity for the purpose of prevention or treatment.* Participants who counseled physical activity were presented with three additional questions related to the specific purposes for their counseling: (a) preventing mental disorders, (b) treating mental disorders, and (c) for somatic diseases (see Table 16).

Almost all participants (96%) who advised physical activity ( $N = 504$ ), did it for the purpose of treating their patients' mental disorders with 52% indicating doing it either often or always ( $M = 3.41$ ) (see Figure 3). Using physical activity as a preventive therapy for mental disorders was reported by 95% of the counseling respondents ( $M = 3.18$ ), of which 39% did it often or always. Women ( $M = 3.25$ ,  $SD = .93$ ) counseled physical activity significantly more often for the purpose of preventing mental disorders than their male counterparts ( $M = 2.95$ ,  $SD = .99$ ) ( $t = 3.01$ ,  $df = 502$ ,  $p = .003$ ). Likewise, the older the professionals, the more likely they were to prescribe physical activity for the prevention of mental disorders ( $r = .105$ ;  $p = .019$ ).

Counseling physical activity for improving somatic diseases was not as common; 79% of respondents ( $M = 2.66$ ) did so at some level, but almost one-half (42%) never or seldom counseled for somatic diseases (see Figure 3). No significant relationship was found between age and counseling for somatic diseases; however, younger respondents (under 30 years of age) counseled physical activity for somatic diseases more frequently ( $M = 3.06$ ) than the other age groups.



*Figure 3. Frequency of counseling physical activity for the purpose of preventing, and treating mental disorders, and somatic diseases (N = 504).*

*Type of mental disorders and somatic diseases.* This study also examined for which mental disorders subjects counseled physical activity and whether they did so in combination with other therapies (adjunct), such as drugs and psychotherapy, or as a stand-alone treatment (mono). The most frequently indicated disorder for which physical activity was counseled was anxiety in combination with other therapies (91% of the cases) (see Figure 4). Other common disorders were mild to moderate depression

(adjunct; 87%), severe depression (adjunct; 80%), and stress (adjunct; 78%).

Recommending physical activity as a monotherapy was less common; stress and mild to moderate depression yielded the highest numbers of respondents, 19% and 18% respectively. Fifty-five respondents reported other mental disorders, of these neuropsychiatric disorders (e.g., ADHD), bipolar disorders, and personality disorders were the most common.

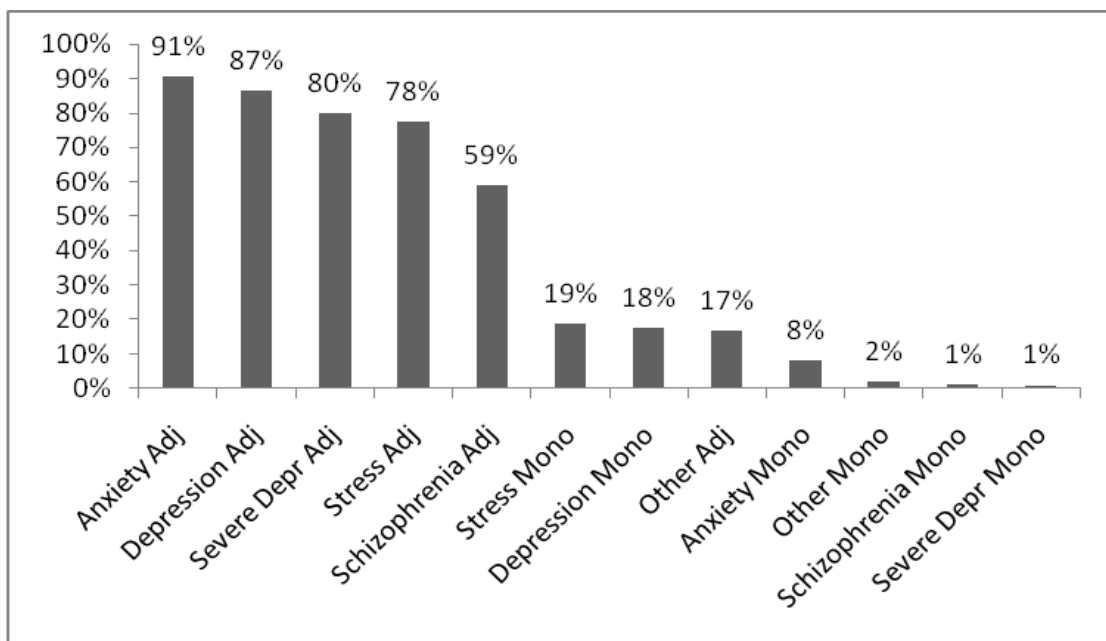


Figure 4. Mental disorders for which physical activity was advised ( $N = 483$ ).

Ninety-three percent of those respondents who reported working with patients with depression also counseled physical activity (as a mono and/or adjunctive therapy) for this disorder; 88% of those who reported working with patients with anxiety counseled physical activity for anxiety, 87% of those who reported working with patients with stress counseled physical activity for those with stress-related symptoms,

and 71% of those who reported working with patients with schizophrenia counseled physical activity for this disorder.

Somatic diseases related to weight were the most prevalent (93% of the subjects), for which the respondents counseled physical activity (see Figure 5). Physical activity was also recommended for diabetes (78%), cardiovascular diseases (70%), and somatic problems associated with pain (67%). These somatic diseases are also most frequently indicated among primary care providers in Sweden (Bengtsson & Svensson, 2006; Berglund & Olin, 2005; Lindström, Hedberg, Bellander, & Yggström, 2008; Sandberg, 2005). Respondents suggested sleep disorders and neurological diseases as other conditions for which they advised physical activity, while a few indicated working with no physical conditions, “I work with psych!”.

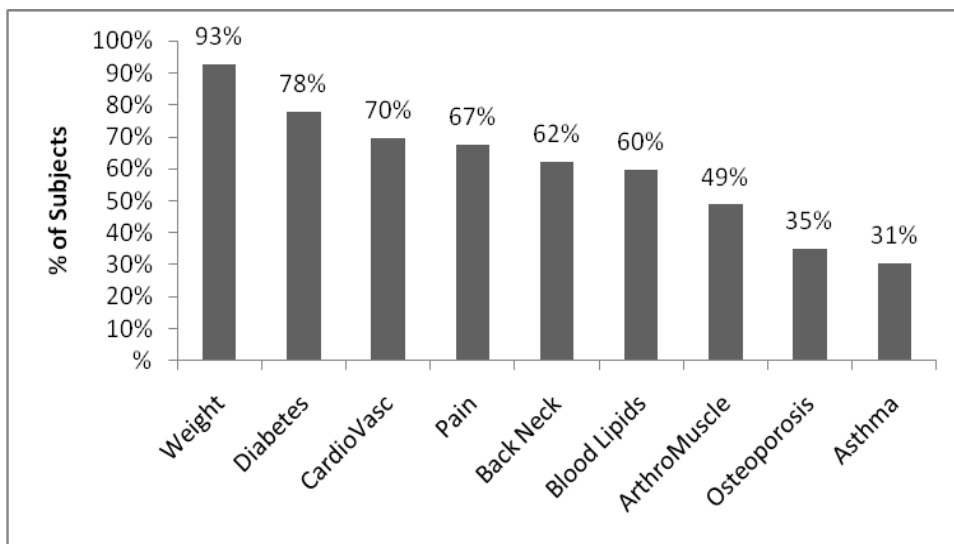


Figure 5. Somatic diseases for which physical activity was advised. ( $N = 369$ ).

There was a significant positive relationship between counseling physical activity for the purpose of preventing mental disorders and treating mental disorders ( $r = .659$ ,  $p$

= .000), as well as counseling physical activity for somatic diseases (prevention of mental:  $r = .333$ ,  $p = .000$ ; treatment:  $r = .256$ ,  $p = .000$ ) (see Table 17). Consequently, those subjects that considered physical activity as being a beneficial treatment or preventive therapy for mental disorders also counseled this treatment alternative for somatic diseases.

Table 17

*Pearson correlations of counseling physical activity for the purpose of preventing and treating mental disorders, and somatic diseases (N=504)*

	Counseling PA for prevention of mental disorders	Counseling PA for treatment of mental disorders	Counseling PA for somatic diseases
Counseling PA for prevention of mental disorders	-	.659*	.333*
Counseling PA for treatment of mental disorders		-	.256*
Counseling PA for somatic diseases			-

\* Correlation is significant at the .01 level (2-tailed)

*Reasons for counseling physical activity.* Respondents counseled physical activity for a variety of reasons (see Figure 6). Promoting general well-being (89%) and building a daily structure for the patients (78%) were indicated more often than preventing (74%) or treating mental disorders (66%). Other commonly reported reasons for such counseling were to offer patients something to do during the day (64%) and distract patients from their worries and difficulties (61%). Subjects also noted its use in the promotion of sleep, control of smoking, enhancement of body awareness, facilitation of societal adaptation, increased exposure to daylight, and body- and mind



integration - “mental and physical are interlocked with each other, to look at the whole”. Physical activity was also reported to be a way to -“get to know oneself and one’s limits, to respect them but also, in a safe setting, to challenge them”.

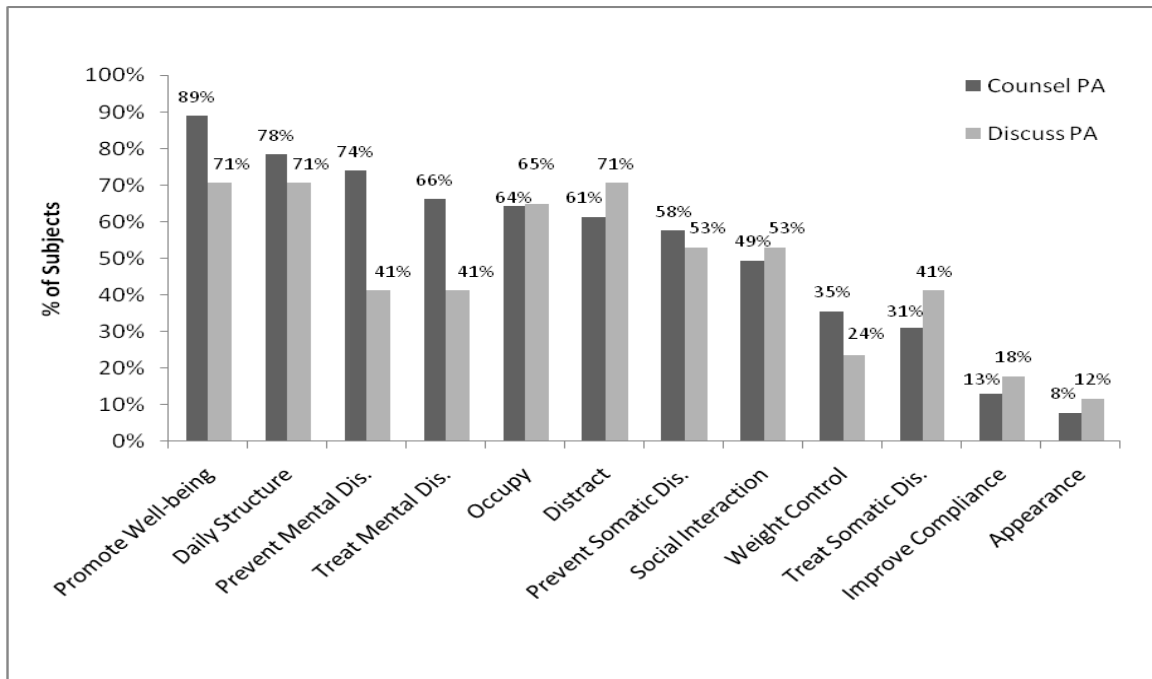


Figure 6. Summary of reasons for counseling or discussing physical activity (Counsel,  $n = 502$ ; Discuss,  $n = 17$ ).

When assessing the top-3 reasons for counseling physical activity across professions similarities were found. All professions, except psychotherapists, indicated promoting well-being as the primary reason for counseling physical activity. In contrast, psychotherapists reported preventing mental disorders and relapses as their primary reason. Physicians and physical therapists were the only professionals that indicated the treatment of mental disorders as one of their top-3 reasons. Similarities in the rational for such treatment were also found across all age groups. Interestingly,

subjects under the age of 30 years were the only professionals who reported its use for the prevention of somatic diseases as a top-3 reason. Subjects who only discussed physical activity but did not give any individual advice, reported promoting well-being, daily structure, distraction, and giving patients something to do as their main reasons for holding general health-promoting discussions about physical activity with their patients.

#### *Research Question Two<sup>8</sup> – Methods and Procedures*

Nine method and procedure-related questions were presented to those subjects who reported counseling physical activity ( $N = 504$ ).

*Prescription Method.* Counseling in a clinical environment has been shown to increase patients' physical activity levels by 12-50%, with a 15-50% improvement if a written prescription also is given (SBU, 2006). Participants were therefore asked to indicate on a frequency scale, ranging from 1 = never to 5 = always, which prescription methods they used. All participating mental health professionals (99%) gave their patients verbal advice when counseling physical activity; 88% did it either often or always (see Table 18). Written prescription, on the other hand, was found to be used infrequently by the respondents; 71% of the counseling subjects ( $N = 504$ ) never or seldom ( $n = 145$ ) used any forms, paper or computer-based. The most frequently used written prescription method, "Written prescription on other paper form", was used at least sometimes by 21%, and "FaR®-electronic version" by only 1%. Consequently, only 22% ( $n = 111$ ) of the participants used either of the FaR® methods ("FaR®-electronic version" or "FaR®-written prescription on the yellow FaR®-form"), and

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<sup>8</sup> Which methods and procedures are used by mental health professionals in counseling physical activity as a treatment and preventive therapy for mental disorders and somatic diseases?

two-thirds of those used FaR® at least sometimes. Other methods suggested by respondents, included group-training, daily schedule with group- or individual training, hand-outs with workout-journals, and training with the help of social living support.

Table 18

*Summary of the use of prescription methods*

	Never (1)	Seldom (2)	Some- times (3)	Often (4)	Always (5)	<i>N</i>	<i>M</i>
Verbal Advice	1%	2%	9%	31%	57%	495	4.43
FaR®-Written prescription on the yellow FaR®-form	74%	10%	11%	4%	1%	415	1.48
FaR® - electronic version	95%	4%	1%	0%	0%	400	1.07
Written prescription on other paper form	67%	12%	12%	7%	2%	415	1.65
Written prescription in the data system	91%	5%	2%	0%	2%	406	1.16
Referral to other person within the health care	44%	15%	33%	7%	1%	417	2.06
FYSS	73%	16%	8%	3%	0%	529	1.41

\* *Note.* Analysis based solely on respondents who counsel physical activity (*N* = 504)

Professionals working in exclusive inpatient care might not be able to use FaR®'s referral system, which refers patients to outside sport- and fitness organizations. A second series of analyses was therefore performed differentiating outpatient, integrated, and inpatient care providers. The analyses revealed that 25% (*n* = 100) of subjects working in outpatient and integrated care (*n* = 395) used FaR® when prescribing physical activity, while only 10% of inpatient care respondents (*n* = 109) used FaR®.

Consequently, respondents working in outpatient and integrated care prescribed using FaR® paper-form significantly more ( $M = 1.46$ ) than inpatient care providers ( $M = 1.12$ ) ( $t = 3.919$ ,  $df = 413$ ,  $p = .000$ ).

*Advice Components.* According to the FaR®-method, mode (type of exercise), frequency (how many times per week), duration (how many minutes), intensity (degree of effort), the number of weeks of training, and relevant restrictions should be included in physical activity advisement (Leijon et al., 2008). When asked, more than one-half (58%) of the subjects reported specifying three or more of the aforementioned components in their verbal or written advice (see Table 19).

Table 19

*Summary of training variables included in the physical activity advice (N = 486)*

Advice Item	<i>n</i>	% of cases
Mode	467	96%
Frequency	433	89%
Duration	264	54%
Intensity	169	35%
Program duration (weeks)	93	19%
Restrictions	126	26%

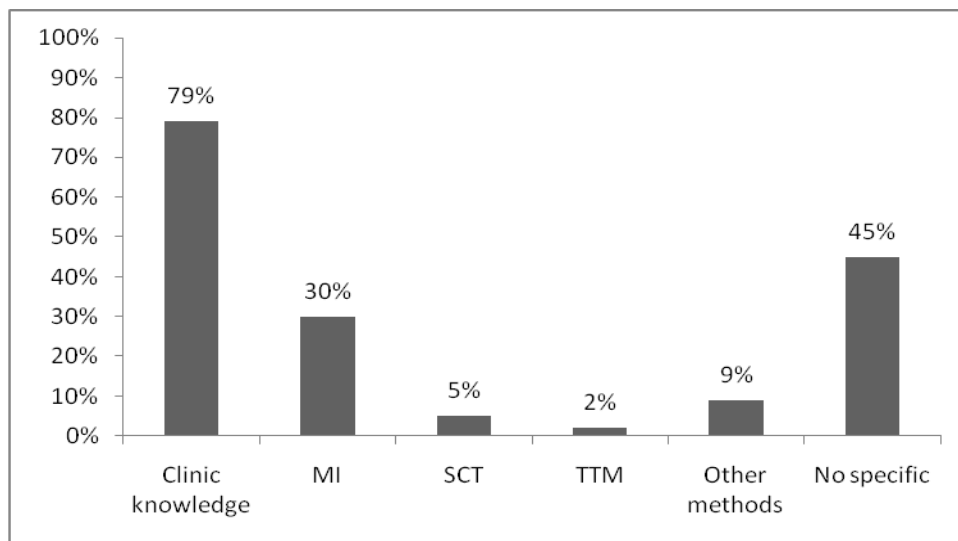
The most frequently counseled training variable were mode and frequency, which were noted by 96% and 89% of the subjects respectively. Only 19% mentioned including the duration of the treatment program (weeks). Examples of other

recommendations were sleep and diet recommendations, awareness of signals from the body when the level of the physical activity should be decreased, and time during the day. Several respondents emphasized the importance of giving advice based on the patient's abilities.

*Motivational Method.* Motivating patients to a behavioral change is crucial for future compliance with any remedy, life-style changes included. Study participants were therefore asked to indicate on a 5-point scale, ranging from 1 = never to 5 = always, how often they talked to their patients about their motivation to change their behavior and to comply with the physical activity advice. All participating mental health professionals (99%) discussed motivation frequently with their patients; the majority did it often or always (66%).

Models for behavioral change and intervention have been researched over the past several decades in an attempt to understand how and why people change their behavior (SBU, 2007). Results of these models can be used to develop techniques to advance the promotion of physical activity (Faskunger et al., 2007). Respondents were therefore asked to report how they motivate their patients; if they use, for an example, common knowledge acquired in their work with their patients or if they use any specific models. Two models were suggested, Cognitive Behavior Therapy and the Transtheoretical Model of Change (Stages-of-change), as reported in SBU's review of methods for promoting physical activity. The Transtheoretical Model of Change was also discussed and used during the FaR® pilot project (Kallings & Leijon, 2003). Motivational interviewing (MI) is commonly used in lifestyle interventions and is well suited for physical activity counseling (Holm, Ivarsson, & Prescott, 2008).

Subjects noted using their clinical knowledge about motivation that they had acquired through interaction with their patients (79%) and one-half (45%) did their physical activity counseling without using any specific consultation techniques or behavior change models. Considering their profession in psychiatric and mental care, one can assume that their everyday work provides mental health professionals with greater skills in consultation techniques than in the case of primary care professionals. The aforementioned methods and models were selected by one-third (37%) of the subjects. Motivational Interviewing (MI) was the most frequently reported method (30%), and Cognitive Behavior Therapy was specifically mentioned as used by several subjects ( $n = 23$ ) (see Figure 7).



*Figure 7. Summary of motivation methods (N = 494).*

If the subjects did not discuss motivation and compliance directly with the patients themselves, they were asked to specify who performed this function. Eight percent mentioned other healthcare professionals, such as responsible physicians,

primary care physicians, physical therapists, or the contact person (responsible for the patient at the clinic) which usually was a nurse.

*Referral procedures.* Patient compliance with physical activity advice may be dependent on how much aid the patient subsequently receives with physical activity. Therefore, subjects were asked to indicate if the patient received referral to a physical therapist, supervised training within the healthcare system, personnel at the clinic who would help patients to start their own training or to find an appropriate place/association/club, persons that work within the sport- and fitness industry, or FaR®-educated sport and fitness instructors within Stockholm FaR®ledarnätverket<sup>9</sup>, who would train with the patient. If no help was given, subjects were asked how frequently the “patient is asked to carry out the activity or to make any necessary contacts on his/her own”. For each specific item, respondents also indicated the frequency of referral, ranging from 1 = never to 5 = always.

The most frequently reported procedure was for patients to carry out the physical activity prescription on their own (98%); 73% reported doing this often or always. The least favorable option utilized by subjects was to send their patients to a FaR®-trained fitness professional from Stockholm FaR® network (22%). Additionally, 38% sent their patients to other fitness personnel outside the healthcare system (see Table 20). One-half of the subjects (53%) referred the patient at least sometimes to another professional at the clinic; the most commonly involved personnel being physical therapists, contact persons, and case managers. Figure 8 shows a summary of the options which were indicated to be used at least sometimes.

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<sup>9</sup> Network for working fitness professionals who work with FaR®-patients and who are trained in physical activity prescriptions.

Table 20

*Summary of referral procedures*

	Never (1)	Seldom (2)	Sometimes (3)	Often (4)	Always (5)	<i>N</i>	<i>M</i>
On their own	2%	4%	21%	47%	26%	482	3.79
Physical Therapist	21%	25%	43%	10%	1%	455	2.31
Supervised training within HC	56%	23%	17%	4%	0%	432	2.17
Personnel at clinic	29%	18%	32%	17%	4%	451	2.33
Fitness industry	62%	20%	13%	4%	1%	430	1.52
FaR Network	78%	11%	7%	3%	1%	416	1.31

\* *Note.* Analysis based solely on respondents who counsel physical activity ( $N = 504$ )

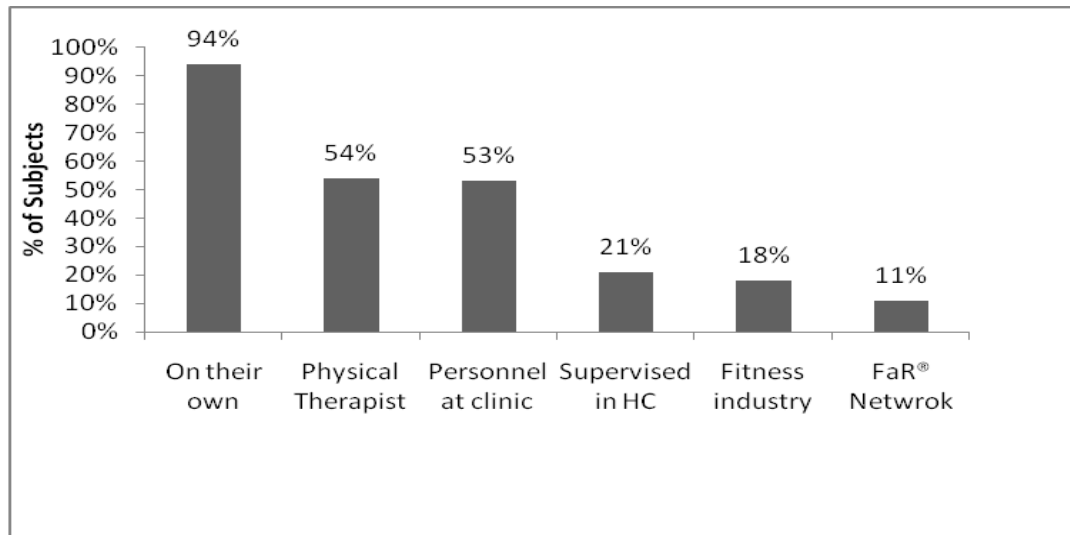


Figure 8. Summary of referral procedures utilized at least sometimes ( $N = 416-482$ ).

Three-quarters (79%) of respondents working in outpatient or integrated settings let the patient carry out the physical activity themselves often or always. The



corresponding number for inpatient professionals was 49%. Four percent suggested other ways to help their patients, such as finding a friend or relative with whom to work out, or to use public healthcare services such as physical activities provided by municipal psychiatry or social living support. One subject mentioned that an hour session of health promotion was mandatory in the treatment.

*Documentation of current physical activity levels and advice.* In accordance with 3 § “Patient Journal Act” (1985:562) all verbal and written physical activity advice must be documented in the patient’s journal. Ninety-three percent of study respondents indicated on a 5-point scale, ranging from 1 = never to 5 = always, ( $M = 3.23$ ), that they documented their advice (see Table 21). This finding is consistent with previous research in primary care in Stockholm, where 89% documented their advice (Sandberg, Ekblom, & Eckerman, 2007). However, only 14% of respondents in this study always complied with the Patient Journal Act and one-quarter (25%) never or seldom did so. Ninety-three percent of the participants documented their patients’ current physical activity levels in journals, with an average frequency of “sometimes” ( $M = 3.01$ ).

Table 21

*Summary of documentation of physical activity levels and advice*

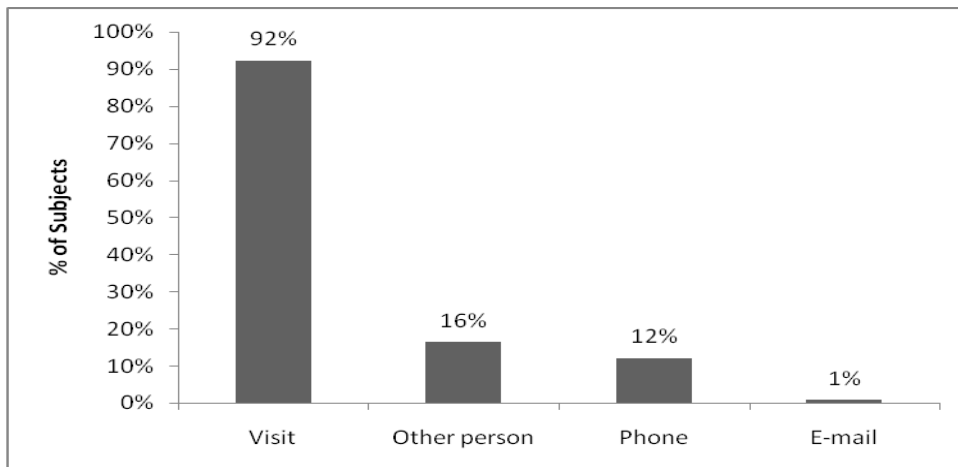
Documentation of:	Never (1)	Seldom (2)	Sometimes (3)	Often (4)	Always (5)	<i>N</i>	<i>M</i>
Current physical activity levels	7%	23%	36%	29%	5%	529	3.01
Physical Advice	7%	18%	34%	27%	14%	504	3.23

\* *Note.* Analysis based solely on respondents who counsel physical activity ( $N = 504$ )

*Follow-up on physical activity advice.* An important part of a physical activity advice/prescription is the follow-up by a healthcare professional. During the follow-up, compliance and the effect of the physical activity advice can be noted. The participants were asked how often, on 5-point frequency scale, ranging from 1 = never to 5 = always, they followed-up on their physical activity advice and which method they used (self during next visit, self with a phone call, self via e-mail, other person, and other ways). As many as two-thirds (62%) followed-up often or always and only 10% seldom or never. With as many as 99% following-up at some level, more professionals follow-up in psychiatric care than primary care (Berglund & Olin, 2005; Lindström et al., 2008; Sandberg, 2005).

Most of the options given were geared toward outpatient settings. Participants working in inpatient settings, followed-up on a continuous basis by themselves or by other personnel at the care-unit, “Working at an inpatient unit, I talk to patients when I meet them in a suitable situation” or “I work in an inpatient unit where we daily evaluate/follow-up the patient’s status”. One participant expressed the lack of possibility in following-up, “The patient is not followed-up by healthcare providers.. is given own responsibility after she/he is discharged from the inpatient clinic....Good/bad?! Opportunity to follow-up is not always given”. Other individuals who followed-up were case managers, primary care personnel, and physical therapists.

A majority (92%) of respondents followed-up with their patients’ physical activity advice during the next visit with the patient (see Figure 9). Follow-ups by another professional were utilized more often in inpatient care (33% of inpatient professionals counseling physical activity) than outpatient/integrated settings (11%).



Note. Visit, phone, and E-mail are used when the respondent him/herself follow-up

Figure 9. Summary of follow-up methods used by subjects (N = 490).

### *Research Question Three<sup>10</sup> – Attitude toward Physical Activity Counseling*

This survey of mental health professionals included five statements designed to measure the subjects overall attitude toward physical activity counseling (see Table 22). Two individual items directly assessed participants' attitude toward using physical activity for the purpose of either preventing or treating mental disorders on a 5-point scale, ranging from 1 = highly negative to 5 = highly positive. Participating professionals were highly positive toward working with physical activity for both prevention ( $M = 4.62$ ) and treatment ( $M = 4.52$ ) of mental disorders. Using physical activity for the purpose of preventing mental disorders was viewed most positively by respondents (70%).

Although highly positive toward working with physical activity, a majority (53%) of the participants did experience barriers in this area (see Research Question Four).

<sup>10</sup> What are mental health professionals' attitudes toward using physical activity in prevention and treatment of mental disorders?

Those most indicating the option “highly positive” toward treating mental disorders were respondents 40-49 years (69% of 144 subjects), with the least indicating “highly positive” over the age of 60 (57% of 90 subjects).

Support from management and colleagues are important factors influencing the implementation or alteration of methodologies and procedures for treatments within the healthcare system. When the subjects were asked to report their level of agreement, 1 = strongly disagree to 5 = strongly agree, with “My management supports counseling of physical activity at my workplace” and “My colleagues support counseling of physical activity at my workplace”, a majority agreed to both statements with only 6% and 3% disagreeing respectively.

This is consistent with results from studies conducted in Swedish primary care settings (Berglund & Olin, 2005; Bengtsson & Svensson, 2006; Sandberg, 2005). The mean score for the two statements were found to be similar, although more of the subjects (38%) strongly agreed to management supporting their physical activity counseling than their colleagues (31%). Interestingly, there was a significant difference among age groups with regard to colleague ( $F = 3.861$ ,  $df = 4$ ,  $p = .004$ ) and management ( $F = 5.599$ ,  $df = 4$ ,  $p = .000$ ) support. Respondents 30-39 years of age agreed significantly less ( $M = 3.63$ ) that their managers supported physical activity counseling than older professionals. Further, the 30-39 years age group also agreed significantly less ( $M = 3.75$ ) that their colleagues supported physical activity counseling than those 40-49 years ( $M = 4.12$ ).

Table 22

*Summary of attitudes toward working with physical activity*

Statements	Highly Negative	Somewhat Negative	Neither	Somewhat Positive	Highly Positive	<i>N</i>	<i>M</i>
Attitude towards using physical activity in prevention of mental/psychiatric disorders	0%	1%	6%	23%	70%	529	4.62
Attitude towards using physical activity in treatment of mental/psychiatric disorders	0%	1%	8%	28%	63%	529	4.52
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	<i>N</i>	<i>M</i>
My management supports counseling of physical activity at my workplace	2%	4%	26%	30%	38%	529	3.98
My colleagues support counseling of physical activity at my workplace	1%	2%	24%	42%	31%	529	3.99
There are barriers to using physical activity in prevention and treatment within psychiatry	8%	17%	22%	44%	9%	529	3.31

*Research Question Four<sup>11</sup> – Barriers and Enhancing Factors*

*Perceived Barriers.* As previously mentioned, 53% of the participating mental health professionals experienced barriers to using physical activity in prevention and treatment within psychiatric care settings (see Table 23). The five barriers most frequently reported by the subjects related to either lack of routines or insufficient time,

<sup>11</sup> Which barriers are experienced by mental health professionals with regard to physical activity counseling and prescription and what factors would encourage them to increase the prevalence in their counseling practices?

with “Inadequate guidelines and instructions at my workplace about how to counsel physical activity” as the major barrier (65%). Not knowing where to refer a patient who needs to be more physically active (45%) or how to follow-up with the physical activity advice/prescription (48%) were two other barriers related to inadequate routines. In regard to time-related barriers, insufficient time both during the patients’ visit (51%) and to help the patient to start exercising (37%) were also noted.

*Table 23*

*Summary of perceived barriers to counseling physical activity (N = 355)*

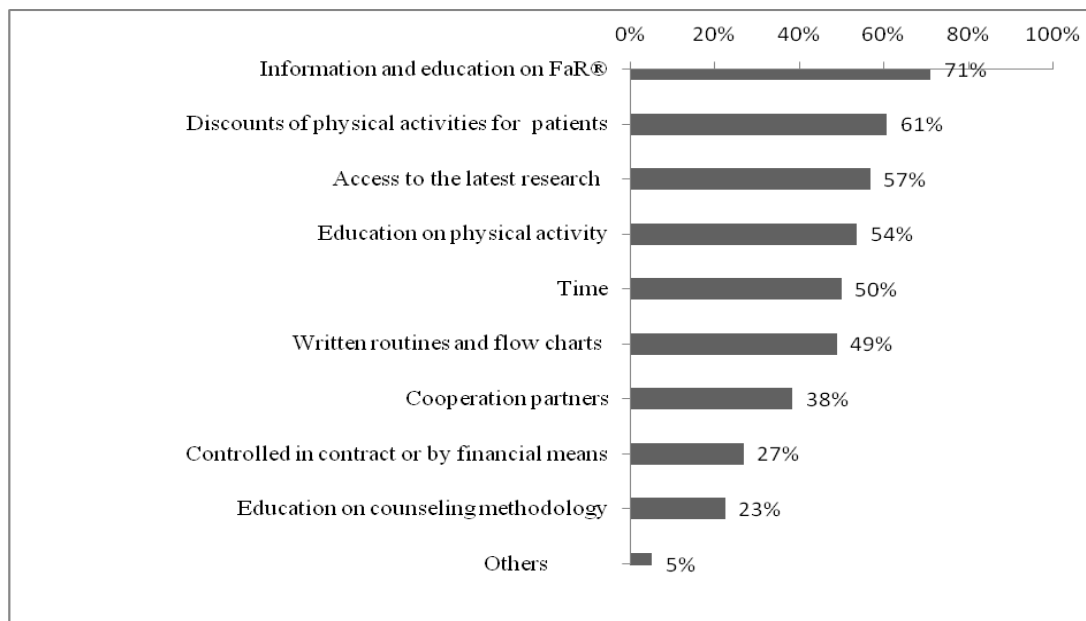
	<i>n</i>	%
Inadequate guidelines and instructions at my workplace about how to counsel physical activity	231	65%
Due to lack of time during the patient’s visit, counseling of physical activity has a low priority	180	51%
Insufficient routines in following-up physical activity advice/prescription	169	48%
I don’t know to whom I may refer a patient that needs to be more physically active	161	45%
I do not have time to practically help the patients to start exercising	132	37%
I have insufficient knowledge about counseling physical activity	102	29%
I do not have time to follow-up the patients’ advice about physical activity	57	16%
Other barriers	57	16%
The patients are not interested in getting advice for physical activity	56	16%
I believe my patients expect to get psychiatric advices and not counseling about physical activity	48	14%
I do not have enough time to learn a new methodology	46	13%
I have insufficient knowledge about the effects of physical activity	42	12%
I have a lack of trust in my patients' compliance	35	10%
I do not consider it is scientifically proven that physical activity is beneficial for the disorders I treat	7	2%

Comments made by respondents to “Other Barriers” emphasized the importance of offering the prescribing professionals resources or physical activity options for their patients: “There are few direct options to where the patients can be sent”, “Those that have larger needs may be sent to physical therapists...but those that do not have that urgent needs must look up themselves where to go ... if they have the motivation to do so”. Several comments were made by subjects that worked within inpatient settings, indicating that opportunities for physical activity were limited. Those limitations were associated with several factors including the severity of the disorder and the physical structure of the inpatient environment.

Additional comments such as “The patients have difficulties from time to time to maintain consecutiveness and motivation due to their disorders” and “The symptoms of the disorders, that is, the negative symptoms of schizophrenia or severe depression will worsen when the prescribed activity becomes another burden” describe how the type of care and disorder may have an impact on the subjects’ counseling behavior. The respondents also noted that locked care-units gave limited opportunities to spend time outside and there are few options to indoor physical activity - “lack of motivation to walk back and forth in a hospital corridor”.

*Enhancing factors.* When asked about what is needed in order to enhance the ongoing work with physical activity counseling, almost three-quarters (71%) of the subjects indicated “Information and education on Physical Activity on Prescription (FaR®) (see Figure 10). Another important factor was the patients’ financial situation and their need for subsidized physical activities (61%). The notion that psychiatric patients may not have the financial means to carry out physical activity advice on their own was indicated by several participants: “Patient is hesitant to prescription as those

activities which they usually are interested in imply a personal cost”, or “Our patients cannot afford memberships, even if they receive discount”. Further, education, information, and access to the latest research on the links between physical activity and prevention and treatment of diseases were also frequently reported as major factors to success. Interestingly, time and written routines and instructions were not among the most important factors for improvement (50% and 49%, respectively), while these were noted as the greatest barriers to counseling physical activity.



*Figure 10. Summary of what is needed in order to enhance physical activity counseling. (N = 511).*



### *Research Question Five<sup>12</sup> – Knowledge*

Knowledge about the effects of physical activity on either mental/psychiatric disorders or somatic diseases and conditions were assessed using two self-reported questions. The participants were asked to indicate their knowledge on a 5-point scale where 1 = none/very poor and 5 = very good<sup>13</sup>. The results indicate that the subjects perceived themselves as having at least somewhat good knowledge about the effects of physical activity on either psychiatric/mental disorders and somatic diseases with mean scores of 3.80 and 3.76, respectively (see Table 24). There was a significant correlation between perceived knowledge about psychiatric/mental disorders and somatic diseases ( $r = .60$ ;  $p = .00$ ), meaning that those subjects who had knowledge about the effects of physical activity on mental disorders had a corresponding knowledge about the effects on somatic diseases.

Table 24

*Summary of perceived knowledge about the effects of physical activity (N = 529)*

	Very Good	Somewhat Good	Neither	Somewhat Poor	Very Poor/None	M
Knowledge of the effects on Psychiatric/Mental Disorders	13%	61%	20%	5%	1%	3.80
Knowledge of the effects on Somatic Diseases	13%	60%	19%	7%	1%	3.76

<sup>12</sup> How knowledgeable do mental health professionals perceive themselves to be about the effects of physical activity on mental disorders and somatic diseases?

<sup>13</sup> *Note.* The English version of the scale was alternately worded as Poor/None, Fair, Good, Very Good, and Excellent.

Interestingly, female professionals had statistically greater knowledge about the effects of physical activity on both psychiatric/mental disorders ( $M = 3.84$ ) and somatic diseases ( $M = 3.80$ ) than males ( $M = 3.66$  and  $3.62$ , respectively) (mental:  $t = -2.085$ ,  $df = 179$ ,  $p = .038$ ; somatic:  $t = -2.216$ ,  $df = 527$ ,  $p = .027$ ). Three-quarters (76%) of participating women and 66% of men indicated either somewhat good or very good knowledge of the effects on mental disorders; comparably 75% of women and 66% of men perceived themselves having a good level of knowledge of the effects on somatic diseases. Knowledge was significantly related to age, specifically the older the subject, the greater their perceived knowledge of the effects on mental disorders ( $r = .127$ ,  $p = .004$ ) and somatic diseases ( $r = .141$ ,  $p = .001$ ).

*Research Question Six<sup>14</sup> – Physical Activity on Prescription (FaR®) and FYSS*

The Stockholm County Council FaR®-project began with the goal of implementing the physical activity prescription method FaR® in the county healthcare system. The FaR®-method involves the issue of a written prescription for physical activity, and thereafter referral of the patients to fitness providers outside the healthcare system or allowance of the patient to carry out the prescribed physical activity on their own. The knowledge manual, FYSS (Physical Activity in Prevention and Treatment of Diseases), is central to the FaR®-method but is meant to be used by all healthcare professionals that advise patients on physical activity, even professionals who do not have access to FaR®. With the purpose of exploring variables describing mental health professionals' practice of, knowledge about, and attitudes toward the FaR®-method and

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<sup>14</sup> Do mental healthcare professionals use the recommended prescription-method Physical Activity on Prescription (FaR®), and its related knowledge manual Physical Activity in Prevention and Treatment of Diseases (FYSS) and how do they perceive their usefulness?

FYSS and their perceived usefulness, 13 questions were included in the questionnaire.

Participating professionals were asked to indicate their perceived knowledge of FaR® and FYSS on a 5-point scale, ranging from 1 = very poor/none to 5= very good. Only 20% reported having good level of knowledge about FaR®, while a majority (61%) perceived themselves as having poor level of knowledge (see Table 25). As previously mentioned, inpatient care settings may only be able to use the FaR® referral system upon discharge. When type of care is taken into consideration, three-quarters (75%) of subjects working in inpatient settings had a poor level of knowledge about FaR, while fewer (57%) of the outpatient/integrated professionals had a corresponding level of knowledge. Moreover, only one-third (34%) of the subjects knew that SLL in January 2007 issued guidelines, stating that healthcare providers within SLL are obligated to use FaR® as a treatment alternative in preventing and treating diseases. Further, only 13% of the subjects reported having good level of knowledge about FYSS. More of the responding psychologists (65%) and psychotherapists (55%) had very poor or no knowledge about FYSS while physical therapists indicated greatest knowledge about the manual (68%).

Table 25

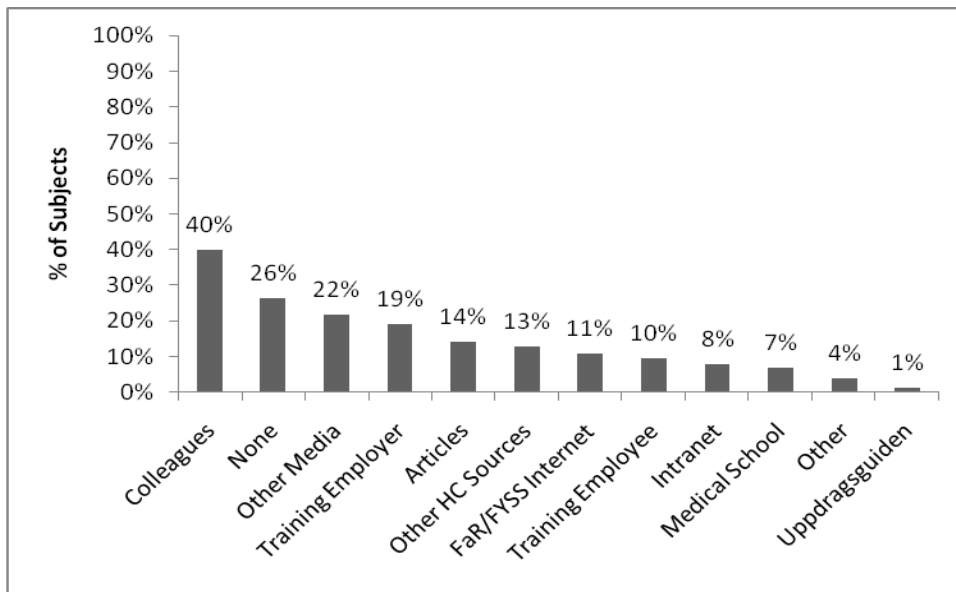
*Summary of perceived knowledge about the FaR®-method and FYSS*

	Very Good	Somewhat Good	Neither	Somewhat Poor	Very Poor/None	<i>N</i>	<i>M</i>
Knowledge of FaR®	3%	17%	19%	30%	31%	529	2.3
Knowledge of FYSS	1%	12%	17%	24%	46%	529	2.0

This lack of knowledge was also reflected in the low use of FaR® and FYSS when respondents counseled physical activity (see Table 18, p. 89). The frequency-items were assessed using a 5-point scale, ranging from 1 = never to 5= always. As previously noted, neither the FaR® yellow prescription paper form nor the electronic version were used frequently by the respondents who counseled physical activity. One-quarter (26%) of subjects used the paper form and only 5% used the electronic version. Only 16% of participants used the paper form at least sometimes, yet only 1% used the electronic version. Participants who prescribed physical activity and worked in outpatient or integrated care settings tended to use FaR®-forms more frequently (25%) than inpatient professionals (10%).

The use of FYSS among the subjects was very low (see Table 18, p. 93). Only 27% of subjects used the manual FYSS at some level and one-half of them seldom. Few psychologists (10%), psychotherapists (5%), nurses (8%), and physicians (9%) used FYSS at least sometimes when they counseled physical activity. The most frequent users of FYSS were physical therapist (55%), which may be understandable due to the nature of the profession.

Forty percent of the subjects had come in contact with FaR® through colleagues (see Figure 11). Other frequently reported sources included other media (22%) and training initiated by employer (19%), such as classes, lectures, seminars and general information at the work-units. A few individuals mentioned having received FaR® prescriptions on their own, while others had come in contact with FaR® through their patients, “Apoteket” (pharmacy), and involvement in different FaR® projects. One-quarter indicated not having had any contact with FaR®.



*Figure 11. How respondents came in contact with FaR® (N=502)*

Respondents' were also asked a set of five statements geared toward more specifically assessing their attitudes toward FaR® and FYSS (see Table 26). Responses were scaled from 1 = strongly disagree to 5 = strongly agree, with a "don't know" option provided as FaR® and FYSS were unfamiliar to some respondents.

Consistent with the previous finding of the lack of subjects knowledge about FaR®, more respondents disagreed (44%) than agreed (26%) to the statement "I have sufficient competence to use the prescription method FaR®", indicating a perceived lack of competence to use FaR®. Over one-half (55%) could not respond to the second statement, "FaR® is a good prescription method to use when I prescribe physical activity". Interestingly, a majority (64%) of those who expressed an opinion (agreeing, neither, or disagreeing) believed FaR® to be a good method to use, with only 7% disagreeing.

Table 26

*Summary of attitudes toward FaR® and FYSS (N = 529)*

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Don't Know	<i>M<sup>a</sup></i>
I have sufficient competence to use FaR®	27%	17%	12%	19%	7%	18%	2.53
FaR® is a good prescription method to use when I prescribe physical activity	2%	1%	13%	16%	13%	55%	3.82
There are barriers to using FaR® in psychiatry	6%	9%	14%	23%	5%	43%	3.22
The handbook FYSS is a good tool to use when I prescribe physical activity	0%	2%	12%	10%	8%	68%	3.78
There are barriers to using the handbook FYSS in psychiatry	6%	10%	14%	7%	2%	61%	2.70

<sup>a</sup> Mean value is based on number of participants who had an option, i.e., did not indicate don't know.

The third statement assessed if respondents experienced any barriers using FaR®. For those who did, a follow-up question inquired about specifics (see Table 27). Among respondents, one-half (49%) indicated agreement with the barrier statement. Insufficient knowledge about FaR® was a major barrier (72%), as was the lack of guidelines on the use of FaR® (55%). One-half of respondents (50%) reported that not having a person who could coordinate the FaR® activities was another barrier. With regard to time-related restrictions, only 18% believed “It takes too much time to establish working routines for FaR®” or that time in general was an issue.

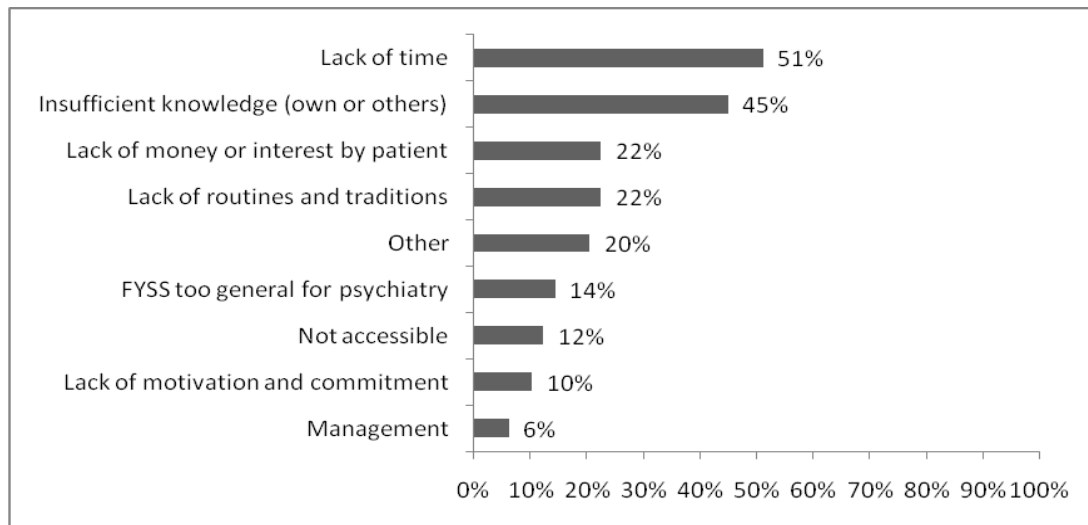
Table 27

*Summary of perceived barriers to using FaR® (N = 275)*

	<i>n</i>	%
I have insufficient knowledge about FaR®	197	72%
Lack of guidelines on the use of FaR®	151	55%
No coordinator for FaR®-activities	136	50%
It takes too much time to establish working routines for FaR®	48	18%
Patients are not interested to receive physical activity on prescription	36	13%
Health care personnel are not interested in prescribing physical activity	29	10%
Technical problems	10	4%
Others	24	9%

To measure the overall perceived usefulness of FYSS, respondents were asked to indicate their agreement with “The handbook FYSS is a good tool to use when I prescribe physical activity”. Many respondents ( $n = 362$ ) felt they could not answer this question which, if coupled with the poor knowledge of FYSS, was expected. Of those who did respond to the statement ( $n = 167$ ), 58% agreed that FYSS was a good aid. With regard to perceived barriers to use of FYSS, 35% were indifferent; 41% did not believe there were barriers and 23% did experience barriers which restricted their use of the manual. An open question was included to survey the type of barriers which hindered respondents from using FYSS; 49 of the subjects responded to this open

question (see Figure 13). Lack of time (51%) and insufficient knowledge (45%) were the two primary barriers (“Who prescribes? Only physicians?”). In addition, several subjects regarded FYSS as being too general or not geared toward psychiatric care (14%): “Too little research about psychiatric disorders”. Routines and traditions were also reported to be lacking (22%): “Traditional medical viewpoint prevails”. Patient-related reasons were noted by 22% of respondents, as psychiatric patients may have a weaker financial situation than the general population due to prolonged sick-leave. Hence, the patients may both lack the interest and money to exercise. One respondent thought the problem was that personnel were overweight and did not exercise themselves.



*Figure 12. Summary of perceived barriers to using FYSS (N = 49).*



### *Scale Construction*

Four scales were developed (i.e., clinical practices [Frequency of Physical Activity Counseling and Behavior of Physical Activity Counseling], attitudes [Attitude toward Physical Activity Counseling], and knowledge [Knowledge about Physical Activity]) and used in analyses for the identification of relationships among personal physical activity, professions, operations, type of care (TOC), and key study variables (see Table 28). All four scales were intercorrelated at the .01 critical alpha level (see Table 29).

Table 28

#### *Summary of Frequency, Behavior, Attitude, and Knowledge scales*

Scale	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>	<i>α</i>
Frequency	529	5	25	16.14	3.96	.85
Behavior	504	6	34	20.67	5.15	.68
Attitude	529	5	25	19.81	2.65	.58
Knowledge	529	2	10	7.56	1.41	-

#### *Frequency of Physical Activity Counseling Scale*

The Frequency of Physical Activity Counseling scale (Frequency) was computed as the sum of individual items: (a) discussing physical activity, (b) counseling physical activity, (c) counseling physical activity for the purpose of preventing mental disorders, (d) counseling physical activity for the purpose of treating mental disorders, and (e)

counseling physical activity for somatic diseases. Scale scores ranged from 5 to 25, where 5 indicated never counseling physical activity and 25 always counseling physical activity. The twenty-five participants who did not counsel physical activity were automatically recoded to never for the last three variables (counseling for prevention, treatment, and somatic diseases) as non-counseling participants were not presented with these three questions.

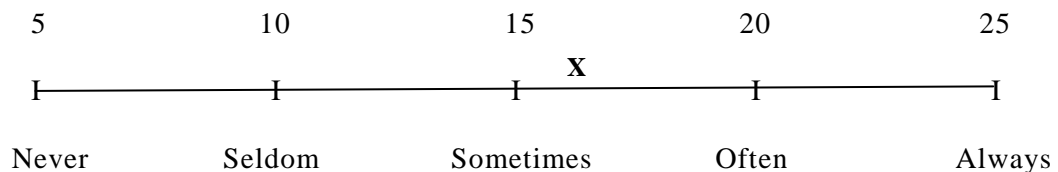
Table 29

*Pearson correlations of Frequency, Behavior, Attitude, and Knowledge scales*

	Frequency	Behavior	Attitude	Knowledge
Frequency	-	.554*	.388*	.433*
Behavior		-	.407*	.343*
Attitude			-	.301*
Knowledge			.	-

\* Correlation is significant at the .01 level (2-tailed)

The intercorrelation of the five items resulted in an overall reliability coefficient (Cronbach alpha) of .85. The mean score for the sample was 16.14 ( $SD = 3.96$ ), which translates to an average of somewhat more frequently than sometimes:



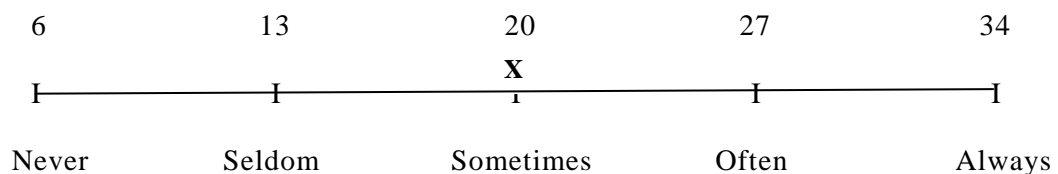
No significant differences were found among age groups ( $F = .766, p = .548$ ) or between men and women ( $t = 1.815, df = 527, p = .07$ ) with regard to Frequency.

Neither did Frequency correlate significantly with age ( $r = .035$ ,  $p = .430$ ). For comparisons among operations, professions, and type of care, see “Inferential Statistics” (p. 116).

#### *Behavior of Physical Activity Counseling Scale*

The Behavior of Physical Activity Counseling scale (Behavior) comprised all variables measuring frequency of methods and procedures used by participants when counseling physical activity: (a) documentation of patient’s current physical level (1-5 points); (b) documentation of patient’s physical activity advice/prescription (1-5 points); (c) counseling method used at least often (never, seldom, sometimes = 1 point or often, always = 5 points); (d) discussion of motivation (1-5 points); (e) referral procedures used at least often (patient own = 1, all other options = 5 points); (f) follow-up on physical activity advice (1-5 points); and (g) physical activity advice content (0-4 points). The lowest score possible was 6 meaning that the respondent did not use any physical activity counseling methods or procedures, while the highest score, 34, was computed for those that frequently used all of the suggested methods and procedures. The intercorrelations of the five items resulted in an overall reliability coefficient (Cronbach’s alpha) of .68.

The overall mean was 20.67 ( $SD=5.15$ ,  $N=504$ ), which corresponds to using a variety of methods sometimes:



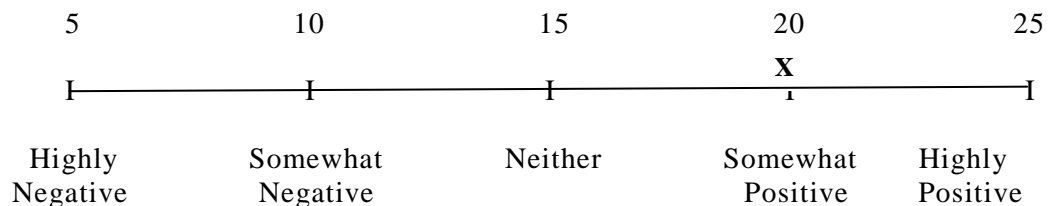
No significant differences were found among age groups ( $F = 1.753$ ,  $p = .137$ ) or between men and women ( $t = -1.104$ ,  $df = 502$ ,  $p = .270$ ) with regard to Behavior.

Neither did Behavior correlate significantly with age ( $r = .014$ ,  $p = .750$ ). For comparisons among operations, professions, and type of care, see “Inferential Statistics” (p. 116).

#### *Attitude toward Physical Activity Counseling Scale*

A perceived Attitude toward Physical Activity Counseling scale (Attitude) was computed, with scores ranging from 10 to 25, where 5 = respondents had a very negative attitude toward physical activity counseling and 25 = a very positive attitude. The attitude scale comprised five variables including: (a) attitude toward using physical activity in prevention of mental disorders, (b) attitude toward using physical activity in treatment of mental disorders, (c) beliefs about support from management, (d) beliefs about support from colleagues, and (e) experienced barriers to using physical activity in prevention and treatment. The intercorrelation of the five items resulted in an overall reliability coefficient (Cronbach alpha) of .58. If the barrier variable, which used a reversed scale (1 = strongly agree, 5 = strongly disagree), was removed the coefficient was improved to .68.

A mean of 19.81 ( $SD = 2.65$ ,  $N = 529$ ) was computed for the sample, indicating that the subjects were somewhat positive toward using physical activity for prevention and treatment:

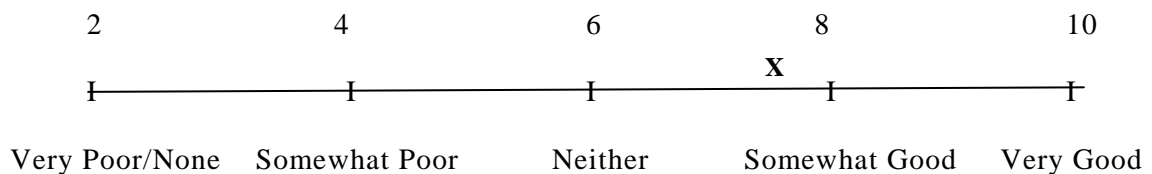


No significant differences were found between men and women ( $t = -1.212$ ,  $df = 527$ ,  $p = .226$ ) with regard to Attitude. There was a significant difference in attitude

among age groups ( $F = 2.509$ ,  $p = .041$ ), but the specific intergroup differences were not significant. Further, attitude correlated significantly with age ( $r = .093$ ,  $p = .034$ ). For comparisons among operations, professions, and type of care, see “Inferential Statistics” (p. 116).

#### *The Knowledge about Physical Activity Scale*

The Knowledge about Physical Activity scale (Knowledge) included only two items: (a) self-reported knowledge about the effects of physical activity on mental disorders and conditions, and (b) self-reported knowledge about the effects of physical activity on somatic diseases and conditions. Reliability coefficient was not computed for this scale as it only comprised two variables. The calculated mean score was 7.56 (where possible totals ranged from 2 to 10) ( $SD = 1.41$ ,  $N = 529$ ) corresponding to a somewhat good knowledge about the effects of physical activity on mental disorders and somatic diseases:



Significant differences were found between men and women ( $t = -2.328$ ,  $df = 182$ ,  $p = .012$ ) with regard to Knowledge, where women perceived themselves having greater knowledge than men. Knowledge also correlated significantly with age, with older respondents perceiving themselves as having greater knowledge than their younger colleagues ( $r = .150$ ,  $p = .001$ ). Significant differences were also found among age groups ( $F = 2.879$ ,  $p = .022$ ), but specific groups did not differ significantly. For comparisons among operations, professions, and type of care, see “Inferential Statistics” (p. 116).

## Inferential Statistics

The interrelationships among personal physical activity, practices of, attitudes toward, and knowledge about physical activity counseling were analyzed using correlation coefficients. Further, a series of independent *t*-Tests and ANOVA were performed to assess hypothesized differences among professions, types of care, and geographic operations.

### *Hypothesis Testing*

#### *Hypothesis One*

The first hypothesis that participants' levels of personal physical activity would correlate significantly and positively with key study variables, clinical practices, attitudes, and knowledge was supported (see Table 30). As previously mentioned, the distribution of physical activity levels in large scale populations may be skewed as self-reported measures tend to overestimate levels of personal physical activity (see Descriptive Statistics, Personal Physical Activity, , p. 75). IPAQ (2005) therefore recommends using median instead of mean values. As such, non-parametric, Spearman rho ( $r_s$ ) statistics were calculated to assess the intercorrelations of the Frequency, Behavior, Attitude, and Knowledge scales.

Personal physical activity was significantly and positively correlated with Frequency ( $r_s = .163, p = .000$ ), Behavior ( $r_s = .201, p = .000$ ), Attitude ( $r_s = .092, p = .049$ ), and Knowledge ( $r_s = .175, p = .000$ ). Overall, the more physically active the subjects, the more often they counseled physical activity and used counseling methods and routines. They were also more positive toward counseling and had a greater knowledge about physical activity.

Table 30

*Correlations of personal physical activity levels and Frequency, Behavior, Attitudes, and Knowledge*

Scale	Personal Physical Activity Levels MET minutes per week		
	<i>N</i>	<i>r<sub>s</sub></i>	<i>p</i>
Frequency	461	.163*	.000
Behavior	442	.201*	.000
Attitude	461	.092**	.049
Knowledge	461	.175*	.000

\* Spearman Rho correlation is significant at the .01 level (2-tailed)

\*\* Spearman Rho correlation is significant at the .05 level (2-tailed)

### *Hypothesis Two*

The first part of Hypothesis Two, that there would be a significant difference between medical and non-medical professionals with regard to study key variables (i.e., clinical practices [Frequency and Behavior], Attitudes, and Knowledge) was not supported. Specifically, results of independent sample *t*-Tests indicated no significant differences between medical professionals (physicians and nurses) and non-medical personnel (psychologists, psychotherapists, physical therapists, and occupational therapists) with regard to Frequency ( $t = .783$ ,  $df = 527$ ,  $p = .434$ ), Behavior ( $t = -.843$ ,  $df = 502$ ,  $p = .400$ ), Attitude ( $t = -1.497$ ,  $df = 527$ ,  $p = .135$ ) and Knowledge ( $t = 1.276$ ,  $df = 328$ ,  $p = .203$ ). However, the second series of analyses comparing differences among individual professions revealed that physical therapists were significantly different with respect to several of the key variables (see Table 32). Physical therapists were therefore excluded from the non-medical group, and the independent *t*-Tests were repeated. Differences were subsequently found among groups; specifically, medical

professionals counseled physical activity more often and had a higher level of knowledge of the effects of physical activity on mental disorders and somatic diseases than non-medical personnel (see Table 31).

Table 31

*t-Test results for Frequency, Behavior, Attitude, and Knowledge between medical and non-medical (without physical therapists) professionals*

Scale	Medical			Non-Medical (w/o physical therapist)			<i>t</i>	<i>df</i>	<i>p</i>
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>			
Frequency <sup>a</sup>	350	16.24	4.03	157	15.47	3.69	2.038	505	.042*
Behavior <sup>b</sup>	331	20.53	5.10	151	20.11	4.71	.862	480	.389
Attitude <sup>c</sup>	350	19.68	2.68	157	20.07	2.63	-1.502	505	.134
Knowledge <sup>d</sup>	350	7.62	1.35	157	7.27	1.49	2.463	276	.014*

\* Correlation is significant at the .05 level (2-tailed)

<sup>a</sup> Summated score ranging from 5 to 25, where 5 = low level of counseling frequency and 25 = high

<sup>b</sup> Summated score ranging from 6 to 34, where 6 = low use of counseling methods and 34 = high

<sup>c</sup> Summated score ranging from 5 to 25, where 5 = highly negative twd counseling and 25 = highly positive

<sup>d</sup> Summated score ranging from 2 to 10, where 2 = poor knowledge and 10 = very good

The second part of Hypothesis Two, that differences would be found among professions with regard to Frequency, Behavior, Attitude, and Knowledge, was supported. ANOVA with post hoc Scheffé analyses revealed significant differences among the six professions with regard to Frequency ( $F = 3.632$ ,  $df = 6$ ,  $p = .002$ ), Behavior ( $F = 8.280$ ,  $df = 6$ ,  $p = .000$ ), Attitude ( $F = 4.773$ ,  $df = 6$ ,  $p = .000$ ), and Knowledge ( $F = 4.566$ ,  $df = 6$ ,  $p = .000$ ). Specifically, physical therapists counseled



physical activity significantly more frequently than psychologists, psychotherapists, and nurses. Further, physical therapists used physical activity counseling methods and procedures to a significantly greater extent than any other professionals, besides occupational therapists (see Table 32). Psychotherapists used counseling methods and routines significantly less than physical therapists, occupational therapists, and nurses.

Table 32

*Post hoc Scheffé test for Frequency, Behavior, Attitude, and Knowledge among professions*

Scale	(I) Profession	(J) Professions	<i>M difference</i>	<i>p</i>
Frequency	Physical Therapists	Psychologists	3.98*	.005
		Psychotherapists	4.61**	.025
		Nurse	3.19**	.039
Behavior	Occupational Therapists	Psychotherapists	5.45**	.034
		Nurse	4.44**	.030
	Physical Therapists	Psychologists	6.24*	.000
		Psychotherapists	10.37*	.000
		Nurse	5.93*	.000
		Physicians	6.39*	.000
Knowledge	Physical Therapists	Psychologists	1.53*	.001

*Note.* Only significant differences are reported

\* Correlation is significant at the .01 level

\*\* Correlation is significant at the .05 level

Attitude and Knowledge yielded few significant differences among the six professions. With the exception of psychotherapists who tended to have less positive attitudes toward physical activity counseling, all others were positive. No significant interprofession differences were, however, found. Knowledge was also found to be

equally good among subjects, except for physical therapists who perceived themselves as having significantly higher levels of knowledge than psychologists.

### *Hypothesis Three*

The third hypothesis, that type of care (TOC) with which mental health professionals worked would differ with regard to key study variables (i.e., clinical practices, attitudes, and knowledge), was supported. With little data from previous research, no predictions were initially made concerning the directions of the differences. As such, a series of *t*-Tests and ANOVA with post hoc Scheffé analyses were utilized to evaluate differences between TOC with regard to Frequency, Behavior, Attitude, and Knowledge. The aforementioned analyses were computed based on three different groupings:

*Psychoses care and general psychiatry care.* No significant differences were detected between professionals in psychoses care ( $n = 97$ ) and general psychiatric care ( $n = 324$ ) with regard to Frequency ( $t = -1.590$ ,  $df = 5419$ ,  $p = .113$ ), Behavior ( $t = -.425$ ,  $df = 398$ ,  $p = .671$ ), Attitude ( $t = -.621$ ,  $df = 419$ ,  $p = .535$ ), and Knowledge ( $t = -.404$ ,  $df = 419$ ,  $p = .686$ ). Mental health professionals working with psychoses care did not differ significantly from professionals working with general psychiatric care with regard to how often the subjects counseled physical activity or used counseling-related methods and procedures, nor was there a significant difference with regard to personnel attitude or knowledge.

*Inpatient care and outpatient care.* Significant differences were found between inpatient (i.e., psychoses inpatient, general psychiatry inpatient, and inpatient integrated;  $n = 121$ ) and outpatient (i.e., psychoses outpatient, general psychiatry outpatient, and outpatient integrated;  $n = 316$ ) care settings with regard to Frequency ( $t$

= -2.307,  $df = 435$ ,  $p = .022$ ), Behavior ( $t = -.365$ ,  $df = 413$ ,  $p = .715$ ), Attitude ( $t = -2.235$ ,  $df = 184$ ,  $p = .027$ ), and Knowledge ( $t = -1.642$ ,  $df = 435$ ,  $p = .101$ ) (see Table 33). Interestingly, a series of  $t$ -Tests revealed that professionals primarily affiliated with inpatient settings counseled physical activity less frequently ( $M = 15.40$ ) and had a less positive attitude toward physical activity counseling ( $M = 19.45$ ) than those affiliated with outpatient care ( $M = 16.38$ ,  $M = 20.14$ ). Consequently, professionals working in inpatient settings did not counsel physical activity as often as their colleagues in outpatient care, nor did they have as positive an attitude toward physical activity counseling as their colleagues working in outpatient settings.

Table 33

*t*-Test results for Frequency, Behavior, Attitude, and Knowledge between in- and outpatient care

Scale	Inpatient Care			Outpatient Care			$t$	$df$	$p$
	$n$	$M$	$SD$	$n$	$M$	$SD$			
Frequency <sup>a</sup>	121	15.40	4.54	316	16.38	3.74	-2.307	435	.022*
Behavior <sup>b</sup>	109	20.71	5.27	306	20.91	4.96	-.365	413	.715
Attitude <sup>c</sup>	121	19.45	3.02	316	20.14	2.46	-2.235	184	.027*
Knowledge <sup>d</sup>	121	7.33	1.44	316	7.58	1.38	-1.642	435	.101

\* Correlation is significant at the .05 level (2-tailed)

<sup>a</sup> Summated score ranging from 5 to 25, where 5 = low level of counseling frequency and 25 = high

<sup>b</sup> Summated score ranging from 6 to 34, where 6 = low use of methods and routines and 34 = high

<sup>c</sup> Summated score ranging from 5 to 25, where 5 = highly neg. towards counseling and 25 = highly pos.

<sup>d</sup> Summated score ranging from 2 to 10, where 2 = low level of knowledge and 10 = high

Psychoses inpatient care, psychoses outpatient care, general psychiatric inpatient care and general psychiatric outpatient care. ANOVA with post hoc Scheffè analyses showed significant differences among psychoses inpatient ( $n = 32$ ), psychoses

outpatient ( $n = 60$ ), general psychiatric inpatient ( $n = 66$ ), and general psychiatric outpatient ( $n = 237$ ) care with regard to Frequency ( $F = 2.952$ ,  $df = 3$ ,  $p = .033$ ).

However, specific intergroup differences were not significant. Further, types of care did not differ with regard to Behavior ( $F = .876$ ,  $df = 3$ ,  $p = .453$ ), Attitude ( $F = 2.436$ ,  $df = 3$ ,  $p = .064$ ), and Knowledge ( $F = .826$ ,  $df = 3$ ,  $p = .480$ ).

#### *Hypothesis Four*

The fourth hypothesis, that there would be differences among the six SLSO Psychiatry operations with regard to key study variables, clinical practices, attitudes, and knowledge, was partly supported. Specifically, ANOVA with post hoc Scheffè analyses did not indicate any significant differences among Northern Stockholm Psychiatry, Psychiatry Northwest, Psychiatry Northeast, Psychiatry Southern Stockholm, Psychiatry Southwest, and Psychiatry Southeast with regard to Frequency ( $F = 1.758$ ,  $p = .120$ ), Behavior ( $F = .671$ ,  $p = .646$ ), and Attitude ( $F = 1.564$ ,  $p = .169$ ). There was a significant difference among the six operations with regard to Knowledge ( $F = 3.587$ ,  $p = .003$ ), but no significant interoperation differences were noted.

Overall, mental health professionals in the six geographic operations did not differ with regard to how often they counseled physical activity and used counseling-related methods and procedures, in their attitude toward this therapy option, and their perceived level of knowledge about the effects of physical activity on mental disorders and somatic diseases.

## CHAPTER V

### DISCUSSION AND RECOMMENDATIONS

The intent of this exploratory study was to examine Swedish mental health professionals' clinical practices of, attitudes toward, and knowledge about physical activity counseling and prescription. A summary of procedures employed, major findings and conclusions, implications for practice, as well as recommendations for future study are herein presented.

#### Summary of Procedures

##### *Data Collection*

Primary data were collected using a web-based survey, distributed via email to the majority of all licensed mental health professionals working in Health Provision, Stockholm County Council (SLSO) Psychiatry during the period January 23 to March 20, 2009. The email list was provided by SLSO Office of Supportive Personnel. A pre-survey email was sent out to all subjects by the Swedish advisor as an informative invitation to participate. Two reminders to non-respondents and one additional reminder to all managers were sent out during the collection period. Five-hundred twenty-nine surveys were completed.

##### *Instrumentation*

A survey instrument was developed by the researcher specifically for this study and contained six sections, inquiring about recommended treatments for a case study, clinical practices of physical activity counseling, attitudes and knowledge, use of the

Swedish prescription-method FaR® and its related knowledge manual FYSS, and demographics (age, gender, profession, operation, type of care, type of diagnoses, years in practice and personal physical activity). Additional questions examined participants' use of the Action Program of Overweight and Obesity, but this section was outside the scope of this thesis. The questionnaire comprised 49 individual items developed for the purpose of this study and many reflected those used in previous international studies and Swedish undergraduate theses. Four scales were developed for use in hypothesis testing, as well as descriptive analyses: Frequency of Physical Activity Counseling, Behavior of Physical Activity Counseling, Attitude toward Physical Activity Counseling, and Knowledge of Physical Activity. Level of personal physical activity, a key variable in this study, was measured using the short version of the International Physical Activity Questionnaire (IPAQ, 2005).

In order to fulfill the need for both a Swedish and an English version of the questionnaire, the first step of a three-step translation process, determined by the researcher and based on Sperber et al. (1994) and IPAQ (2008) recommendations, was executed. A two language version of the survey was developed reciprocally in a “decentered” process, where all items originally in one of the languages were translated to either Swedish or English. Special considerations were taken with regard to the scales used in both the Swedish and the English versions of the questionnaire.

#### *Data Analysis*

Findings for each of the six research questions were evaluated with descriptive statistics, including frequencies across identified subgroups (i.e., operation, type of care, and profession). In order to test hypothesis one, the hypothesized relationships between level of personal physical activity and clinical practices (frequency and

behavior), attitudes, and knowledge related to physical activity counseling, correlation coefficients with Spearman rho ( $r_s$ ) for rank orders were performed. For hypotheses two through four, differences among professions, type of care, and operations, were tested with a series of independent  $t$ -Tests and ANOVA with post hoc Scheffé analyses. Supplemental intercorrelation analyses with Cronbach alpha were computed for the proposed scales.

### Summary of Major Findings and Conclusions

This study is one of the first, if not the only, comprehensive investigation of Swedish mental health professionals and their physical activity counseling practices, attitudes, knowledge, and personal level of physical activity across type of care, profession, and operation. Subjects represented all six licensed mental health professions (i.e., physicians, nurses, psychologists, psychotherapists, physical therapists, and occupational therapists), six SLSO geographic adult psychiatric care operations, and the four main types of care (i.e., outpatient general psychiatry, inpatient general psychiatry, outpatient psychoses care, and inpatient psychoses care). Inpatient care was not, however, as represented among respondents as outpatient care.

### *Respondent Bias*

Two factors within this study are important to identify as potential sources of bias. Firstly, more respondents were found to be physically active and met public recommendations for physical activity levels than the Swedish population, in general (86% and 76%, respectively). There is some evidence that medical personnel are more physically active than the general population. Lindström et al. (2008) found in their study of primary care providers on Södermalm (in SLSO) ( $N = 187$ ) that those primary care professionals who did not prescribe physical activity had higher levels of physical

activity (moderately physically active 3.74 days/week), than the population of Södermalm (2.9 days/week). Moreover, other studies using multiple domain instruments (e.g., IPAQ) have reported higher national levels of physical activity in some countries (such as the United States, Australia, Canada, and New Zealand), than Sweden (Bauman et al., 2009), which may imply that higher levels of physical activity may be found in subgroups. Nevertheless, if study respondents were more physically active than the rest of SLSO mental health professionals, they may be more interested in the use of physical activity in counseling. Hence, the results of this study may be affected as physical activity levels correlate positively with clinical practices, attitudes, and knowledge.

Secondly, more professionals working in outpatient settings than inpatient care responded to this survey. The analysis of initial and late responders, where the late respondents included more inpatient professionals than outpatient, did not reveal any significant differences with regard to Frequency, Behavior, Attitude, and Knowledge. There were, however, significant differences between inpatient care personnel and outpatient with regard to Frequency of Physical Activity Counseling, Attitude, and the use of the FaR®-method. Outpatient care professionals counseled physical activity and used the FaR®-method more frequently, and had a more positive attitude than inpatient care professionals. This may have affected the results overall, as outpatient care professionals were more greatly represented in this study sample than in the general population.

#### *Personal Physical Activity*

Findings of previous research indicate that personal physical activity correlates positively with counseling practices of and attitudes toward the use of physical activity in prevention and treatment of diseases among mental health professionals (Abramson



et al., 2000; Frank et al., 2003; Kallings & Leijon, 2003; McDowell et al., 1997; McEntee & Halgin, 1996; Puig Ribera et al., 2005). Interestingly, results of this study not only revealed significant correlations between personal physical activity and both Attitude ( $r_s = .092$ ,  $p = .049$ ) and Frequency ( $r_s = .163$ ,  $p = .000$ ), but also with the use of physical activity counseling-related methods, Behavior ( $r_s = .201$ ,  $p = .000$ ), and Knowledge ( $r_s = .175$ ,  $p = .000$ ). While personal physical activity was significantly related to Frequency of Physical Activity Counseling, the distribution of physical activity levels by Frequency approximated a u-distribution. Whether this phenomenon emerged solely from the use of a 5-point frequency scale (never, seldom, sometimes, often, and always) cannot be determined. A better understanding of this relationship should be the focus of future research. The effect of higher levels of personal physical activity on the use of physical activity counseling in prevention and treatment of diseases in terms of causation was not hypothesized. It is, however, evident that exercising mental health professionals counsel physical activity more often than their inactive colleagues.

On average, subjects reported being physically active seven hours per week. Physical therapists tended to be more physically active than those in any other profession, while physicians were the least active. Compared with Swedish national IPAQ statistics collected by The International Prevalence Study (IPS) (Bauman et al., 2009) and the yearly “Health on Equal Terms?” (The Swedish National Institute of Public Health, 2008c), SLSO mental health professionals are more physically active than the average population. As many as 86% of study respondents met public recommendations for health promoting levels of physical activity (i.e., 30 minutes of moderate intensity activity 5 days a week, 20 minutes of vigorous activity 3 days a

week, or a combination of the two), compared to three-quarters (76%) of the Swedish population reported by the IPS study and 65% of Swedish men and 64% of women in the “Health on Equal Terms?” survey.

There is some evidence that healthcare professionals and medical students are more physically active than the general population (Frank, Tong, Lobelo, Carrera, & Duperly, 2008; Lindström et al., 2008; Lobelo, Duperly, & Frank, 2009) and some researchers have suggested healthcare professionals having healthier lifestyles (Abuissa, Lavie, Spertus, & O’Keefe, 2006; McNerney, Andes, & Blackwell, 2007). Such relationships and national/international differences warrant more cross-cultural research.

Additionally, IPAQ is designed to evaluate physical activity across the four different domains of leisure-time, work, transportation, and household tasks. A third category, “high active” (twice the MET-minutes of the “moderate” level), has therefore been added for setting more suitable population targets when using a multiple domain instrument and for distinguishing highly active individuals who obtain even greater health benefits (Bauman et al., 2009; IPAQ, 2005). Highly active individuals in this study comprised 36% of the respondents, which is close to both the Swedish national IPAQ-level (39%) (Bauman et al., 2009) and the 41% for men and 34% for women reported by The Swedish National Institute of Public Health (2008c). Consequently, if the higher activity level is considered as a population target for health-enhancing physical activity, two-thirds (64%) of study respondents did not meet the criteria. Only 14% of study respondents were, however, categorized as “low active”, compared to one-quarter (24%) of the general population.

### *Frequency of Physical Activity Counseling*

Nearly all (98%) Swedish mental health professionals working in SLSO held general discussions with their patients about the importance of physical activity. More importantly, 95% also gave their patients individualized physical activity advice for both the purpose of treating their patients' mental disorders (96% of the counseling subjects), or preventing new psychiatric diagnoses (95%). Physical activity was commonly counseled as an adjunct to other therapies, such as pharmacological and psychological therapies, and most frequently for anxiety disorders and mild to moderate depression. This approach is in alignment with conclusions by several reviews, as well as research and governmental institutions (Daley, 2008; Mead, 2008; NBHF, 2009; Stathopoulou et al., 2006). Physical activity was used as a monotherapy by some of the counseling respondents; one-quarter advised physical activity therapy without combining it with other treatments.

The high proportion of mental health professionals who counseled physical activity is impressive and consistent with studies conducted internationally and in Swedish primary care settings, where a majority of the personnel discuss or counsel physical activity at some level with their patients (Berglund & Olin, 2006; Douglas, Torrance et al., 2006; Kallings & Leijon, 2003; Lawlor et al., 1999; Lindström et al., 2008; McDowell et al., 1997; Puig Ribera et al., 2005; Sandberg, 2005; Sandberg et al., 2007). Greater variation in the use of physical activity can be found in psychiatric care; where studies report as few as 40% and upwards of 93% of participants recommending physical activity to their patients (Barrow et al., 1987; Burks & Keelev, 1989; Faulkner & Biddle, 2002; MHF, 2005; Phongsavan et al., 2007). The degree of agreement with "physical activity promotion being part of their job" and the frequency with which

mental health professionals discuss or counsel physical activity varied in these studies depending on profession and how “counseling” is defined. Consequently, it is difficult to compare and generalize the prevalence of physical activity counseling.

Moreover, the high proportion of professionals who discuss or counsel physical activity becomes less impressive when the frequency of action is taken into account. For example, in some of the aforementioned studies all subjects are reported to have discussed, recommended, or counseled physical activity at some level, meaning that even those that do it very seldom may be included. In studies that do indicate frequency or level of counseling, a more differentiated image is depicted. Some report a computed mean of “occasionally” or “sometimes” (Barrow et al., 1987; Burks & Keelev, 1989), while primary care in Stockholm shows higher frequencies (e.g., 72%-93% of respondents counseled physical activity at least “often”) (Larsson et al., 2005; Sandberg, 2007).

In comparison with primary care in Stockholm, study subjects reported a lower frequency of discussing (67%) and counseling (55%) physical activity at least often, with 39% using it at least often for the purpose of preventing mental disorders, and 52% for treatment. The score on the Frequency of Physical Activity Counseling scale, which comprised five physical activity counseling items, indicated that overall, SLSO mental health professionals counseled physical activity sometimes. Thus, there is room for improvement in the use of this beneficial method, namely increasing the frequency of physical activity counseling by the majority of SLSO mental health professionals.

Frequency of Physical Activity Counseling correlated with several variables. As hypothesized, the more physically active the participating mental health professional, the more often they counseled physical activity ( $r_s = .163$ ,  $p = .000$ ). This finding is

further evidence of the importance of personal physical activity as an enhancing factor in counseling-related situations, and is in line with results from previous studies (Abramson et al., 2000; Faskunger et al., 2007; Frank et al, 2000; Kallings & Leijon, 2003; McEntee & Halgin, 1996; Puig Ribera et al., 2005). Frequency was also found to significantly intercorrelate with the use of methods and procedures (i.e., Behavior of Physical Activity Counseling) ( $r = .554, p = .000$ ), Attitude toward Physical Activity Counseling ( $r = .388, p = .000$ ), and Knowledge about Physical Activity ( $r = .433, p = .000$ ). Another important finding was that significant intercorrelations existed among all four scales. Hence, behavioral interventions aimed at modifying and improving the clinical practices of physical activity counseling, attitudes, or knowledge may improve any of the intercorrelated variables. Further, the impact of personal physical activity engagement must also be considered.

Interestingly, female professionals counseled physical activity significantly more often than males for the purpose of preventing mental disorders ( $t = 3.01, df = 502, p = .003$ ). Further, the older the professionals counseling physical activity ( $n = 504$ ), the more likely they were to counsel physical activity in prevention ( $r = 0.105; p = .019$ ). This is consistent with previous findings reported by Walsh, Swangard, Davis, and McPhee (1999, as cited in Taylor, 2003).

Another very important justification to counsel physical activity for individuals with mental disorders is the high prevalence of somatic problems and diseases (Allison et al, 2009; Carless & Faulkner, 2003; NBHW, 2009; Newcomer, 2007). Physical activity is a prerequisite for improved health (NBHW, 2009). The National Institute of Mental Health (Mead et al., 2009), in their review of obesity, nutrition, and physical activity, found that levels of obesity are higher in patients with schizophrenia and

depression. Due to the presence of the metabolic syndrome, mentally ill persons also have increased risk to cardiovascular disease and type 2 diabetes, making the patient more vulnerable to premature mortality (Newcomer, 2007). A separation of mind and body by healthcare professionals allows, however, for differential diagnosis and treatment for mental disorders and somatic diseases (Faulkner & Biddle, 2001a). This separation of mind and body was confirmed in this study, as only 28% often or always counseled physical activity for somatic diseases. Seventy-nine percent, however, used physical activity at some level and, in particular, for weight-related issues (93%). Further, 63% integrated patients' physical health in the care of their patients at least sometimes ("How often does your care unit work actively with patients' physical health, regardless of diagnosis?"; section 6, Action Program for Overweight and Obesity, Swedish version of this study's questionnaire). Interestingly, there was a significant relationship between those subjects that advised physical activity for preventing ( $r = 0.333$ ,  $p = .000$ ) or treating ( $r = 0.256$ ,  $p = .000$ ) mental disorders and those who recommended physical activity for their patients' somatic diseases.

### *Profession*

With regard to differences among professions, medical professionals (i.e., physicians, nurses) counseled physical activity more often than non-medical professionals (i.e., psychologists, psychotherapists, occupational therapists) ( $t = 2.038$ ,  $df = 505$ ,  $p = .042$ ). As expected, physical therapists, who employ physical activity within the profession, were the most frequent prescribers of physical activity and did so significantly more often than psychologists, psychotherapists, and nurses. Hence, physical therapists' important role as advocates of physical activity therapies should not be ignored nor neglected. As stated by one occupational therapist: "Different

professions have different focus on what they consider as important for health and well-being; physicians are not always so willing to [physical activity], talk more about medication, psychologists want to have conversations, occupational therapists and physical therapists have a holistic thinking with regard to patients”. Physical therapists are both resources to whom patients may be referred and a knowledgeable source of information. They seem, however, to be scarce in Sweden: “The physical therapist, who should be a self-evident professional in psychiatry, is lacking!” was noted by a physician, and a physical therapist explained her situation with: “As the only physical therapist, it is hard to drive everything myself. I only get in contact with a fraction of the clinic’s patients”. As frequent exercisers, these professionals may also inspire to increased physical activity among personnel.

Previous studies also indicate differences across professions but the results are mixed. In a Swedish undergraduate study, non-medical personnel, in general, and physical therapists in particular, were the most frequent prescribers, where only half of the medical professionals (nurses and physicians) prescribed physical activity (Larsson et al., 2005). This is in line with Lindström et al. study (2008) where more physical therapists had knowledge about the prescription method FaR® and prescribed physical activity than any of the other primary care professions. For their healthy patients, nurses commonly give general physical activity advice (in current study defined as “discussion”) significantly more than general practitioners (Douglas, Torrance et al., 2006; Puig Ribera et al., 2005) and psychiatrists tend to note the use of physical activity less helpful than other professionals (Jorm, Korten, Jacomb, Rodgers et al., 2007; Jorm et al., 2008). This conclusion was not supported in this study, as nurses and physicians reported similar levels of physical activity counseling. Lindström et al. on

the other hand, reported that a larger fraction of general practitioners prescribed FaR® than nurses. Lastly, the findings of this study indicate that mental health professionals working in outpatient care settings counseled physical activity significantly more frequently than those working in inpatient care ( $t = 2.307$ ,  $df = 435$ ,  $p = .022$ ): “I work in inpatient settings where the patient’s outdoor access is limited and where the patient’s psychiatric health status is in a more acute phase”.

There were no differences among the six geographic operations with regard to the frequency of counseling ( $F = 1.758$ ,  $p = .120$ ). Although professionals may vary in their use of physical activity counseling, patients have the potential to be exposed to physical activity regardless of the psychiatric geographic operation they access.

### *Reasons*

When asked about their reasons for advising patients to use physical activity, promotion of general well-being (89%), building a daily structure for their patients (78%), and preventing mental disorders and relapses (74%) were most frequently noted. Similarities in the reasons for using physical activity were found across professions. However, physicians and physical therapists also reported treating mental disorders as one of their primary roles. Inpatient and outpatient care professionals equally considered promoting well-being and giving the patient a daily structure as the most important reasons for counseling physical activity. Interestingly, more subjects working in outpatient care counseled physical activity for the treatment and prevention of mental disorders (prevention = 75%, treatment = 70%), while inpatient care professionals focused to a greater extent on somatic diseases (prevention = 72%, treatment = 36%). Patients in inpatient settings usually have more severe symptoms, where physical activity may not be perceived as a primary treatment alternative for the mental disorder,



but rather helpful in combating somatic conditions induced by medication and more severe mental problems. Further, giving patients something to do during the day (Outpatient care professionals = 59%; Inpatient care professionals = 78%), and to distract patients from their worries and difficulties (Outpatient care professionals = 57%; Inpatient care professionals = 69%) were indicated by more subjects in inpatient care than outpatient care. Considering the inpatient environment and the limitations on physical activity alternatives, these results are not surprising. These findings also confirm those of Faulkner and Biddle (2002), who found that participating mental health nurses perceived physical activity as advantageous in distracting the patients from boredom, providing structure, and removing clients from the environment, but as being less useful in inducing positive mood or as a therapy alternative.

#### *Physical Activity Counseling-Related Behaviors*

Not surprisingly, physical therapists used counseling-related methods significantly more often than any other profession, except occupational therapists. Psychotherapists, on the other hand, reported the lowest frequency of use of counseling-related methods, and significantly less than occupational therapists, physical therapists, and nurses. In this study, there was a significant interrelationship between personal physical activity and the use of counseling behavior; the more physically active the professionals, the more likely they were to use counseling-related methods ( $r_s = .201, p = .000$ ). On the other hand, no significant differences in method-related behaviors were found between male and female professionals, or among age groups, the six different geographic operations, or types of care.

### *Written prescription*

With a written prescription issued, patient's level of physical activity may increase by 15-50% (SBU, 2006). The findings of this study suggest that physical activity counseling methods, in particular the use of written prescriptions, may not have penetrated psychiatric care settings to the same extent as in primary care. As previous studies with Swedish primary care professionals indicate, verbal advice is more commonly used than written prescription (Berglund & Olin, 2006; NBHW, 2007; Sandberg, 2005; Sandberg et al., 2007), and may be even more so in psychiatry. Dohrn's study (2007) of primary care supervisors in SLSO (the same organization as this study) reported that 98% of the clinics prescribed physical activity using verbal advice and 67% also used written prescriptions. Despite efforts to promote and implement written prescription methods in SLL, very few mental health professionals comply with these guidelines. Only 29% of study participants ( $N = 504$ ) reported using written prescriptions at least sometimes, and manually written forms (27%) were more commonly used than computer-based (4%).

With regard to the written prescription method FaR®, three-quarters of respondents (74%,  $N = 415$ ) never used the yellow FaR® paper form and few (95%,  $N = 400$ ) used the electronic version. This demonstrates very limited use of a standardized and developed methodology. That said, as previously mentioned, FaR® is not always feasible to use within inpatient settings; more outpatient and integrated care providers used the FaR®-form (25%) than inpatient care professionals (10%). Although the extent of inpatient care has decreased towards greater outpatient care, inpatient care still account for more than half of the resources, 52% and 48% respectively (NBHW, 2005).

It is therefore important to find effective methods that correspond to the specific needs of the inpatient care settings.

Comparisons to Swedish primary care statistics are difficult as measurements differ. The National Board of Health and Welfare (as cited in Faskunger et al., 2007) reported that among one-half of primary care units that had established physical activity promotion routines, 69% wrote physical activity on prescription. Across the aforementioned Swedish undergraduate theses and reports, 12%-71% of primary care professionals used physical activity on prescription or other written forms (Bengtsson & Svensson, 2006; Berglund & Olin, 2005; Larsson et al., 2005; Lindström et al., 2008; Sandberg, 2005; Sandberg et al., 2007). However, when the Swedish population was asked about whether their primary care physician had prescribed physical activity, using FaR®, only 21-33% responded affirmatively (Swedish Association of Local Authorities and Regions [SALAR], 2008).

#### *Referrals of Physical Activity Advice*

Another important component in the success of physical activity counseling is how the healthcare system aids the patient in carrying out the advised activity. As many as 86% ( $N = 504$ ) of subjects in this study who counseled physical activity reported ensuring their patients compliance to the physical activity advice by referring them in at least one of the suggested ways (physical therapist, supervised training within the healthcare system, personnel at the clinic, outside fitness and recreation industry, FaR®, and other) and at least at some level. However, only 31% ( $N = 504$ ) of the respondents provided help either often or always. A large majority (98%,  $N = 482$ ) of participants reported that they asked their patients to carry out the physical activity advice themselves, and 73% did that often or always. Seventy-three percent of the

subjects also ( $N = 504$ ) reported using some type of referral within the healthcare system (physical therapist or supervised training), where only 12% did it at least often. The least used method was to send the patients to the outside FaR®-network, which requires established referral routines at the clinics. In comparison with the aforementioned undergraduate primary care studies, mental health professionals in this study helped their patients more frequently than those in primary care. In primary care, 33% to 67% helped their patients to start exercising, usually with the help of personnel at the clinic (Berglund & Olin, 2005; Hagberg et al., 2007; Sandberg, 2005), even though 92% knew where to refer their patients (Sandberg et al., 2007). Again, caution must be exercised in interpretation of these results, based on differences in design of the questions and methods between the current study and undergraduate studies in primary care.

*Barriers.* With regard to barriers to using physical activity in prevention and treatment, one finding, in particular, is of major interest. It was revealed that inadequate guidelines and instructions in how to counsel physical activity were, by far, the greatest barrier (65% of subjects). Further, professionals did not know where to refer their patients (45%) and had insufficient routines to follow-up on issued physical activity advice (48%). These results are consistent with previous research, where a lack of instructions and guidelines are cited as perceived barriers or inconveniences to physical activity counseling (Puig Ribera et al.; 2005). Lastly, information and education on the Swedish written prescription method FaR® was cited as most needed (71%) to enhance and improve the ongoing work with physical activity counseling. In summary, both the most frequently reported barriers and major motivating factors to

enhance physical activity counseling were the needs for routines, instructions, protocols, information, and education at participants' care units.

The second most indicated barrier (51%) was a lack of time during patient visits. This is also in line with previous research where time has been reported to be one of the largest barriers to counseling physical activity in both primary care and psychiatric settings (Abramson et al., 2000; Lawlor et al., 1999; Phongsavan et al., 2007; Puig Ribera et al., 2005). Abramson et al. reported that the major barriers for physicians to counsel aerobic exercise were inadequate time (61%) and inadequate knowledge or experience (16%). This is also true in Swedish primary care (Berglund & Olin, 2005; Larsson et al., 2005; Sandberg, 2005). Interestingly, although time was the second most reported barrier in this study, only one-half of respondents believed lack of time hindered them in counseling physical activity and only one-half thought more time would enhance the ongoing work with physical activity counseling in their workplace.

#### *Attitudes toward Physical Activity Counseling and FaR®*

A positive attitude is an important determinant of the promotion of physical activity (McEntee & Halgin, 1996; Taylor, 2003). SLSO mental health professionals were very positive toward using physical activity for both the purpose of treating mental disorders ( $M = 4.52$  out of 5), and toward its use in prevention ( $M = 4.62$  out of 5). These findings are consistent with the positive attitude usually held among primary care providers in Stockholm (Berglund & Olin, 2005; Sandberg, 2005).

The Attitude toward Physical Activity Counseling scale was found to be significantly correlated with Frequency ( $r = .388, p = .000$ ). This finding is further evidence of the importance of attitude to behavior. Professionals working in outpatient settings reported significantly more positive attitudes than their colleagues in inpatient

settings ( $t = 2.235$ ,  $df = 184$ ,  $p = 0.027$ ). This may be due, in part, to inpatient care providers perceiving their colleagues to be less supportive. Also of note, attitude correlated positively with age ( $r = .093$ ,  $p = .034$ ), where older respondents were more positive toward working with physical activity. Considering the relatively new research in this area, this is a surprising finding. No other significant differences were, however, found between males and females or among professions and geographic operations with regard to attitudes toward physical activity counseling.

With regard to written prescription (FaR®), many respondents expressed little familiarity with or knowledge about the method. However, as many as 64% of those who did have an opinion about FaR® (agreeing, indifferent [neither], or disagreeing), believed it was a good prescription method to use when prescribing physical activity. This result is consistent with previous studies of primary care professionals, who have reported a 67-96% level of approval with FaR® (Bengtsson & Svensson, 2006; Larsson et al., 2005; Lindström et al., 2008; Sandberg et al., 2007), with non-medical professionals being the most positive about FaR® (Larsson et al., 2005). Respondents were slightly less positive about the perceived usefulness of the knowledge manual FYSS; 58% of the subjects who had an opinion agreed that FYSS was a good tool to use when prescribing physical activity. This result is somewhat lower than that found by Larsson (2005) in an undergraduate study of primary care physicians (79%). One-half (49%) of respondents agreed barriers existed, with insufficient knowledge about FaR® being the greatest. Barriers to using the manual FYSS were not a major concern; only 23% perceived barriers existed to using FYSS. The major barriers reported were lack of time (51%) and insufficient knowledge (45%).

### *Knowledge about Physical Activity and FaR®*

Knowledge is an important reinforcing factor to physical activity counseling; a positive correlation between knowledge and the promotion of physical activity has been reported (McDowell et al, 1997; Ploeg et al., 2007). Responding to two self-rated items about the effects of physical activity on mental disorders and somatic diseases, participants rated their own knowledge as somewhat good (3.8 and 3.76 out of 5, respectively). Three-quarters (74%) of participants thought they had sufficient knowledge about the preventive and therapeutic effects of physical activity on mental/psychiatric disorders with a corresponding result of 73% for somatic diseases. These findings are in accord with other studies of self-rated knowledge (Lawlor et al., 1999; 75%), although, lower ratings have also been reported (Douglas, Torrance et al., 2006, Phongsavan et al. 2007). It should be noted that only 13% of respondents considered themselves as having very good knowledge about the link between physical activity and mental disorders. This rating would be expected to be higher, due to the importance of using physical activity within the healthcare system.

Knowledge of the effects of physical activity on mental disorders and somatic disease were significantly correlated ( $r = .60, p = .000$ ). Specifically, those participants who believed they had knowledge about the effects of physical activity on mental disorders also reported having greater knowledge about the effects on somatic diseases. Interestingly, knowledge was also correlated with age (mental disorders,  $r = .127, p = .004$ ; somatic diseases,  $r = .141, p = .001$ ). This was an unexpected finding, as the use of physical activity as a preventive or therapeutic tool is relatively new and physical activity counseling may have not been integrated in medical schools until recently. Women perceived themselves as having significantly greater knowledge than men

(mental disorders:  $t = 2.085$ ,  $df = 179$ ,  $p = .038$ ; somatic diseases:  $t = 2.216$ ,  $df = 527$ ,  $p = .027$ ). Moreover, medical professionals scored significantly higher on the knowledge scale than non-medical professionals (physical therapists excluded) ( $t = 2.463$ ,  $df = 276$ ,  $p = .014$ ). This study also revealed that psychologists had a significantly lower level of knowledge about the effects of physical activity on mental disorders and somatic diseases than physical therapists.

Lack of knowledge has been reported as a barrier to promoting and counseling physical activity (Phongsavan et al., 2007; Puig Riberia et al., 2005). Similarly, the findings of this study indicate that subjects' self-rated high level of knowledge was reflected in the absence of knowledge barriers. Only 29% of the subjects perceived insufficient knowledge about physical activity counseling as being a barrier and even fewer (12%) reported insufficient knowledge about the effects of physical activity as a constraint. When rating their knowledge about the developed and provided prescription method FaR®, however, only 20% believed they had good knowledge, while as many as 61% had poor or no knowledge of the method. This finding is considerably lower than the primary care physicians in Stockholm, of which 66% thought they had sufficient knowledge to use FaR® (Sandberg et al., 2007) and the 50%-89% who reported being familiar with FaR® and FYSS (Berglund & Olin, 2005; Lindström et al., 2008; Sandberg, 2005). The current study respondents' knowledge about the manual FYSS was even lower, 70% perceived themselves as having poor or no knowledge.

This result is further reflected in the low use of both FaR® (FaR®-form, 26%, FaR®-electronic, 5%) and FYSS (27%), as well as the perceived barriers to using the FaR®-method, (e.g., insufficient knowledge about FaR®). While the knowledge manual FYSS describes and recommends the dosage for a number of somatic diseases and



mental disorders, only 11% of respondents used the manual at least sometimes, which is consistent with the low use of both FYSS and FaR® among primary care professionals in Stockholm (Berglund & Olin, 2005; Lindström et al., 2008; Sandberg, 2005). Results from other parts of Sweden report much higher use (71%) (Bengtsson & Svensson, 2006), which again may be a result of how the questions were asked and the characteristics of the respondents (e.g., only those with a positive attitude toward physical activity counseling may have responded). Respondents in the current study also revealed a need for more knowledge; education on physical activity and access to the latest research were two frequently reported enhancing factors to improving physical activity counseling in the work place.

### Implications for Practice

#### *Personal Health Promoting Behaviors*

This study found significant intercorrelations among respondents' personal physical activity levels and frequency of physical activity counseling, the use of counseling-related methods, attitudes, and knowledge about the effect of physical activity on mental disorders and somatic diseases. These findings can be utilized to justify interventions for healthy lifestyle behaviors, such as the promotion of physical activity across the six psychiatric operations. Frank et al. (2000) found that conveying physicians own healthy habits, such as having fruit and a bike helmet on one's desk, enhances healthcare professionals' abilities to motivate their patients to change their lifestyle to a healthier one. Hence, promoting physical activity among healthcare professionals would not only have a positive impact on physical activity counseling, but also have a positive effect on the potential to change patients' behavior.

There are other positive implications of increased physical activity among medical personnel, including physical stamina/energy level, mood, mental stamina/energy level, and concentration (Barrow et al., 1987). Advantages, such as regulation of stress, better general health status, and good health practices among physically active healthcare professionals have been reported (Barrow et al., 1987; Frank et al., 2003). These health-enhancing factors, together with the positive relationships between personal physical activity and counseling-related behaviors, strongly warrant the promotion of physical activity among personnel within care-units. Activities such as discounted memberships to recreational facilities, health-promotion days with training in nutrition and physical activity, pedometer journals, and walking-meetings are but a few suggestions that should be considered for implementation.

#### *Physical Activity Counseling*

The findings of this study indicate that physical activity counseling is prevalent at some level across professions, operations, and in- and outpatient care within SLSO Psychiatry. However, mental health professionals utilize physical activity counseling activities only sometimes. There is a need for increased awareness of the benefits of a more holistic and health promoting care system, including the psychiatric care, as an integrated body and mind approach has been found to be beneficial. Without being overly focused on the mental disorder, mental health professionals should routinely counsel physical activity for their patients' mental and physical health, and general well-being. In particular, as the high prevalence of somatic diseases among mentally ill persons warrants focus on the patients' physical health status and even more so if they do not see a general practitioner.

Based on the importance of physical activity for both physical and mental health, study findings should be used to motivate the healthcare system, including management and support personnel, to better enable physical activity counseling-related methods and procedures. Personnel had an overall positive attitude towards working with physical activity in prevention and treatment of mental disorders, and did not believe that (a) there is a lack of scientific proof of the benefits of physical activity for the disorders they treat, (b) there is a lack of trust in patients compliance, and (c) their patients would be uninterested in physical activity advice. Resources should therefore be focused primarily on removing constraints experienced by 53% of respondents. Several findings, in particular, are worth considering in enhancing physical activity counseling. These include the need for methods that are adapted to inpatient care environment and its limited access to physical activities, as well as major barriers such as an overall lack of methods and instructions, and insufficient training in how to use implemented and standardized methods, such as FaR®.

With regard to inpatient care settings, one of the major barriers to physical activity counseling is the limited opportunity to exercise. Thus, an increase in supervised group training within the healthcare system is needed along with more physical therapists that could support patients burdened with severe symptoms and with a greater need for motivation. Knowledge and use of the standardized FaR®-method and FYSS were lower in inpatient care settings, compared to outpatient and integrated settings. A focus on personnel training, specifically geared toward inpatient settings is needed. The unique needs of psychiatric inpatient care are discussed below.

### *Barriers*

Three of the four major barriers to the use of physical activity counseling included routines and instructions in how to counsel physical activity, where to refer patients, and how to follow-up on the advice. Physical Activity on Prescription (FaR®) has been implemented in SLL and attempts to integrate it in psychiatry have also been made. Still, written prescription is seldom used in psychiatry, mostly because professionals have very low levels of knowledge about FaR® and FYSS and how to use them. If SLL's intention is to implement the FaR®-method in all parts of the healthcare system, then more efforts need to be made in order to facilitate implementations and the use of the methods in secondary care, such as psychiatry. The FaR® pilot project reported that healthcare professionals thought that the written form increased their paper work and almost one-half of the project's participants believed lack of time was the greatest barrier (Kallings & Leijon, 2003). Although 51% of the subjects in this current study indicated lack of time during patient visit to be a barrier, lack of knowledge and instructions about FaR®, as well as the absence of a coordinator of FaR®-activities (health-coordinator) were more constraining.

Health-coordinators, with the role of implementing routines for health promoting interventions, such as FaR®, should be employed. These individuals would assume a key responsibility for reaching out to professionals within the local fitness and recreation industry, an important factor to success (Faskunger et al., 2007; Nordlander, 2006), and for increasing the number of supervised physical activity groups within the healthcare system. Importantly, referral methods need to be incorporated and adapted to psychiatric settings. Mentally ill persons need extended support in starting to become physically active, as added responsibility may initially be perceived as another burden

by the patients. It is therefore crucial to develop exercise referral schemes both within the healthcare setting and with outside recreation and fitness programs. Supervised exercise groups would be trained in how to motivate patients who struggle with mental problems. Routines in how to follow-up with patients should be integrated in the documentation and physical activity advisement process.

Information and training in physical activity, in general, and FaR® in particular, and access to the latest research were requested by respondents. Such information, together with reviews of mandatory guidelines (e.g., documentation of physical activity advice) should be provided. The health-coordinator's role would therefore be to spread information, initiate training, and manage all paperwork. Spreading information and distributing knowledge should be done directly with the care-units as most respondents reported contact with FaR® through their colleagues, underscoring the importance of engaging personnel directly. The health coordinator would create unit-specific routines, predominantly focused on flow-charts involving referral and follow-up procedures. Referral procedures would need to be adapted to local conditions of each specific care-unit but remain adherent to published guidelines.

Other useful improvements would include the development of time-efficient, partly standardized, motivational protocols, founded in motivational interviewing and cognitive behavioral therapy (CBT), to be used during consultation with patients. Such protocol should be developed together with primary care professionals, who are similarly in need of this type of motivational tool (Kallings & Leijon, 2003).

#### *Subsidized physical activities*

Other important factors to consider when developing new ways to help patients adhere to their physical activity prescriptions include the sociodemographic

characteristics of psychiatric patients. Many respondents commented that their patients may not have the financial means to pay for physical activity and a prescription is therefore not useful if the patient is not motivated to exercise on his/her own outside of a facility. A discount on physical activity for psychiatric patients was noted by many as a method to enhance the work of physical activity counseling. One can argue that healthy persons should not have to contribute to subsidization of an ill person's physical activity, while subsidizing physical activities is a logical component of physical activity prescription (Annebäck, 2008). If the decision is made to implement healthcare interventions, the right conditions to succeed must be considered. Within psychiatric care, subsidized physical activity is one such vehicle.

#### *Inpatient care*

Findings of this study underscore the importance of adapting standardized methods, such as FaR®, to inpatient care settings. Inpatient care facilities do not have the option to send their patients to recreational programs and sports outside the healthcare system unless specific collaborations between inpatient care and outside recreational programs can be initiated. On the other hand, inpatient care professionals have a variety of opportunities through their daily contact with patients, and may also have access to other exercise alternatives given within the healthcare system. One cannot expect the implementation of FaR® to be successful when the method is not suited for the different needs of inpatient care. When patients are released from inpatient care, the FaR® method could be used; while in the hospital, other routines and methods need to be developed. Many subjects commented on the limited alternatives for physical activity for inpatients, outdoor activities in particular, which are even more beneficial due to exposure to sunlight and fresh air. More research is needed before

sufficient methods can be developed and currently used routines improved and adapted. One suggestion could be to better engage the fitness industry within the healthcare environment. If hospitalized patients cannot utilize community-based fitness programs perhaps, with appropriate training, the fitness industry could come to the patients, providing their services within the inpatient care setting. More information on exercise options for inpatients is needed.

#### Recommendations for Future Research

The results of this exploratory study have provided valuable information about the use of physical activity counseling in psychiatric care and a greater understanding of what is needed to improve the acceptance and use of physical activity as a treatment alternative. These results have implications for further research and practice. Expanding upon these findings, further study of mental health professionals' physical activity counseling practices should be developed.

This study used a large-scale survey, providing primarily quantitative results, which should be replicated and extended using smaller, experience-based focus groups and interviews. Such collection provides a more detailed picture of mental health professionals' opinions and experiences on a day-to-day basis. This mixed approach has been successfully conducted in similar studies (Puig Ribera et al., 2005), and would give more insight into attitudes toward physical activity and methods used. Further efforts should also be made to involve those professionals that do not counsel physical activity and who hold a negative attitude toward such counseling. Moreover, this study has limited generalizability for other psychiatric cohorts in Sweden, which may work under different circumstances and with other patients. Other groups of mental health professionals should therefore be studied.

A mixed approach would be particularly beneficial for studies of inpatient care. Although the results of this study can be largely generalized to the whole population of mental health professionals working for SLSO, due to the representativeness of respondents, inpatient care professionals were not as well represented. These individuals were also the last to respond. As previously noted, inpatient care personnel work under different circumstances than outpatient care professionals, and have been the focus of less research. More research is therefore needed to focus on this population of professionals prior to implementing methods, most of which are founded in primary care and outpatient settings.

Another meaningful extension of this study would be to conduct cross-cultural comparisons involving countries which provide national healthcare systems with implemented prescription methods. As previously mentioned, physical activity counseling related data collected in psychiatric care settings are scarce. Comparisons of how different national psychiatric care settings work to include physical activity with their patients would provide valuable insight with practical implications.

Participants reported relatively high levels of knowledge of the effects of physical activity on mental disorders and somatic diseases, but research has found that this self-reported knowledge may not be fully indicative of actual knowledge (Douglas, Torrance et al., 2006). Physical activity counseling is implemented in many different parts of the healthcare system, both nationally and internationally. It would be helpful to develop reliable scales for assessing knowledge of physical activity counseling to be used in training and in the distribution of counseling-related information. The scales should test for knowledge of the effects of physical activity on mental disorders and somatic diseases, motivational techniques, public health promotion recommendations,



components of physical activity advisement, effectiveness of physical activity promotional methods, and mandatory guidelines and methods implemented within a specific system.

Further scale construction and refinement would contribute to the overall understanding of physical activity counseling. An internally reliable attitude scale should assess additional attitude attributes in order to better operationalize the concept of attitude toward the use of physical activity. Refinement of the Behavior of Physical Counseling scale should also be considered. This study's survey instrument was thoroughly tested for its validity. Additional test-retest reliability should be conducted before collecting primary data with this instrument. Due to the informative nature of the data collection instrument, efforts to "neutralize" potential bias through the random rearrangement of items would be appropriate.

Finally, efforts should be made to develop models to predict use of physical activity counseling. While results of this study have highlighted the intercorrelations of frequency of physical activity counseling, use of counseling-related methods, attitudes toward physical activity counseling, knowledge about the effects of physical activity on mental disorders and somatic diseases, age, and personal physical activity, increased value would be gained through predictive analyses (e.g. regression analyses, discriminant function analyses). Additional, relevant variables (e.g., patient activity level, patient age, respondent education, and preparation) should, therefore, be considered.

In sum, a growing body of research has documented the positive effects of physical activity on somatic and mental health, and well-being. Efforts to promote physical activity in healthy and ill populations have, therefore, been made in many

national healthcare systems, including Sweden. The use of guidelines and developed methods, such as Physical Activity on Prescription (FaR®), is, however, still low, allowing for improvements to be made throughout the Swedish primary and secondary care system. With regard to psychiatric care, mentally ill persons not only struggle with mental disorders, but somatic comorbidities. Physical activity has great potential to enhance patients' mental and physical health. It was therefore necessary to investigate if and how mental health professionals counsel physical activity with their patients, and whether they use prescription methods proven to have a positive relationship with patient compliance. The results of this study indicate that Swedish mental health professionals, working in SLSO, use physical activity in their work with their patients, but not as often as expected. Their use of prescription and referral methods was also reported to be low, in part due to a lack of instructions, referral procedures, and follow-up routines. Providing physical activity prescription methods adapted to psychiatric care as a means of increasing physical activity counseling would not only be cost effective but provide mentally ill persons with the potential health benefits of physical activity, thereby enhancing quality of life.

# APPENDIX A – Swedish FaR® STUDIES

Authors	English Title	Year	N	Region
Bengtsson & Svensson	Doctor's opinion to the FaR®-method – In relation to their own experience of physical activity and sports.	2006	69	Skåne
Berglund & Olin	FYSS and FaR in the City of Stockholm.	2005	119	City of Stockholm
Dohrn	Report of physical activity prescription in SLL.	2007	87	Stockholm County Council
Hagberg, Danesjö-Gustafsson, Johansson, & Modin	Introduction of physical activity in primary care in Örebro County 2004-2006	2007	15 care units	Örebro County
Larsson, Linnros & Svensson	Health care professionals' attitudes towards physical activity prescriptions	2005	70	Halland
Lindström, Hedberg, Bellander, & Yggström	Report exercise is the remedy: Development of physical activity on prescription	2008	187	Södermal m
Nordlander	What factors would encourage healthcare personnel to a greater extent prescribe physical activity – FaR?	2006	61	Uppsala
Sandberg	Physical activity on prescription – A study in primary care of Värmdö.	2005	45	Värmdö
Sandberg, Ekbom, & Eckerman,	Health program for physical activity – What did we do and how did it go?	2007	93	Nacka

\* Note : Physical Ph. = Physical Therapist, Work TH. = Work Therapist,

## APPENDIX B – ACRONYMS

CBT	Cognitive behavioral therapy
CCBT	Computer based cognitive behavioral therapy
ECT	Electro Convulsive Therapy
FaR®	Physical activity on prescription.
FYSS	Physical Activity in the Prevention and Treatment of Disease.
GP	General Practitioner
HV	Health Visitors
MDD	Major Depressive Disorder
NP	Nurse Practitioner
SLL	Stockholm County Council.
SLSO	Health Provision, Stockholm County Council.
WHO	World Health Organization

## APPENDIX C – QUESTIONNAIRE

### Physical Activity in Psychiatry

Thank you for participating in our survey. The questionnaire contains questions about how you currently work with physical activity with your patients, your attitude to this treatment method as well as your knowledge within the field. We are also interested in your personal physical activity. The questionnaire consists of 32 questions divided into five sections; case study, counseling and prescription, attitude and knowledge, Physical Activity on Prescription (FaR®), and your background.

#### 1. Case study

Below follows a patient case study that briefly describes a patient. Please, let us know how likely it is that you would recommend the suggested treatment alternatives for the below vignette.

1. Ana is 30 years old. She has been feeling unusually sad and miserable for the last four to five weeks without any reason. Even though she sleeps more than usual, sometimes 11-12 hours, she does not feel rested. She has also gained weight. She usually likes her job a lot but now it seems uninteresting. She cannot keep focus during the day, not even during a regular meeting. Ana's problem has come to the attention of both her husband and her boss, and they have now asked her to seek help. Ana is making the contact with the psychiatric healthcare by herself.

How likely is it that you would recommend any of the following?	Yes, definitely	Yes, likely	Maybe	No, not likely	No, definitely not	Don't know, outside my responsibilities
Pharmacological therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Counseling (supportive)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Psychotherapy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Psychosocial support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electroconvulsive therapy (ECT)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other therapies that you would likely recommend? (Please specify).						

#### 2. Physical Activity Counseling and Prescription

We would now like to know how you clinically work with physical activity with your patients at your clinic. We will also ask you about your routines and methods.

2. How often do you **document** your patients' current **level** of physical activity?  
☐ Always    ☐ Often    ☐ Sometimes    ☐ Seldom    ☐ Never

3. How often do you **discuss** physical activity with your patients?

With "**discuss physical activity**" we mean general health promoting deliberations about the importance of physical activity and the patient's own work-out habits. The purpose is to inform.

☐ Always    ☐ Often    ☐ Sometimes    ☐ Seldom    ☐ Never

4. a. How often do you **counsel** physical activity (verbal advice or written prescription) for your patients?

With "**counseling physical activity**" we mean giving the patient individualized advice about physical activity. The advice, for example to start walking moderately several times a week, can be verbal or in written and can imply referral to some other health or fitness professional or that you let the patient carry out the physical activity without professional guidance.

## Physical Activity in Psychiatry

☐ Always    ☐ Often    ☐ Sometimes    ☐ Seldom    ☐ Never

b. What are your reasons for discussing physical activity with your patients? (Select all that apply)  
(Responded by those that discuss PA Q3 – "Always", "Often", "Sometimes" and "Seldom" BUT "Never" prescribe PA Q4.a). They will after Q4.b be transferred to Q14.

OR

b. What are your reasons for counseling physical activity (verbal advice or written prescription) for your patients? (Select all that apply)  
(Responded by those that counsel PA Q4a – "Always", "Often", "Sometimes" and "Seldom")

- ☐ Promote general wellbeing
- ☐ Prevent somatic diseases, such as diabetes or cardiovascular diseases
- ☐ Treat patients' somatic diseases, such as diabetes or cardiovascular diseases
- ☐ Prevent mental/psychiatric disorders and relapses of current disorders
- ☐ Treat patients' mental/psychiatric disorders
- ☐ Promote patients' compliance to treatment
- ☐ Distract patients from their worries and difficulties
- ☐ Offer patients something to do during the day
- ☐ Promote patients' social interaction with other people
- ☐ Control patients' weight
- ☐ Promote patients' appearance
- ☐ Establish a daily structure for the patient
- ☐ Other: \_\_\_\_\_

5. How often do you counsel physical activity (verbal advice or written prescription) for the purpose of **preventing** mental/psychiatric disorders?

☐ Always    ☐ Often    ☐ Sometimes    ☐ Seldom    ☐ Never

6. a. How often do you counsel physical activity (verbal advice or written prescription) for the purpose of **treating** mental/psychiatric disorders?

☐ Always    ☐ Often    ☐ Sometimes    ☐ Seldom    ☐ Never

(Responded by those that counsel PA Q6a – "Always", "Often", "Sometimes" and "Seldom")

b. For which of the following mental/psychiatric disorders do you counsel physical activity (verbal advice or written prescription)?

Please, also indicate if you counsel physical activity as the only treatment (instead of other alternatives) and/or as a complement to other treatments, such as medication and psychotherapy. Hence, you can select both of the alternatives if you sometimes use physical activity as the only treatment and sometimes in combination with other treatments for the same disorder.

The below disorders and conditions are specified in the information source FYSS - Physical activity in prevention and treatment of diseases. However, if you counsel physical activity for other disorders and conditions, please specify. (Select all that apply).

Please assume that nothing suggests that physical activity incurs a risk for the patient.

	As the only treatment	In combination
Mild to moderate depression	<input type="checkbox"/>	<input type="checkbox"/>
Severe depression	<input type="checkbox"/>	<input type="checkbox"/>
Schizophrenia	<input type="checkbox"/>	<input type="checkbox"/>

## Physical Activity in Psychiatry

Stress	<input type="checkbox"/>	<input type="checkbox"/>
Anxiety	<input type="checkbox"/>	<input type="checkbox"/>
Please, specify what kind of anxiety: _____		
Other mental disorders:	<input type="checkbox"/>	<input type="checkbox"/>
_____		

7. a. How often do you counsel physical activity (verbal advice or written prescription) for **somatic diseases and conditions**?

☐ Always
 ☐ Often
 ☐ Sometimes
 ☐ Seldom
 ☐ Never

- b. For which of the following somatic diseases and conditions do you counsel physical activity (verbal advice or written prescription)? (Select all that apply).

- ☐ Asthma/chronic obstructive pulmonary disease (COPD)  
☐ Abnormal blood lipids levels  
☐ Back- and neck problems  
☐ Cardiovascular diseases, including hypertonic  
☐ Diabetes  
☐ Joint- and muscle problems  
☐ Osteoporosis  
☐ Pain and ache  
☐ Overweight/Obesity  
☐ Other somatic diseases or conditions: \_\_\_\_\_

	Always	Often	Some- times	Seldom	Never
8. When you counsel physical activity (verbal advice or written prescription), how often do you use each of the following methods? Please, also specify additional methods that you may use.					
Verbal advice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FaR®-written prescription on the yellow FaR®-form	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FaR®- electronic version	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written prescription on other paper form	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written prescription entered in the data system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Referral to other health care professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other method: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. What does your physical activity advice (verbal or written prescription) contain?

- ☐ Mode (type of activity)  
☐ Frequency (how many times a week)  
☐ Duration (how many minutes each time)

□

## Physical Activity in Psychiatry

- ☐ Intensity (grade of effort)
- ☐ Duration of the program (number of weeks)
- ☐ Restrictions
- ☐ Other: \_\_\_\_\_

2. When you counsel physical activity, how often do you document your physical activity advice (verbal or written prescription)?

- ☐ Always    ☐ Often    ☐ Sometimes    ☐ Seldom    ☐ Never

1. When you counsel physical activity, how often do you discuss the patients' motivation to change their behavior and comply with the advice (verbal advice or written prescription)?

- ☐ Always    ☐ Often    ☐ Sometimes    ☐ Seldom    ☐ Never

If somebody else discusses motivation with the patients, who is it: \_\_\_\_\_

(Responded by those that discuss motivation Q1 1a – "Always", "Often", "Sometimes" and "Seldom")

b. How do you discuss motivation and behavior change with your patients? Below are several common consultation techniques and behavior change models listed, with which you may be familiar. (Select all that apply).

- ☐ I use the clinical knowledge about motivation that I have acquired through interaction with my patients
- ☐ I discuss motivation with the patient but use no special consultation technique or behavior change model
- ☐ Motivational interviewing (MI)
- ☐ Social Cognitive Theory (SCT) –
- ☐ Stages-of-change model - Transtheoretical model (TTM)
- ☐ Other: \_\_\_\_\_

**Social Cognitive Theory (SCT):** SCT posits that there is an interaction between an individual's thoughts, perceptions, behavior and social environment. SCT uses different behavior change techniques, such as goal setting discussions, in order to improve an individual's confidence in changing a behavior (self-efficacy).

**Stages-of-change model - Transtheoretical model (TTM):** TTM categorizes an individual into levels/steps based on his/her level of motivation or readiness to change a behavior. The goal is to move the individual from one level/step to a higher level or degree of motivation

12. We would like to know what happens after you have given your patient verbal advice or written prescription for physical activity. Please, indicate how often the following suggestions occur. If you use other ways, please specify them under "Other".	Always	Often	Sometimes	Seldom	Never
The patient is asked to carry out the activity or to make any necessary contacts on his/her own	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The patient is referred to a physical therapist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The patient is referred to supervised training within the health care system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The patient is referred to personnel at the clinic, who will help the patient to start with own training or to find an appropriate place/association/club to conduct the activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## Physical Activity in Psychiatry

Which personnel: \_\_\_\_\_

The patient is referred to persons that work within the sport- and fitness industry (not through FaR®)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The patient is referred to FaR®-educated sport and fitness instructors within Stockholms FaR®led nätverk, who will train with the patient (for more information, see <a href="http://www.farledare.se">www.farledare.se</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. a. How often do you **follow up** on your physical activity advice (verbal advice or written prescription)?

☐ Always ☐ Often ☐ Sometimes ☐ Seldom ☐ Never

(Responded by those that discuss motivation Q13a – "Always", "Often", "Sometimes" and "Seldom")

b. Which method do you use? (Select all that apply).

- ☐ Next time I meet my patient  
☐ I follow up with a phone call  
☐ I follow up with an email  
☐ Another person follow ups

Who: \_\_\_\_\_

☐ Other: \_\_\_\_\_

### 3. Attitudes towards and Knowledge about Physical Activity

Please find below some questions and statements about your attitude toward and knowledge about physical activity for prevention and treatment of diseases and illness.

14. What is your attitude toward using physical activity in **prevention** of mental/psychiatric disorders?

☐ Highly Positive ☐ Somewhat Positive ☐ Neither Positive nor Negative ☐ Somewhat Negative ☐ Highly Negative

15. What is your attitude toward using physical activity in **treatment** of mental/psychiatric disorders?

☐ Highly Positive ☐ Somewhat Positive ☐ Neither Positive nor Negative ☐ Somewhat Negative ☐ Highly Negative

16. Please indicate your level of agreement with the following statements:

a. My **management** supports **counseling** of physical activity at my workplace.

☐ Strongly Agree ☐ Agree ☐ Neither Agree nor Disagree ☐ Disagree ☐ Strongly Disagree

b. My **colleagues** support **counseling** of physical activity at my workplace.

☐ Strongly Agree ☐ Agree ☐ Neither Agree nor Disagree ☐ Disagree ☐ Strongly Disagree

c. There are barriers to using physical activity in prevention and treatment within psychiatry.

☐ Strongly Agree ☐ Agree ☐ Neither Agree nor Disagree ☐ Disagree ☐ Strongly Disagree

i. If you believe there are barriers, what kind of barriers do you believe there to be? (Select all that apply).

- ☐ Inadequate guidelines and instructions at my workplace about how to counsel physical activity  
☐ Due to lack of time during the patient's visit, counseling of physical activity has a low priority  
☐ I don't know to whom I may refer a patient that needs to be more physically active  
☐ Insufficient routines in following up physical activity advice/prescription

### Physical Activity in Psychiatry

- ☐ I do not have enough time to learn a new methodology
- ☐ I have insufficient knowledge about the effects of physical activity
- ☐ I have insufficient knowledge about counseling physical activity
- ☐ I do not consider it is scientifically proven that physical activity is beneficial for the disorders I treat
- ☐ I believe my patients expect to get psychiatric advices and not counseling about physical activity
- ☐ I have a lack of trust in my patients' compliance
- ☐ I do not have time to practically help the patients to start exercising
- ☐ I do not have time to follow up the patients' advice about physical activity
- ☐ The patients are not interested in getting advice for physical activity
- ☐ Other barriers: \_\_\_\_\_

17. a. How would you rate your knowledge about the effects (therapeutic/preventive) of physical activity on **mental/psychiatric disorders**?

- ☐ Excellent      ☐ Very Good      ☐ Good      ☐ Fair      ☐ Poor / No Knowledge

b. How would you rate your knowledge about the effects (therapeutic/preventive) of physical activity on **somatic diseases and conditions**?

- ☐ Excellent      ☐ Very Good      ☐ Good      ☐ Fair      ☐ Poor / No Knowledge

### 4. Physical Activity on Prescription (FaR®)

FaR® is a method to promote a physically active lifestyle and to prescribe physical activity in prevention and treatment of somatic diseases and mental disorders. FaR® entails medical staff issuing a formal prescription, where patients are referred to either supervised group-based exercise or lifestyle-based physical activity or recreation outside the health care system. The handbook FYSS (also available as an electronic version on the Internet) is a guide for health care professionals, which provides information about the impact that physical activity has on somatic diseases and mental disorders and their recommended physical activity-related doses. For more information see, [http://www.fhi.se/templates/Page\\_\\_\\_\\_11995.aspx](http://www.fhi.se/templates/Page____11995.aspx).

18. How would you rate your **knowledge** about Physical Activity on Prescription - **FaR®**?

- ☐ Excellent      ☐ Very Good      ☐ Good      ☐ Fair      ☐ Poor / No Knowledge

19. In what contexts have you come **in contact** with this prescription method? (Select all that apply)

- ☐ Have not come in contact with Physical Activity on Prescription - **FaR®**
- ☐ Intranet for health care professionals
- ☐ Other sources of information explicitly catering towards health care professionals
- ☐ Training and education, such as, classes, seminars, and lectures, initiated by my **employer**
- ☐ Training and education, such as, classes, seminars, and lectures, which I looked up **myself**
- ☐ During medical school
- ☐ Scholarly articles
- ☐ Other types of media
- ☐ Conversations with colleagues at current or previous workplace
- ☐ FaR®/FYSS on the internet
- ☐ Other: \_\_\_\_\_

## Physical Activity in Psychiatry

- 
20. Do you know that Stockholm County Council has issued **obligated guidelines** for Physical Activity on Prescription - FaR®.
- ☐ Yes   ☐ No
- 
21. How would you rate your **knowledge** about the handbook **FYSS** (Physical activity in prevention and treatment of diseases), which also can be found on the Internet?
- ☐ Excellent   ☐ Very Good   ☐ Good   ☐ Fair   ☐ Poor / No Knowledge
- 
22. How often do you **use** the handbook **FYSS**?
- ☐ Always   ☐ Often   ☐ Sometimes   ☐ Seldom   ☐ Never
- 
23. What do you believe would facilitate the progress of counseling physical activity at your workplace?
- ☐ Education on physical activity
  - ☐ Education on motivational interviewing (MI)
  - ☐ Information and education on Physical Activity on Prescription (FaR®)
  - ☐ Access to the latest research on the links between physical activity in prevention and treatment of diseases
  - ☐ Time
  - ☐ Follow-ups by buyer (i.e., in contract) or financial controlling
  - ☐ Cooperation partners
  - ☐ Discounts of physical activities for my patients
  - ☐ Easily accessible guidelines with routines and methods for prescription of physical activity
  - ☐ Others: \_\_\_\_\_
- 
24. Please, indicate your level of agreement with the following statements:
- a. I have sufficient **competence** to use the prescription method FaR®.
- ☐ Strongly Agree   ☐ Agree   ☐ Neither Agree nor Disagree   ☐ Disagree   ☐ Strongly Disagree   ☐ Don't Know
- b. FaR® is a **good prescription method** to use when I prescribe physical activity.
- ☐ Strongly Agree   ☐ Agree   ☐ Neither Agree nor Disagree   ☐ Disagree   ☐ Strongly Disagree   ☐ Don't Know
- c. There are **barriers** to using the prescription method FaR® in psychiatry.
- ☐ Strongly Agree   ☐ Agree   ☐ Neither Agree nor Disagree   ☐ Disagree   ☐ Strongly Disagree   ☐ Don't Know
- 
- i. If you believe there are barriers, what kind of barriers do you believe there to be? (Select all that apply).
- ☐ I have insufficient knowledge about FaR®
  - ☐ Lack of guidelines on the use of FaR®
  - ☐ No coordinator for FaR®-activities
  - ☐ It takes too much time to establish working routines for FaR®
  - ☐ Technical problems
  - ☐ Patients are not interested in receiving physical activity on prescription
  - ☐ Healthcare professionals are not interested in prescribing (written prescription) physical activity
  - ☐ Others: \_\_\_\_\_
-

## Physical Activity in Psychiatry

- d. The handbook FYSS is a good tool to use when I prescribe physical activity.  
☐ Strongly Agree ☐ Agree ☐ Neither Agree nor Disagree ☐ Disagree ☐ Strongly Disagree ☐ Don't Know

- e. There are barriers to using the handbook FYSS in psychiatry.  
☐ Strongly Agree ☐ Agree ☐ Neither Agree nor Disagree ☐ Disagree ☐ Strongly Disagree ☐ Don't Know

i. If you believe there are barriers, please specify the 3 major ones.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

### 5. Your Background

25. In which year were you born? \_\_\_\_\_

26. What is your gender? ☐ Male ☐ Female

27. What is your profession?
- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Psychiatrist    | <input type="checkbox"/> Nurse              | <input type="checkbox"/> Occupational Therapist |
| <input type="checkbox"/> Psychiatrist ST | <input type="checkbox"/> Physical Therapist | <input type="checkbox"/> Other: _____           |
| <input type="checkbox"/> Psychologist    | <input type="checkbox"/> Psychotherapist    |   |

28. For how many years have you been in your current profession? \_\_\_\_\_ Years

29. In which operation are you currently working? (Select all that apply)
- |  |  |
|--|--|
| <input type="checkbox"/> Northern Stockholm Psychiatry | <input type="checkbox"/> Psychiatry Southern Stockholm |
| <input type="checkbox"/> Psychiatry Northwest          | <input type="checkbox"/> Psychiatry Southwest          |
| <input type="checkbox"/> Psychiatry Northeast          | <input type="checkbox"/> Psychiatry Southeast          |
|  | <input type="checkbox"/> Other: _____                  |

30. What types of care do you provide? (Select all that apply)
- |   |  |
|---|--|
| <input type="checkbox"/> Psychotic outpatient care    | <input type="checkbox"/> General psychiatric outpatient care |
| <input type="checkbox"/> Psychotic inpatient care     | <input type="checkbox"/> General psychiatric inpatient care  |
| <input type="checkbox"/> Urgent/Emergency/Mobile team | <input type="checkbox"/> Neuropsychiatric care               |
| <input type="checkbox"/> Psychotherapy care           | <input type="checkbox"/> Other: _____                        |
| <input type="checkbox"/> Forensic psychiatric care    |  |

31. Which disorders do you treat? (Select all that apply)
- |  |  |
|--|--|
| <input type="checkbox"/> Anxiety                                     | <input type="checkbox"/> Eating disorders  |
| <input type="checkbox"/> Depression                                  | <input type="checkbox"/> Neuropsychiatric disorders                                      |
| <input type="checkbox"/> Schizophrenia and other psychotic disorders | <input type="checkbox"/> Personality disorders   |
| <input type="checkbox"/> Stress disorders                            | <input type="checkbox"/> Sleep disorders   |
| <input type="checkbox"/> Affective disorders                         | <input type="checkbox"/> Here you can be more specific or specify other disorders: _____ |
| <input type="checkbox"/> Drug use and Abuse disorders                |  |

32. Now, we will ask you about your personal physical activity. We are interested in finding out about the kinds of physical activities that you do as part of your everyday lives. The questions will ask you about the time you spent being physically active in the last 7 days. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport (the questions come from the "International Physical Activity Questionnaire", IPAQ).

## Physical Activity in Psychiatry

- a. Think about all the vigorous activities that you did in the last **7 days**. Vigorous physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling?

\_\_\_\_\_ days per week

☐ No vigorous physical activities

Go to question 32.c

- b. How much time did you usually spend doing vigorous physical activities on one of those days?

\_\_\_\_\_ hours per day

\_\_\_\_\_ minutes per day

☐ Don't know/Not sure

- c. Think about all the moderate activities that you did in the last **7 days**. Moderate activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.

\_\_\_\_\_ days per week

☐ No moderate physical activities

Go to question 32.e

- d. How much time did you usually spend doing moderate physical activities on one of those days?

\_\_\_\_\_ hours per day

\_\_\_\_\_ minutes per day

☐ Don't know/Not sure

- e. Think about the time you spent walking in the last **7 days**. This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.

During the last 7 days, on how many days did you walk for at least 10 minutes at a time?

\_\_\_\_\_ days per week

☐ No Walking

- f. How much time did you usually spend walking on one of those days?

\_\_\_\_\_ hours per day

\_\_\_\_\_ minutes per day

☐ Don't know/Not sure

If you have any further comments that you would like to share with us, please write them down here.

*Thank You so much for your participation*

## APPENDIX D - SCALES

### 1. Frequency of Physical Activity Counseling

- a. How often do you discuss physical activity with your patients? (Q3)
- b. How often do you counsel physical activity (verbal advice or written prescription) for your patients? (Q4)
- c. How often do you counsel physical activity (verbal advice or written prescription) for the purpose of preventing mental/psychiatric disorders? (Q5)
- d. How often do you counsel physical activity (verbal advice or written prescription) for the purpose of treating mental/psychiatric disorders? (Q6)
- e. How often do you counsel physical activity (verbal advice or written prescription) for somatic diseases and conditions? (Q7)

### 2. Behavior of Physical Activity Counseling

- a. How often do you document your patients' current level of physical activity? (Q2)
- b. When you counsel physical activity, how often do you document your physical activity advice (verbal or written prescription)? (Q10)
- c. When you counsel physical activity (verbal advice or written prescription), how often do you use each of the following [prescription/counseling] methods? (Q8)
- d. What does your physical activity advice (verbal or written prescription) contain? (Q9)
- e. When you counsel physical activity, how often do you discuss the patients' motivation to change their behavior and comply with the advice (verbal advice or written prescription)? (Q11)
- f. We would like to know what happens [referral methods] after you have given your patient verbal advice or written prescription for physical activity? (Q12)
- g. How often do you follow up on your physical activity advice verbal advice or written prescription)? (Q13)

### 3. Attitude toward Physical Activity Counseling

- a. What is your attitude toward using physical activity in prevention of mental/psychiatric disorders? (Q14)

- b. What is your attitude toward using physical activity in treatment of mental/psychiatric disorders? (Q15)
  - c. My management supports counseling of physical activity at my workplace. (Q16a)
  - d. My colleagues support counseling of physical activity at my workplace. (Q16b)
  - e. There are barriers to using physical activity in prevention and treatment within psychiatry. (Q16.c)
4. Knowledge about Physical Activity
- a. How would you rate your knowledge about the effects (therapeutic/preventive) of physical activity on mental/psychiatric disorders? (Q17.a)
  - b. How would you rate your knowledge about the effects (therapeutic/preventive) of physical activity on somatic diseases and disorders? (Q17.b)

## APPENDIX E – COVER LETTER

### Study about Physical Activity in Psychiatry

Several studies have been conducted recently on physical activity counseling within primary care settings. Much less is known about how mental health professionals use physical activity in the care of their patients. Stockholm County Council, as part of the 3-year implementation project of Physical Activity on Prescription (FaR®) and in collaboration with George Mason University (GMU) in the USA, will conduct a study focusing on clinical practice of, attitude toward, as well as knowledge about physical activity within psychiatry. The results of this study will be used to promote physical activity in prevention and treatment of diseases, make more effective use of resources and, ultimately, improve psychiatric healthcare. This investigation has been reviewed by the GMU Human Subject's Review Board

You have been selected to participate in this study as a licensed professional working in SLSO's Psychiatry. Your participation is completely voluntarily; however, your participation is key to the success of this study. **Your information will be handled confidentially** and all responses will be analyzed without any identification data. Your name will therefore not be connected with your responses. This web survey will take approximately 10-15 minutes to complete and you access the survey by clicking on the following link:

[Link to web survey.](#)

As a token of our appreciation, all respondents will participate in a lottery with the chance of winning prizes related to physical activity, such as 2-day FaR® courses (<http://www.cefam.se/home/page.asp?sid=28&mid=2&PagelId=1229>), FYSS-manuals, and private training with a NASM\* certified personal trainer.

If you have any questions about this study, please contact Jill Taube, SLL, phone: 070-484 6283, email: [jill.taube@sll.se](mailto:jill.taube@sll.se), or Madeleine Jennysdotter Olofsgård, email: [molofsga@gmu.edu](mailto:molofsga@gmu.edu).

## Thank you in advance for your help.

Gratefully,

Stockholm, Sweden and Vienna, USA, January 2009.

#### **Jill Taube**

Psychiatrist & project manager FaR® in  
Stockholm County Council (SLL)  
Center for Family and Community Medicine  
(CeFAM)  
Phone: 070-484 6283  
Email: [jill.taube@sll.se](mailto:jill.taube@sll.se)

Stockholm County Council

#### Collaborators:

#### **Madeleine Jennysdotter Olofsgård**

Graduate Student, MS, Exercise, Fitness and  
Health Promotion, George Mason University.  
Email: [molofsga@gmu.edu](mailto:molofsga@gmu.edu)

#### **Ellen Rodgers, Ph.D.**

Graduate Advisor, George Mason University.  
Email: [erodger1@gmu.edu](mailto:erodger1@gmu.edu)

George Mason University  
College of Education and Human Devpt  
4400 University Drive, MSN-4B4  
Fairfax, VA 22030 USA



## APPENDIX F – REMINDER LETTERS 1 AND 2

### Study about Physical Activity in Psychiatry - 1

Recently we sent you an email in which we asked you to participate in a collaborative, international research project between Stockholm County Council (SLL) and George Mason University (GMU) in the USA. The purpose of this study is to enhance our knowledge about clinical practice of physical activity as treatment alternative within psychiatric care, as well as mental health professionals' attitude to and knowledge about this treatment alternative. The results of this study will be used to promote physical activity in prevention and treatment of diseases, make more effective use of resources and, ultimately, improve psychiatric healthcare. This study is also an important part of the evaluation of the prescription method Physical Activity on Prescription (FaR®) utilized by SLL's healthcare.

We have noticed that you have not yet responded and we understand if you have forgotten or have not had time to respond. We are grateful for the responses that we have received so far and we hope that you will join this supportive group. Your participation is completely voluntarily; however, your participation is very important to this study's result. We therefore ask you to complete our web survey by clicking on the following link:

[Link to web survey.](#)

As noted in our previous email, this study has been reviewed by GMU's Human Subject Review Board. **Your information will be handled confidentially** and identification data will be separated from the responses and thereafter destroyed. Your name will therefore never be connected with your responses. Do not miss out on the opportunity to win prizes related to physical activity, such as 2-day FaR® courses (<http://www.cefam.se/home/page.asp?sid=28&mid=2&PageId=1229>), FYSS-manuals, or private training with NASM\* certified personal trainer.

If you have any questions about this study, please contact Jill Taube, SLL, phone: 070-484 6283, email: [jill.taube@sll.se](mailto:jill.taube@sll.se), or Madeleine Jennysdotter Olofsgård, email: [molofsga@gmu.edu](mailto:molofsga@gmu.edu).

**Thank you in advance for your help.**

Gratefully,

Stockholm, Sweden and Vienna, USA, January 2009.

**Jill Taube**

Psychiatrist & project manager FaR® in  
Stockholm County Council (SLL)  
Center for Family and Community Medicine  
(CeFAM)

Phone: 070-484 6283

Email: [jill.taube@sll.se](mailto:jill.taube@sll.se)

Stockholm County Council

Collaborators:

**Madeleine Jennysdotter Olofsgård**

Graduate Student, MS, Exercise, Fitness and  
Health Promotion, George Mason University.

Email: [molofsga@gmu.edu](mailto:molofsga@gmu.edu)

**Ellen Rodgers, Ph.D.**

Graduate Advisor, George Mason University.

Email: [erodger1@gmu.edu](mailto:erodger1@gmu.edu)

George Mason University  
College of Education and Human Devpt  
4400 University Drive, MSN-4B4  
Fairfax, VA 22030 USA

## Study about Physical Activity in Psychiatry - 2

We sent you an email XX weeks ago, asking for your participation in our study about health professionals' use of physical activity in prevention and treatment of mental disorders in psychiatry. The study is significant for several reasons; specifically, there is a need for more research in regard to clinical practice of, attitude toward and knowledge of physical activity within psychiatry as a lot of the attention about the use of physical activity has been given to primary care. The result from this study will also be an important contribution to the evaluation of the prescription method Physical Activity on Prescription (FaR®) in Stockholm County Council's (SLL) psychiatric care.

We will soon close our web survey, giving only a short amount of time left to participate in this study. Unfortunately, we still have not received your response. Although your participation is completely voluntarily, your participation is critical for our study and your input will have a great impact on research in this area. We therefore ask you to complete our web survey by clicking on the following link:

[Link to web survey.](#)

This study is a collaborative, international research project between SLL's FaR®-project and George Mason University (GMU), in the USA, and has been reviewed by GMU's Human Subject Review Board. As mentioned in our previous emails, **your information will be handled confidentially** and all identification data will be destroyed. Your name will therefore never be connected with your responses. Do not miss out on the opportunity to win prizes related to physical activity, such as 2-day FaR® courses (<http://www.cefam.se/home/page.asp?sid=28&mid=2&PagelId=1229>), FYSS-manuals, or private training with NASM certified personal trainer.

If you have any questions about this study, please contact Jill Taube, SLL, phone: 070-484 6283, email: [jill.taube@sll.se](mailto:jill.taube@sll.se), or Madeleine Jennysdotter Olofsgård, email: [molofsga@gmu.edu](mailto:molofsga@gmu.edu).

**Thank you in advance for your help.**

Gratefully,

Stockholm, Sweden and Vienna, USA, January 2009.

### **Jill Taube**

Psychiatrist & project manager FaR® in  
Stockholm County Council (SLL)  
Center for Family and Community Medicine  
(CeFAM)  
Phone: 070-484 6283  
Email: [jill.taube@sll.se](mailto:jill.taube@sll.se)

Hälso- och sjukvårdsnämndens förvaltning  
Stockholms läns landsting  
Box 6909  
102 39 Stockholm

### **Collaborators:**

#### **Madeleine Jennysdotter Olofsgård**

Graduate Student, MS, Exercise, Fitness and  
Health Promotion, George Mason University.  
Email: [molofsga@gmu.edu](mailto:molofsga@gmu.edu)

#### **Ellen Rodgers, Ph.D.**

Graduate Advisor, George Mason University.  
Email: [erodger1@gmu.edu](mailto:erodger1@gmu.edu)  
George Mason University  
College of Education and Human Devpt  
4400 University Drive, MSN-4B4  
Fairfax, VA 22030 USA

\* National Academy of Sports Medicine

## REFERENCES

## REFERENCES

- Abramson, S., Stein, J., Schaufele, M., Frates, E., & Rogan, S. (2000). Personal exercise habits and counseling practices of primary care physicians: A national survey. *Clinical Journal of Sport Medicine*, 10, 40–48.
- Abuissa, H., Lavie, C., & Spertus, J., O'Keefe, J. (2006). Personal health habits of American cardiologists. *American Journal of Cardiology*, 97(7), 1093-1096.
- Aday, L.A. & Cornelius, L. (2006). *Designing and conducting health surveys: A comprehensive guide*. San Francisco, CA: Jossey-Bass.
- Allison, D. B., Newcomer, J. W., Dunn, A. L., Blumenthal, J. A., Fabricatore, A. N., Daumit, G. L., et al. (2009). Obesity among those with mental disorders: a National Institute of Mental Health meeting report. *American Journal of Preventive Medicine*, 36(4), 341-350.
- Annebäck, B.. (2008, April 9). Subventionera fysisk aktivitet [Subsidize physical activity]. *Dagens Medicin*.
- Babyak, M., Blumenthal, A., Herman, S., Khatri, P., Doraiswamy, M., Moore, K, et al. (2000). Exercise treatment for major depression: Maintenance of therapeutic benefit at 10 months. *Psychosomatic Medicine*, 62, 633-638.
- Barrow, J., English, T., & Pinkerton, R. (1987). Physical fitness training: Beneficial for professional psychologists? *Professional Psychology: Research and Practice*, 18(1), 66-70.
- Bauman, A., Bull, F., Chey, T., Craig, C. L., Ainsworth, B. E., Sallis, J. F., et al. (2009). The international prevalence study on physical activity: Results from 20 countries. *International Journal of Behavioral Nutrition and Physical Activity*, 6(21). Retrieved April 1, 2009, from <http://www.ijbnpa.org/content/6/1/21>.
- Bengtsson, H. & Svensson, C. (2006). *Läkarnas inställning till FaR® -metoden: I relation till deras personliga erfarenhet av fysisk aktivitet och idrott* [Doctors' opinion to the FaR®-method: In relation to their own experience of physical activity and sports]. Unpublished undergraduate thesis, Malmö Högskola, Malmö, Sweden.
- Berglund, A. & Olin, H. (2005). *FYSS och FaR i Stockholms innerstad: Erfarenheter, inställning och önskemål inför arbetet med FaR* [FYSS and FaR in the city of Stockholm: Experience, attitude and needs to work with FaR®]. Unpublished

undergraduate thesis, Stockholm University College of Physical Education and Sport, Stockholm, Sweden.

- Blumenthal, J., Babyak, M., Doraiswamy P., Watkins, L., Hoffman, B., Barbour, K., et al. (2007). Exercise and pharmacotherapy in the treatment of major depressive disorder. *Psychosomatic Medicine*, 69, 587–596.
- Brenes, G., Williamson, J., Messier, S., Rejeski, W., Pahor, M., Ip, E., et al. (2007). Treatment of minor depression in older adults: A pilot study comparing sertraline and exercise. *Aging and Mental Health*, 11, 61–68.
- Brown, W. J., Trost, S. G., Bauman, A., Mummery, K., & Owen, N. (2004). Test-retest reliability of four physical activity measures used in population surveys. *Journal of Science and Medicine in Sport*, 7(2), 205-215.
- Burks, R. & Keeley, S. (1989). Exercise and diet therapy: Psychotherapists' beliefs and practices. *Professional Psychology: Research and Practice*, 20, 62-64.
- Butor, P. (2006). *Psykologisk och terapeutisk kompetens inom primärvården* [Psychologic and therapeutic competence in primary care]. Stockholm, Sweden: Stockholms Läns Sjukvårdsområde.
- Carless, D. & Faulkner, G. (2003). Physical activity and mental health. In J. McKenna & C. Riddoch (Eds.), *Perspectives on Health and Exercise* (pp. 61-82). Hampshire, UK: Palgrave MacMillan.
- Cox, J. (2008). *Your opinion, please!: How to build the best questionnaires in the field of education*. Thousand Oaks, CA: Corwin Press.
- Cox, R. (2007). *Sport psychology: Concepts and applications*. New York, NY: McGraw-Hill.
- Craft, L. & Perna, F. (2004). The benefits of exercise for the clinically depressed. *Primary Care Companion to the Journal of Clinical Psychiatry*, 6, 104–111.
- Daley, A. (2008). Exercise and depression: A review of reviews. *Journal of Clinical Psychology in Medical Settings*, 15, 140–147.
- Department of Health. (2004). *At least five a week: Evidence on the impact of physical activity and its relationship to health* (No. 2389). Retrieved April 2, 2009, from [http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_4080994](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4080994).
- Dohrn, I-M. (2007). FYSS och FaR® i primärvården [FYSS and FaR® in primary care]. Unpublished raw data. Stockholm, Sweden: Stockholm County Council.

- Douglas, F., van Teijlingen, E., Torrance, N., Fearn, P., Kerr, A., & Meloni, S. (2006). Promoting physical activity in primary care settings: Health visitors' and practice nurses' views and experiences. *Journal of Advanced Nursing*, 55(2), 159-168.
- Douglas, F., Torrance, N., van Teijlingen, E., Meloni, S., & Kerr, A. (2006). Primary care staff's views and experiences related to routinely advising patients about physical activity: A questionnaire survey. *BMC Public Health*, 6, 138.
- Dox, G. I., Melloni, B. J., Eisner, M. G., & Melloni, L. J. (2002). Melloni's illustrated medical dictionary (4th ed.). (2002). London, UK: The Parthenon Publishing Group.
- Dunn, A., Trivedi, M., Kampert J., Clark, C., & Chambliss, H. (2005). Exercise treatment for depression: Efficacy and dose response. *American Journal of Preventive Medicine*, 28(1), 1-8.
- Ekelund, U., Sepp, H., Brage, S., Becker, W., Jakes, R., Hennings, M., & Wareham, N. (2006). Criterion-related validity of the last 7-day, short form of the International Physical Activity Questionnaire in Swedish adults. *Public Health Nutrition*, 9(2), 258-265.
- Engdahl, J. & Ossowicki, M. (2007). *Psykiska Sjukdomar och Sjukdomar i Rörelseorganen* [Psychiatric diseases and locomotive organ disorders, The Swedish Social Insurance Agency. Retrieved, October 10, 2009, from <http://www.forsakringskassan.se/filer/publikationer/pdf/red0704.pdf>.
- European Commission. (2006). *Mental well-being*. (Special Eurobarometer 248 / Wave 64.4 – TNS Opinion & Social). Retrieved October 10, 2008, from [http://ec.europa.eu/public\\_opinion/archives/ebs/ebs\\_248\\_en.pdf](http://ec.europa.eu/public_opinion/archives/ebs/ebs_248_en.pdf).
- Faskunger, J., Leijon, M., Ståhle, A., & Lamming, P. (2007). *Fysisk aktivitet på recept (FaR®) – En vägledning för implementering* [Physical activity on prescription (FaR®) – Guidelines for implementation]. Stockholm, Sweden: The National Institute of Public Health.
- Faulkner, G. & Biddle, S. (2001a). Exercise and mental health: It's just not psychology! *Journal of Sports Sciences*, 19, 433-444.
- Faulkner, G. & Biddle, S. (2001b). Predicting physical activity promotion in health care settings. *American Journal of Health Promotion*, 16(2), 98-106.
- Faulkner, G. & Biddle, S. (2002). Mental health nursing and the promotion of physical activity. *Journal of Psychiatric & Mental Health Nursing*, 9(6), 659-165.
- Frank, E., Bhat Schelbert, K., & Elon, L. (2003). Exercise counseling and personal exercise habits of US women physicians. *Journal of the American Medical Women's Association*, 58(3), 178-184.

- Frank, E., Breyan, J., & Elon, L. (2000). Physician disclosure of healthy personal behaviors improves credibility and ability to motivate. *Archives of Family Medicine*, 9(3), 287-290.
- Frank, E., Tong, E., Lobelo, F., Carrera, J., & Duperly, J. (2008). Physical activity levels and counseling practices of U.S. medical students. *Medical Science of Sports and Exercise*, 40(3), 413-421.
- Gay, L., Mills, G., & Airasian (2006). *Educational research*. Upper Saddle River, NJ: Pearson Education.
- Goodwin. (2003). Association between physical activity and mental disorders among adults in the United States. *Preventive Medicine*, 36, 698-703.
- Government Offices of Sweden. (2008) *Hälso- och sjukvårdslagen* [Health and Medical Services Act]. Retrieved October 10, 2008, from: <http://62.95.69.15/>.
- Hagberg, L., Danesjö-Gustafsson, A., Johansson, M., & Modin. T. (2007). *Införande av fysisk aktivitet på recept i primärvården i Örebro län 2004-2006* [Introduction of physical activity in primary care in Örebro County 2004-2006]. Nota Bene, No. 29: Örebro Läns Landsting.
- Hagströmer, M., Oja, P., & Sjöström, M. (2006). The International Physical Activity Questionnaire (IPAQ): A study of concurrent and construct validity. *Public Health Nutrition*, 9(6), 755-762.
- Hamilton, M. B. (2003). *Online survey response rates and times: Background and guidance for industry*. Tercent, Inc. Retrieved February 4, 2009, from [http://www.supersurvey.com/papers/supersurvey\\_white\\_paper\\_response\\_rates.pdf](http://www.supersurvey.com/papers/supersurvey_white_paper_response_rates.pdf).
- Harris, A., Cronkite, R., & Moos, R. (2006). Physical activity, exercise coping and depression in a 10-year cohort study of depressed patients. *Journal of Affective Disorders*, 93, 79-85.
- Hassmén, P., Koivula, N., & Uutela, A. (2000). Physical exercise and psychological well-being: A population study in Finland. *Preventive Medicine*, 30, 17-25.
- Healthcare Provision, Stockholm County. (2007a). *Handlingsplan för folkhälsoarbetet i SLSO 2007-2008* [Action plan for public health within SLSO. 2007-2008]. Stockholm, Sweden: SLSO. Retrieved August 14, 2008, from [http://www.slpo.sll.se/upload/English/SLSO\\_broschyr\\_engelsk\\_2007.pdf](http://www.slpo.sll.se/upload/English/SLSO_broschyr_engelsk_2007.pdf).
- Healthcare Provision, Stockholm County. (2007b). *Health and medical care arranged by the County Council*. Stockholm, Sweden: SLSO. Retrieved August 14, 2008, from [http://www.slpo.sll.se/upload/English/SLSO\\_broschyr\\_engelsk\\_2007.pdf](http://www.slpo.sll.se/upload/English/SLSO_broschyr_engelsk_2007.pdf).

- Henriksson, J. & Sundberg, C. J. (2008). Allmänna effekter av fysisk aktivitet [General effects of physical activity]. In Yrkesföreningar för Fysisk Aktivitet (YFA), Ståhle, A. (Ed), *FYSS – Fysisk aktivitet i sjukdomsprevention och sjukdomsbehandling* (pp. 11-37) [Physical activity in the prevention and treatment of disease]. Stockholm, Sweden: National Institute of Public Health.
- Holm Ivarsson, B. & Prescott, P. (2008). In Yrkesföreningar för Fysisk Aktivitet (YFA), Ståhle, A. (Ed), *FYSS – Fysisk aktivitet i sjukdomsprevention och sjukdomsbehandling* (pp. 79-92) [Physical activity in the prevention and treatment of disease]. Stockholm, Sweden: National Institute of Public Health.
- Humpel, N., Owen, N., & Leslie, E. (2002). Environmental factors associated with adults' participation in physical activity: A review. *American Journal of Preventive Medicine*, 22(3), 188-199.
- Hunt, S. & Bhopal, R. (2004). Self report in clinical and epidemiological studies with non-English speakers: The challenge of language and culture. *Journal of Epidemiologic Community Health*, 58, 618-622.
- Hälso- och sjukvårdsnämndens förvaltning, Stockholms Läns Landsting. (2007). *Behov av hälso- och sjukvård i Stockholms län utifrån ett befolkningsperspektiv* [The need of healthcare in Stockholm County, based on the population]. Retrieved May 24, 2009, from [http://www.sll.se/upload/Rapporter/behov\\_av\\_vardsept07.pdf](http://www.sll.se/upload/Rapporter/behov_av_vardsept07.pdf).
- International Physical Activity Questionnaire. (2005). *Guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ)*. Retrieved December 1, 2008, from <http://www.ipaq.ki.se/scoring.htm>.
- International Physical Activity Questionnaire. (2008). *Cultural adaption*. Retrieved December 1, 2008, from <http://www.ipaq.ki.se/cultural.htm>.
- Jorm, A., Christensen, H., Griffiths, K., & Rodgers, B. (2002). Effectiveness of complementary and self-help treatments for depression. *The Medical Journal of Australia*, 176 (10 Suppl), 84-95.
- Jorm, A., Korten, A., Jacomb, P., Christensen, H., Rodgers, B., & Pollitt, P. (1997). Mental health literacy: A survey of the public's ability to recognize mental disorders and their beliefs about the effectiveness of treatment. *The Medical Journal of Australia*, 166, 182-186.
- Jorm, A., Korten, A., Jacomb, P., Rodgers, B., & Pollitt, P. (1997). Beliefs about the helpfulness of interventions for mental disorders: A comparison of general practitioners, psychiatrists and clinical psychologists. *The Australian and New Zealand Journal of Psychiatry*, 3(6), 844-851.



- Jorm, A., Medway, J., Christensen, H., Korten, A., Jacomb, P., & Rodgers, B. (2000). Public beliefs about the helpfulness of interventions for depression: Effects on actions taken when experiencing anxiety and depression symptoms. *Australian & New Zealand Journal of Psychiatry*, 34(4), 619-626.
- Jorm, A., Morgan, A., & Wright, A. (2008). Interventions that are helpful for depression and anxiety in young people: A comparison of clinicians' beliefs with those of youth and their parents. *Journal of Affective Disorders*, doi:10.1016/j.jad.2008.02.021.
- Jorm, A. & Wright, A. (2007). Beliefs of young people and their parents about the effectiveness of interventions for mental disorders. *The Australian and New Zealand Journal of Psychiatry*, 41(8), 656-666.
- Jorm, A. Wright, A., & Morgan, A. (2007). Beliefs about appropriate first aid for young people with mental disorders: Findings from an Australian national survey of youth and parents. *Early Intervention in Psychiatry*, 1, 61–70.
- Kallings, L. (2008). *Physical activity on prescription: Studies on physical activity level, adherence and cardiovascular risk factors*. Unpublished doctoral dissertation, Karolinska Institutet, Stockholm, Sweden.
- Kallings, L. & Leijon, M. (2003). *Erfarenheter av fysisk aktivitet på recept - FaR* [Experiences of Physical Activity on Prescription – FaR®]. (No. 2003:53). Stockholm, Sweden: The National Institute of Public Health.
- Kallings, L., Leijon, M., Hellenius, M-L., & Ståhle, A. (2008). Physical activity on prescription in primary health care: A follow-up of physical activity level and quality of life. *Scandinavian Journal of Medicine & Science in Sports*, 18(2); 154-161.
- Kjellman, G., Martinsen, E., Taube, J., & Andersson, E. (2008). Depression [Depression]. In Yrkesföreningar för Fysisk Aktivitet (YFA), Ståhle, A. (Ed), *FYSS – Fysisk aktivitet i sjukdomsprevention och sjukdomsbehandling* (pp. 79-92) [Physical activity in the prevention and treatment of disease]. Stockholm, Sweden: National Institute of Public Health.
- Knubben, K., Reischies, F., Adil, M., Schlattmann P., Bauer M., & Dimeo, F. (2007). A randomised, controlled study on the effects of a short-term endurance training programme in patients with major depression. *British Journal of Sports Medicine*, 41(1), 29-33.
- Larsson, M., Linnros, P., & Svensson, M. (2005). *Inställning till fysisk aktivitet på recept hos en grupp legitimerad sjukvårdspersonal* [Health care professionals' attitudes towards physical activity prescriptions]. Unpublished undergraduate thesis, Sektion för hälsa och samhälle, Halmstad, Sweden.

- Lawlor, D. & Hopker, S. (2001). The effectiveness of exercise as an intervention in the management of depression: Systematic review and meta-regression analysis of randomized controlled trials. *British Medical Journal*, 322, 1-8.
- Lawlor, D., Keen, S., & Neal, R. (1999). Increasing population levels of physical activity through primary care: GPs' knowledge, attitudes and self-reported practice. *Family Practice*, 16(3), 250-254.
- Leijon, M., Kallings, L., Faskunger, J., Laerum, G., Börjesson, M., & Ståhle, A. (2008). Främja fysisk aktivitet [Promote physical activity]. In Yrkesföreningar för Fysisk Aktivitet, Ståhle, A. (Ed), *FYSS – Fysisk aktivitet i sjukdomsprevention och sjukdomsbehandling* [Physical activity in the prevention and treatment of disease]. Stockholm, Sweden: National Institute of Public Health.
- Lindström, S., Hedberg, M., Bellander, E., & Yggström, N. (2008). *Rapport rörelse är receptet: Metodutveckling av Fysisk Aktivitet på Recept* [Report: Exercise is the remedy: Development of physical activity on prescription]. (No. SLSO 08-1473). Stockholm, Sweden.
- Lobelo, F., Duperly, J., & Frank, E. (2009). Physical activity habits of doctors and medical students influence their counseling practices. *British Journal of Sports Medicine*, 43(2), 89-92.
- Martinsen, E. W. & Taube, J. (2008). Schizofreni [Schizophrenia]. ). In Yrkesföreningar för Fysisk Aktivitet (YFA), Ståhle, A. (Ed), *FYSS – Fysisk aktivitet i sjukdomsprevention och sjukdomsbehandling* (pp. 79-92) [Physical activity in the prevention and treatment of disease]. Stockholm, Sweden: National Institute of Public Health.
- McDowell, N., McKenna, J., & Naylor, P. (1997). Factors that influence practice nurses to promote physical activity. *British Journal of Sports Medicine*, 31(4), 308-313.
- McEntee, D. & Halgin, R. (1996). Therapists' attitudes about addressing the role of exercise in psychotherapy. *Journal of Clinical Psychology*, 52(1), 48-60.
- McNerney, J., Andes, S., & Blackwell, D. (2007). Self-reported health behaviors of osteopathic physicians. *Journal of American Osteopathic Association*, 107(12), 537-546.
- Mead, G. E., Morley, W., Campbell, P., Greig, C. A., McMurdo, M., & Lawlor, D. A. (2008). Exercise for depression. *Cochrane Database of Systematic Reviews*, 4.
- Mental Health Foundation. (2005). *Up and Running - Exercise therapy and the treatment of mild or moderate depression in primary care*. London, Great Britain: Mental Health Foundation. Retrieved December 15th, 2009, from <http://www.mhf.org.uk/publications/?EntryId5=43026>.

- Mosby's dictionary of medicine, nursing and health professionals* (7th ed.). (2006). St. Louise, MO: Mosby Elsevier.
- National Board of Health and Welfare. (2005). *Hälso- och sjukvårdsrapport 2005* [Healthcare report 2005]. (Article No. 2005-111-4). Retrieved September 20, 2008, from <http://www.socialstyrelsen.se>.
- National Board of Health and Welfare. (2008). *Hälso- och sjukvård lägesrapport 2007* [Healthcare status report 2007]. (Article No. 2008-131-7). Retrieved September 20, 2008, from [http://www.socialstyrelsen.se/NR/rdonlyres/42EE3119-1EFF-4CBA-8D12-43EA9972ADB0/10153/20081317\\_rev2.pdf](http://www.socialstyrelsen.se/NR/rdonlyres/42EE3119-1EFF-4CBA-8D12-43EA9972ADB0/10153/20081317_rev2.pdf).
- National Board of Health and Welfare. (2009). *Nationella riktlinjer för depressionssjukdom och ångestsyndrom: Beslutsstöd för prioriteringar* [National guidelines for depression and anxiety disorder: Support for prioritization]. Retrieved March 15, 2009, from <http://www.socialstyrelsen.se/Publicerat/2009/10311/2009-126-85.htm>.
- National Heart Foundation of Australia. (2007). *Physical activity and depression*. (No. PP-612). Retrieved March 10, 2009, from <http://www.heartfoundation.org.au>.
- National Institute for Health and Clinical Excellence. (2009). *Depression in adults (Update) – Depressions: The treatment and management of depression in adults*. Retrieved March 15, 2009, from <http://www.nice.org.uk/Guidance/CG/WaveR/24>.
- Newcomer, J. W. (2007). Metabolic syndrome and mental illness. *The American Journal of Managed Care*, 13(7), 170-177.
- Nording, G. (2009, June 1). Läkarbesök inom psykiatri och primärvården [Patient visit within psychiatry and primary care]. *Västerbottens Läns Ländsting*. Retrieved January 10, 2009, from <http://www.vll.se/default.aspx?id=40513>.
- Nordlander, Å. (2006). *Vilka faktorer skulle kunna få vårdpersonalen att i högre utsträckning skriva ut fysisk aktivitet på recept – FaR?* [Which factors would affect healthcare personnel to prescribe physical activity – FaR?]. Stockholm University College of Physical Education and Sport, Stockholm, Sweden.
- Ormel, J., von Korff, M., Ustun, T., Pini, S., Korten, A., & Oldehinkel, T. (1994). Common mental disorders and disability across cultures: Results from the WHO collaborative study on psychological problems in general health care. *Journal of the American Medical Association*, 272, 1741–1748.
- Ossowicki, M. (2007). *Försäkringskassan – PM (2007-12-12); Sjukskrivningstid per diagnos*. [The Swedish Social Insurance Agency – PM (2007-12-12): Sick leave per diagnosis]. Retrieved September 22, 2008, from [http://www.forsakringskassan.se/press/aktuellt/071214/Kort\\_Sjukskrivningstid\\_per\\_diagnos.pdf](http://www.forsakringskassan.se/press/aktuellt/071214/Kort_Sjukskrivningstid_per_diagnos.pdf).

- Paffenbarger, R. S., Lee, I. M., & Leung, R. (1994). Physical activity and personal characteristics associated with depression and suicide in American college men. *Acta Psychiatrica Scandinavica. Supplementum*, 377, 16-22.
- Phongsavan, P., Merom, D., Bauman, A., & Wagner, R. (2007). Mental illness and physical activity: Therapists' beliefs and practices. *The Australian and New Zealand Journal of Psychiatry*, 41(5), 458-459.
- Pinto, B. M., Goldstein, M. G., DePue, J. D., & Milan, F. B. (1998). Acceptability and feasibility of physician-based activity counseling. *American Journal of Preventive Medicine*, 15, 95-102.
- Ploeg van der, H., Smith, B., Stubbs, T., Vita, P., Holford, R., & Bauman, A. (2007). Physical activity promotion: Are GPs getting the message? *Family Physician*, 36(10), 871-874.
- Prince, S. A., Adamo, K. B., Hamel, M. E., Hardt, J., Gorber, S. C., & Tremblay, M. (2008). A comparison of direct versus self-report measures for assessing physical activity in adults: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, 6, 5-56.
- Puig Ribera, A., McKenna, J., & Riddoch, C. (2005) Attitudes and practices of physicians and nurses regarding physical activity promotion in the Catalan primary health-care system. *European Journal of Public Health*, 15(6), 569-575.
- Sandberg, M. (2005). *Skriftlig ordination av fysisk aktivitet: En enkätstudie inom primärvården i Värmdö* (Physical activity on prescription: A study in primary care of Värmdö). Unpublished undergraduate thesis, Stockholm University College of Physical Education and Sport, Stockholm, Sweden.
- Sandberg, M., Ekblom R., & Eckerman, I. (2007). *Hälsoprogram för fysisk aktivitet: Rapport om införandet av FaR® på vårdcentralerna i Nacka 2005-2007* [Health program for physical activity: Report about implementation of FaR® in primary care in Nacka 2005-2007]. Stockholm, Sweden: Folkhälsoenheten i Nacka.
- 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 cross-sectional survey. *Preventive Medicine*, 39, 1200– 1207.
- Smith, T. (2006). Blood, sweat and tears: Exercise in the management of mental and physical health problems. *Clinical Psychology: Science and Practice*, 13(2), 198-202.
- Sperber, A., Devellis, R., & Boehlecke, B. (1994). Cross-cultural translation: Methodology and validation. *Journal of Cross-Cultural Psychology*, 25, 501-524.

- Stathopoulou, G., Powers, M., Berry, A., Smits, J., & Otto, M. (2006). Exercise interventions for mental health: A quantitative and qualitative review. *Clinical Psychology: Science and Practice*, 13(2), 179-193.
- Stedman's medical dictionary for the health professions and nursing* (6th ed.). (2005). Baltimore, MD: Lippincott Williams & Wilkins.
- Stockholm County Council. (2007). *FaR® i SLL: Fysisk Aktivitet på recept i Stockholms Läns Landsting*. [FaR® in SLL: Physical Activity on Prescription in Stockholm County Council]. Retrieved April 24, 2008 from <http://www.cefam.se/home/page.asp?sid=28&mid=2&PageId=1255>.
- Swedish Association of Local Authorities and Regions (SALAR). (2008). *Annual Report 2007 - The Population and Patient Survey*. Retrieved November 20, 2008, from [http://www.vardbarometern.nu/downloads/Vardbarometern\\_2007.pdf](http://www.vardbarometern.nu/downloads/Vardbarometern_2007.pdf).
- Swedish National Institute of Public Health. (2008a). *FaR-arbetet i Landstingen* [FaR in the Counties]. Retrieved August 20, 2008, from [http://www.fhi.se/templates/Page\\_10015.aspx](http://www.fhi.se/templates/Page_10015.aspx).
- Swedish National Institute of Public Health. (2008b). *Förskrivning av Fysisk Aktivitet*. [Physical Activity on Prescription]. Retrieved August 20, 2008, from [http://www.fhi.se/templates/Page\\_10875.aspx](http://www.fhi.se/templates/Page_10875.aspx).
- Swedish National Institute of Public Health. (2008c). *Resultat från nationella folkhälsoenkäten – Hälsa på lika villkor* [Results from the national public health survey – Health on Equal Terms]. Retrieved October 5th, 2009, from <http://www.fhi.se/Documents/Statistik-uppfoljning/Folkhalsoenkaten/Resultat-2008/Fysisk-aktivitet-090405.pdf>.
- Swedish Council on Technology Assessment in Health Care. (1999). *Evidensbaserad omvårdnad vid behandling av personer med depressionssjukdomar* [Evidence based care for treatment of persons with depression]. Mölnlycket, Sweden; Swedish Council on Technology Assessment in Health Care.
- Swedish Council on Technology Assessment in Health Care. (2007). *Metoder för att främja fysisk aktivitet: En systematisk litteraturöversikt* [Methods to promote physical activity: A systematic review]. Mölnlycket, Sweden; Swedish Council on Technology Assessment in Health Care.
- Taylor, A. (2003). The role of primary care in promoting physical activity. In J. McKenna & C. Riddoch (Eds.), *Perspectives on health and exercise* (pp. 153-180). Hampshire, UK: Palgrave MacMillan.
- U.S. Department of Health and Human Services (1999). *Mental health: A report of the Surgeon General*. Rockville, MD. Retrieved February 7, 2009, from <http://www.surgeongeneral.gov/library/mentalhealth/home.html>.

- U.S. Department of Health and Human Services. (2008). *Physical activity guidelines for Americans*. Rockville, MD. Retrieved March 17, 2009, from [www.health.gov/paguidelines](http://www.health.gov/paguidelines).
- U.S. Preventive Services Task Force. (2002). *Behavioral counseling in primary care to promote physical activity: Recommendations and rationale*. Rockville, MD: Agency for Healthcare Research and Quality. Retrieved May 26, 2008, from <http://www.ahrq.gov/clinic/3rduspstf/physactivity/physactrr.htm>.
- University of Texas at Austin – Division of Instructional Innovation and Assessment. (2007). *Instructional assessment resources: Assess teaching – Response rates*. Retrieved April 13, 2009, from <http://www.utexas.edu/academic/diia/assessment/iar/teaching/gather/method/survey-Response.php>.
- Venes, D. (Eds.). (2001). *Taber's Cyclopedic Medical Dictionary* (19th ed.). Philadelphia, PA: F.A. Davis Company.
- Williams, N., Hendry, M., France, B., Lewis, R., & Wilkinson, C. (2007). Effectiveness of exercise-referral schemes to promote physical activity in adults: Systematic review. *British Journal of General Practice*, 57, 979-986.
- World Health Organization. (2004). *Prevention of mental disorders: Effective interventions and policy options*. (ISBN 92 4 15921). Geneva, Switzerland: WHO Press. Retrieved September 26, 2008, from WHO web site: [http://www.who.int/mental\\_health/evidence/en/prevention\\_of\\_mental\\_disorders\\_sr.pdf](http://www.who.int/mental_health/evidence/en/prevention_of_mental_disorders_sr.pdf).
- World Health Organization. (2005). *Promoting mental health: Concepts, emerging evidence, practice* (ISBN. 92 4 156294 3). Geneva, Switzerland: WHO Press. Retrieved September 26, 2008, from [http://www.who.int/mental\\_health/evidence/MH\\_Promotion\\_Book.pdf](http://www.who.int/mental_health/evidence/MH_Promotion_Book.pdf).
- Yrkesföreningar för Fysisk Aktivitet (YFA). (2008). *FYSS – Fysisk aktivitet i sjukdomsprevention och sjukdomsbehandling* [Physical activity in the prevention and treatment of disease]. Stockholm, Sweden: National Institute of Public Health.

## CURRICULUM VITAE

Madeleine Jennysdotter Olofsgård was born on August 6, 1964, in Stockholm, Sweden. After graduation from Tibble High School in Täby she worked for four years in accounting, supervising a financial department. In 1992, Madeleine graduated from Stockholm University, Sweden, with a Bachelor of Science degree in Business Administration and Economics. In the years following her degree, Madeleine worked primarily within the IT field on the financial markets with marketing, teaching, consultancy, and project management. Madeleine moved in 2001 to the United States of America with her husband and two children and began to study exercise science while employed. When she was admitted to George Mason University, she began to devote her time and efforts to pursuit of a Master of Science in Exercise, Fitness, and Health Promotion. In 2009, she completed her degree and was recognized as the outstanding graduate student in this program.