# Exploring Psychiatrists' Perceptions of the Utility of Physical Activity and/or Exercise as Treatment for Depression

by

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## Abstract

There is extensive evidence in support of physical activity and/or exercise having therapeutic benefits on the prevention and management of depression, also known as major depressive disorder (MDD). Physical activity and/or exercise prescriptions, also known as "green prescriptions," have been growing in popularity, yet little research has been done to explore the use of these prescriptions in clinical practice. The purpose of this study was to explore psychiatrists' perceptions of the utility of physical activity and/or exercise as a form of treatment for depression in order to understand how to maximize the curative potential of green prescriptions. Social cognitive theory was used in a comparative context to identify constructs that may have influenced psychiatrists' perceptions.

Using an interpretative phenomenological analysis research approach, one-on-one semi-structured audio recorded interviews were conducted with eleven psychiatrists in Edmonton, AB. Using a four-step inductive analysis, five themes represented psychiatrists' perceptions around utilizing green prescriptions: (a) "You need to treat the whole thing," (b) "Our bodies are made to move," (c) "We stick to medication and therapy 'cause [sic] so far it's the best we have," (d) "My job is to make sure that they're well," and (e) "Out of all specialties, we're the most open to new things like this." Although most psychiatrists in this study expressed favorable attitudes regarding the therapeutic potential of green prescriptions, numerous barriers inhibited their ability to carry out these prescriptions in clinical practice. Depressive symptoms, poor education, and limited infrastructure within the mental healthcare system were the most prevalent barriers that discouraged psychiatrists from prescribing these treatments. This study shed light into the feasibility of green prescriptions and outlined suggestions on how to develop strategies to support the uptake of utilizing physical activity and/or exercise as a treatment for depression.

## Preface

This thesis is an original work by Julienne Audrey Cancio. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project Name “Exploring psychiatrists’ perceptions of the utility of physical activity and/or exercise as treatment for depression,” No. 00084898, October 3, 2018.

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## Glossary of Terms

Adjunctive Treatment: Adjunctive treatments are used in conjunction with initial (primary) therapies to assist the efficacy of the initial treatment (Veale et al., 1992).

Aerobic exercise: The American College of Sports Medicine (ACSM) defined aerobic exercise as "any activity that uses large muscle groups to perform movements continuously and rhythmic in nature." For example, aerobic exercises include cycling, dancing, hiking, jogging, running, swimming, and walking (Patel et al., 2017).

Anaerobic exercise: As defined by the ACSM, anaerobic exercises are "intense physical activities of very short duration, fuelled by the energy sources within the contracting muscles and independent of the use of inhaled oxygen as an energy source." Examples include sprinting, high-intensity interval training, and weight lifting (American College of Sports Medicine, 2013).

Clinical Depression: Clinical depression, also known as major depressive disorder (MDD), is characterized by a debilitating sense of sadness that interferes with everyday functioning and persists over a period of two or more weeks (Lawrence & Burns, 2011). Symptoms include lack of energy, loss of motivation, negative feelings, memory impairment, inability of concentrate, eating disturbances, sleep disruptions, and suicidal thoughts or desire to self-harm (Lawrence & Burns, 2011).

Exercise: Exercise is a subset of physical activity. It is described as any planned, structured, or repetitive activity that is performed with the objective to improve or maintain physical fitness components (Caspersen, Powell, & Christenson, 1985).

Exercise is Medicine (EIM): This global health initiative strives to improve health and longevity by advocating physical activity as a chronic disease prevention and management strategy (Exercise is Medicine Canada, 2018). Launched in 2007 and managed by the American College

of Sports Medicine, EIM encourages primary care physicians and healthcare providers to incorporate physical activity prescriptions into standard clinical practice by integrating activity into treatment plans (American College of Sports Medicine, 2018).

Physical Activity/Exercise Prescription: Also known as a "green prescription (GRx)," this form of prescription is a health professional's written advice to a patient to be physically active, as part of a treatment program (Government of New Zealand, 2016).

Mental Disorders: Mental disorders, also referred to as mental illnesses, are generally characterized by alterations in thinking, mood, behaviors, and relationships with others associated with significant distress and impaired functioning (World Health Organization [WHO], 2018). Symptoms vary from mild to severe and can be treated with appropriate support (Centre for Addiction and Mental Health, 2018).

Mental Health Professional: This title describes healthcare professionals who assist in the diagnosis and recovery of those suffering from mental illness. These professionals can work in both inpatient services such as hospitals and psychiatric facilities, and outpatient services such as community mental health clinics, schools, and private practices (National Alliance on Mental Illness, 2017).

Physical Activity: Any bodily movement produced by skeletal muscles that results in energy expenditure, which can be measured in kilocalories. Physical activity in daily life can be categorized into occupational, leisure, transportation, household, or other activities (Caspersen et al., 1985).

Psychiatrist: A licensed medical doctor who specializes in the prevention, diagnosis, and treatment of mental illness. Compared to psychologists, psychiatrists can prescribe medication in

addition to delivering diagnostic and therapeutic tasks (National Alliance on Mental Illness, 2017).

# Chapter One: Introduction

## 1.1 Overview

There is extensive evidence of a positive relationship between engaging in physical activity and/or exercise and improved mental well-being (Biddle & Mutrie, 2001; Blumenthal et al., 1999; Harvey et al., 2018; Schuch et al., 2018). More importantly, physical activity and exercise have been demonstrated to have therapeutic benefits in both the prevention and management of major depressive disorder (MDD) (Mammen & Faulkner, 2013; Schuch et al., 2016), one of the most prevailing psychiatric disorders worldwide (World Health Organization [WHO], 2017). Depending on the severity of symptoms, MDD is often treated with antidepressants, psychotherapy, or a combination of both (Cooney et al., 2013). However, the substantial burden of MDD is due, in part, to the lack of accessibility and inadequate response to treatments (Rethorst & Trivedi, 2013). According to Waitzfelder et al. (2018), only 30% of individuals who seek help receive an effective treatment, which warrants the need to explore alternative therapies for treating depression.

Physical activity and exercise have been proposed as attractive non-pharmacologic approaches for their accessibility, low cost, and fewer adverse events (Khawam, Laurencic, & Malone, 2006). More importantly, exercise has been demonstrated to be as efficacious as antidepressants in alleviating depressive symptoms (Biddle & Mutrie, 2001; Blumenthal et al., 1999). Previous research has demonstrated that aerobic and nonaerobic exercises are equally capable of reducing moderate-to-severe depression (Doyne et al., 1987; Dunn, Trivedi, & O'Neal, 2001; Martinsen, Hoffart, & Solberg, 1989) whereas “light” exercise (i.e., yoga) has been recommended in treating mild-to-moderate depression (Ravindran et al., 2016).

Researchers suggest that physical activity and exercise are viable alternatives for treating depression; however, utilizing physical activity and/or exercise in mental health practice is less known. For instance, only 15.8% of general practitioners report writing exercise prescriptions aimed at increasing activity to achieve health benefits (Petrella, Lattanzio, & Overend, 2007). Perceptions of the utility of physical activity and/or exercise treatments have been examined in general practitioners (Patel, Schofield, Kolt, & Keogh, 2011; Searle et al., 2012; Stanton, Franck, Reaburn, & Happell, 2015), mental health nurses (Happell, Scott, Platania-Phung, & Nankivell, 2012b; Robson, Haddad, Gray, & Gournay, 2013), psychologists (Burton, Pakenham, & Brown, 2010), and educational directors (Faulkner & Biddle, 2001). Despite favourable attitudes towards using physical activity and/or exercise as therapy, shared concerns include (a) lack of confidence in physical activity and/or exercise prescriptions (Searle et al., 2012; Stanton et al., 2015); (b) inadequate training, guidelines, and procedure (Persson, Brorsson, Hansson, Troein, & Strandberg, 2013; Way, Kannis-Dymand, Lastella, & Lovell, 2018); and (c) an inconsistent evidence-base of the efficacy of physical activity and exercise (Faulkner & Biddle, 2001). From these practitioners, there is a debate surrounding the utility of physical therapies and their potential role in mental health treatment. To date, psychiatrists have been an understudied population whose opinions on physical activity and/or exercise as therapy are less understood. Therefore, the current study aims to explore psychiatrists' perceptions of the utility of physical activity and/or exercise in treating depression. Throughout this thesis, using physical activity and/or exercise as a form of treatment is synonymous to the terms "physical activity/exercise prescription," "physical treatments/therapies," "physical prescriptions," "green prescriptions," and "physical activity/exercise as therapy."

## 1.2 Statement of the Problem

Depression can lead to substantial loss in health and functioning; in fact, depression accounted for a total of 50 million years lived with disability, a disease burden metric defined as multiplying the prevalence of the disorder by the average level of disability associated with them (WHO, 2017). Furthermore, the prevalence of depression is rising, with an estimated 300 million people now living with depression, an increase of 18.4% between 2005 and 2015 (GBD 2015 Disease and Injury Incidence and Prevalence Collaborators, 2016). As a consequence, there is an increased economic burden on the healthcare system and overwhelming loss in productivity (WHO, 2017). Therefore, there is a necessity to explore alternative methods of therapy such as physical activity and exercise. Physical activity and exercise have been shown to be effective in the prevention and treatment of depression. For instance, Harvey et al. (2018) found that small amounts of exercise at any intensity could protect against future depression, regardless of gender or age. Likewise, individuals who engage in physical activity and/or exercise experience more favourable health outcomes such as improved mood, higher functional capacity, and better quality of life (Penedo & Dahn, 2005).

Given these benefits, physical activity and/or exercise prescriptions, also known as "green prescriptions," may be useful in mental health treatment. Green prescriptions are written advice administered by a health professional to increase physical activity as part of a treatment (Swinburn, Walter, Arroll, Tilyard, & Russell, 1998). There is the potential for psychiatrists to "prescribe" physical activity and/or exercise because of their extensive training in behavior change; therefore, this may put them in an optimal position to counsel physical activity or incorporate exercise into treatment plans. Further research is needed to understand how physical activity and exercise is viewed from the eyes of psychiatrists to better understand how to

maximize the therapeutic potential of physical treatments (Faulkner & Biddle, 2001). Ideally, increasing access and efficacy of available treatments would help reduce the incidence, and/or severity, of depression and alleviate the economic burden on the healthcare system.

### 1.3 Aim and Scope

There is limited research examining psychiatrists' opinions regarding non-pharmacologic treatments for depression, despite the growing support of physical activity and exercise and their protective properties in the prevention and management of depression. The general purpose of this thesis was to explore psychiatrists' perceptions of the utility of physical activity and/or exercise as a form of treatment for depression to address the discrepancy between current evidence-based research and lack of physical activity and/or exercise prescriptions.

#### 1.3.1 Limitations

The following limitations were applied to the aim and scope of this thesis:

1. Due to time and financial constraints, the sample used in the current study was limited to psychiatrists in Edmonton, Alberta. Therefore, generalizations could not be made regarding views held in the greater Canadian psychiatric community.
2. Respondents may have been subject to potential self-selection bias via purposeful selection. For instance, this study may have attracted participants with an interest and appreciation of physical activity and exercise.
3. Low participant response rate may have been influenced by scheduling conflicts. Prospective participants may only be available during regular hours of operation and may not want to participate at the expense of an hour of billable service.

#### 1.3.2 Delimitations

Specific delimitations to this study included:

1. The study sample was limited to men and women who were (a) practicing psychiatrists in the public sector and (b) residing in Edmonton, Alberta.
2. The study duration was delimited to a 12-week period (September to December).

# Chapter Two: Review of Literature

## 2.1 The Mental Health Problem

According to the World Health Organization (2017), the global prevalence of mental disorders is rising, which has severe ramifications on healthcare costs and loss in productivity. Psychiatric disorders account for 22.8% of the global burden of diseases (GBD 2013 DALYs and HALE Collaborators, 2015). As of 2010, the economic cost of mental illness in Canada on the healthcare system was estimated to be at least $50 billion per year; it is projected that $2.5 trillion will be required to provide treatment, care, and support for people with this condition over the next 30 years (Mental Health Commission of Canada, 2013). One of the most prevalent psychiatric disorders worldwide is depression, also known as major depressive disorder (MDD), with an estimated 300 million people suffering from depression worldwide (WHO, 2017). More importantly, depression is ranked as the single largest contributor to global disability and is a major contributor to suicide deaths, which is close to 800, 000 per year (WHO, 2017). In Canada, 4.7% of the population – over 1.7 million people – met the criteria for major depression, and suicide is consistently one of the leading causes of death in both men and women from adolescence to middle age (Government of Canada, 2016; Mental Health Commission of Canada, 2013).

Depending on the severity of symptoms, depression is often treated with using pharmacotherapy (i.e., antidepressants), psychotherapy (i.e., cognitive behavioural therapy), or a combination of both (Cooney et al., 2013). Most guidelines recommend these therapies as a first-step treatment; however, both are costly in terms of time, money, potential adverse effects (e.g., nausea, anxiety, lethargy, sexual dysfunction, etc.) (Gartlehner et al., 2017), and lag time between starting antidepressants and seeing improvements in mood (Cooney et al., 2013). Out of

the estimated 50% of individuals who seek help, only 30% receive an effective treatment (Andrews, Sanderson, Corry, & Lapsley, 2000; Waitzfelder et al., 2018). There is also substantial evidence that many patients receive suboptimal treatment in terms of antidepressant dosage and duration, with up to 20% of individuals having poor adherence (Roberson, Castro, Cagan, & Perlis, 2016). In response to these issues, non-pharmacologic treatments for depression have received increasing interest. For instance, physical activity and/or exercise have been proposed as viable alternatives for treating depression. Physical activity is defined as any bodily movements that result in energy expenditure, which includes day-to-day activities such as walking for leisure or work and household chores (Caspersen et al., 1985). Exercise, defined as structured, repetitive, and goal-directed physical activity to improve or maintain a physical fitness component (Caspersen et al., 1985), has been argued to be just as efficacious as pharmacologic therapy (Blumenthal, Smith, & Hoffman, 2012; Cooney et al., 2013; Schuch et al., 2016). Physical therapies are attractive alternatives due to their accessibility, lack of stigma, low cost, and fewer side effects (Khawam et al., 2006; Martinsen, 1990).

The American Psychological Association (APA) recognizes the importance of treating both body and mind in the following statement:

> No other discipline is better suited and equipped than psychology to discover, delineate, and demonstrate the organismic nature of humans and to encourage an ever-broadening realization that humanity's total functional health is threatened whenever either side of the interactive mind-body equation is neglected. Any program for healthcare and illness management can achieve comprehensiveness and integration only as there is respect for the functional unity of the individual (APA Task Force on Health Research, 1976, p. 271)

Therefore, mental healthcare professionals are in a unique position to discuss and prescribe physical regimens to their clients as a form of treatment for mental illness. Particularly, psychiatrists are medical doctors who specialize in mental health, making them qualified to assess both physical and mental aspects of psychological disorders (American Psychiatric

Association, 2018). This population is of interest due to their extensive knowledge of both physical and mental aspects of health, which make them an appropriate source to discuss the potential interplay of physical activity and/or exercise on depression.

### 2.2 Definition of Depression

Depressive disorders are characterized as a debilitating sense of sadness that interferes with everyday functioning, which persists over a period of two or more weeks (Lawrence & Burns, 2011). Symptoms include loss of interest or pleasure, feelings of guilt or low self-worth, disrupted sleep or appetite, feelings of tiredness, poor concentration, and suicidal thoughts or desire to self-harm (Lawrence & Burns, 2011; WHO, 2017).

According to the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5; American Psychiatric Association, 2013), there are eight classifications of depressive disorders including (a) disruptive mood dysregulation disorder; (b) major depressive disorder (MDD); (c) persistent depressive disorder (dysthymia); (d) premenstrual dysphoric disorder; (e) substance/medication-induced depressive disorder; (f) depressive disorder due to another medical condition; (g) other specified depressive disorder (i.e., seasonal affective disorder); and (h) unspecified depressive disorder. Among these conditions, MDD is the most prevalent and involves a combination of the previously listed symptoms (WHO, 2017). However, depending on the number and severity of symptoms, a depressive episode can be categorized as mild, moderate, or severe (WHO, 2017). At its most severe, depression can lead to suicide (WHO, 2017).

### 2.3 Types of Care for Depression

For mild-to-moderate depression, first-line treatment may include either antidepressants or a type of psychotherapy such as cognitive-behavioural therapy, interpersonal therapy, or

behavioural activation (Parikh et al., 2016). For moderate-to-severe depression, both medication and psychotherapy are recommended since combined treatment is superior to either treatment alone (Parikh et al., 2016). In treatment-resistant depression, defined as failing to produce significant clinical improvement with at least two antidepressants of adequate dose and duration (Little, 2009), neurostimulation treatments (i.e., electroconvulsive therapy) are recommended (Milev et al., 2016). However, side effects include memory impairment, nausea, headaches, temporary confusion, and cardiovascular and neurological risks, which limits its broader use and this form of therapy is typically reserved for the most extreme cases (Nemeroff, 2007). Out of these available treatments, antidepressant medication remains the most common first-line defense (Nemeroff, 2007; Schuch et al., 2015).

Despite the pervasive use of antidepressants, the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) study showed that only approximately 18% of depressed patients showed symptom relief after 14 weeks of antidepressant treatment (Sinyor, Schaffer, & Levitt, 2010). This commonly prescribed therapy may be susceptible to poor compliance (Helgadottir, Forsell, Hallgren, Moller, & Ekblom, 2017), adverse events (e.g., nausea, drowsiness, sexual dysfunction, etc.) (Khawam et al., 2006), and be viewed with skepticism (Gartlehner et al., 2017).

In response to these issues, there has been a trend toward “natural” treatments (Gartlehner et al., 2017). For instance, physical activity and exercise have garnered interest as alternative therapies for their accessibility, lack of stigma, cost-effectiveness, ability to be self-administered, and fewer side effects (Khawam et al., 2006; Olson, Brush, Ehmann, & Alderman, 2017). As acknowledged in the Canadian Network for Mood and Anxiety Treatments (CANMAT) 2016 Clinical Guidelines for the Management of Adults with Major Depressive Disorder, physical

treatments such as physical activity and/or exercise are recommended first- or second-line treatments for mild-to-moderate MDD and recommended second-line adjunctive treatments for moderate-to-severe MDD (Ravindran et al., 2016).

### 2.4 Definition of Physical Activity and Exercise

Physical activity is defined as any bodily movement that results in energy expenditure and can be categorized into occupational, leisure, transportation, or household activities completed in daily living (Caspersen et al., 1985). Exercise is a subset of physical activity that refers to performing planned, structured, or repetitive activities with the objective of improving or maintaining any physical fitness component (Caspersen et al., 1985). These terms are often used interchangeably, but it is important to recognize that "exercise" falls under the broader umbrella term "physical activity."

### 2.5 Physical Activity Recommendations

Physical activity recommendations refer to the minimum level of activity required for health benefit. According to the Canadian Society for Exercise Physiology (2018), physical activity guidelines vary for children, youth, adults, and older adults; however, it is universally recommended that achieving more physical activity provide greater health benefits. For children and youth (aged 5-17 years), this cohort should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity daily, with at least 3 days of muscle- and bone-strengthening activity per week (Canadian Society for Exercise Physiology, 2018; Tremblay et al., 2011). To achieve health benefits, both adults aged 18-64 years and older adults aged 65 years and older should accumulate at least 150 minutes of moderate- to vigorous-intensity aerobic physical activity per week, in bouts of 10 minutes or more, with at least 2 days of muscle- and bone-strengthening activities per week (Canadian Society for Exercise Physiology, 2018; Tremblay et

al., 2011). For additional health benefits, adults and older adults may strive to accumulate 300 minutes of moderate-intensity aerobic physical activity per week or engage in 150 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate- and vigorous-intensity activity (WHO, 2011).

## 2.6 Protective Properties of Physical Activity and Exercise

There is substantial evidence for physical activity and/or exercise as viable stand-alone therapies or adjunctive treatments for depression. Penedo and Dahn (2005) suggest that individuals who engage in exercise, physical activity, and physical activity interventions generally see more favourable health outcomes including better quality of life, higher functional capacity, and improved mood states. Research has demonstrated that exercise can reduce depressive symptoms after short periods of exercise (i.e., walking on a treadmill 30 minutes a day for 10 days), which is promising given that antidepressant medication takes about two to four weeks to experience therapeutic effect (Dimeo, Bauer, Varahram, Proest, & Halter, 2001). As an adjunctive treatment, engaging in habitual physical activity may facilitate better treatment response to antidepressant medication or psychotherapy (Hallgren et al., 2016). Therefore, lifestyle factors such as physical activity and exercise may offer many therapeutic benefits for psychiatric disorders, especially depression (Blumenthal et al., 2007).

**2.6.1 Physical activity and exercise as a preventive measure.** Engaging in physical activity or exercise may protect against the onset of depressive symptoms (Farmer et al., 1988; Harvey et al., 2018; Mammen & Faulkner, 2013; Paffenbarger Jr, Lee, & Leung, 1994; Schuch et al., 2018). In a systematic review, Mammen and Faulkner (2013) found that any level, in terms of minutes per week, of aerobic physical activity could prevent the onset of depression. Studies included in this review ranged in the amount of physical activity required to prevent depression;

however, all levels were protective. Analyses revealed that engaging in <150 or >150 minutes of moderate-to-vigorous physical activity per week were associated with an 8%-63% and 19%-27% decreased risk of future depression, respectively (Mammen & Faulkner, 2013). More importantly, sustaining activity levels over time could further prevent the onset of depression (Mammen & Faulkner, 2013), with durations as short as 15 minutes, three times per week significantly associated with lower risk (Chang, Lu, Hu, Wu, & Hu, 2017).

In addition, the 11-year longitudinal Health Study of Nord-Trøndelag County (HUNT) study followed a healthy cohort of 33, 908 adults, who had no symptoms of mental disorders or debilitating physical health conditions. The authors found a negative relationship between the total amount of exercise and risk of future depression; those reporting no exercise at baseline had 44% increased odds of developing depression compared to those who were exercising 1-2 hours per week (Harvey et al., 2018). In this large population cohort study, Harvey et al. (2018) stressed that relatively small amounts of exercise at any intensity could protect against future depression, regardless of gender or age.

In terms of gender, and consistent with findings from Harvey et al. (2018), physical activity appears to protect against depression for both men and women. Using data from the National Health and Nutrition Examination Survey (NHANES I), Farmer et al. (1988) analyzed the relationship between self-reported physical activity and depressive symptoms among 1,900 healthy participants from 1982-1984. Despite initially low depressive symptoms at baseline, little or no levels of baseline physical activity independently predicted depression eight years later among Caucasian women (Farmer et al., 1988). Among men, results from the Harvard alumni study found that depression rates exhibited an inverse relationship with levels of energy expenditure (Paffenbarger Jr et al., 1994). Risk of incident depression, defined as the rate of

occurrence of depression, was lowest among the most physically active men, those who expended 2500 kcal or more per week, and men who expended 1000-2499 kcal per week at 28% and 17% less risk, respectively (Paffenbarger Jr et al., 1994).

Meta-analytic reviews help quantify the beneficial effects of physical activity on depression. Across 49 studies, Schuch et al. (2018) reported an adjusted odds ratio of 0.83 for individuals with higher levels of physical activity, indicating that those who completed 150 minutes or more of moderate-to-vigorous physical activity per week had a decreased risk of developing future depression. The protective effects of physical activity against the emergence of depression was seen regardless of age and geographical region, which supports physical activity as an appropriate universal treatment (Schuch et al., 2018). Overall, these studies propose that the subsequent risk of depression can be altered by modifiable lifestyle factors such as physical activity and exercise.

**2.6.2 Exercise and remission of depressive symptoms.** Exercise has been argued to be as equally effective in ameliorating depressive symptoms as antidepressants (Biddle & Mutrie, 2001; Blumenthal et al., 1999; Johnsgard, 1989). A meta-analysis of 25 randomized control trials found large antidepressant effects of aerobic exercise interventions, at moderate and vigorous intensities, in populations with a confirmed diagnosis of major depressive disorder (Schuch et al., 2016). In terms of exercise types, aerobic and anaerobic exercise appear equally successful in reducing moderate-to-severe depression (Doyne et al., 1987; Dunn et al., 2001; Martinsen et al., 1989) whereas lighter intensity workouts such as yoga, may be effective for treating mild-to-moderate depression (Ravindran et al., 2016).

**2.6.3 Aerobic (cardiovascular) exercise.** The appeal of aerobic exercise in treating depression is associated with its ability to reduce depressive symptoms (a) after acute bouts of

exercise as low as walking 30 minutes for 10 consecutive days (Dimeo et al., 2001); (b) efficacy across age groups (Martinsen, Medhus, & Sandvik, 1985); (c) comparable effects to antidepressants and psychotherapy (Blumenthal et al., 2007; Blumenthal et al., 1999); and (d) potential long-term remission effects (Hoffman et al., 2011).

Early work by Martinsen et al. (1985) compared an aerobic exercise treatment with a control (no exercise) group in a sample of 43 depressed patients receiving psychotherapy, aged 17-60 years. The exercise regimen consisted of supervised 1-hour training sessions with an instructor, three times a week at 50-70% maximum aerobic capacity for nine weeks while the control group attended occupational therapy. The authors found that the exercise group had significantly reduced scores on the Beck Depression Inventory scale, experiencing a greater antidepressive response to exercise than the control group (Martinsen et al., 1985). Blumenthal et al. (1999) reinforced these findings in a 16-week randomized control trial with older adults aged 50 years and up. In this trial, participants were randomized to an exercise, medication, or combination therapy condition. The exercise group attended 45-minute training sessions with a certified exercise physiologist three times a week at 70-85% heart rate reserve for 16 consecutive weeks whereas the medication group received sertraline (Zoloft), a selective serotonin reuptake inhibitor, at an initial dosage of 50 mg that was adjusted until a well-tolerated therapeutic dosage was achieved of up to 200mg (Blumenthal et al., 1999). The combination group received both treatments concurrently. The authors found that although the medication group experienced a more rapid curative response, all groups experienced similar reductions in depressive symptoms after 16 weeks of treatment with no significant differences between them, which highlight the comparable efficacy of exercise to standard treatment (Blumenthal et al., 1999).

Blumenthal et al. (2007) extended these findings by further distinguishing the effects of exercise by comparing the effects between supervised group exercise training, home-based exercise, sertraline, and a placebo pill group in the Standard Medical Intervention & Long-term Exercise (SMILE) study. The goal of this study was to achieve remission, defined as no longer meeting the criteria for major depressive disorder (MDD) and a Hamilton Depression Rating Scale (HAM-D) score less than 8. Consistent with their previous findings, clinically meaningful remission rates were higher in supervised exercise (45%), home-based exercise (40%), and medication groups (47%) compared to the placebo group (31%) after 16 weeks, respectively (Blumenthal et al., 2007). In a follow-up of the SMILE study, Hoffman et al. (2011) examined whether these effects persisted over time. At the one-year follow-up, remission rates increased to 67% in the supervised exercise group, 67% in the home-based exercise group, 63% in the sertraline group, and 65% of the placebo group, suggesting that exercise had long lasting benefits (Hoffman et al., 2011). Therefore, there is evidence that supports aerobic exercise training programs to be as efficient as standard treatment and can be considered as an alternative to antidepressants.

**2.6.4 Anaerobic (weight or resistance) exercise.** For patients whom aerobic activity may be inappropriate or lack the initial motivation to start an aerobic regimen, nonaerobic (resistance) training may be a viable alternative (Stathopoulou, Powers, Berry, Smits, & Otto, 2006). The majority of evidence for aerobic exercise suggests that a cardiovascular component is necessary to experience an exercise treatment effect; however, this has been refuted in studies that compared both forms of exercise head-to-head. Martinsen et al. (1989) randomly assigned depressed patients to either an 8-week aerobic (running) or nonaerobic (weight-lifting) condition, with the aerobic group advised to maintain 70% of maximum aerobic capacity whereas the

nonaerobic group trained in muscle strengthening, flexibility, and relaxation at low intensity. The authors found that both groups experienced similar reductions in depressive scores, which highlights the similar efficacy of aerobic and nonaerobic exercise (Martinsen et al., 1989). This is consistent with findings from Doyne et al. (1987), who found no significant group differences between an eight-week weight-lifting, running (aerobic), or wait-listed control condition. More importantly, Doyne et al. (1987) noted that reduced depressive scores were maintained at a 12-month follow-up, comparable with aerobic effects reported by Hoffman et al. (2011). These studies indicate that anaerobic exercise can also significantly reduce depression and that experiencing an exercise treatment effect is not contingent upon achieving a cardiovascular component.

In terms of intensity, there is evidence to support that higher intensity resistance training is more effective than training at a lower intensity. Singh et al. (2005) randomized depressed elderly patients to either a supervised high-intensity (80% maximum load), or low-intensity (20% maximum load) training condition for three days per week for 8 weeks, or to a standard general practitioner care (control) group. A clinical response to treatment was defined as a 50% or greater improvement in Hamilton Rating Scale of Depression (HRSD) scores; the higher intensity group had the greatest response to treatment over the low intensity and control group at 61% compared to 29% and 21%, respectively. Therefore, higher intensity resistance training may yield more curative effects.

With regards to acceptability, anaerobic exercise does not appear to discriminate against age or gender. Using nationally representative data from the NHANES 1999-2006, anaerobic activity appeared to be inversely associated with levels of depressive symptoms in both men and women aged 18-85 (Cangin, Harris, Binkley, Schwartzbaum, & Focht, 2018). Among depressed

elderly patients, Singh, Clements, and Singh (2001) found that an anaerobic exercise regimen of three times a week for 10 weeks was feasible and significantly reduced depression scores at both 20-weeks and 26-months. Thus, these findings support anaerobic exercise as a feasible intervention for all.

**2.6.5 Stretching and balance exercise.** Yoga is an increasingly popular form of exercise that may be particularly suitable for depressed individuals because of its low intensity and fewer reported adverse events (Uebelacker & Broughton, 2016). Despite the paucity of studies, a systematic review conducted by Bridges and Sharma (2017) suggest that yoga may influence depressive outcomes. For instance, when compared to moderate and vigorous aerobic exercise, yoga had the greatest long-term effects in reduced depression severity at the 3-month and 12-month follow-up (Helgadottir et al., 2017). More importantly, yoga is recommended as a second-line adjunctive therapy in treating mild-to-moderate depression (Ravindran et al., 2016). The range and support of various exercise modalities is increasing, which allows for more treatment options for depressed individuals.

**2.6.6 Physical activity and exercise as an adjunctive treatment with antidepressants and psychotherapy.** Several studies have reported that physical activity and/or exercise can act as an effective add-on treatment in conjunction with antidepressants and/or cognitive behavioural therapy. Acute bouts of exercise have successfully reduced depressive symptoms in patients taking medication (Bartholomew, Morrison, & Ciccolo, 2005), suggesting exercise exerts an additive effect on pharmacotherapy. Trivedi et al. (2011) found that combining a higher dose of exercise (i.e., meeting recommended guidelines) with antidepressant medication was more effective at reducing depression than lower doses of activity (i.e., meeting less than recommended guidelines). Hallgren et al. (2016) also found that patients currently taking

medication responded more favourably to cognitive behavioural therapy when engaged in high levels of habitual physical activity, whom experienced more rapid improvements in depressive symptoms than their less active peers. Similarly, a combined prescription of exercise (i.e., 150 minutes of moderate-to-vigorous exercise and resistance training twice a week), medication, and cognitive behavioural therapy effectively alleviated depressive symptoms and produced additional benefits such as improved sleep quality, cognitive function, and higher remission rates versus a single treatment condition (Gourgouvelis, Yielder, Clarke, Behbahani, & Murphy, 2018). Add-on exercise may additionally boost quality of life in severely depressed inpatients, which is promising given that those treated with only antidepressants may still present an impaired quality of life (Schuch et al., 2015). For patients actively using pharmacologic and psychotherapeutic medication, physical activity and/or exercise may bolster the effects of these conventional treatments.

**2.6.7 Recommended dose and frequency of physical activity and exercise.** Any intensity of physical activity and/or exercise is appropriate to decrease the risk of incident depression (Mammen & Faulkner, 2013) and to treat mild-to-moderate depression (Helgadottir, Hallgren, Ekblom, & Forsell, 2016); however, there is consensus that the public health guideline of 150 minutes of moderate-to-vigorous physical activity per week is the optimal dosage to alleviate severe depression (Dunn, Trivedi, Kampert, Clark, & Chambliss, 2005; Hallgren et al., 2016). In terms of exercise, Blumenthal et al. (2012) suggest that 30 minutes of exercise three times a week is sufficient to reduce depressive symptoms. There is evidence to suggest that energy expenditure rather than frequency is the key determinant to symptom remission. In a dose-response trial, Dunn et al. (2005) found no differences between groups exercising 3- or 5-times per week; rather, those exercising at moderate to high intensities experienced greater

reductions in depressive symptoms. A systematic review conducted by Dunn et al. (2001) and a meta-analysis by Schuch et al. (2016) corroborate this notion in their results that suggest moderate and vigorous exercise intensities were more effective at alleviating depression than light to moderate intensity exercises. Studies have also found that exercising three times per week at 70-85% maximum heart rate, which falls within the vigorous intensity range (Centers for Disease Control and Prevention, 2015), is a robust treatment for patients with major depression (Babyak et al., 2000; Blumenthal et al., 2007). In general, higher intensities of activity are more effective at reducing depressive symptoms.

**2.6.8 Longitudinal associations between physical activity, exercise, and mental health.** In addition to the protective effects of physical activity and exercise, there is evidence to suggest that benefits persist over time. All intensities and types of exercise can produce long-lasting effects. For instance, light intensity yoga (Helgadottir et al., 2017) and both moderate-to-vigorous intensity aerobic (Babyak et al., 2000) and anaerobic exercise (Singh et al., 2001) were effective in reducing depression symptoms for up to 12-weeks, 10-months, and 26-months, respectively. In terms of relapse prevention, Babyak et al. (2000) re-examined Blumenthal et al. (1999) cohort after 10-months and showed that there were significantly fewer incidences of relapse in the exercise groups compared to the medication-only group. Exercise is associated with significant therapeutic benefit, especially when continued over time.

Among studies examining physical activity levels, Mammen and Faulkner (2013) found that reducing physical activity levels over time or remaining inactive increased the risk of developing depression whereas maintaining or increasing activity levels were associated with decreased risk. This finding was further reinforced by results from the Alameda County study, which found that individuals who were highly active but became less active were 1.5 times more

likely to become depressed compared to those who maintained high levels of physical activity (Camacho, Roberts, Lazarus, Kaplan, & Cohen, 1991). Therefore, adopting physical activity or exercise as a regular, ongoing life activity helps in the prevention, reduction, and relapse of depressive symptoms.

**2.7 Physical Activity and Exercise Prescription in Current Contexts**

Physical activity and exercise interventions have been beneficial in the prevention of several chronic diseases including, but not limited to, type 2 diabetes, heart disease, osteoarthritis, chronic obstructive pulmonary disease (COPD), and chronic fatigue syndrome (Hoffmann et al., 2016). Given the success of preventing and managing chronic conditions, there has been growing interest in applying physical interventions to treat mental health conditions (Rethorst & Trivedi, 2013). In fact, physical treatments have been included in the American Psychiatric Association's latest treatment guideline (American Psychiatric Association, 2010). This development encourages mental health practitioners to consider using physical activity and/or exercise prescriptions as a form of therapy for psychiatric patients.

Exercise prescriptions, also known as "green prescriptions," are a health professional's written advice to increase physical activity as part of a treatment plan (Swinburn et al., 1998). According to Moore (2004), exercise prescriptions resemble drug prescriptions in the sense that patients are prescribed, "Exercise *A*, taken *N* times daily, for *X* duration of weeks/months/years." Physical activity prescriptions mimic exercise prescriptions in terms of boosting overall activity; however, prescriptions may be less specific. For instance, a healthcare provider may ask simple questions about current activity habits including "(a) On average, how many days/week do you engage in moderate or greater physical activity (like a brisk walk)? and (b) On those days, how many minutes do you engage in activity as this level?" (Sallis, 2011). Compared to the former

prescription, adherence to a structured exercise program, a physical activity prescription may advise patients to establish a regular physical activity regimen or to increase their existing habits with a variety of activities (e.g., walking, gardening, biking, etc.) (Josyula & Lyle, 2013). It is important to note that the person's individual needs, goals, and ability level must be taken into consideration when developing an appropriate prescription (Moore, 2004).

Early work conducted by Swinburn et al. (1998) found green prescriptions to be more effective at increasing physical activity levels over a 6-week period than verbal advice alone when given by a general practitioner (GP). More importantly, Meyer et al. (2016) suggested that being directed to exercise by a healthcare professional (e.g., clinician, psychologist, etc.) may lead to more positive outcomes for patients with MDD. When comparing self-selected versus prescribed exercise intensity among females diagnosed with MDD, patients who exercised at their own intensity had smaller improvements in mood compared to those who were prescribed light, moderate, or hard intensities (Meyer et al., 2016). This may be due, in part, to healthcare professionals being credible and respected sources of advice in the eyes of patients, which may influence an individual's adherence and motivation (Lobelo & de Quevedo, 2016; Swinburn et al., 1998). In addition to credibility, advice from a healthcare professional is viewed as both accessible and valued (Josyula & Lyle, 2013).

As demonstrated by the Exercise is Medicine (EIM) global health initiative, which strives to improve health and longevity by advocating physical activity as a chronic disease prevention and management strategy, these prescriptions have been growing in popularity (Exercise is Medicine Canada, 2018). EIM encourages primary care physicians and healthcare providers to incorporate physical activity prescriptions into standard clinical practice by integrating activity into treatment plans (American College of Sports Medicine, 2018). Therefore, physical

prescriptions from a healthcare professional may be an effective way to manage mental health conditions.

### 2.8 Current Mental Healthcare Practitioner Perspectives on Physical Activity and Exercise Prescription

Very little is known about how psychiatrists perceive the concept of physical activity and/or exercise; however, the perceptions of primary care professionals including general practitioners (GPs) and mental health nurses have been studied while fewer studies have examined mental health specialists (i.e., psychologists) and educational directors.

Several studies found that GPs held favourable attitudes toward using exercise prescriptions in the management of depression (Patel et al., 2011; Searle et al., 2012; Stanton et al., 2015). In fact, GPs reported two main benefits of a "green prescription" that included a non-medication approach to a healthier lifestyle and the support from a professional in the initiation and maintenance of physical activity or exercise (Patel et al., 2011). Despite these attitudes, numerous barriers were reported including (a) lack of confidence in prescribing exercise (Glowacki, Weatherson, & Faulkner, 2018; Searle et al., 2012; Stanton et al., 2015); (b) low patient motivation (Glowacki et al., 2018; Searle et al., 2012; Stanton et al., 2015); (c) comorbidities (Stanton et al., 2015); (d) time constraints (Patel et al., 2011); (e) lack of guidelines, specialized training, and procedure (Glowacki et al., 2018; Persson et al., 2013; Way et al., 2018); (f) inadequate organizational support and support from colleagues (Glowacki et al., 2018; Persson et al., 2013; Way et al., 2018); and (g) not seeing exercise prescriptions as part of their role (Glowacki et al., 2018). A survey of Canadian primary care physicians found that 85% of GPs reported asking patients about their physical activity levels, but only 15.8% used written prescriptions for a physical activity promotion program (Petrella et al., 2007). While this rate is

low, Way et al. (2018) found that mental healthcare practitioners expressed interest in further training in exercise prescriptions.

Mental health nurses believed that they were adequate resources in providing exercise advice to patients and supported promoting physical activity to enhance mental health (Happell, Scott, Platania-Phung, & Nankivell, 2012a; Happell et al., 2012b; Robson et al., 2013). However, in addition to previously reported barriers such as low confidence and limited training in prescription (Verhaeghe, De Maeseneer, Maes, Van Heeringen, & Annemans, 2011), other barriers such as competing work priorities (Happell et al., 2012b) and a proclivity to the mind-body duality (Faulkner & Biddle, 2002), defined as treating the body and mind as separate entities that do not interact with each other, further limited the provision of exercise programmes for mental health consumers.

Similarly, Faulkner and Biddle (2001) identified four themes that hindered the use of exercise as an adjunctive treatment for mental health problems among British course directors of clinical psychology programs. These themes included "(a) an inconsistent evidence base on the efficacy of exercise; (b) perceived "simplicity" of exercise interventions; (c) a practical adherence to mind-body dichotomy; and (d) incompatibility of exercise with traditional models of understanding and treating clinical conditions."

Despite minimal formal training, psychologists agreed that promoting physical activity could benefit psychological treatment and felt capable in providing general advice (Burton et al., 2010). Among 236 psychologists, 93% agreed that physical activity counseling could be useful in psychological treatment and >80% believed that they could discuss options and plan for anticipated barriers, but less than half felt confident in monitoring activity levels or prescribing individually-tailored programs (Burton et al., 2010). In contrast with front-line practitioners,

psychologists have longer consultation periods and extensive training in theory and practice of behaviour change, which may explain the higher levels of confidence in exercise prescriptions (Burton et al., 2010).

Additionally, mental healthcare professionals' personal exercise habits may influence their perspectives and subsequent use of physical activity and/or exercise as a therapeutic treatment (Glowacki et al., 2018). According to Lobelo, Duperly, and Frank (2009), health professionals who discussed their personal exercise habits came across as more credible, which increased the efficacy of activity recommendations and patient motivation. There is mixed evidence regarding the strength of this association. Some studies found that practitioners who exercise regularly also prescribed exercise more to patients (Burton et al., 2010) whereas others did not find an association between personal exercise behavior and exercise prescription rates (Stanton et al., 2015).

From these professionals, we know that there is debate surrounding the practicality of physical activity and/or exercise prescriptions and a general lack of confidence in prescribing activity mostly due to inadequate knowledge and educational resources. Understanding the viewpoints of mental health professionals is important to maximizing access to the therapeutic potential of physical activity and exercise. Like psychologists, psychiatrists generally have longer consultation periods and formal training in behaviour change, which may put them in an optimal position to counsel physical activity or incorporate exercise into treatment plans.

**2.9 Rationale**

Physical activity and exercise have many therapeutic benefits that are comparable to pharmacologic and psychotherapeutic interventions; however, physical treatments are under prescribed (Hoffmann et al., 2016). To date, there is a lack of literature understanding these

perceptions among psychiatrists. In terms of treatment and diagnosis, psychiatrists are capable of performing both tasks without the aid of other mental health professionals and are consistently viewed as having an important position in psychiatric care (Hutschemaekers, Tiemens, & Kaasenbrood, 2005). As stated by Biddle, Fox, and Boutcher (2000), qualitative studies of how different healthcare professionals perceive the role of physical activity and exercise in the treatment of depression is warranted to understand how a physical activity and/or exercise prescription would be developed and adopted. Therefore, the purpose of this study was to explore psychiatrists' perceptions of using physical activity and/or exercise as a form of treatment for depression. This study had the following research questions:

1. What are psychiatrists' perceptions of the utility of physical activity and/or exercise as a form of treatment for depression?
2. What influences these beliefs?
3. What are their experiences in using physical activity and/or exercise prescriptions?
4. How can we facilitate the inclusion of physical activity and/or exercise prescriptions?

Using semi-structured interviews and interpretative phenomenological analysis (IPA), this study aimed to identify perceptual themes among psychiatrists to shed light on how to facilitate the inclusion of physical activity and/or exercise into treatment plans for mental health consumers.

# Chapter Three: Method

## 3.1 Paradigmatic Assumptions

**Ontology.** My research questions (a) "What are psychiatrists' perceptions of the utility of physical activity and/or exercise as a form of treatment for depression?"; (b) "What influences these beliefs?"; (c) "What are their experiences in using physical activity and/or exercise prescriptions?"; and (d) "How can we facilitate the inclusion of physical activity and/or exercise prescriptions?" align best with a constructivist (or interpretivist) paradigm. This paradigm holds a relativist ontology that defines reality as a "form of multiple mental constructions, socially and experientially based, local and specific, dependent for their form and content on the person who hold them" (Guba, 1990, p. 27). The constructivist paradigm emphasizes understanding the subjective experiences of each individual, which aligns with my interest of comprehending the utility of physical activity and/or exercise as a treatment for depression from a psychiatrist's perspective.

**Epistemology.** The constructivist paradigm follows a transactional epistemological stance that believes in "co-created findings" (Lincoln, Lynham, & Guba, 2011). This epistemological stance is inherent within my desired method, interpretative phenomenological analysis (IPA), due to the two-stage interpretation process, also known as a double hermeneutic. The participants are trying to make sense of their world while the researcher is trying to make sense of the participants trying to make sense of their world (Smith & Osborn, 2003). Thus, this iterative cycle demonstrates researcher-participant data generation or "co-created findings."

## 3.2 Position in Research

My experience as a former client within the mental healthcare system is what shaped my desire to pursue this area of research. As an adolescent, I struggled with major depressive

disorder and experienced a constant sense of sadness, anger, and confusion. After three years of suffering, I finally sought professional help, which involved a variety of experts that included my school guidance counsellor, two local therapists, a psychologist, and a psychiatrist. It took a heavy combination of medication and psychotherapy to bring me back from what I thought was the end of my life.

Reflecting on my experience, I frequently asked myself, "Could there have been an easier way?" I questioned whether my course of treatment could have been more efficient or if there was a "more natural" way of healing since the side effects I endured – nausea, headaches, agitation, and insomnia to name a few – due to the medication made me second-guess whether trying to get better was even worth it. Nevertheless, my arduous treatment experience was successful, and I continue to use my battle with mental illness to fuel my passion for mental health. My experience helps me to genuinely seek and understand how the mental healthcare system can be improved.

As I progressed through my undergraduate psychology degree, I became fascinated by the growing support for "non-traditional" and "natural" treatments for depression, particularly using physical activity or exercise as a way of alleviating depressive symptoms. However, I was perplexed as to why this was never mentioned during my treatment and wondered if it was ever considered as viable therapy in current psychiatric practice. Throughout this thesis, I aimed to explore psychiatrists' perceptions regarding the use of physical prescriptions in practice to better understand whether physical treatments are considered, or even used, as treatments for depression. Using a social cognitive lens, I wanted to better understand the factors that influenced whether psychiatrists engaged in using this type of prescription. I aimed to collaborate with psychiatrists to better comprehend the feasibility of physical activity and/or

exercise treatments for depression to inform, and hopefully contribute to the improvement of, current practices.

### 3.3 Interpretative Phenomenological Analysis

To best understand the psychiatrists' perceptions of the utility of physical activity and/or exercise as a form of treatment for depression, the method for this study was interpretative phenomenological analysis (IPA). IPA aims to explore participants' personal lived experience, how they make sense of that experience, and treats participants as experts (Smith, 2004). This method is comprised of three key theoretical underpinnings: phenomenology, hermeneutics, and idiography. Phenomenology is the philosophical study of 'being,' a study of our existence and experiences (Larkin & Thompson, 2012); therefore, at the core of this approach is a phenomenological emphasis on trying to understand a participant's world through the meanings that they attribute to their experiences (Larkin, Watts, & Clifton, 2006; Shinebourne, 2011). More importantly, IPA is concerned with cognitions and understanding what the particular respondent thinks or believes about the topic under discussion (Smith, Jarman, & Osborn, 1999). Thus, this method is appropriate for understanding psychiatrists' perceptions of the utility of physical activity and/or exercise treatments for depression. Researchers play a role in making sense of participants' experiences via a process of intersubjective meaning-making, highlighting the interpretative theory of hermeneutics (Larkin & Thompson, 2012). IPA consists of a double hermeneutic whereby the researcher tries to make sense of the participants' world as participants are trying to make sense of their world (Smith & Osborn, 2003). Focusing on a participant's experience, process of understanding, and meaning attributed to their experience sheds light on their engagement with a phenomenon (Larkin et al., 2006). Lastly, IPA has a commitment to an idiographic level of analysis, which emphasizes an in-depth, detailed examination of particular

experiences (Larkin & Thompson, 2012). By using a phenomenological approach, the researcher can gain insight into the elements, or themes, of a phenomenon by exploring participants' experiences with that phenomenon. In this study, the phenomenon of interest was the perceived utility of physical activity and/or exercise as a form of treatment, operationalized in the form of physical prescriptions, for depression. Psychiatrists' experiences with promoting or using physical prescriptions in their own practice provided the experiences by which the themes of utility and feasibility were explored.

There are several reasons why I chose to utilize IPA. First, this approach is consistent with my paradigmatic assumptions and this method is appropriate for understanding subjective experiences and meanings. IPA aligns with realist ontology due to the emphasis on understanding the subjective meaning of the participants' experiences. Likewise, this method is consistent with a constructivist paradigm since an epistemological assumption of IPA is that researchers access experience through a process of inter-subjective meaning making (Larkin & Thompson, 2012); thus, this researcher-participant relationship reflects the transactional epistemological process of co-created findings. Second, IPA has been identified as a suitable approach when one is "concerned with complexity, process or novelty" (Smith & Osborn, 2003, p. 55). The study of using physical activity and/or exercise in the prevention and/or management of chronic conditions is growing in popularity, especially in the area of mental health (Rethorst & Trivedi, 2013). In fact, physical treatments have been included the American Psychiatric Association's most recent treatment guidelines (American Psychiatric Association, 2010). This allows initiatives such as the "green prescription" program, designed to support people in increasing their level of physical activity to achieve health benefits, to be incorporated into mental health care (Patel et al., 2011; Swinburn et al., 1998). Despite the growing support for

this type of prescription, understanding the perceptions of the treatment provider is less understood. There is scant qualitative literature examining the perceptions of healthcare providers on using physical activity and/or exercise as treatment for mental health conditions; however, Faulkner and Biddle (2001) used an idiographic, inductive approach to identify themes surrounding the perceptions of exercise treatments among course directors of doctoral clinical psychology programs. To date, there is limited qualitative research examining psychiatrists' perceptions; therefore, replicating this early work would be useful in understanding how mental health experts view physical activity and/or exercise as a treatment modality. Therefore, the study of psychiatrists' perceptions of the utility of physical activity and/or exercise for treating depression can be considered novel and IPA can assist in understanding this particular phenomenon. Third, IPA focuses on exploring the participant's view of the world and adopts an "insider's perspective" (Conrad, 1987) of the phenomenon under study (Smith, 1996). By exploring psychiatrists' experiences in using physical activity and/or exercise as avenues of treatment, it sheds light on the feasibility of the phenomenon itself. Therefore, IPA is an appropriate method to use when trying to understand psychiatrists' perceptions of the utility of physical activity and/or exercise as a form of treatment for depression.

### 3.4 Theoretical Considerations

Previous literature has identified social cognitive theory constructs such as low confidence, self-efficacy, and perceived impediments, which may influence psychiatrists' perceptions of the utility of physical activity and/or exercise as a viable treatment for depression (Faulkner & Biddle, 2001; Stanton et al., 2015). Social cognitive theory (SCT) specifies a core set of determinants, from personal attributes to social processes, which dynamically and reciprocally react to influence behaviour such as using physical activity and/or exercise

prescriptions (Bandura, 2004). Core determinants include knowledge, outcome expectations, goals, perceived facilitators, perceived impediments, and perceived self-efficacy (Bandura, 2004). For the purpose of this thesis, I will only discuss the following constructs – perceived impediments, self-efficacy, and outcome expectations – that are relevant in understanding my research question. To note, after data analysis, only these constructs were discussed due to the richness of data. Despite exploring all SCT determinants using the interview script, only the constructs of perceived impediments, perceived self-efficacy, and outcome expectations emerged as themes.

Perceived impediments describe socio-structural factors that may deter an individual from acting on specific health behaviours whereas perceived self-efficacy, or confidence, is the belief in oneself to exercise control over a behaviour (Bandura, 2004). Outcome expectations are beliefs about the expected results, costs, and benefits of performing a behaviour (Bandura, 2004). The phenomenon under investigation is the perceived utility of physical activity and/or exercise as a form of treatment for depression, with psychiatrists as the population of interest. In this context, the behaviour of interest is using physical activity and/or exercise prescriptions. For the purpose of my study, SCT can be helpful in identifying what constructs (i.e., personal or social) influence psychiatrists' perceptions of utilizing physical treatments for depression. Stanton et al. (2015) and Searle et al. (2012) identified low levels of confidence in prescribing exercise among general practitioners, which may suggest decreased self-efficacy as a construct that influences psychiatrist perceptions. Moreover, Faulkner and Biddle (2001) outlined several perceived impediments such as an inconsistent evidence base and incompatibility of exercise with traditional models of treatment that may impact psychiatrists' perceptions of physical activity and/or exercise prescriptions. Identifying constructs that influence the perception of the utility of

physical activity and/or exercise prescriptions may help determine what areas need to be addressed at the practitioner level to facilitate the inclusion of physical therapies into treatment plans for mental health consumers. Given the exploratory nature of this research, physical activity and/or exercise prescriptions were discussed interchangeably and broadly to study any experiences participants may have had with using physical treatments.

As discussed in Sandelowski (1993), "theory can either be central or peripheral to the target phenomena under investigation" (pp. 215). Having theory as central describes using participant voices as evidence for a theory, which is more aligned to a positivist approach whereas using theory peripherally allows participant voices to be central, with the theory acting as a reference to enhance interpretation (Sandelowski, 1993). In my study, I used SCT as peripheral to place greater emphasis on participant voices to better understand how psychiatrists perceive the utility of physical activity and/or exercise as a form of treatment. More importantly, I used SCT in a comparative context to find meaning in the interpretative process of analysis. By investigating whether identified themes reflected SCT constructs (e.g., self-efficacy, outcome expectations, and perceived impediments), this may shed light on what type of support psychiatrists need to increase their confidence and ability in using physical activity and/or exercise prescriptions. I also used SCT to guide the development of my interview script. For example, the construct of self-efficacy was examined through the following question, "How much confidence do you have in giving a physical prescription?" Overall, SCT can substantiate the utility of physical activity and/or exercise as a viable therapy that may broaden the availability of treatments for depressed individuals.

### 3.5 Ethical Considerations

This study is best characterized as "low risk" inquiry because the topic of interest, using physical activity and/or exercise as a treatment for depression, is "*not* emotionally charged, *not* sensitive, *not* personal, *not* controversial, and does *not* require confidential disclosure" (Morse, Niehaus, Varnhagen, Austin, & McIntosh, 2008). However, important ethical concerns including protecting anonymity and confidentiality, establishing a trustworthy researcher-participant relationship, and providing informed consent (Morse et al., 2008; Sanjari, Bahramnezhad, Fomani, Shoghi, & Cheraghi, 2014) were taken into account prior to carrying out this qualitative inquiry.

Prior to beginning interviews, all participants gave informed consent (see Appendix D). Informed consent outlined the time commitment, any foreseeable risks or benefits, study purpose, procedures, the ability to withdraw from the study at any time without consequence, and how the data will be stored, kept safe, destroyed, and used in scholarly writing upon completion of the study. By clearly stating the goals and procedures, this step was essential to establishing a good relationship with participants before starting the interview. To further minimize potential risks, Morse et al. (2008) stress, "the researcher's responsibility is first to the participant and the setting, and second, to the research goals." As such, I was aware of any signs of discomfort, emotional responses, or extreme fatigue exhibited by the participant and offered to take a break or stop the interview, if necessary. The following strategies of (a) secure data storage methods; (b) removal of identifying information; and (c) use of pseudonyms (Sanjari et al., 2014) were used to protect participant anonymity and confidentiality. These plans helped to create a safe space for participants to discuss their beliefs regarding using physical activity and/or exercise as a form of treatment for depression.

### 3.6 Participants

Prior to recruitment, ethics approval was obtained via the Research Ethics Board (REB) at the University of Alberta. A characteristic feature of IPA is the idiographic nature of inquiry, which is the detailed examination of the perceptions and understandings of a particular group rather than searching for overarching generalizable claims (Eatough & Smith, 2017; Smith & Osborn, 2003). As such, IPA studies are typically conducted on small sample sizes, with a general recommendation of 5-10 participants for a student project using IPA (Smith & Osborn, 2003). The current study emphasized quality rather than quantity of data (Morse, 2000); therefore, 11 participants were recruited.

Purposive sampling was utilized to obtain a homogenous sample for which the research question was significant in order to generate high quality data (Smith & Osborn, 2003). In this study, the phenomenon of interest was exploring psychiatrists' perceptions of physical activity and/or exercise for treating depression, as psychiatrists are a respected source of advice in the eyes of other mental health professionals in terms of both diagnostic and therapeutic treatment (Hutschemaekers et al., 2005).

Participants were recruited via introductions through a known sponsor, an online search, and through word-of-mouth referrals from public practices in the Edmonton, Alberta area. Psychiatrists recruited in this study were between the ages of 33 and 71 years old (mean age of 47), with experience ranging from 2 ½ to 50 years. In this sample, there were two female psychiatrists and nine male psychiatrists. Each psychiatrist had a unique style of practice and saw a variety of patients, but all had experience working with depressed patients. In terms of representation, four participants held a combination of specialities out of the six identified specializations, seven primarily identified as general adult psychiatrists, three worked as

emergency room psychiatrists, two specialized in child and adolescent psychiatry, two worked as consult-liaison psychiatrists, one psychiatrist held an additional specialization in addictions, and one psychiatrist held a gender dysphoria specialization as part of their practice.

Prior to beginning the one-on-one interview, each participant was given the opportunity to choose a pseudonym in order to protect their anonymity. All participants indicated that they did not have a preference; therefore, I assigned pseudonyms to participants using a random name generator.

### 3.7 Data Generation

Data generation occurred through in-person, one-on-one semi-structured interviews consistent with the recommended mode of data generation set by Smith and Osborn (2003). According to Kvale (1983, p. 174), the qualitative research interview is "an interview, whose purpose is to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomena." Due to the exploratory nature of the phenomenon of interest, the perceived utility of physical activity and/or exercise as a form of treatment, interviews were chosen as the primary data collection method to gather insights on this topic. Structured interviews may have led to missed nuances between perspectives without the ability to probe further whereas unstructured interviews may have elicited too much variation that would have been difficult to analyze (Doody & Noonan, 2013). Therefore, semi-structured interviews were used because this approach allowed participants to freely share their unique experiences on pre-determined topics and gave me the flexibility to explore new themes as they emerged throughout the interview, which contributed to richer data (Doody & Noonan, 2013). Further, in-person interviews were utilized to allow for an opportunity to develop rapport and observe social cues (e.g., body language, emotion, intonation), which assisted in generating

quality information (Opdenakker, 2006). An interview script developed from previous literature and SCT (see Appendix E) informed the types of questions asked; however, the script was adapted as necessary with probing questions as emerging themes and topics arose from interviews.

Interviews were conducted in locations that were convenient for participants, typically in private offices or meeting rooms in their workplace and lasted between 25 to 70 minutes. Upon obtaining participant consent, interviews were audio-recorded, with two audio recorders per interview, and transcribed verbatim immediately following the interview to retain the most accurate retelling of events. I recorded field notes on the interview script during the interviews in order to recall the body language and emotion of participants as they answered each question. These notes provided valuable contextual data, which was useful when recalling interviews and ensuring an accurate portrayal and interpretation of participants' voices during data analysis (Phillippi & Lauderdale, 2018).

**Reflexivity journal.** A journal was used to document my thoughts and feelings immediately following each interview. I engaged in this process to actively practice "reflexivity," where I was able to recognize my own thoughts and biases as they arose throughout data collection. This was conducted in order to avoid making false assumptions during data analysis and to uphold the integrity, quality, and validity of participants' experiences (Guillemin & Gillam, 2004). The journal contained 12 entries between November 2018 and December 2018.

**Member reflections.** Member reflections were conducted with study participants after completing preliminary analyses, roughly two months after conducting and transcribing all 11 interviews. A summary of themes generated from each participant's individual transcript (see

Appendix F) was emailed to each participant, and they were invited to make any comments on my preliminary interpretations. Four participants responded and all saw accurate representations of their perceptions in their themes. “This sounds most thorough and complete. I think you have captured the essence of what I was expressing. Well done,” commented one participant. Nine out of eleven participants indicated interest in reading the final manuscript, and one participant extended an invitation to present my results to their colleagues upon completion of this thesis.

**3.8 Data Analysis**

IPA focuses on detailed exploration of participants’ personal lived experience and how they understand those experiences (Smith, 2004). The result of analysis yielded the identification of individual themes and overarching, also known as superordinate, themes that reflected participant experiences. In the context of this study, IPA was used to identify themes that represented psychiatrists’ beliefs in using physical activity and/or exercise for the treatment of depression. The four-step process for analyzing data included (a) looking for themes in the first case; (b) seeking relationships and clustering themes; (c) continuing the analysis with other cases; and (d) writing up a narrative account (Pietkiewicz & Smith, 2012; Smith & Osborn, 2003).

The first step, looking for themes in the first case, involved multiple readings of the transcript and making notes of distinctive phrases made by the participant (Pietkiewicz & Smith, 2012). During this stage, I immersed myself in the data by reading the transcript numerous times and referring to field notes to help recall the atmosphere of the interview. With each read, I documented themes by transforming initial notes into concise phrases that reflected the essential quality of the participant’s text, keeping in mind that the themes allowed for theoretical connections across other cases, but remained grounded in the individual’s specific words (Smith

& Osborn, 2003). After the completion of this step, I proceeded to connect the themes. This occurred by compiling all emergent themes on a sheet of paper and looking for connections between them using an analytical or theoretical lens (Smith & Osborn, 2003). At this stage, themes were clustered together, with some emerging as superordinate concepts, while others became sub-themes or dropped. Consistent with the first step of analysis, it was paramount that the connections of themes were supported by the actual words of the participant (Smith & Osborn, 2003). This iterative cycle led to a final list of themes for the transcript, with in-text quotations from the participant supporting each theme.

Upon completion of steps one and two, I repeated this process with each subsequent transcript. According to Smith and Osborn (2003), "one can either use themes from the first case to help orient the subsequent analysis or separate transcripts and analyze each from scratch." It was important to remain aware of what had come before to help identify consistent themes across cases while simultaneously finding responses that articulated new themes. During this stage, it was important to "respect convergences and divergences in the data – recognizing ways in which accounts from participants are similar but also different" (Smith & Osborn, 2003, p. 73). Once each transcript was subjected to the interpretative process, a final list of superordinate themes from each case was created. Themes were prioritized and reduced based on the richness of data that best represented participants' experiences (Smith & Osborn, 2003). The last step of analysis was to translate themes into a narrative account. This involved describing the inherent meaning of the themes representing participant experiences through my own analytic lens, combined with verbatim extracts from the text to support each theme (Pietkiewicz & Smith, 2012). In this stage, Smith and Osborn (2003) stress the importance of clearly distinguishing between the words of the participant and the interpretation of the researcher. Moreover, it is

important to note that analysis continues throughout this last stage, as the researcher continues to interpret the participant experiences in order to accurately translate them into results and discussion, which can be subsequently linked to extant literature (Smith & Osborn, 2003). This four-step approach of IPA analysis was used to understand the overarching themes surrounding psychiatrists' perceptions of the utility of physical activity and/or exercise as a form of treatment for depression.

### 3.9 Verification Strategies

Researchers view the notion of rigor as a necessary marker of quality (Smith & McGannon, 2017). According to Morse, Barrett, Mayan, Olson, and Spiers (2002), verification strategies should be incorporated into the research process to ensure that the study is both reliable and valid, which are key components to ensuring rigor. Integrating these strategies helps the researcher to identify and correct errors before these mistakes become irreversible and undermine the quality of the study (Morse et al., 2002). The iterative nature of qualitative inquiry stresses that a good researcher should systematically check for coherence between each component of the research process – from question formulation, literature review, recruitment, data generation, and analysis – to establish and maintain rigor (Morse et al., 2002). In addition, Morse et al. (2002) highlight that investigator responsiveness, defined as the researcher's creativity, sensitivity, flexibility, and skill in using verification strategies, is crucial to maintaining rigor in a study because these qualities determine the reliability and validity of a study. Therefore, it is essential for a researcher to remain open and flexible by disregarding any preconceived biases to attain optimal reliability and validity.

Several verification strategies were employed throughout this study to ensure rigor. First, this study utilized member reflections to ensure an accurate representation of participant voices.

This method was selected over member checking, defined as sharing field notes, interview transcripts, or any other collected empirical material with the participants to allow them to verify an accurate portrayal of their experience (Markula & Silk, 2011), due to this process being subject to several critiques such as participant biases, contradicting researcher-participant interpretations, participants not being invested in the member checking process, or time constraints (Smith & McGannon, 2017). To mitigate these threats, Smith and McGannon (2017) suggest using member reflections to "provide researchers a practical opportunity to acknowledge and/or explore with participants any contradictions and differences within the researcher's interpretation." Thus, the goal of member reflections was to provide an opportunity for open dialogue to generate a deeper understanding with participants to ensure a truthful account of their experience. Second, the sample was appropriate for optimal data saturation (Morse et al., 2002). Psychiatrists are considered to have the highest contribution in both diagnostic and treatment tasks (Hutschemaekers et al., 2005); thus, they are highly knowledgeable and capable of providing quality data. Lastly, each component of the study design strived for methodological coherence. According to Morse et al. (2002), methodological coherence aims to ensure congruence between the research question and the research process. For instance, understanding psychiatrists' perceptions about a particular phenomenon can be understood using an IPA approach that has roots in cognitive psychology, a field focused on examining mental processes and perceptions (Smith, 2004). This study also ensured that the number of recruited participants were consistent with recommended sample sizes for an IPA study (Smith & Osborn, 2003).

# Chapter Four: Results

Psychiatrists' perceptions of the utility of physical activity and/or exercise as a form of treatment for depression are represented by the following five themes: (a) "You need to treat the whole thing;" (b) "Our bodies are made to move;" (c) "We stick to medication and therapy 'cause [sic] so far it's the best we have;" (d) "My job is to make sure that they're well;" and (e) "Out of all specialties, we're the most open to new things like this."

## 4.1 "You need to treat the whole thing"

Although depression is a well-known psychiatric illness, definitions of depression vary between patients and psychiatric experts. "You know the word 'depression' to some people means one thing, to psychiatrists we always kind of say, 'well what do you mean by that depression?'" explained Michael. Gauging psychiatrists' conceptualizations of depression was necessary to understand how they treated this illness. In this study, psychiatrists defined depression in a variety of ways including "as an imbalance," "as trauma and anger," "as isolation," "as a loss of agency," and "as something that pulls you into yourself." Furthermore, Robert described the complexity of depression when he said, "The interesting thing about depression is no psychiatrist will ever tell you that they have a good treatment for depression 'cause [sic] we all see people who just don't get better." Such conceptualizations suggest that depression was considered a multifaceted disease that may require intensive and multimodal treatment.

Participants repeatedly described depression treatment as a "complex," "individualized," and "holistic" process despite each psychiatrist having a unique style of practice, which varied from pharmacologic- or psychodynamic-based, to a combination of both. Psychiatrists reported regularly completing comprehensive assessments to guide treatment planning; additionally, some

psychiatrists also consulted multidisciplinary team members, if necessary. Several psychiatrists followed a biopsychosocial, sometimes spiritual and/or cultural, model of care whereas others stressed a more collaborative or motivational relationship with patients. William reflected these experiences in his description of treatment planning:

> I use a five-pronged model which consists of biological, psychological, social, spiritual, and cultural components. Because we consider all parts of the person's health, what I do is I work collaboratively with the patient to come up with a treatment plan.

Administering individualized care was a prevalent feature among all psychiatrists' practices; however, there were varied levels of involvement between patients and psychiatrists. Some psychiatrists applied their knowledge to develop practitioner-directed treatment plans. Michael explained, "Its [treatment] always very individual you know, so I always kind of read the patient and try to come up with something that's crafted to them." Adrian shared similar beliefs, "I mean to some degree I'm giving them the options of what would be best for them but trying to emphasize the things that are really, really important, basically mandatory." On the other hand, several psychiatrists were careful of imposing their expertise and often treated patients as experts in their own care. This collaborative approach was intended to help patients regain a sense of control and independence. Carol shared, "They're [patients] going to decide to do what is gonna [sic] be best for them." This also allowed patients to achieve a sense of mastery or agency, which was considered an important aspect for treating depression. Wayne said:

> In a psychological sense they benefit because they have a sense of agency… 'I can do things, I can master something'… sense of mastery is crucial… I leave a lot of the things up to the people I see because I figure if I'm able to help people see who they are, they're gonna [sic] go for what's right for them.

Judith also shared:

> I'm often in a place of coming from a bit of a motivational enhancement model and giving lots of choices… How it [physical activity or exercise] might fit as a choice in treatments 'cause [sic] I think that's a big part for depression, like you have to find a treatment that patients are gonna [sic] buy into… How do you make sure you're not invalidating patients and how are you giving them some choice in trying to find something where they're gonna [sic] be on board for the treatment, 'cause [sic] that's a big part of treating depression.

As part of administering individualized care, participants discussed how well physical activity and/or exercise fit within their treatment approach. Psychiatrists described physical activity and/or exercise to be beneficial at any stage of treatment including prevention, treatment, and maintenance after recovery. "Based on scientific studies, exercise can be preventative for certain types of depression and for other people it can be therapeutic if they already have it," shared William. Michael further described longitudinal benefits, "If they continue an exercise regimen, it might prevent a future depressive episode." Physical benefits included improved physical functioning such as increased energy, better blood flow, improved sleep quality, regulated appetite, weight loss and/or decreased risk of weight gain, enhanced cardiac and respiratory functioning, decreased risk or lessened medication side effects, and the release of mood-enhancing neurotransmitters (e.g., endorphins and serotonin). Psychological advantages encompassed cognitive benefits such as improved self-regulation, enhanced executive functioning, increased concentration, and better coping skills; in addition, positive mental wellbeing factors included lower depressive and anxiety symptoms, increased sense of mastery and agency, and higher self-esteem. From these reported benefits, the interplay between the mind

and body and how physical activity and/or exercise may influence this relationship was a common experience. For example, William described how exercise fit within cognitive behavioural therapy (CBT), a common psychotherapeutic approach:

> So exercise is a part of a therapy called cognitive behavioural therapy, which is very evidence-based for depression and there is the behavioural element that includes behavioural activation, which means doing something… That's a behavioural activation, which is the first step in setting up the person to eventually engage in some sort of routine exercise.

Michael stated exercise could be considered as a form of CBT, which suggested how being active can be a comparable therapy for depression. He shared, "I guess you could argue that exercise is actually a form of CBT depending on how you think about it… CBT is you know evidence-based very effective psychotherapy for depression." Similarly, physical activity and exercise were described to have therapeutic effects that contributed the holistic wellbeing of individuals. Michael shared:

> Do I think of it [physical activity and exercise] as more of bio or more psycho… Its both to be honest with you, I mean it's a biological treatment in the sense that you know there's immediate physiological benefits and it's also psychological because you can think about it as like behavioural activation.

Judith also described psychiatry as a field that has evolved over time to include physical treatments as a way to benefit both the body and mind:

> I think there's been a longer standing or older tradition of trying to separate some of the psychiatry stuff from the medical part of things, or like the head from the body in some ways, and I think that the research would show that that's absolutely not true right?

> Obviously, our nervous system and our endocrine system and hormones all run throughout our whole body and you need to treat the whole thing and so I think it [physical activity and exercise] ties in really nicely with that as well.

The psychiatrists' views of treatment as a comprehensive process alongside their integrated awareness of the mind and body relationship allowed physical activity and/or exercise to be understood as viable avenues of treatment for depression.

**4.2 "Our bodies are made to move"**

Understanding psychiatrists' definitions of physical activity and exercise was used to gauge how they incorporated either activity into their practice. When asked to define physical activity and exercise, most psychiatrists were able to differentiate and provide a description of each term, with only two psychiatrists understanding physical activity and exercise as the same construct. Psychiatrists described physical activity to be a broad term that encompassed "any activity that involved moving the body" or as something that "could be easily incorporated into someone's routine." Conversely, exercise was described to involve "specific," "goal-oriented," and "intentional or deliberate" activities that often required more "exertion." Consistent with Caspersen et al.'s (1985) definition, two psychiatrists appropriately identified exercise to be a subset of physical activity. In regard to which term they used more frequently with patients, three psychiatrists used "physical activity" more often, four favored using "exercise," and four used both terms depending on what the patient was interested in. These distinctions proved to be meaningful as participants indicated that they were particular about the terminology they used with patients; in fact, one participant explicitly outlined their support for physical activity over exercise as a therapeutic modality. "Exercise I don't think needs to be promoted. Personally, I don't think that's the way to go, I think it's more about physical activity," stated Robert.

In general, most psychiatrists held favorable attitudes towards utilizing either physical activity or exercise as a form of treatment for depression, except one. Among proponents of both physical activity and exercise, there were positive attitudes regarding the "natural" or "non-medication" approach to treating depression. Adrian shared, "Exercise is the most powerful non-medication antidepressant that there is." Wayne echoed this belief when he said, "To me our bodies are made to move! So exercise is a given! Like there can't be a doubt about the value of exercise… And the most important thing to me is that that treatment comes from within your body."

In addition, the notion that physical activity and/or exercise being comparable to antidepressants further reinforced psychiatrists' beliefs in using activity as a form of treatment. William articulated, "For first-line depression, in my opinion exercise can be just as good as a first-line antidepressant." Conversely, some psychiatrists expressed confidence in physical activity and/or exercise acting as "adjunctive" or "augmenting" treatments, but not necessarily as first-line therapy. "Physical exercise on its own is not a cure for depression… I have confidence in it as an adjunct but not as a stand-alone treatment," explained Daniel. James shared similar sentiments, "I'm very confident in it acting as an augmentation agent for everything else that we're doing, from talk therapy or medication wise." These perceptions were shaped by scientific evidence, personal experiences, or a combination of both. Scientific evidence reporting the benefits of using physical activity and/or exercise to alleviate depressive symptoms bolstered psychiatrists' perceptions around the utility of these modalities. Daniel explained, "I do routinely prescribe it [physical activity and exercise] … Because of the sciences behind it." Thomas added:

> Well I'm a very strong advocate… Based on my fervent belief in the literature, which suggests that physical activity or exercise is equally effective as CBT you know for some mild-to-moderate forms of clinical depression… It's not a blind trust, it's more informed by the literature which suggests that it's efficacious.

On the other hand, some psychiatrists advocated for physical activity and/or exercise based on their own personal experiences and values. In this sample, five out of eleven psychiatrists were physically active themselves, with four out of five psychiatrists promoting physical activity and/or exercise more often in their practice due to their active lifestyles. For example, Carol shared her experiences using exercise as a coping mechanism as a way of encouraging her patients:

> I have always been someone that values exercise so I personally have done it. But I also had three postpartum depressions and I used exercise to get me through two out of those three without medication, so I have a personal experience and I know it helped… I've seen people very close to me within my family like my husband and my kids adopt exercise as a way of mood regulation, energy, increased concentration, and just better academic performance, so I've just have seen it be a really powerful tool… I tell them [patients] my own experience and the role it plays for me so that they are kind of motivated to pursue it.

For Judith, being physically active gave her a sense of credibility that made it easier for her to relate to patients, which may play a role in influencing their motivation levels:

> I feel like that's something I can speak to for patients and relate to them on a lot of the time 'cause [sic] I played a bunch of sports growing up… I find it easier to convince teenagers to do things when you can kind of walk the walk as well as talk the talk.

As summarized by James, “It’s got evidence behind it and seeing my [personal] subjective benefits, it should be an ongoing piece of treatment,” physical activity and/or exercise were viewed favorably among most psychiatrists to be feasible forms of treatment for depression. However, one psychiatrist held negative attitudes towards utilizing exercise in the treatment of depression. Despite being supportive of using physical activity, Robert expressed skepticism towards using exercise due to a lack of evidence on the specific beneficial mechanisms of exercise. He shared:

> I mean you know there is BDNF [brain-derived neurotrophic factors] and all these kind of proposed theories of how exercise works and blah blah blah… It’s a lot of wishful thinking. I just don’t know that I can definitively say it is this you know the muscle contractions leads to this, which causes that. I don’t know actually that evidence exists.

Evidence in support of physical treatments, including exercise, is discussed in the latest Canadian Network for Mood and Anxiety Treatment (CANMAT) 2016 Clinical Guideline. In this document, studies reported exercise as an appropriate first-line treatment for mild-to-moderate MDD and a second-line treatment for moderate-to-severe MDD. However, psychiatrists in this study voiced split opinions on this evidence. Among supporters, the quality of evidence was satisfactory and the guideline provided a scientific rationale to reinforce their activity recommendations. William cited CANMAT to justify his advice to patients and said, “I tell them this is not just me telling them and this is based on the scientific guidelines.” James aptly communicated CANMAT advocates’ beliefs in his statement, “That’s why I kind of promote it. I mean I do feel as though it [CANMAT] has good evidence and it should be promoted in that way.” On the other hand, critics reported a biased presentation of evidence that made the guideline difficult to use in practice. As stressed by Robert:

> The evidence is not very strong. It carries more a feeling it should work but when you actually look at the evidence, it's not super strong evidence that it would work. So my own bias has always been as much as I like to exercise, I rarely promote exercise among my patients.

Consistent with this view, Wayne saw practical difficulties around using CANMAT among his colleagues, "What I see with CANMAT is that I see my colleagues not using them. I don't know, it appears overwhelming or cumbersome." It was important to recognize the disproportionate attitudes that existed among psychiatrists to understand how to frame and validate physical treatments as feasible options to mental health practitioners.

**4.3 "We stick to medication and therapy 'cause [sic] so far it's the best we have"**

In terms of their experiences utilizing physical activity and/or exercise within their practice, all psychiatrists felt knowledgeable to provide general recommendations, with two psychiatrists expressing confidence in suggesting more specific regimens if necessary. When asked about their experiences in using physical activity and/or exercise prescriptions, defined as a health professional's written advice to a patient to be physically active as part of a treatment program (Government of New Zealand, 2016), only one psychiatrist had used this type of prescription. Carol used written prescriptions as a tangible reminder of her advice, but whether it was effective in promoting activity remained unclear. She recalled:

> They're [patients] quite surprised, they laugh about it, but you know its something they can take home with them and make them think about it… I've never actually taken the stats to see who actually ends up exercising and who doesn't… Plus we're relying on patient reporting and I think sometimes people feel embarrassed to tell you that they're not doing it, so they may not be entirely honest about what they're up to.

Due to the individualized nature of treatment, physical activity and/or exercise recommendations varied in terms of type of activity, intensity, and duration. Nine out of eleven psychiatrists were not aware of the current physical activity or exercise guidelines, which translated into ambiguous and unstructured advice. Daniel reflected these experiences when he shared, "I just kind of tell them whatever thing that they are doing that they consider as exercise… I'll just ask them to do it so I'm not very specific with them as to what they should do." On the contrary, two psychiatrists were familiar with current guidelines and this reflected in the type of instructions they provided. For example, Carol explicitly mentioned type, duration, and frequency with her patients, "…What I recommend patients do is 30 minutes of aerobic activity - a minimum of 30 minutes - preferably daily but if not daily then four to five times a week." From these experiences, there were clear discrepancies in the quality of physical activity and/or exercise recommendations patients received from their psychiatrist.

The prevalence of applying physical activity and/or exercise as a therapeutic modality among the psychiatric community may have influenced the awareness, acceptance, and utility of these treatments. As explained by Robert, psychiatrists have not deviated from medication and psychotherapeutic treatments because nothing has proved to be more efficacious than them:

> It [physical activity and exercise] would never hold the same kind of prestige. I think it should but I don't think it would or does… So I think you know we stick to medication and therapy 'cause [sic] so far it's the best we have… Nothing has come along that's been better than that.

In addition, participants were unsure of whether their colleagues were recommending physical activity and/or exercise to their patients. Although psychiatrists in this sample may have promoted physical activity and/or exercise in their offices, this study represented a small

proportion of psychiatric practices. James said, “It’s a pretty big portion of what I describe. I’m not sure what other psychiatrists would be doing per se.” Adrian shared similar thoughts, “Most of us don’t watch each other work, so I don’t know how much other psychiatrists recommend it or talk about it.” From these experiences, there was a lack of awareness around the utility of physical activity and/or exercise among the psychiatric community, which may provide insight into the current acceptance of physical treatments. Moreover, psychiatrists may assume that it is not within their role to promote physical activity and/or exercise or that someone else may discuss it, which may further perpetuate apathy towards using alternative therapies. Michael shared, “We tend to just assume that that’s someone else’s responsibility I think, so just remembering that it is. I like the word prescription ‘cause [sic] probably no one thinks about it like that.” The prevalence of non-traditional therapies within the professional community, of lack thereof, may influence the use and acceptance of physical treatments.

Psychiatrists identified numerous barriers, described as either patient- or psychiatrist-related, that limited their ability to use physical activity and/or exercise as a form of treatment. Financial costs associated with being active were commonly stated as patient barriers. William shared, “The financial issues… Sometimes if patients were to go join a gym, it can be quite prohibitive especially if a patient is not working.” In addition, depressive symptoms such as low motivation and low sense of mastery were frequently cited as barriers that made it difficult to engage patients. “Some of the symptomatic aspects of the depression itself with that lack of energy, lack of focus, the anhedonia, that decreased drive to do anything is a barrier… The symptoms itself of the depression is a limiting factor,” explained James. Wayne further echoed, “It’s missing in a depression. There’s no sense of mastery.” All psychiatrists shared how depression severity played a large role in patient engagement. Robert reflected these experiences

in his description of how prioritizing the treatment of depressive symptoms was necessary in order to facilitate patient responsiveness to other suggestions:

> I really see the main problem is the depression you know like that is really the tough thing to treat… You can make all these suggestions but it never goes anywhere but then once you finally treat the depression and they're not as depressed, people want to do things and they find the things to do and they'll come back and tell you stuff they're doing that you didn't know they were interested in.

Psychiatrists also acknowledged barriers that impacted their ability to use physical activity and/or exercise treatments in their practices. For example, psychiatrists' level of awareness around the benefits of physical activity and/or exercise for depression may have influenced their confidence to discuss and advocate for this type of therapy. "Even lack of knowledge or lack of familiarity might lead to reluctance to talk about it as much or even bring it up at all," explained Adrian. Daniel also shared, "If the physician does not have that knowledge of what a physical exercise is in terms of improving symptoms of depression, then that physician is less likely to advocate for it as a treatment." It was evident that education was necessary in order to empower psychiatrists to use physical activity and/or exercise as treatments; however, there were recurring voices of frustration at the lack of clarity and infrastructure within the mental healthcare system, which further hindered psychiatrists' ability to utilize physical prescriptions. For Aaron, limited infrastructure negatively impacted the legitimacy of physical treatments. "It's a verbal prescription but not a written prescription. It's not a kind of legal prescription," he said. Judith described her frustration at the lack of adequate supports to encourage physical prescriptions:

> I find it frustrating that we don't support that [physical activity] in the same way. Like, 'Could I be able to prescribe a City of Edmonton pass or should I be able to prescribe a City of Edmonton pass to a kid or family and then say this is the kind of physical activity you should be doing.' I think that is something that should be better supported.

Thomas discussed the importance of engaging all levels of healthcare, from patients to policy makers, to facilitate the formalization of physical activity and/or exercise prescriptions into the mental healthcare system:

> If there is buy-in from patients and also buy-in from the health services and there's something very structured, then psychiatrists will be very much interested in referring patients to engage in structured physical activity or exercise… Getting health policy makers and managers actually aware of the evidence 'cause [sic] I mean they have to create the infrastructure for this to happen. If the infrastructure is not there, then it's [physical activity and exercise prescriptions] not going to happen.

Poor infrastructure encompassed other barriers such as insufficient resources, particularly specialists, who could support psychiatrists' activity promotion efforts. Aaron said, "We don't have a recognized specialist for physical activities slash exercise… We don't have a recognized specialist who could do functional assessment of physical abilities." James also identified not knowing where to send patients within the system to be a limitation, "We need more accessible programs that are easy for psychiatrists to learn about so we kinda [sic] know what's out there… One of the other barriers is not knowing where to send people." Therefore, these barriers may have influenced psychiatrists' ability to utilize physical activity and/or exercise prescriptions.

### 4.4 "My job is to make sure that they're well"

In this study, psychiatrists held diverse attitudes regarding the role they play in physical activity and/or exercise promotion. In general, psychiatrists described their role to be largely influential due to the level of credibility associated with their position. "Sometimes the value placed on what the doctor says to do is different than some other members of the team," shared Judith. James also reiterated the level of trust embedded in the patient-psychiatrist relationship:

> Individuals come to their psychiatrist and have a level of trust in them… I think the patients put a decent amount of stock into what they're saying… So I think they [psychiatrists] have a pretty big role in it [activity promotion].

However, only two out of eleven psychiatrists saw themselves as capable of advising physical activity and/or exercise as a therapeutic prescription. Most psychiatrists expressed a lack of confidence in delivering structured physical activity and/or exercise treatments or were limited by stereotypes. Wayne saw administering physical prescriptions to be outside of his scope of practice, "I figure that's out of my league to say 'this is my prescription'… I'm not giving a [physical] prescription 'cause [sic] I'm a psychiatrist and not a physical therapist and a recreation therapist and all that stuff." Aaron further described not seeing physical prescriptions as part of his role, "It's kind of odd for us as psychiatrists to do the thing [prescribe activity] because why do we need to do it?" For Judith, she had experienced being typecast into certain duties as a result of her title, which limited her ability to perform physical prescriptions confidently. She shared:

> In other settings where I've worked that might be seen as, 'Okay well your role is to deal with the medications and that's what you're trained to do so do that part and don't spend

> time on this other stuff [physical activity and exercise promotion], that'll be somebody else's job.'

Participants commonly viewed themselves acting in supportive or facilitative roles; they voiced more confidence in referring patients to additional supports and resources rather than being the sole advisor of physical activity and exercise. Robert said:

> My job is not to give them an idea 'cause [sic] everyone knows exercise is good for you. That's not my job. My job is to make sure that they're well enough that they seek out those things that they like to do, one of them being exercise.

From a facilitative standpoint, Wayne viewed himself acting as a bridge between resources, "If you want a [physical] therapist, there are lots of therapists around. Tell me who you want to go see and I'll make sure you get there." Judith also expressed how psychiatrists may have a role in helping patients access activity programs:

> I think I see psychiatrists sometimes playing a role in advocacy for access to activities for some kids and families… I'd see us having a role in that too. Sometimes like writing a letter or sending things to support that this is an important part of treatment for a patient or family.

As previously discussed, psychiatrists identified a lack of education in physical activity and/or exercise, which may have contributed to seeing themselves act in facilitative roles. Michael disclosed not feeling confident enough to provide specific prescriptions, "If it's like a structured regimen or you know anything like that I mean I don't know. I guess I would defer to a physio or to a rec therapist." Moreover, psychiatrists may not be properly educated in these types of interventions. "You don't necessarily receive training in those [physical] kind of

interventions, so that you can be able to appropriately refer people for the intervention with other people who have the expertise," explained Thomas.

Despite hesitation to carry out physical prescriptions, it was generally stated that psychiatrists should be leaders and advocates for using physical activity and/or exercise as forms of treatment for depression. "I think it's [treatment] supposed to be multidisciplinary, definitely psychiatrists act like a bridge between body and mind and are supposed to take a medical lead," stated Aaron. Due to their level of credibility, participants explained that they may be influential in the uptake of physical activity and/or exercise prescriptions. "I think our role should be as large as family doctors… I think there are certain things that we as psychiatrists should be promoting and given the benefits specifically to mental health, we absolutely should be pushing for it," explained Carol. Thomas echoed, "Clients generally listen a lot to psychiatrists. So, psychiatrists should take a lead role in advocating or in prescribing physical activity or exercise to their clients."

Although psychiatrists may be capable of prescribing physical treatments, these findings suggest that this type of prescription is currently not viewed to be within psychiatrists' scope of practice. In this study, participants preferred to act in supportive and facilitative roles, but stated they were capable in influencing the acceptance of physical activity and/or exercise treatments based on their level of credibility. Further education and awareness are necessary to solidify psychiatrists' confidence and ability to provide therapeutic physical treatments.

**4.5 "Out of all specialties, we're the most open to new things like this"**

The integration of physical activity and/or exercise as a formal prescription within psychiatric practice was viewed with optimism and support from participating psychiatrists; however, participants repeatedly stressed that the adoption of physical prescriptions would still

be up to the psychiatrist's discretion. As Aaron stated, "Everyone has a different level of practice, vision, and open-mindedness." Despite the reality of having diverse perspectives on physical prescriptions, participants stated that physical activity and exercise should be incorporated as treatments within psychiatry. They explained that the emerging evidence regarding the curative potential of physical activity and exercise might lead to the formal integration of physical prescriptions in future psychiatric care. Aaron reflected these experiences when he shared:

> Physical activity and exercise are supposed to be a part of any psychiatric program, for MDD included… It's not a part of psychiatry but it's supposed to be… We need to recognize medicine and physical exercise as part of a treatment for mentally ill people.

In order to promote the inclusion of physical prescriptions in practice, psychiatrists voiced suggestions that were described as either patient- or practitioner-centered, or systemic, the latter defined as improvements within the system that would enable psychiatrists to prescribe and facilitate physical prescriptions. To address barriers associated with patients' depressive symptoms, providing more resources, accessible programs, and reframing expectations were common recommendations to encourage physical prescriptions in order to increase their awareness of alternative therapeutic options. James shared, "More resources for people gives them easier access to exercise programs… They've got access to something that might serve them well if they don't have to seek it out themselves." Wayne further stressed the importance of simplicity to increase the likelihood of adherence, "The more you can remove steps, the more likely it's gonna [sic] happen." Judith also suggested reframing patients' expectations, in terms of the type of care that they may receive, to further emphasize the utility of physical prescriptions:

> There just needs to be even more public awareness of that's something that they should be coming in expecting… Somehow having it set up that it was part of the expectation of the patients from earlier on, so that they'd have some more buy into it… If I say from the beginning that [physical activity and/or exercise] could be a part of the treatment and that we're remembering to set it up that way, I think that makes a big difference.

From a practitioner perspective, participants unanimously expressed a need for additional training and awareness regarding the utility of physical activity and/or exercise. Increased knowledge may bolster psychiatrists' confidence to communicate the benefits of physical activity and/or exercise. Judith expressed:

> I think we have some responsibility to know a bit more specifically what we should be suggesting the same way that we would with light therapy or some of those other things. We should know about dose and frequency and that part of things… I think education is a big part of it like the more we know, the more we're able to communicate.

James explained how psychiatrists require further education in order to influence the prevalence of physical activity and/or exercise discussion. He shared, "If the psychiatrists are not talking about it, the patient's not gonna [sic] view that as a treatment option. It's just awareness in the psychiatry community, it should be there, I mean these are treatments that are in the guidelines." Similarly, Robert identified a need for more training and robust evidence to further legitimize the use of physical activity and/or exercise as forms of treatment. He said, "If we had more training in it or more discussion around those topics rather than these arcane discussions about different types of psychotherapy… I think seeing more kind of training on that and more presentation of evidence." Education, either continuing professional education or formal training during their medical degree, was repeatedly identified as a crucial factor in boosting

psychiatrists' confidence to prescribe physical treatments and fundamental to cultivating greater acceptance of physical prescriptions within the psychiatric community.

From a systemic level, participants suggested several ideas to increase the formal use of physical prescriptions. Adrian proposed integrating physical activity and exercise items in assessments to encourage practitioners to think of activity as an important aspect of wellbeing. "By making it a specific line item, 'Did you ask the patient about exercise yes or no?' then every time they see that on the form that they're supposed to fill, that encourages that," explained Adrian. Carol suggested creating exercise requisition forms, like lab tests, as a way of formalizing physical prescriptions. She shared, "Like when we get a lab requisition to go and do certain lab tests from our doctors, what if we had an exercise requisition that recommended 'this is the type of exercise that's recommended.'" Alternatively, participants expressed support for having dedicated specialists who could assist them in facilitating physical activity and/or exercise regimens. "I would love it as in, if I had somebody who came by to see my patients and got them physical, I would love it. Yeah I'd be all for it," shared Robert. Wayne also stated the importance of having hands-on specialists in order to promote activity effectively:

> If you're there to take somebody down to the gym for instance, that's what'll work… I don't see people doing a lot of stuff with educational resources, I see people doing a lot of stuff with, 'we're going to the gym today.'

Psychiatrists viewed the feasibility of these suggestions with optimism given the progressiveness of their field. Daniel shared how psychiatry continues to evolve and is open to finding alternative ways to alleviate depressive symptoms:

> Psychiatry is changing. Focusing more on medication used to be the norm in the past but now it is more of looking at a multimodal approach to treating depression, so I think it

> [physical activity and exercise] is quite compatible with what has changed over time in terms of looking at other factors to ameliorate symptoms of depression.

Michael echoed similar thoughts when he said, “It’s [psychiatry] new and evolving… We know that we’re new and we know that we don’t understand everything and so I feel like out of all specialties, we’re the most open to new things like this.” Participants also optimistically described in the addition of physical activity and exercise as fundamental aspects of future psychiatric practice. “I do believe future psychiatry is gonna [sic] be on very strong foundation of physical—like theory of practice based on physical activity and exercise,” explained Aaron.

## Chapter Five: Discussion

The purpose of this study was to explore psychiatrists' perceptions of the utility of physical activity and/or exercise as a form of treatment for depression. Overall, most psychiatrists held positive attitudes towards the utility of physical activity and/or exercise as a therapeutic treatment for depression; however, many had limited experience in using formal physical prescriptions. In this study, social cognitive theory was used in a comparative context to identify constructs that may have influenced psychiatrists' perceptions; thus, highlighting what areas need to be addressed at the practitioner level to facilitate the inclusion of physical prescriptions. Importantly, this study identified personal and social factors that can be targeted to promote the use of physical treatments in psychiatric care. In particular, the results of this study recognized barriers that reflected constructs of perceived self-efficacy, perceived impediments, and outcome expectations. These barriers highlighted how an individual's perceptions and their surrounding environment may influence the likelihood of performing a behavior such as using physical prescriptions. Social cognitive theory offers predictors and principles on how to inform, enable, and guide strategies to motivate people to adopt habits that promote health behaviors such as physical prescriptions (Bandura, 2004). Using a social cognitive theoretical perspective, this study explored factors contributing to the limited use of physical prescriptions. This research may assist scholars to develop strategies to facilitate the implementation of these treatments into future clinical practice.

Psychiatrists viewed depression treatment as a comprehensive and holistic process, with physical activity and exercise fitting within this model of care. They acknowledged the importance of treating both the mind and body in order to achieve overall wellbeing. Further, they perceived physical activity and exercise as ways to maintain a healthy mind-body

relationship. This finding is consistent with the American Psychological Association's commitment to holistic health, which states, "Humanity's total functional health is threatened whenever either side of the interactive mind-body equation is neglected." (APA Task Force on Health Research, 1976, p. 271). These perceptions support the use of physical activity and/or exercise as viable treatments for mental illnesses and is inconsistent with a previous limitation outlined by Faulkner and Biddle (2001), who found a proclivity to the mind-body duality as a factor inhibiting the formal use of exercise as treatment. This discrepancy reflects how attitudes have shifted toward an integrated awareness of the body and mind, which argues that treating one side can influence the other. Therefore, this suggests that physical treatments are capable of exerting influence on mental illnesses and aligns with the trend toward identifying and using "natural" medicine in modern practice (Gartlehner et al., 2017). Although the mind-body duality may be less prevalent in present-day attitudes, it was apparent at a behavioral level. Several psychiatrists in this study acknowledged not prescribing physical treatments even if they recognized the mind-body connection. Thus, this suggests that the mind-body duality is apparent in how psychiatrists conduct their work and may be a subconscious factor influencing the use of physical treatments (Faulkner & Biddle, 2001).

Despite controversy over terminology, psychiatrists generally agreed that physical activity or exercise could benefit psychological treatment and reported numerous benefits such as (a) its comparable efficacy to antidepressants (Biddle & Mutrie, 2001; Blumenthal et al., 1999; Johnsgard, 1989); (b) reported benefits at any stage of treatment (Farmer et al., 1988; Harvey et al., 2018; Mammen & Faulkner, 2013; Paffenbarger Jr et al., 1994; Schuch et al., 2018); (c) its effective use as an adjunct to medication and psychotherapy (Bartholomew et al., 2005; Gourgouvelis et al., 2018; Hallgren et al., 2016; Schuch et al., 2015; Trivedi et al., 2011); and (d)

numerous physical and psychological benefits (Blumenthal et al., 2007; Penedo & Dahn, 2005). Although psychiatrists were supportive of the use of physical activity and/or exercise for the above reasons, there was a discrepancy between these perceptions and current practices. To note, physical activity and/or exercise prescriptions were discussed broadly to study any experiences participants may have had with using physical prescriptions. Psychiatrists expressed that the terminology they used varied depending on the patient they were seeing and the patient's goals. In this study, only one psychiatrist had experience in prescribing written "exercise" prescriptions, which is lower than the 15.8% "physical activity" prescription rate among Canadian general practitioners (Petrella et al., 2007).

Consistent with previous literature, most participants felt comfortable providing general advice, but many did not feel confident in prescribing individually-tailored programs (Burton et al., 2010). Psychiatrists cited a lack of education and inadequate training on guidelines and procedures (Persson et al., 2013; Way et al., 2018) to negatively impact their confidence in administering physical prescriptions. This finding reflects how perceived self-efficacy, defined as belief in oneself to exert control over a behavior, may influence the likelihood of performing a certain behavior (Bandura, 2004) such as using physical activity and/or exercise prescriptions. This barrier may have influenced psychiatrists' level of confidence to prescribe physical treatments, which highlights how low self-efficacy may contribute to the subsequent low use of physical prescriptions. From participants' experiences, better discussion and presentation of evidence around the therapeutic application of physical activity and exercise is necessary to promote the use of physical prescriptions among the psychiatric community (Glowacki et al., 2018). Future research should focus on developing physical activity and exercise-specific training for practitioners in order to bolster confidence in using these prescriptions. Perhaps

training should be incorporated into the medical curriculum to prepare healthcare providers prior to entering their practice (Faulkner & Biddle, 2001) or be an ongoing form of training throughout their professional career (Way et al., 2018).

Within this research, two predominant categories of barriers were noted as inhibitors to physical prescription use and were described as either patient- or psychiatrist-related. Financial costs (Gartlehner et al., 2017) and depressive symptoms (e.g., low motivation, decreased sense of mastery; (Faulkner & Biddle, 2001; Glowacki et al., 2018; Searle et al., 2012; Stanton et al., 2015) were most commonly cited as difficulties when trying to engage patients to consider physical activity or exercise regimens as a way of alleviating depressive symptoms. From a practitioner perspective, psychiatrists reported having insufficient resources (e.g., recreation therapists, exercise specialists, educational pamphlets; (Glowacki et al., 2018; Stanton et al., 2015) and poor infrastructure within the mental healthcare system (Glowacki et al., 2018; Persson et al., 2013; Way et al., 2018) as broader systemic inhibitors that impacted their ability to discuss or prescribe physical treatments. These barriers reflect perceived impediments, defined as socio-structural factors that may enable or deter an individual from acting on specific health behaviors, which may exert influence on the likelihood of physical prescription behavior. The reported systemic barriers of poor infrastructure, which encompassed other barriers such as insufficient supports and resources, highlights how the participants' environment is not set up in a way to support the use of physical prescriptions; therefore, reflecting how perceived impediments may inhibit physical prescription behavior.

Likewise, the prevalence of physical activity and/or exercise prescription among colleagues, or lack thereof, further reflected how the social milieu may influence psychiatrists' behaviors via observational learning and social support. Vicarious experiences, or learning

through observation, transmits knowledge by teaching observers effective skills to engage in particular behaviours that may influence their level of self-efficacy (Bandura, 1998). According to Bandura (1998), a way of creating and strengthening self-efficacy is through social modeling in which observers view others successfully perform a behavior, which raises the observers' beliefs that they also possess the capabilities to perform that behaviour. Zamani-Alavijeh, Araban, Harandy, Bastami, and Almasian (2019) found this result in their qualitative study that explored what contributed to healthcare providers' self-efficacy when delivering health education. In this study, vicarious experiences affected self-efficacy as healthcare providers expressed that viewing their colleagues effectively educate others boosted their confidence to do the same (Zamani-Alavijeh et al., 2019). If physical prescriptions were more common among psychiatric practices, psychiatrists may reciprocally influence each other via observational learning and bolster practitioner self-efficacy in using physical activity and/or exercise prescriptions.

Organizational culture within a workplace is another aspect of the social environment that may influence behavior. Although organizational culture has no singular definition, core features of this concept are that it is based on shared experiences and that it is flexible to change (Bellot, 2011). This has implications for healthcare organizations as Sovie (1993) emphasized that "the shared beliefs, values, and feelings that exist within an institution direct the perception of and the approach to the work that is to be done" (p. 72). From this literature, this suggests that organizational culture may influence behavior as beliefs guide how work is to be carried out. If mental healthcare systems supported and advocated physical prescriptions as part of everyday practice, psychiatrists may better understand the value of these prescriptions, which may reinforce their self-efficacy in prescribing these treatments. These are important considerations

as organizational culture addresses the therapeutic environment; thus, there is opportunity to improve service quality and outcomes for both healthcare providers and patients (Bellot, 2011).

Likewise, having social support aids in the adoption of health promoting behaviors (i.e., physical prescriptions) and is crucial to ensure the long-term success of the behavior (Bandura, 2004). These findings align with literature suggesting that organizational culture changes are integral for successful integration of physical activity or exercise into mental health services (Rosenbaum et al., 2018). As outlined in Glowacki et al. (2018), organizational change involves creating infrastructure that supports physical prescription programming, and includes specialized training on the benefits and application of physical activity and/or exercise for mental health professionals. By fostering an environment that encourages the use of physical prescriptions, improving socio-structural factors may facilitate the use of these prescriptions among practitioners by strengthening their self-efficacy; therefore, future research should focus on developing infrastructure to support physical prescription behavior such as improved training and procedures to encourage sustainable organizational change.

Consistent with published literature (Lobelo & de Quevedo, 2016; Swinburn et al., 1998), psychiatrists in this study viewed themselves as influential sources of advice due to their level of credibility. However, not all participants saw themselves as the primary advisors of physical activity and/or exercise. Most psychiatrists viewed themselves as appropriate individuals to promote activity and felt that advice coming from themselves would increase the legitimacy of physical prescriptions (Glowacki et al., 2018; Happell et al., 2012a, 2012b; Robson et al., 2013). However, some participants explicitly stated that physical activity and/or exercise prescriptions "were not part of their role" and deferred to someone else who was more knowledgeable (Faulkner & Biddle, 2001). This barrier further reflects how role clarity may influence self-

efficacy as confidence may be rooted in having a clear scope of practice. For instance, psychiatrists may have been hesitant to prescribe physical treatments because they were unsure of whose role it is to carry out this task. To address this barrier, education should incorporate alternative treatments into psychiatrists' scope of practice to clarify their ability to provide therapeutic physical treatments in order to further boost their self-efficacy.

Participants cited their past experiences with physical activity and/or exercise to shape their beliefs and subsequent activity promotion behaviors; thus, it is possible that those participants who had more physical activity experiences may have been more confident to promote activity, which reflects how determinants of self-efficacy and outcome expectations may influence behavior such as discussing or using physical treatments. More active psychiatrists may possess higher self-efficacy in promoting activity as a result of their lifestyle habits since they have experienced benefits first-hand.

Consistent with Lobelo et al. (2009), psychiatrists who shared their experiences with patients described how they came across as more credible and relatable, which made it easier to motivate and encourage patients. Outcome expectations, defined as beliefs about the expected costs and benefits for different health habits (Bandura, 2004), may have been reflected in the increased rate of activity promotion among psychiatrists who were active themselves. From the results of this study and based on previously published research, it is possible that individuals who had positive experiences with being active were more inclined to expect positive outcomes (i.e., physical and mental benefits) of physical activity and/or exercise prescriptions and were more likely to promote these ideals to their patients. This result is consistent with previous literature suggesting that practitioners who exercise regularly also prescribe exercise more to patients (Burton et al., 2010). However, it is important to note that the strength of this association

remains unclear since there was one psychiatrist who contradicted this finding, they reported fewer discussions around physical activity and exercise with patients despite being active themselves. This finding reflected how activity promotion is ultimately up to the practitioners' discretion; nevertheless, promoting active lifestyles among psychiatrists may be a strategy to strengthen their experience and credibility as reputable physical activity and/or exercise counsellors, which may influence the efficacy of physical prescriptions among patients. Future research should focus on understanding the strength of the association between personal lifestyle behaviors and physical prescription rates to better understand whether encouraging active lifestyles among professionals would influence the overall use of physical prescriptions.

Overall, psychiatrists in this study viewed physical prescriptions as feasible and foreseeable in future standard practice. To address patient-centered barriers, participants suggested providing more resources, accessible programming, and reframing client expectations as ways to enable patients to overcome psychological barriers and increase the likelihood of activity adoption (Firth et al., 2016). From a systemic standpoint and congruent with suggestions outlined by Glowacki et al. (2018), participants emphasized a need for formalized organizational support (e.g., better guidelines, addition of physical activity and exercise items in assessments, exercise requisition forms, and dedicated exercise specialists for support), ongoing education and training for mental health providers, increased funding, and more robust evidence on the efficacy of physical activity and/or exercise for depression in order to garner widespread acceptance of physical prescriptions. The findings of this study reflect a socially oriented approach to health promotion by identifying a need to collectively change social and environmental conditions that affect health (Bandura, 2004). According to Bandura (2004, p. 159), "Socially oriented approaches seek to raise public awareness of health hazards, to educate and influence policy

makers, to build community capacity to change health policies and practices…" By making environmental changes conducive to improving practitioners' self-efficacy, psychiatrists may mobilize to effect change within the mental healthcare system by justifying the need for more alternative treatments. This reflects the belief that collective efficacy is key to bring out social change within the system and crucial to health promotion and disease prevention (Bandura, 1998). The integration of physical prescriptions is a complex process and requires changing the practices of social systems rather than only changing the habits of individual practitioners (Bandura, 2004). This change will take extensive time and effort; however, it would ideally increase access and efficacy of available treatments, which would help reduce the incidence, severity, and economic burden of depression on the healthcare system.

The implications of this study's findings are important for mental health consumers, practitioners, and psychiatric practice. For mental health consumers, the results of this study suggest that psychiatrists may become appropriate sources of advice for physical activity and/or exercise; thus, increasing the access and types of available treatments. However, the onus is also on the consumer to aid the inclusion of physical activity and/or exercise treatments in clinical practice, with the efficacy and reception of physical prescriptions a joint effort between patient and healthcare provider. For psychiatrists, the results of this study highlighted a need for further education and organizational support to implement physical therapies into mental healthcare. Given the shift towards holistic care, the feasibility of formalized physical prescriptions is a viable reality in future practice. This research adds to the literature by understanding what are and what influences psychiatrists' attitudes towards using physical activity and/or exercise as forms of therapy, which was congruent with existing attitudes of other mental health professionals. This study sheds light on how researchers can develop interventions designed to

support the promotion of physical prescription behavior on both individual and systemic levels to move society towards enhanced human health (Bandura, 1998).

### 5.1 Strengths and Limitations

To my knowledge, this study is one of the first to qualitatively explore psychiatrists' perceptions and experiences with using physical activity and/or exercise prescriptions in clinical contexts. The results of this study reiterated that barriers faced at the specialist level are similar to those of other mental health professions (e.g., psychologists, mental health nurses). This suggests that an overall integration of physical activity and exercise to the mental healthcare system would be beneficial for most, if not all, practitioners. This may foster more holistic and comprehensive care for mental health consumers. Another strength of this study was the explicit differentiation between physical activity and exercise terms. Based on the findings, this distinction may be important in helping professionals tailor and prescribe appropriate physical prescriptions. Further, terminology may be important when creating physical activity and/or exercise guidelines for clinical use and designing interventions to support activity promotion among mental healthcare providers. However, this study is not without limitations. Although numerous specializations were included, there was a disproportionate representation of specialties, which may not accurately represent the attitudes of the greater psychiatric community and limits the generalizability of the results. This study may have missed nuanced perceptions of the utility of physical activity and/or exercise as a therapeutic modality among different psychiatric specialties (i.e., geriatric psychiatry); therefore, further research with greater representation of specialities is warranted. The self-selection nature of recruitment may have recruited a sample of participants who held similar positive assumptions about the role of physical activity and/or exercise in depression. Therefore, this study may not have recruited

those who have concerns with respect to this topic. Social desirability bias may have also confounded the findings; psychiatrists may have overestimated the frequency of physical activity and/or exercise promotion in their practices, which may inaccurately represent the rate of physical activity and/or exercise participation.

## Chapter Six: Conclusion

In conclusion, the present study focused on exploring psychiatrists' perceptions regarding the utility of physical activity and/or exercise as forms of treatment for depression to understand how these types of prescriptions would be developed and adopted (Biddle et al., 2000). An examination of the findings through a social cognitive lens allowed for a deeper understanding of the factors that encouraged or inhibited physical activity and/or exercise prescription use among psychiatrists. Several conclusions can be drawn from this study that deserves consideration with respect to current and future psychiatric care. Most psychiatrists are supportive of and believe in the utility of physical activity and/or exercise as a therapeutic modality for treating depression; however, they faced numerous barriers that inhibited their ability to carry out formal physical prescriptions in clinical practice. In addition to addressing depressive symptoms, the most prominent barriers that discouraged psychiatrists were poor education and infrastructure within the mental healthcare system, which reflected social cognitive constructs of self-efficacy, perceived impediments, and outcome expectations that may have influenced the likelihood of prescribing these treatments.

To address these deficiencies and promote the use of physical treatments, specialized training should educate psychiatrists on the evidence base, teach psychiatrists how to advise evidence-informed physical prescriptions, and inform psychiatrists that their scope of practice can include non-traditional prescriptions. Second, the integration of physical prescriptions within the mental healthcare system will require broader systemic change. There is a need to foster collective efficacy among professionals in order to incite sustainable organizational reform. By exploring psychiatrists' perceptions, this research has provided insight into the feasibility of non-pharmacologic treatments for depression and has identified suggestions on how to bridge the gap

between evidence-based research and clinical practice. The findings from this study could be used to inform and develop strategies to support the uptake of utilizing physical activity and/or exercise as a therapeutic modality for people with depression.

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## Appendix A: Ethics Approval

### Notification of Approval

Date: October 3, 2018

Study ID: Pro00084898

Principal Investigator: Julienne Cancio

Study Supervisor: William Mummery

Study Title: Exploring psychiatrists' perceptions of the utility of physical activity and/or exercise as treatment for depression

Approval Expiry Date: Wednesday, October 2, 2019

| Approved Consent Form: | Approval Date | Approved Document |
|---|---|---|
| | 10/3/2018 | Participant Consent Form_V2_CleanCopy.docx |

Thank you for submitting the above study to the Research Ethics Board 1. Your application has been reviewed and approved on behalf of the committee.

A renewal report must be submitted next year prior to the expiry of this approval if your study still requires ethics approval.
If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application.

Approval by the Research Ethics Board does not encompass authorization to access the staff, students, facilities or resources of local institutions for the purposes of the research.

Sincerely,

Anne Malena, PhD
Chair, Research Ethics Board 1

*Note: This correspondence includes an electronic signature (validation and approval via an online system).*

## Appendix B: Recruitment Email

**Known sponsor email template**

Email subject line: Invitation to Participate in a Research Study

Good morning/afternoon Dr. [insert name here],

My name is Julienne Cancio and I am a master's student in the Faculty of Kinesiology, Sport, and Recreation at the University of Alberta.

Christine Mummery has forwarded your information to me to discuss your potential participation in my thesis project, which seeks to explore how psychiatrists perceive the utility of physical activity and/or exercise as a form of treatment for depression.

Please find attached an invitation letter to participate that briefly outlines the background, purpose, and procedures of my study. I am looking to recruit psychiatrists of all specializations (e.g., child, adolescent, and adult) who include treating major depressive disorder (MDD) in their scope of practice.

Thank you for your interest and I look forward to hearing your response.

Kind regards,
Julienne

**General email template**

Email subject line: Invitation to Participate in a Research Study

Good morning/afternoon Dr. [insert name here],

My name is Julienne Cancio and I am a master's student in the Faculty of Kinesiology, Sport, and Recreation at the University of Alberta.

I am currently recruiting psychiatrists for my thesis work and I am writing to invite your participation in my thesis study.

Please find attached an invitation letter to participate that briefly outlines the background, purpose, and procedures of my study. I am looking to recruit psychiatrists of all specializations (e.g., child, adolescent, and adult) who include treating major depressive disorder (MDD) in their scope of practice.

Thank you for your time and I look forward to hearing your response.

Kind regards,
Julienne

## Appendix C: Invitation Letter

### Invitation to Participate in a Research Study

**Title of Study:** Exploring psychiatrists' perceptions of the utility of physical activity and/or exercise as a treatment for depression

(insert date here)

Dear (insert Dr. name here),

My name is Julienne Cancio and I am a master's student at the University of Alberta under the supervision of Dr. Kerry Mummery in the Faculty of Kinesiology, Sport, and Recreation.

My research is focused on understanding psychiatrists' perceptions of non-pharmacological treatments for depression, particularly physical activity and/or exercise. Physical activity and exercise have been associated to have positive effects on mental well-being and has been proposed as a viable alternative therapy to medication and psychotherapy. Previous research has suggested that physical activity and/or exercise may have therapeutic benefits in both the prevention and treatment of major depressive disorder (MDD). However, I want to understand whether psychiatrists view the utility of physical activity and/or exercise as treatment and whether physical activity counseling or exercise prescription would be feasible in practice.

I am writing to invite you to participate in my thesis study. With your assistance, I hope to shed light on alternative avenues of treatment for depression.

If you agree to participate, I will request 45-minutes to 1-hour of your time for an in-person interview. Following the interview, I will also request an additional 1-hour of your time to engage in a process known as "member reflections," in which I will share your transcript and my interpretation of themes with you to ensure accuracy of your responses. This second step can be done online or in-person.

Participation is complete voluntary. You may withdraw from the study any time without penalty or prejudice. Any information you provide will be kept confidential and the only individuals who will have access to your data is myself and my supervisor, Dr. Kerry Mummery.

If you would like more information about this project or are willing to participate, please contact me at (403) 464-6579 or via email at jcancio@ualberta.ca. If you would like to speak with my supervisor, please contact Kerry Mummery at (780) 492-3364 or at kerry.mummery@ualberta.ca. I look forward to hearing your response.

Sincerely,

Julienne Cancio, BSc
Principal Investigator

## Appendix D: Participant Consent Form

### Participant Consent Form

**Title of Research Study:** Exploring psychiatrists' perceptions of the utility of physical activity and/or exercise as a treatment for depression

**Investigators:**
Julienne Cancio, BSc
Kerry Mummery, PhD, FASMF

**Background:** Physical activity and exercise has been associated to have positive effects on mental well-being and has been proposed as a viable alternative therapy to medication and psychotherapy. Previous research has suggested that physical activity and/or exercise may have therapeutic benefits in both the prevention and treatment of major depressive disorder (MDD). However, further research is needed to understand how mental healthcare professionals view the utility of physical activity and/or exercise as treatment and whether physical activity counseling or exercise prescription would be feasible in practice. We want to explore how psychiatrists perceive the utility of physical activity and/or exercise as a treatment for depression to understand how to maximize the therapeutic potential of physical activity and/or exercise.

**Purpose:** You are being invited to participate in a study that explores psychiatrists' attitudes towards physical activity and/or exercise as a stand-alone or adjunct therapy for depression and practicality of physical activity/exercise prescriptions.

**Procedures:** This study has two components. The first component will be completed during an in-person appointment: a 45-minute to 1-hour face-to-face interview with the primary investigator to get background information and discuss topics such as beliefs about effectiveness of exercise, formal training in exercise counseling/prescription, and exercise promotion to clients. The second component will be completed via email, with the possibility of a second face-to-face interview. During the second phase of the study, you will receive a copy of the interpretations and themes generated from the interview. This process is known as "member reflection," and is an opportunity for open dialogue between the researcher and participant to ensure an accurate retelling and interpretation of your experience. If there are any contradictions between the researcher and participant, a second face-to-face interview or phone call may be scheduled to discuss how to overcome these differences.

**Possible Benefits:** You may not benefit directly from the results of this study. It is hoped that the results will help researchers further understand how to bridge the gap between evidence-based research and practice. In the future, this might help identify new avenues of treatment for depression.

**Possible Risks:** There are no foreseeable risks for taking part in this study.

**Voluntary Participation:** Participating in this study is your choice. You can change your mind and stop participating in the study up until you have confirmed accuracy of my interpretations to your comments. Please note, there is a limitation to data withdrawal. The last point in which participant data can be withdrawn is prior to de-identification during the member checking process. After this process has been completed, data cannot be withdrawn since it will be anonymized and no longer linked to participants.

**Confidentiality:** All consent forms will be stored in a locked location. Real names will not be included on any materials. In place of real names, each participant will be assigned a code number. In scholarly writing, pseudonyms will be used. After the study is completed, study data will remain securely stored. Audio recordings will be kept in a locked filing cabinet in the researcher's office and transcribed computer files will be encrypted with a password. All data will be transferred to my supervisor, securely maintained, and will be stored at the University of Alberta for a minimum of 5 years.

**Contact Information:** If you have any further questions about this study, please feel free to contact Julienne Cancio at (403) 464-6579 or at jcancio@ualberta.ca. If you wish to talk to the supervisor on this project, please contact Kerry Mummery at (780) 492-3364 or at kerry.mummery@ualberta.ca.

If you have any questions concerning your rights as a possible participant in this research, or research in general, please contact the Research Ethics Office at the University of Alberta at (780) 492-0459. The plan for this study has been reviewed by a Research Ethics Board at the University of Alberta. If you have questions about your rights or how research should be conducted, you can call (780) 492-2615. This office is independent of the researchers.

# CONSENT FORM

**TITLE:** **Exploring psychiatrists' perceptions of the utility of exercise as treatment for depression**

**PRINCIPAL INVESTIGATOR:** Julienne Cancio Telephone: (403) 464-6579

Do you understand that you have been asked to be in a research study? Yes No

Have you read and received a copy of the attached Information Sheet? Yes No

Do you understand the benefits and risks involved in taking part in this research study? Yes No

Have you had an opportunity to ask questions and discuss this study? Yes No

Do you understand that you are free to refuse to participate or withdraw from the study at any time? You do not have to give a reason. Yes No

Has the issue of confidentiality been explained to you? Do you understand who will have access to your records? Yes No

I agree to take part in this study.

_____ _____
Signature of Research Participant Date

_____
Printed Name

I believe that the person signing this form understands what is involved in the study and voluntarily agrees to participate.

_____ _____ _____
Signature of Investigator Date Printed Name

## Appendix E: Interview Script

### Interview Script

**INTRODUCTION**

Interviewer background: My name is Julienne Cancio and I am a Masters student at the University of Alberta in the Faculty of Kinesiology, Sport, and Recreation.

Purpose of study: Research has argued that exercise and physical activity are viable strategies to improve mental health among clinical populations. My general focus is to understand whether psychiatrists perceive this as an appropriate therapy in practice. Specifically, this study aims to investigate attitudes toward physical activity and/or exercise as a stand-alone or adjunctive treatment for depression and what factors may influence your belief or disbelief in physical activity/exercise prescriptions.

Confidentiality:

- You will not be identified or described in any way that would reveal identity. Each participant will be given a unique identifier code or you may choose a pseudonym.
- My supervisor and I will be the only people who will have access to the audiotaped interview. I will be the only person who will transcribe them.
- If you wish, a copy of the final manuscript can be sent to you.
- You are free to not answer any question or to end the interview at any time without need to give an explanation.
- Do I have permission to tape record the interview?
- Do you have any questions?

[Start audio recorders]

"As I have previously mentioned, I am interested in understanding psychiatrists' perceptions of the utility of physical activity and/or exercise a form of treatment for depression, so we're going to discuss several topics related to this theme. If you have any questions, please feel free to ask at any time."

**DEMOGRAPHIC INFORMATION/BACKGROUND**

1. Please tell me your age, how long you have been practicing, and your specialty?
2. Please tell me about your professional background such as qualifications and current responsibilities?
3. In your practice, how many of your clients are diagnosed with depression?
4. How do you develop a treatment plan for clients diagnosed with depression?
    a. What therapies do you prescribe and why?
5. Please tell me how you define the term physical activity and exercise.
    a. How would you differentiate between them?
    b. Which term are you more aware of? Why?

"Throughout the interview, physical activity is used as the term to describe any form of activity while exercise is used to describe systematic programmes of activity, which are often supervised."

**FORMAL TRAINING**

1. During your time in medical school, was there any discussion of health behaviour modification?
    a. Did you receive any formal training on physical activity and/or exercise as a therapeutic treatment during your time in medical school?
2. How would you feel about physical activity and/or exercise being promoted as a *stand-alone treatment* within medical school, for example, for depression?
3. What are your thoughts as physical activity and/or exercise as an *adjunct treatment* for depression?

**BELIEFS ABOUT EFFECTIVENESS**

1. What are your thoughts on using physical activity and/or exercise in the treatment/rehabilitation/management of clinical conditions?
    a. Why or why not would physical activity and/or exercise be effective (i.e., in what ways)?
2. Please tell me your thoughts on using physical activity and/or exercise therapies as a form of treatment, particularly for depression?
    a. [If effective], why?
        i. How would they benefit?
        ii. What has shaped your beliefs in terms of efficacy?
    b. [If not], why would they not benefit?
        i. What has influenced these beliefs?
3. How compatible do you think physical activity and/or exercise, as a therapeutic modality, would be with the traditional roles and values of psychiatrists?

**PHYSICAL ACTIVITY/EXERCISE PROMOTION TO CLIENTS**

1. In your opinion, how common would you say it is for psychiatrists to recommend physical activity/exercise to their clients (i.e., is this part of typical care)?
2. Are you aware of the Canadian Network for Mood and Anxiety (CANMAT) guidelines for physical activity/exercise prescriptions?
    a. [If yes], what do you think of them?

"[If unaware/if they ask], the CANMAT 2016 Clinical guidelines for the management of adults with MDD recommend exercise as an appropriate first- and second-line therapy for mild-to-moderate MDD and a recommended adjunctive exercise for moderate-to-severe MDD."

3. What are your thoughts about personally prescribing physical activity and/or exercise to clients?
4. Please tell me about your experience in using a physical activity and/or exercise prescription.
    a. [If none], hypothetically, how would you do it?
5. How much confidence do you have in giving a physical prescription?

    a. [If confident], do you know how much aerobic/anaerobic exercise to give (i.e., specific prescription)?
6. What are your thoughts on psychiatrists having a role in the integrated effort to increase physical activity of clients?
7. Please tell me your thoughts on any challenges that prevent greater physical activity and/or exercise promotion to clients diagnosed with depression by psychiatrists?
    a. How do you think these barriers could be addressed?
8. To your knowledge, are there any facilitators?
    a. [If yes], are they effective in promoting greater activity?
9. What are your thoughts on physical activity and/or exercise prescriptions being incorporated in future practice?
10. How could physical activity/exercise prescriptions be better promoted?

**CONCLUSION**

1. Is there anything else you would like to add or anything important you think I have not considered?
2. Would you like a copy of the final manuscript?
3. Do you know of anyone else who may be interested in being interviewed?

**Thank you for your time and assistance.**

## Appendix F: Member Reflection Form

### Member Reflection: Preliminary Themes

### Exploring psychiatrists' perceptions of the utility of physical activity and/or exercise as a form of treatment for depression

Thank you very much for your contribution to my master's thesis study on exploring psychiatrists' perceptions of utilizing physical activity and/or exercise as a form of treatment for depression. I have completed preliminary data analysis and I am looking for your feedback on the following themes that were developed. Please note that these themes are not final. Please take some time to complete the following steps:

1) Read the theme summaries and provide feedback, if necessary
2) Return the completed form to me at jcancio@ualberta.ca by **March 13, 2019**

The themes that were developed from your transcript are as follows:

**Depression treatment as an individualized and collaborative process**

I described my treatment approach as patient-centered by emphasizing the importance of understanding and tailoring treatment options to suit the patient's needs. I work with patients to help them understand their diagnosis and give them options that would work best for them.

Direct quotes:

"Discussing with the patient you know what the diagnosis is what it means. Um you know what it means for them what an active course is and what treatment uh that's recommended out to be. Um and uh, that it ought to be um a-a collaborative process" (31-34)

"I'd go into the the options there and and what would suit the patient." (65-66)

**Perceptions and practice**

In general, I held favorable attitudes towards using physical activity and/or exercise as a form of treatment for depression. Physical activity and/or exercise is appropriate for mild-to-moderate depression and a possible adjunctive treatment. My beliefs were reinforced by prior knowledge gained from educational workshops and experiences in professional practice. In terms of my experience in using a physical activity and/or exercise prescription, I provide general recommendations to patients based on what their interests are. I work with patients to set reasonable goals and tailor recommendations based on their lifestyles and interests.

Direct quotes:

"…what I say to patients is that exercise is uh the most powerful non-medication antidepressant that there is umm and I recommend it in whatever form, works for them…" (56-57)

"That's where I would see it more that um, if it—it works. Patients get better." (214)

"...I mean that's what I would do I would try to adjust it to, what is likely to be completed um, because that's just the model in my head for behaviour change… I'm less interested in being pushy about a specific outcome that I am about you know getting started and then building on it." (312-316)

**Psychiatrists have a supportive role in the promotion of physical activity and/or exercise**

In terms of physical activity and/or exercise promotion, I described my role to be a supportive one. My role as a psychiatrist includes supporting mental health therapists' efforts, advocating physical activity to patients, and contributing to the knowledge base.

Direct quotes:

"My role there would be to um, support to reinforce the the efforts that um, um well the patient's efforts but also the therapist's efforts in trying to encourage them to um, make it a part of their treatment plan." (349-351)

"We have a responsibility um, to, uh, well to think of it to mention it um and not to uh not to be dismissive of it." (352-353)

"…its one of our roles is to contribute to to umm, adding to the knowledge base right. We're not just about treatment…" (479-480)

**Future directions**

To incorporate physical activity and/or exercise prescriptions in future practice, I suggested more educational services and formalized assessments for practitioners. For example, adding a specific item assessing patient's levels of activity on forms may make it easier for practitioners to encourage physical activity and/or exercise promotion.

Direct quotes:

"…by making it a specific umm, uh a specific line item that you know 'did you ask the patient about exercise yes or no?' and then every time they see that on the form that they're supposed to fill it you know that encourages umm that encourage that so that's one way…" (417-420)

"…you know offering educational services you know where employees, or service providers are allowed to attend that probably has less uh effectiveness but its also less pushy which is—some benefit to that." (422-424)

Once you have read the themes, do you have any comments about the themes, labels, or additional concerns? Please let me know.

If you have noticed any discrepancies, I will follow-up with you shortly and we can discuss further to resolve these gaps in whatever mode works best for you (e.g., over the phone, in-person). If not, I am incredibly grateful for your time, knowledge, and contribution to my study. Thank you again!

Sincerely,

Julienne Cancio, MA Student
jcancio@ualberta.ca