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EVALUATING THE ATTITUDES AND PRACTICES OF EXERCISE PRESCRIPTION AMONG PSYCHOTHERAPISTS

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EVALUATING THE ATTITUDES AND PRACTICES OF EXERCISE PRESCRIPTION AMONG PSYCHOTHERAPISTS

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Education
at the University of Kentucky

By

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ABSTRACT OF DISSERTATION

EVALUATING THE ATTITUDES AND PRACTICES OF EXERCISE PRESCRIPTION AMONG PSYCHOTHERAPISTS

Exercise has been shown to improve mood, anxiety, stress, and promote neuroplasticity (Conn, 2010; Donaghy, 2007; Josefsson, Lindwall, & Archer, 2014; Silveria et al., 2013; Stathopoulou et al., 2006). However, limited research on the topic suggests that many psychologists and mental health providers are not incorporating exercise into psychological treatment, and many lack the confidence to do so (Burton, Pakenham, & Brown, 2010; Weir, 2011). The purpose of this study was to evaluate current exercise prescription trends among practicing psychologists and trainees, including identifying their current beliefs, attitudes, training, and the perceived barriers hindering psychotherapists from recommending and prescribing exercise.

Psychologists and trainees (N = 146), completed the Exercise in Mental Illness Questionnaire – Health Practitioner Version (EMIQ-HP). Results revealed: a) 40.4% (n = 59) of psychotherapists prescribed exercise only occasionally and recommended clients exercise "most days of the week," at moderate intensity; b) older psychotherapists' (t[163] = -2.15, p = .038) and trainees further along in training (t[163] = 2.26, p = .029) were both more likely to prescribe exercise (F[9, 36] = 9.27, p = .011, R^2 = .42); c) exercise habits of respondents were not significant predictors of exercise prescription; d) a small number of respondents (22.6%; n = 33) reported previous formal training in exercise prescription; and formal training (β = .39, p < .001) was positively correlated with exercise prescription [F(1, 144) = 26.99, p < .001, R^2 = .16]; and e) therapist barriers (β = -.39, p < .001; e.g., "Prescribing exercise to people with a mental illness is not part of my job…I do not know how to prescribe exercise to people with a mental illness…I don't believe exercise will help people with a mental illness," etc.) were inversely related with exercise prescription, F[2, 145] = 27.03, p < .001; R^2 = .27.

In conclusion, psychotherapists' age, year in graduate school (for trainees; n = 55), and formal training in exercise prescription were significant predictors of exercise

prescription, while higher perceived therapist barriers to exercise prescription hinder prescription practices. Study findings, limitations, and future research directions are discussed.

Keywords: exercise, prescription, mental health, psychology, psychotherapy

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EVALUATING THE ATTITUDES AND PRACTICES OF EXERCISE PRESCRIPTION AMONG PSYCHOTHERAPISTS

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Chapter 1: Introduction and Review of Literature

The research highlighting the empirical evidence on the use of physical exercise for the improvement of mental health has been growing in recent decades (Bartley, Hay, & Bloch, 2013; Deslandes et al., 2009; Dunn et al., 2005). Current recommendations state that individuals receiving mental health services should aim to complete thirty minutes or more, of moderate–to-vigorous physical exercise, three to five days per week for a total of 75-150 minutes, using a combination of aerobic and resistance training modes (Dunn et al., 2005). These recommendations are identical to the public health recommendation guidelines for physical exercise established by the American College of Sports Medicine. The ACSM recommends that most adults engage in moderate-intensity cardiorespiratory exercise for at least 30 minutes five days per week for a total of 150 minutes per week, vigorous-intensity cardiorespiratory exercise for at least 20 minutes three days per week for a total of at least 75 minutes per week, or some combination of both moderate and vigorous-intensity exercise (ACSM; Garber et al., 2011).

Statement of the Problem

A cover story of the American Psychological Association's (APA) *Monitor on Psychology* (Weir, 2011), highlighted that many psychologists are aware of the mental health benefits associated with physical exercise. The article also noted, however, that psychologists generally don't incorporate exercise into treatment plans, and that graduate programs rarely teach students how to help clients increase motivation and determination for exercising (Weir, 2011). The limited research that exists on the topic is consistent with Weir, many psychologists and mental health providers alike are interested and willing to incorporate exercise as part of psychological treatment but lack the confidence

to monitor and or tailor their advice to clients (Burton, Pakenham, & Brown, 2010). This has created a gap between the science and the practice of psychology for mental health.

The scientist-practitioner model, a model which many psychology graduate programs use to educate and train students, urges trainees to stay informed on the most relevant literature and to use science to inform clinical practice and decision making (Lowman, 2012). As such it would be of potential benefit for practicing psychologists to acquire the competence of incorporating physical exercise into psychotherapy treatment plans.

Prior to addressing the objectives of this study and the current literature on exercise and mental health, it is important to understand that for the purposes of this paper, exercise *recommendation* is defined as simply encouraging clients to exercise, whereas exercise *prescription* is defined as implementing specific and concrete exercise parameters that aim to get clients to exercise, such as outlining the frequency, intensity, and type of exercise, and helping clients create goals and behavioral strategies. It is also important to clarify for this study, I am addressing and targeting both professional psychologists (those licensed and working within the clinical context) as well as trainees who are currently identified as psychotherapists but are working under a senior supervisor's license, in order to become independent psychologists themselves. The terms psychotherapist and psychologist are used interchangeably to identify both groups.

Exercise Prescription and Recommendation Among Clinicians

Current research suggests that large percentages of both United States and Australian psychologists (83%) are enthusiastic and willing to recommend and prescribe exercise to their clients (Burks & Keeley, 1989; Burton et al., 2010). However, despite

being enthusiastic and willing to encourage clients to exercise, only about a fourth of psychologists are regularly incorporating exercise as part of therapy (Burton et al., 2010). A similar study, with Australian mental health therapists, found lower percentages; only 40% encouraged clients to exercise, even though therapists reported they were aware of the therapeutic potential of incorporating exercise into counseling (Phongsavan, Merom, Bauman, & Wagner, 2007). Similarly, Barrow, English, and Pinkerton (1987) found that only 53% of psychologists in the United States, at least occasionally recommended exercise to clients, with only 10% of psychologists doing it consistently. Other studies, aimed at evaluating how the exercise habits of clinicians impacted exercise recommendation in therapy, indicated that if therapists exercised themselves, estimated at 71% (Barrow et al., 1987), they were more likely to recommend it to their clients (Barrow et al., 1987; Burton et al., 2010; McEntee & Halgin, 1996).

It seems the general consensus, within previous literature, is that psychologists believe in the benefits of exercise but many are reluctant to recommend it consistently to clients (Barrow et al., 1987; Burks & Keeley, 1989; McEntee & Halgin, 1996). Reluctance in recommending and/or prescribing exercise appears to stem from various reasons such as: a) favoring conventional methods of treatment such as cognitive behavioral therapy (CBT), b) believing clients would not benefit from physical activity and general lack of exercise's efficacy on mental health, c) believing physical activity is not important for managing mental illness, d) clinical time constraints, e) depending exercise recommendation on the severity of the mental illness of the client, and f) overall lack of experience, knowledge, training, and or confidence in prescribing exercise (Burks & Keeley, 1989; Burton et al., 2010; McEntee & Halgin, 1996; Phongsavan et al., 2007).

In regards to exercise prescription training, approximately only 10-13% of psychotherapists appear to have received any formal education in exercise/physical fitness (Burks & Keeley, 1989; Burton et al., 2010).

Contrary to the reluctance to recommend or prescribe exercise, reasons why psychotherapists recommended exercise were: a) combating depression, b) reducing anxiety, and c) being aware of the research on the benefits of exercise and mental health, (Burks & Keeley, 1989). In short, a limited amount of literature exists on the topic of exercise prescription among mental health clinicians, and it appears that the current literature is lacking when it comes to assessing current prescription trends among U.S. psychologists. Specifically, few studies have looked at this phenomenon, and the studies that have, resulted in different findings due to factors such as: not specifying the difference between exercise recommendation and exercise prescription, sampling clinicians from differing geographical locations (e.g., United States, Australia), and significant gaps in publication years between studies (Barrow et al., 1987; Burks & Keeley, 1989; Burton et al., 2010; McEntee & Halgin, 1996; Phongsavan et al., 2007). It would be of benefit to the science, practice, and field of psychotherapy to gain a better understanding of the current and consistent prescription trends, and the reasons why psychotherapists choose or choose not to prescribe exercise to their clients.

Implications for Counseling Psychology

Striving to enhance the welfare of others, integrating science and practice, and utilizing a holistic frame of reference to emphasize strengths, resilience, and positive coping, reflect some of the core values established as part of the field of counseling psychology (Packard, 2009). Aligning with these core values, this study will contribute

to the literature and the scientific community's understanding of how exercise is utilized within therapy. This study could help counseling psychologists in their work with clients by helping psychologists acquire and increase awareness regarding the attitudes, practices, and perceived barriers to exercise prescription (e.g., clinical time constraints; lack of experience, knowledge, training, and or confidence in prescribing exercise; favoring other conventional methods of treatment such as CBT; believing clients would not benefit from physical activity; believing physical activity is not important for managing mental illness; allowing the severity of mental illness to impede exercise recommendation; making attributions about clients' motivation and competence to exercise). Once we have a better understanding of these factors, it could help better inform and target training efforts of current and future psychologists, and more importantly encourage psychologists to integrate exercise within psychotherapy to further improve the mental health and well-being of clients. Psychologists could begin to develop potentially better biopsychosocial treatment plans and interventions that include individually tailored exercise plans that help clients live increasingly holistic healthy lives.

This study has practice implications for both the fields of counseling as well as health psychology, particularly as counseling psychology continues to become a part of integrated care and clinical health psychology (Nicholas & Stern, 2011). As counseling psychologists increasingly take their skills and professional values into medical settings, they will work alongside other health professionals such as physicians, nurses, therapists, and dieticians, in order to develop more effective and efficient ways to motivate clients to exercise and increase wellbeing. Since research consistently supports the efficacy of

exercise for mental illness, and counseling psychologists are actively trained in the scientist-practitioner model, we have an obligation to lessen the gap that exists between the science and the practice when it comes to prescribing exercise in the mental health context.

Review of Literature

Depression. Within the past decade, several comprehensive reviews have been conducted on evaluating whether exercise is an effective tool for alleviating mental health concerns. Recent meta-analyses have utilized a large number of individual studies which used depression as the outcome and exercise as the intervention (Conn, 2010; Donaghy, 2007; Josefsson, Lindwall, & Archer, 2014; Silveria et al., 2013; Stathopoulou et al., 2006). The majority focused on observing exercise's effect on alleviating symptoms of depression, and found that physical exercise has a moderate (Silveria et al., 2013) to large effect size (Donaghy, 2007; Josefsson et al., 2014; Stathopoulou et al., 2006) in alleviating or decreasing symptoms related to depressive disorders. One such meta-analysis (Stathopoulou et al., 2006) utilized 11 treatment outcome studies, with a total sample size of 513 participants, and found a large effect size (d = 1.42) indicating exercise has an advantage over control groups in alleviating depression. Similar systematic reviews (Josefsson et al., 2014) have demonstrated that the effect sizes for physical exercise interventions are comparable to current gold-standard treatments for depression such as psychopharmacology and cognitive behavioral therapies (CBT).

In addition, recent individual depression studies found that varying forms of exercise intervention were effective in reducing symptoms of depression when compared to control and or treatment as usual (TAU) conditions (Atlantis et al., 2004; Dunn et al.,

2005; Elavsky & McAuley, 2007; Lincoln et al., 2011; McGale, McArdle, & Gaffney, 2011; Pinto et al., 2013; Schewee et al., 2013; Singh et al., 2005; Trivedi et al., 2011). The quality of research on exercise and depression appears strong with multiple studies utilizing solid methodologies. For example, Dunn et al. (2005) utilized a factorial randomized control design, randomizing 80 participants to one of four exercise conditions with varying energy expenditures and frequencies, in addition to a placebo group. Results elucidated that exercise performed at 17.5 kcal/kg/week was significant in reducing depression symptomology by 47%, compared to 29% for the placebo group which did three days a week of stretching. Other studies also utilized randomized clinical trial (RCT) designs and found significant differences in exercise's ability to improve depression over control or treatment as usual groups (Elavsky & McAuley, 2007; Lincoln et al., 2011; McGale et al., 2011). It is evident that there is strong supporting evidence for the use of exercise in combating depression, in addition to exercise helping with a multitude of other concerns as well. Exercise was defined as a mix of moderate-to-vigorously intense aerobic and resistance training performed two to five days per week for duration of at least thirty minutes (Donnelly et al., 2009; Dunn et al., 2011; Garber et al., 2011).

Anxiety. Additional systematic reviews have been conducted evaluating the impact physical exercise interventions have on anxiety disorders. One such meta-analysis (Wipfli et al., 2008) utilized 49 randomized control trial (RCT) studies, with a total sample of 3,566 participants. Findings indicated a medium to large effect size representing large reductions in anxiety symptomology for those in exercise groups when compared to true control groups which received no-treatment. A moderate effect size

(standardized mean difference = -.582, p = .02) favoring the anxiolytic effect of exercise over control and/or treatment as usual conditions, was also observed by a meta-analysis that utilized six RCT's with a total sample of 262 participants (Stubbs et al., 2017).

The literature has also highlighted that the intensity and frequency of the exercise performed play key roles in alleviating anxiety, similar to depression studies. Statistically significant improvements, as observed via various anxiety measures (Anxiety Sensitivity Index; ASI (Reiss et al., 1986); Hamilton Rating Scale for Anxiety; Ham-A (Hamilton, 1959)), have been found when individuals performed 20 minutes of treadmill running three days per-week at moderate intensity (60-70% VO_{2max}) for two weeks (Medina et al., 2014). Similar results were also found when participants engaged in 20 weeks of treadmill and cycle group-exercises (Oeland et al., 2010). Other studies have shown promising results in varying time frames. Treadmill exercising for eight weeks, three times per-week for 30 minutes, has also been shown to decrease anxiety via Ham-A measures (Gaudlitz et al., 2015). Findings such as these indicate changes in anxiety symptomology can be seen as early as two weeks to as long as twenty weeks when exercising. It would seem that the length of exercise routines, measured via consecutive weeks of exercise performed, is not a significant factor required to show improvement in anxiety symptomology.

Exercise and psychotherapy for anxiety. Since psychotherapy has become the gold-standard approach to treating mental illness, other studies have attempted to combine exercise with psychotherapy in order to see if compounding multiple interventions would consequently increase the improvements exercise has on anxiety. Gaudlitz and colleagues' (2015) study evaluated the effects of adding physical exercise to

cognitive behavioral therapy (CBT). Their study aimed towards addressing panic disorder symptoms, with and without agoraphobia, in order to see how it would affect anxiety outcome scores. Forty-seven patients participated in one month of CBT group therapy and were simultaneously randomly assigned to either an aerobic exercise group (30 min, /3 d/wk at 70% VO_{2max}; n = 24) or a very low intensity exercise group (n = 23) for an 8-week period. Anxiety score outcomes were measured via the Ham-A. Significant group differences were found, concluding that adding higher intensity exercise to ongoing CBT could further enhance anxiety reduction, as compared to control group which received CBT and low intensity exercise (Gaudlitz et al., 2015).

Others found positive results when randomly assigning 74 outpatients suffering from anxiety disorders to either a CBT group with exercise (home-based walking program) intervention group (n = 38) or a CBT group with educational sessions (n = 36) (Merom et al., 2008). Results indicated that the CBT group that also participated in home-based regular walking sessions showed significant improvement on stress, anxiety, and depression as compared to the group that only received group-based CBT and educational sessions.

Exercise and psychotherapy for PTSD. Additionally, other studies have found that when exercise (30 min, 3 d/wk of resistance training and walking) was utilized in addition to psychotherapy (n = 39), it significantly reduced PTSD symptomology outcomes when compared to the control group which only received psychotherapy (n = 42) (Rosenbaum, Sherrington, Tiedemann, 2015). However, despite these few studies mentioned, overall there are not many studies that have evaluated how exercise used in conjunction with traditional psychotherapy impacts mental health outcomes. This may in

turn offer understanding as to why more clinicians have not implemented exercise into psychotherapy. In conclusion, reviewing the literature on exercise and anxiety, there appears to be solid literature supporting the use of exercise for anxiety related mental health disorders.

Other Mental Health Outcomes

As previously stated, exercise has been found to help and alleviate a wide range of distress and mental illness; however, exercise is not solely utilized for depression and anxiety related disorders. Other meta-analyses, which have focused on how exercise benefits mental health, have been conducted with other psychiatric disorders, populations, and varying demographics. One such meta-analysis (Shin & Park, 2012) based on 14 studies, utilizing group designs regardless of control groups, indicated that exercise had a small to medium effect size for individuals with intellectual disabilities. Results indicated that exercising helped individuals with intellectual disabilities improve upon their self-esteem in regards to their scholastic and professional achievements (e.g., school work, job, career, etc.). Evidence also suggested that shorter bouts of exercise (30-60 minutes) were better than those of longer durations, and that exercising four times a week is more effective than exercising just three times a week.

Exercise has also found to benefit individuals with substance use disorders (Wang et al., 2014). Utilizing 22 RCT studies, Wang et al. highlighted that moderate (Heart Rate [HR] = 50-60% VO_{2max}) to high intensity (HR = 80-90% VO_{2max}) aerobic exercising significantly increased participants' abstinence rates, while simultaneously reducing withdrawal symptoms, feelings of anxiety, and depression. The reduction in depression

was more evident for those using illicit substances and alcohol, versus those who used nicotine; also abstinence rates were greater in those using illicit substances.

Further systematic reviews (Firth et al., 2015) have also found that exercise has benefits for individuals with severe mental illness and people diagnosed with schizophrenia. Large effect sizes in the reduction of negative and positive symptoms of schizophrenia, have been found when participants exercised at moderate-to-vigorous intensities about 90 minutes per week (Firth et al., 2015). In addition, structured resistance training exercises, six exercises at 10-15 repetitions per various muscle groups, three times per week, decreased symptoms of schizophrenia 'need of care,' as compared to occupational therapy (Scheewe et al., 2013).

Conversely, a different meta-analysis (Pearsall, Smith, Pelosi, & Geddes, 2014) with eight RCTs found no significant effect of exercise on negative or positive symptoms of schizophrenia, on anxiety, and depressive symptoms or on quality of life. Authors noted it was unclear why exercise did not improve mental health of those with severe mental illness (SMI), but mentioned several theories: a) exercise interventions may not have been sufficiently intense, b) intervention durations may have been too short, c) there may be added difficulty in bringing about change with SMI populations, and d) people with SMI have greater levels of smoking instances, weight problems, co-morbid illnesses, and number of risk factors which may make it more difficult for them to achieve higher levels of physical activity (Pearsall et al., 2014). Although there have been positive findings, it is unclear at this point in time whether exercise is an effective intervention for improving mental health outcomes with people experiencing SMI.

Exercising regularly appears to also help populations of various age ranges and other sociodemographic backgrounds. Exercising for at least 30-45 minutes several times per week has been found to improve the mental health (e.g., life satisfaction, quality of life, self-esteem, happiness, and mastery) of geriatric populations (Windle et al., 2010); improve outcomes for Veterans (Beebe et al., 2005); enhancing cognition and learning among college students, by increasing: vocabulary learning, brain-derived neurotrophic factors, and catecholamine levels (Winter et al., 2007). Exercise has also been shown to improve general psychological stress outcomes (Zschucke et al., 2015). In regards to general stress, walking and or running on a treadmill for 30 minutes at 60-70% VO_{2max} showed reduced acute cortisol responses to physiological and psychological stress, higher bilateral hippocampus activity (HPA), and an increase regarding general positive mood in both sedentary and physically fit young males (Zschucke et al., 2015).

In conclusion, it is evident that current literature highlights and supports the efficacy of exercise for improving mental health. Exercise is most strongly associated with improvements in depression and anxiety, but also shows favor among many other mental health categories such as schizophrenia, substance use, physio/psychological stress, amongst others. However, this brings into question how much exercise appears to be needed and also what proposed mechanisms appear most effective in alleviating mental health concerns.

Exercise Recommendation Standards

It is evident the empirical literature highlights the many positive physical and mental health benefits of exercising, however it raises the question of how much exercise and what type is needed in order to see said benefits. The American College of Sports

Medicine (ACSM), the largest sports medicine and exercise science organization in the world, is the gold standard source regarding exercise recommendations for physical health. Regarding quantity and quality of exercise, in order to obtain and maintain cardiorespiratory, musculoskeletal, and neuromotor fitness, current ACSM recommendations and prescriptions of exercise state that people should aim to complete at least 30 minutes of moderate (about 1000 kcal/week; 3-5.9 METs) physical exercise five days a week, and at least 20 minutes of vigorous (about 1400 kcal/week; ≥ 6 METs) physical activity three days a week (Garber et al., 2011). The stance on proposed mechanisms for performing physical exercise are a mixture of cardiorespiratory (e.g., running, swimming, cycling, etc.), resistance training (e.g., lifting weights, pulling and pressing heavy objects, etc.), and neuromotor work (e.g., stretching, balancing, plyometrics, etc.). The other question that arises however, is whether these same exercise recommendations hold true regarding mental health benefits?

Dunn and colleagues (2005) sought to investigate the dose-response relation of exercise to mental health (i.e., depression) in order to evaluate what exercise stipulations were needed for mental health benefits, such as a reduction in depression symptoms. Their randomized 2 x 2 factorial design (with placebo) study tested 80 adult participants between the ages of 20 and 45, who suffered from depression disorders. Participants were randomized to one of four aerobic exercise groups which varied in intensity and frequency, or to a placebo control. Outcomes were measured using the Hamilton Rating Scale for Depression (Ham-D). Their results elucidated that at least 30 minutes of moderate to vigorous (17.5 kcal/kg/week, 1400 kcal/week; 3-8.7 METs) exercise a day, for 3-5 days a week was sufficient in significantly improving mental health and reducing

depression symptoms (Dunn et al., 2005). Regarding proposed mechanisms, the authors noted people should engage in a mixture of aerobic training (e.g., running, swimming, cycling) and resistance training (e.g., lifting weights).

These findings are in line with ACSM recommendations on exercise and physical health, indicating dosage, intensity, and frequency recommendations do not need to be altered or specifically tailored when targeting mental health improvements in patient populations. Overall, clients will benefit simultaneously, both mentally and physically, from engaging in aerobic and resistance training performed at moderate and vigorous intensities for at least 30 minutes three to five times a week. With adequate research highlighting the mental benefits of exercise, and exercise recommendations being officially established for both physical and mental health, it brings in to question how exercise is being incorporated in psychotherapy by psychotherapists when working with clients who suffer from mental illness and general distress of mental well-being?

Exercise Prescription Among Mental Health Professionals

Searching various scientific databases (e.g., PsycINFO, Web of Science, PubMed, etc.) for studies evaluating exercise prescription among mental health professionals within psychotherapy yielded few studies. The first sets of studies, developed within this arena, were published in the 1980's. Findings suggest (Burks & Keeley, 1989) that U.S. psychologists and psychotherapists prescribe exercise only routinely or always about 30% and 10% of the time, respectively (Barrow et al., 1987). A separate study done with APA division 29 (division of psychotherapy) psychologists concluded that psychotherapists assess and make recommendations for exercise at low frequencies (Burks & Keeley, 1989). However, the study was not specific on what the

authors meant by low frequency, no objective measure or percentages were reported. However, Burks and Keeley (1989) also noted that about 83.3% of psychotherapists report having prescribed exercise to clients at least once.

The next sets of studies were not conducted until two decades later and with a different geographic population. Phongsavan et al., (2007) and Burton et al., (2010) both surveyed Australian psychologists and psychotherapists. Phongsavan et al. (2007) found that only 40% of Australian mental health professionals recommended exercise to clients. Burton and colleagues (2010) found that 54% of Australian psychologists always/often recommend activity, and 12% always/often did "activity counseling" with mentally ill clients. Due to the heterogeneous nature of said studies, it is hard to identify what true percentage of psychologists and psychotherapists prescribe exercise to clients with mental illness. An educated guess can be made, that about half of psychotherapists recommend exercise to clients regularly. Several of these studies noted that factors: a) formal training in exercise prescription for mental health, and b) the clinician's own exercise habits, are both important factors directly impacting the probability of whether psychotherapist will prescribe exercise.

Formal training in exercise prescription. According to most recent statistics, 12% and 31% of US psychologists and psychotherapists report having received formal training in exercise prescription, within their undergraduate and postgraduate training respectively (Burton et al., 2010). Eighteen percent repot having received formal training via workshops. Similarly, Burks and Keeley (1989) found that only about 13% of U.S. psychologists and psychotherapists had received formal training in exercise prescription.

No formal training percentages were provided by other studies (Barrow et al., 1987; Phongsavan et al., 2007).

Physical exercise habits of psychotherapists. As previously noted, several studies have noticed a strong correlation between the physical fitness habits of psychotherapists and their likelihood to prescribe exercise to clients. It is estimated that around 56% (Burks & Keeley, 1989) to 71% (Barrow et al., 1987) of U.S. psychologists engage in regular physical fitness training. Physical fitness training is objectively defined within these studies as performing at least 20 minutes of exercise, three times per week. Seventy-two percent of psychologists exercise about two to four days a week, while a quarter exercises every day (Barrow et al., 1987). Burton and colleagues (2010) noted that psychologists' regular exercise behavior was the most notable factor associated with providing physical activity advice and counseling (i.e., exercise prescription). Their study found that Australian psychologists, who exercise regularly, were two-and-a-half times more likely to prescribe exercise to their clients, than their colleagues who did not exercise regularly (Burton et al., 2010).

Reported barriers to exercise prescription. Despite the many potential health factors associated with prescribing exercise to clients, psychotherapists have acknowledged some barriers hindering the behavior. Burks and Keeley's (1989) study, which surveyed 232 APA division 29 psychologists, found that the majority lack the knowledge, qualification, and expertise in prescribing exercise. Out of the 232 psychologists surveyed, only 12.6% had received any training and/or education on prescribing exercise. This lack of knowledge appeared to be the greatest barrier hindering the prescription of exercise in psychotherapy. Authors noted that many of the

respondents in their study claimed psychologist trainees should be required to participate in formal training on exercise prescription, during their graduate education (Burks & Keeley, 1989). Others also noted that a lack of confidence or efficacy were the greatest barrier to prescribing exercise to clients (Burton, Pakenham, & Brown, 2010).

Barrow, English, and Pinkerton (1987) discovered that psychologists' demographic variables played a significant role in whether they recommended exercise to clients. Their study, which surveyed 196 licensed clinical psychologists in the state of North Carolina, illustrated that female psychologists and those who identify with theoretical orientations such as psychodynamic and psychoanalytic were less likely to prescribe exercise. Barrow, English, and Pinkerton (1987) offered an explanation for such findings by mentioning that females tended to exercise less than male psychologists. Regarding additional sex differences, McEntee and Halgin (1996) found that out of the 110 psychotherapists that they surveyed, male therapists were more likely to discuss exercise with their male clients than with their female clients. An additional psychotherapist demographic factor that presents as a barrier to exercise prescription is whether psychologists exercise themselves. Their findings illustrated that for psychologists who do not exercise, they were two-and-a-half times less likely to prescribe exercise to their clients (Burton, Pakenham, & Brown, 2010; McEntee & Halgin, 1996). As previously mentioned throughout this study, psychotherapists' own exercise habits predict a significant increased likelihood that they will incorporate exercise prescription in therapy (McEntee and Halgin, 1996).

Overall, the reluctance or hindrance impacting exercise prescription appears to stem from a core set of factors. The literature has demonstrated barriers to exercise

prescription include: a) having a lack of confidence and/or efficacy, knowledge, and formal training, b) abiding to theoretical orientations such as psychoanalytic or psychodynamic, b) believing clients would not benefit from physical activity and general lack of exercise's efficacy on mental health, in addition to c) believing physical activity is not important for managing mental illness, d) clinical time constraints, e) depending exercise recommendation on the severity of the mental illness of the client, and f) believing more traditional psychotherapeutic methods to treating mental illness should be used, such as cognitive behavioral therapy (Burks & Keeley, 1989; Burton et al., 2010; McEntee & Halgin, 1996). Having outlined the current exercise prescription habits among psychotherapists, their formal training and personal exercise habits, and the barriers that hinder them from prescribing exercise to clients, it is important to outline the specific goals that this study aims to employ.

Goals for the Current Study

Clinicians' exercise prescription varies greatly across studies, with psychologists and psychotherapists prescribing exercise at rates as low as 10% to 40% (Burton et al., 2010; Phongsavan et al., 2007), to as high as 53% to 83% (Barrow et al., 1987; Burks & Keeley, 1989; Burton et al., 2010). Due to such heterogeneity across studies, the first goal of this study was to evaluate what the current exercise prescription trends are for psychologists and psychotherapists across varying clinical settings in the United States. Additionally, for those psychotherapists who acknowledge prescribing exercise to clients, this study proposes to define how and what psychologist say to their clients, when prescribing exercise. Secondly, this study sought to understand how clinicians' own exercise habits impact their prescription of exercise to clients? As previous research

seems to suggest, when psychologists regularly exercise, they are more likely to prescribe exercise to their clients (Barrow et al., 1987; Burks & Keeley, 1989; Burton et al., 2010; McEntee & Halgin, 1996).

The third goal of this study was to discover what percentage of psychologist have received formal training in exercise prescription, and to discern how such training impacts their prescription of exercise. The final goal centers on trying to extrapolate the perceived barriers to exercise prescription, from the clinicians' perspective. Previous research seems to highlight that clinicians' refrain from prescribing exercise due to a number of barriers and belief (e.g., lack of knowledge and training, time constraints, relying on more traditional psychotherapeutic methods to treating mental illness, etc.) (McEntee & Halgin, 1996). Others favor more conventional methods of treatment such as CBT, doubt clients would benefit from physical activity added to psychotherapy, believe physical activity is not important for managing mental illness, and overall lack the efficacy and confidence in prescribing exercise (Burks & Keeley, 1989; Burton et al., 2010; Phongsavan et al., 2007).

Hypotheses regarding exercise prescription and barriers. Due to the limited existing literature within the area of exercise prescription and psychotherapy, and to better understand exercise prescription behaviors and beliefs among psychotherapists, I propose the following research questions. I also propose additional specific hypotheses, under some but not all research questions, based on the limited literature that is available.

Research Question 1. What percentage of the sample acknowledges recommending exercise occasionally?

Hypothesis 1. With previous findings indicating that around half of U.S. psychologists occasionally recommended exercise (Barrow et al., 1987), I hypothesize that comparably half of my sample will indicate they prescribe exercise occasionally.

Research Question 2. No prior studies have evaluated the intensity at which psychotherapist exercise; hence I would like to find out what percentage of psychotherapists report exercising at both moderate and vigorous intensity levels, and for how long they are performing each? Also, how do their own exercise habits impact their prescription of exercise?

Hypothesis 2. Prior findings indicate that most psychotherapists, around 70%, exercise around two to four days per week (Barrow et al., 1987; McEntee & Halgin, 1996). I hypothesize that a comparable percentage of my sample (around 70%) will report exercising around the same number of days (i.e., at least two to five days per week) at moderate intensity levels.

Hypothesis 2a. Previous literature has estimated that psychotherapists, who exercise regularly, approximately 71% of them, are more likely to recommend it to their clients (Barrow et al., 1987; Burton et al., 2010; McEntee & Halgin, 1996). As such, I hypothesize that psychologists' higher self-reported exercise habits predict increased likelihoods of exercise prescription.

Research Question 3.What percentage of the sample acknowledges having received formal education in exercise prescription, and how does their training impact their exercise prescription.

Hypothesis 3. Existing literature highlights that approximately 13-31% of psychotherapists are formally educated in exercise prescription (Burks & Keeley, 1989; Burton et al., 2010). I hypothesize that those who acknowledged having had formal training in exercise prescription will report prescribing exercise more frequently.

Research Question 4. What client and therapist perceived barriers, to prescribing exercise to clients with mental illness, do psychotherapist acknowledge? Also, how do a) client barriers, b) therapist barriers, and c) overall combined barriers to exercise prescription, as perceived by the psychotherapists, impact their tendencies to prescribe exercise to clients?

Chapter 2: Method

Participants

I recruited participants who identified as either licensed psychologists or trainees via various APA listservs. My sample contains both Masters and Doctoral level psychology clinicians and trainees from diverse ethnic, age, professional, and treatment locations. My sample was limited to adults 18 years and older who endorsed having experiences, past or present, working with clients conducting psychotherapy. I limited my study to APA members in order to increase sampling of US psychologists and trainees, and to control for the impact of varying socialized health care systems found around the world. I also limited my analyses to individuals who earned or are currently attempting to earn either a masters (i.e., MA, MS, MEd) or a doctoral degree (i.e., PhD, PsyD) in a clinically focused psychology field of study (i.e., counseling psychology, clinical psychology, and clinical health psychology). Rationale for this sampling includes: a) making the study findings relevant to the field of professional psychology, b) assessing exercise prescription differences between levels of training and practice, and c) targeting APA listservs will sample predominantly U.S. psychologists and trainees.

A total of 194 participants began the online survey through Qualtrics (Qualtrics, Provo, UT); however, two participants documented their withdrawal by clicking "No" on the consent to participate form. Further, two data entries were deleted because they were dual entries, which was discovered via the matching computer IP addresses used to answer the survey. Forty-four participants failed to answer or complete the entire survey and thus were deleted due to large insufficient data. All remaining participants provided consent acknowledging they fit the recruitment criteria. The final convenience sample

contained 146 participants who provided enough data to be included in the final analysis. Procedures for addressing how analyses were conducted with missing data are discussed later within this document.

Within group differences. Table 2.1 entails detailed information on the distribution of all of the sample demographic variables. The sample consisted of 146 individuals, 112 (76.7%) of which identified as females. One hundred and fourteen (78.1%) participants, identified as White/Caucasian/European-American, while 15 (10.3%) identified as Latino/Latina/Hispanic. The overall mean age of the sample was 38.8 (*SD* = 13.9). In regards to the level of education of the sample, 47 (32.2%) had earned a master's degree, whereas 89 (61%) held a doctorate. Eighty participants (54.8%) reported being licensed to provide psychological services. The majority identified as either a clinical and/or counseling psychologist (63%), or as a health psychologist (28.8%). Seventy-four participants (50.7%) had less than 5 years of experience, 28 (19.2%) had between 5-10 years of experience, and 44 (30.1%) had over 10 years of experience providing clinical services.

Regarding work setting, the majority (25.3%) were in private practice, or in inpatient/outpatient hospitals (24.7%). Seventy-four (50.7%) were fully employed, while twenty-four (16.4%) were part time. Forty-seven participants (32.2%) were still in graduate school. For those enrolled in graduate psychology programs, 3 were second year master's students, 35 were doctoral students, and nine were currently on internship. The other 91 (62.3%) participants were not in school. The general socioeconomic status (SES) backgrounds of the clients that the sampled psychotherapists treated (i.e., clients whom were receiving treatment from the samples participants) were diverse.

Socioeconomic status was broken down and categorized as: low SES, middle SES, upper middle SES, and high SES. It was up to the discretion of the participant to decide how to define and categorize their general client SES demographic. Fifty-four participants (37%) identified working primarily with lower SES clients, 70 (47.9%) worked primarily with middle SES clients, 19 (13%) worked with upper-middle SES clients, and 3 (2.1%) identified working with high SES clients.

Table 2.1

Participant Sociodemographic Characteristics

Characteristic	*n*	%
Gender (*n* = 146)		
Female	112	76.7
Male	32	21.9
Genderqueer	2	1.4
Ethnicity (*n* = 146)		
Asian/Asian American/Pacific Islander	7	4.8
White/Caucasian/European American	114	78.1
Black/African American/African descent	6	4.1
Latino/Latina/Hispanic	15	10.3
Multi-racial	2	1.4
Native American/First Nations/Inuit	1	.7
Other	1	.7
Age (*n* = 139)		
20 to 29 years	40	28.8
30 to 39 years	54	38.8
40 to 49 years	14	10.1
50 to 59 years	14	10.1
60 years and older	17	12.2
Educational Level Completed (*n* = 146)		
Bachelors degree (e.g., BA, BS)	10	6.8
Masters degree (e.g., MS, MA, MEd, EdS)	47	32.2
Doctoral degree (e.g., PhD, PsyD, EdD)	89	61
Licensure Status (*n* = 146)		
Currently licensed	80	54.8

Table 2.1 Continued

Characteristic	*n*	*%*
Not licensed	48	32.9
Attaining licensure	18	12.3
Area of Psychology (*n* = 146)		
Clinical/Counseling Psychology	92	63
Clinical Health Psychology	42	28.8
Forensic Psychology	1	.7
Sports Psychology	4	2.7
Child Psychology	6	4.1
Neuropsychology	1	.7
Years Practicing (*n* = 146)		
Less than 5 years	74	50.7
5-10 years	28	19.2
10-20 years	12	8.2
Over 20 years	32	21.9
Work Setting (*n* = 146)		
Academia	12	8.2
Bureau of Prisons	1	.7
College Counseling Center	21	14.4
Community Mental Health	19	13
Inpatient/Outpatient Hospital	36	24.7
Non-profit Mental Health Agency	3	2.1
Private Practice	37	25.3
VA Medical Center	17	11.6
Client's Socioeconomic Status (*n* = 146)		
Low SES	54	37
Middle SES	70	47.9
Upper Middle SES	19	13
High SES	3	2.1
Students Still in School/Year in Program (*n* = 55)		
Second year Masters	3	2.1
First year Doctoral	4	2.7
Second year Doctoral	7	4.8
Third year Doctoral	10	6.8
Fourth year Doctoral	13	8.9
Fifth year Doctoral	9	6.2
Currently on internship	9	6.2
Not in school (N/A)	91	62.3

Table 2.1 Continued

Characteristic	n	%
Employment Status (n = 146)		
Full time	74	50.7
Part time	24	16.4
Currently seeking employment	1	.7
In training (student, practicum, internship)	47	32.2

Note. SES = socioeconomic status; BA = bachelors of arts; BS = bachelors of science; MS = masters of science; MA = masters of arts; MEd = masters of education; EdS = educational specialist; PhD = doctor of philosophy; PsyD = doctor of psychology; EdD = doctor of education.

Measures

Exercise knowledge, barriers, attitudes, and behaviors. To assess the knowledge, beliefs, barriers, attitudes, and behaviors of exercise prescription among psychotherapists, I utilized Stanton, Happell, and Reaburn's (2014) Exercise in Mental Illness Questionnaire - Health Practitioner Version (EMIQ-HP; Appendix A). The EMIQ-HP is a 68-item measure that assesses the knowledge, training, attitude, behaviors, and perceived barriers of health clinicians regarding their prescription of exercise for clients suffering from mental illness. The measure uses a mixture of Likert-type scale questions, short answer, multiple choice, and fill in the blank. The questionnaire assesses six different domains in relation to exercise: 1) knowledge; 2) beliefs; 3) exercise prescription behaviors; 4) barriers to exercise; 5) personal exercise habits; and 6) demographics.

The first domain entitled "exercise knowledge," contains 10 items, and aims to address the clinicians knowledge on the benefits of exercise, using Likert scale with anchors of 1 = strongly disagree to 5 = strongly agree. This domain also assesses whether the clinician had any formal training in exercise-prescription and if so where that training occurred. In addition, it assesses confidence and knowledge in prescribing exercise to clients with a mental illness. The second domain, "exercise beliefs," contains

eight items and asks the health professional to rank previously evidence based strategies used for mental illness (i.e., cognitive behavioral therapy, medication, social support, etc.) compared to exercise. Responses utilize a five-point Likert scale with the anchors as 1 = significantly less than exercise and 5 = significantly better than exercise. Using a similar 5-point Likert response format, other questions within the domain address agreement with statements regarding the use of exercise for people with mental illness, with anchors at 1 = strongly disagree to 5 = strongly agree. The third domain of the EMIQ-HP, "exercise prescription behaviors," contains seven items and assesses if clinicians' prescribe exercise to clients with mental illness and if so what are the specifics of their prescription. Response formats are a mix and contain Likert type, open ended, and multiple choice questions. This domain also screens for those individuals who do not prescribe exercise to clients with mental illness, and moves them to the next domain if they 'never' prescribe exercise to clients with mental illness.

The fourth domain, "barriers to exercise," contains 23 items divided in two subsections. The first subsection contains 11 items and asks participants to identify their agreement (five-point Likert scale with anchors 1 = strongly disagree to 5 = strongly agree) to statements regarding the barriers that they as clinicians' experience or perceive when attempting to prescribe exercise to their clients with mental illness. For the purpose of this study, these 11 items (questions 26-36 of the EMIQ-HP) were totaled and the final score divided by 11, in order to create a new variable which I have titled Therapist Barriers. The second subsection contains 12 items and asks respondents to indicate (five-point Likert scale with anchors of 1 = strongly disagree and 5 = strongly agree) their level of agreement with statements about the exercise barriers that people with mental illness

have previously reported in the previous research literature. For the purpose of this study, these 12 items (questions 37-48 of the EMIQ-HP) were totaled and the final score divided by 12, in order to create a new variable which I have titled Client Barriers. Finally, I totaled all 23 individual barrier items, divided the final number by 23, and created a new predictor variable entitled Combined Overall Barriers.

The fifth domain, "personal physical activity habits," comprises seven items and assesses the clinicians own physical activity habits (frequency, intensity, type of exercise, etc.). For the purpose of this study and to make it geographically specific to U.S. clinicians, since the scale was originally developed in Australia, the "demographics" section which was the sixth domain of the EMIQ-HP was removed, altered, and can be found separately in Appendix B. Similar to previous research studies (Barrow et al., 1987; Burks & Keeley, 1989; Burton et al., 2010; Phongsavan et al., 2007) the EMIQ-HP will provide similar information on clinician frequency to prescribe exercise to clients with mental illness. Use of this measure permits comparison to the existing literature.

The EMIQ-HP was developed utilizing expert consensus from 30 different health professionals (nursing, exercise physiology, pharmacy, physiotherapy, and dietetics). Interclass Correlation Coefficients (ICC) for all the domains in the EMIQ-HP ranged between .61 to 1.00 suggesting excellent test-retest reliability (Stanton, Happell, & Reaburn, 2014). Previous studies evaluating health clinicians exercise-prescription tendencies and barriers, utilizing the EMIQ-HP, have been conducted with inpatient mental health nurse practitioners (Stanton, Happell, & Reaburn, 2015; Stanton, Reaburn, & Happell, 2015), with future studies focusing on other health professions such as exercise physiologists, psychologists, among others.

The EMIQ-HP measure was utilized for the purpose of assessing clinicians' personal exercise habits, how much formal training have they received on prescribing exercise to clients, how often do they prescribe exercise and if so how do they do it, and finally to identify what barriers clinicians' believe they themselves encounter in prescribing exercise and what barriers they perceive keep clients from exercising. The measure was personally emailed to me by co-developer, Dr. Robert Stanton who gave permission to use the EMIQ-HP in the current study. For this study the formal training IV (independent variable) comes from question one of the knowledge domain of the EMIQ, the exercise prescription DV (dependent variable) comes from question 19 of the behaviors domain of the EMIQ, the therapist barriers IV comes from questions 26-36 (individual barriers were summed and divided by their total; 11) in the barriers domain of the EMIQ, the client barriers IV comes from questions 37-48 (individual barriers were summed and divided by their total; 12) in the barriers domain, the vigorous exercise IV and the moderate exercise IV come from questions 49 and 51 in the exercise participation domain of the EMIQ, respectively. Sociodemographic independent variables (gender, ethnicity, age, education, licensure, years practicing, work setting, client SES, and year in school) all come from the sociodemographic domain found in appendix B.

Sociodemographics. I gathered sociodemographic information including: gender identity (male, female, genderqueer, transgender, other), ethnicity (Caucasian/White/European-American, African American/African descent/Black, Asian/Asian American/Pacific Islander, Latino/Latina//Hispanic, Native American/First Nations/Inuit, Other), age in years, level of education completed (BA or BS completed, MS, MA, or ME completed, PhD or PsyD completed), area within psychology, licensure,

work setting, number of years practicing, SES of the clients they serve, racial/cultural composition of the clients they serve, schooling status, type of work they do, and employment status. The specific sociodemographic and follow up questions can be found in Appendix B.

Procedure

The University of Kentucky Office of Research Integrity reviewed and provided approval of this study and its materials and procedures (Non-Medical IRB Protocol 16-0568-P4S). After Institutional Review Board (IRB) approval, I created an internet-based survey using the Qualtrics (Qualtrics, Provo, UT) platform with the EMIQ-HP measure and sociodemographic questionnaire. The first page of the survey contained the IRB approved informed consent form informing participants of the study's purpose, rights as participants, and any risks and or benefits associated with the study. Participants acknowledged their understanding of the information provided and agreed to participate in the research study by clicking "Yes" on the informed consent form (see Appendix C). The survey was designed so that only those who provided consent were allowed to continue on to take the survey. Those who declined to provide consent were immediately thanked and directed to an exit webpage. The surveys were completed anonymously and were three web pages in total length. The order of the measures was the same for all participants. Mock participants were initially utilized to pilot the survey in order to identify length of time for completion and any troubleshooting related issues. Pilot participants completed the survey within a range of 10 to 15 minutes. Real participants were not financially compensated for their time and effort, and were instructed that their participation was solely voluntary.

Recruitment

The recruitment phase totaled a span of 65 days from August 15, 2016 to October 18, 2016. Participants were recruited through non-probabilistic sampling methods via the various APA listservs. The recruitment email was sent out twice over a period of two months. I identified several APA divisions that house the majority of practicing psychologists. I am a student member in a number of these listservs and I obtained permission to post in those I was not personally affiliated with. The advertisement targeted psychologists and psychological trainee clinicians who acknowledged having experience working with clients and their mental health. Participants were recruited via an advertisement email sent through APA division listservs: Division 17 – Society of Counseling Psychology (2,081 members), Division 29 – Society for the Advancement of Psychotherapy (2,085 members), Division 38 - Society for Health Psychology (2,543 members), Division 42 – Psychologists in Independent Practice (3,157 members), and Division 47 – Society for Sport, Exercise, and Performance Psychology (721 members). Together these different divisions make a potential sampling pool of 10,587 participants.

However, not every member of each division is part of or actively participating in the division listservs, and overlap between divisions (where members are part of more than one division) is highly likely. Thus the actual pool of possible participants, which is not able to be accurately calculated, is certainly smaller. Listserv and division membership sizes were verified via latest APA 2015 Directory statistics (APA, n.d.). I contacted these listservs via email. In addition to my recruitment efforts, I did not hinder or explicitly restrict participants from further distributing the survey among participants or others outside of the previously mentioned divisions. Therefore, it is impossible to

accurately assess the extent of such a possible snowball technique. Officially however, I did not deviate from the recruitment strategy, which was to recruit solely from APA division listservs. For example, I did not post my survey on social media websites such as Facebook, and or send it to individual persons via email. (See Appendix D for the email used to recruit participants.)

Preliminary Analyses

An a priori power analysis, using the software application G*Power 3.1 for Windows (Faul, Erdfelder, Buchner, & Lang, 2009), demonstrated that a sample size of 110 was sufficient in order to discover significant effect sizes. I utilized Statistical Package for the Social Sciences version 23.0 (SPSS 23.0) for all statistical tests and calculations. Prior to testing my hypotheses, the dataset was first examined for missing data, possible outliers, tests of normality, and homogeneity of variance. Data entries containing extensive missing data were excluded from final analyses. Extensive missing data is defined as observations made where participants did not complete the entire survey, and or it was clear when participants discontinued answering questions during a particular section within the survey. Missing data at random was imputed using the expectation-maximization (EM) algorithm, which is done in order to avoid statistical biases one might get from using more traditional missing data procedures such as listwise deletion (Schlomer, Bauman, & Card, 2010).

I conducted analyses of normality, for my outcome variable, prior to hypothesis testing by examining kurtosis and skewness of the data. I found that the data were normally distributed. In order to test and identify possible outliers in the data, graphical assessment visuals, including scatter and box plots were used. Elimination of observed

outliers was based on a case by case basis, dependent on standard deviations, and on normality and homogeneity of variance assessments. Normality was assessed using examination of the histograms by seeing how they related or deviate against a normal bell curve distribution, and observing the levels of kurtosis and skewness present.

Chapter 3: Results

This chapter addresses the findings regarding the previously established hypotheses and research questions. The chapter is organized by preliminary analyses conducted to address missing data and evaluate the assumptions of normality and homoscedasticity. The analytical strategy and subsequent findings from the analyses are then presented.

Missing Data

Schlomer et al. (2010) outlined guidelines for best practices regarding the handling and reporting of missing data within research concerning counseling psychology studies. Their guidelines are considered when reviewing the missing data for the current research study. For this study, missing data ranged from a low of 1% for the outcome exercise prescription variable to a high of 5% for the combined barriers variable. Visual inspection of the data illustrated that missing data appeared to be missing at random.

After visual inspection, in order to further examine the pattern of missing data, I evaluated whether the data were missing completely at random (MCAR). I utilized Little's MCAR test (Schlomer et al., 2010) which employs a chi-square statistical analysis and assumes the null hypothesis, that missing data is missing completely due to randomness. In this case, failing to reject the null hypothesis indicates that the data are most likely missing in a random way. For this study, Little's MCAR test ($x^2[283] = 263.33$, $p = .793$) was not significant for any of the variables considered, indicating that the variables were MCAR, and as such failed to reject the null hypothesis.

Once I determined that the data were MCAR, I proceeded to address the missing data. To avoid reducing the variances of the scores by replacing missing items using

subscale means, the missing data items were instead imputed using the Expectation-Maximization (EM) algorithm within SPSS 23; EM is considered a superior method for conducting missing data imputation when one has MCAR data (Schlomer et al., 2010). This also avoids biases that occur when using listwise deletion methods.

Evaluation of Statistical Assumptions

Next, I tested the data for outliers. I utilized a box-and-whisker plot within SPSS. No outliers were present for the outcome variable (exercise prescription), therefore, no data were required to be eliminated for further hypothesis testing. Results regarding the measures of dispersion, distribution, and central tendency are in Table 3.1. No extreme deviations from 0 were observed for both skewness and kurtosis measures for the outcome or independent variables. Based on these scores, the data appear to be normally distributed.

Table 3.1

Summary Statistics of Skewness and Kurtosis

		Distribution		Central Tendency		Dispersion		
Variable	*n*	Kurtosis (*SE*)	Skewness (*SE*)	*Mdn*	*M*	Range	*SD*	*SEM*
Exercise Rx[a]	145	-.46(.40)	.004(.20)	2	2.48	0-3	.81	.07
Vigorous Exercise	146	-.91(.39)	.29(.20)	3	2.6	0-7	1.97	.16
Moderate Exercise	146	-.78(.39)	.53(.20)	2	2.75	0-7	2.2	.19
Therapist Barriers	146	-.55(.39)	.13(.20)	2	1.96	0-2.3	.49	.05
Client Barriers	146	.32(.39)	-.29(.20)	2.67	2.66	0-3.2	.63	.05
Combined Barriers	146	-.35(.39)	.23(.20)	2.30	2.33	0-2.3	.48	.04

Note. Rx = prescription; Mdn = median; M = mean; SD = standard deviation; SEM = standard error of mean; SE = standard error.
[a]Dependent variable.

Reliability analyses. I conducted a reliability analysis for the barriers subscale of the EMIQ-HP, which includes the therapist barriers, the client barriers, and the overall combined barriers. Cronbach's alpha for the 11 item therapist barriers scale was α = .79. Deleting select items would not increase the alpha. Regarding the client barriers subscale, which had a total of 12 items, Cronbach's alpha was α = .86. Deleting select items would not increase the alpha. Regarding the entire combined barriers scale, which had a total of 23 items, Cronbach's alpha was α = .87. These three Cronbach's alpha values indicated that the scale generated reliable scores for the current sample.

Statistical Analyses of Hypotheses

Preliminary analyses conducted on the data indicated that the data contained no outliers and that there was no significant skewness and kurtosis present. Missing data appeared to be MCAR. Reliability analyses of the therapist barriers (α =.79), client barriers (α =.86), and total combined barriers scale (α =.87) indicated internally consistent scores for measuring barriers to exercise prescription. After completing the preliminary analyses, I conducted main statistical analyses to test the hypotheses and research questions.

Given that the outcome variable, exercise prescription, is ordinal in nature (4-point Likert scale) it is debatable if multiple regression models are appropriate for evaluating the corresponding research questions and hypotheses. To address this concern, ordered logistic regression models were also conducted. The results were consistent with the multiple regression models - no new findings emerged by changing the regression

analyses used. Therefore, only the multiple regression models were reported for the sake of parsimony.

Exercise prescription. My first hypothesis stated that comparably half of my sample will indicate they prescribe exercise occasionally. Previous findings indicated that only 53% of U.S. psychologists occasionally recommended exercise (Barrow et al., 1987). For the current study, the percentage of respondents who endorsed prescribing exercise only 'occasionally' was 40.4% (*n* = 59). Frequency test results revealed that 50.7% (*n* = 74) of the sample prescribed exercise never/occasionally, while 49.3% (*n* = 72) prescribed exercise most of the time/always. This indicates that the sample was split evenly between those who regularly prescribe exercise versus those who seldom or never prescribe. Specific results regarding exercise prescription can be found in Table 3.2.

My findings are slightly lower from previous literature which found that only 53% of U.S. psychologists occasionally recommended exercise (Barrow et al., 1987). To test for significant change between current findings and previous literature, a nonparametric test of two independent proportions was conducted. Results indicated there was no significant difference between current findings and those of Barrow and colleagues (1987). This indicates that within the last three decades there has been very little change in regards to prescribing exercise to clients engaged in psychotherapy. Additionally, the EMIQ-HP asks respondents to disclose specifics about their exercise prescription behaviors. Descriptive statistics revealed that most respondent's (*n* = 47; 32.2%) recommended that their clients exercise "most days of the week," at a moderate intensity level (*n* = 40; 27.4%), for a recommended 30 minutes per session (n = 37;

25.3%). Results regarding the respondents' exact exercise prescriptions are found in Table 3.2.

Table 3.2

Exercise Prescription Variables

Item	*n*	%
Do you prescribe exercise to people with a mental illness? (*n* = 146)		
Never	15	10.3
Occasionally	59	40.4
Most of the time	57	39
Always	15	10.3
How often do you recommend [clients] exercise? (*n* = 146)		
Every day	8	5.5
Most days of the week	47	32.2
Once or twice a week	16	11
As often as they feel they can	42	28.8
Other	33	22.6
How hard, what intensity, do you recommend [clients] exercise? (*n* = 146)		
Low intensity	13	8.9
Moderate intensity	40	27.4
Vigorous intensity	7	4.8
At a level that makes them feel good	21	14.4
I do not suggest an intensity	36	24.7
Other	29	19.9
How long do you suggest [clients] try to exercise at any one time? (*n* = 146)		
10 minutes per session	18	12.3
20 minutes per session	17	11.6
30 minutes per session	37	25.3
60 minutes per session	8	5.5
As long as they can	18	12.3
Other	48	32.9

Additionally, I evaluated if psychotherapist demographic variables (gender, age, ethnicity, educational level, licensure, years practicing, work setting, year in school, and their client's socioeconomic status) predicted exercise prescription. Multiple regression analyses were conducted, utilizing the enter method, in order to test if demographic

variables significantly predicted psychotherapists exercise prescription. Regression model results indicated that two predictors: a) age and b) years in school, explained 42% of the variance (F[9, 36] = 9.27, p = .011, R^2 = .42), equating to a medium effect size. Regression analyses found that predictor variables age (β = .37, p = .038), and year in graduate program (β = .32, p = .03), significantly predicted increased likelihood that participants would prescribe exercise to their clients. Specifically, the older the psychologists and the further along a trainee is within their graduate training, the more likely they are to prescribe exercise to clients. Table 3.3 shows the complete results from this multiple regression model.

Table 3.3

Multiple Regression of Demographic Variables (Outcome: Exercise Prescription)

	b	SE b	β
Constant	-.40	.66	
Gender	.18	.22	.11
Ethnicity	.01	.06	.01
Age	.03	.02	.37*
Education	.44	.23	.28
Licensed	-.11	.14	-.12
Yrs. practicing	-.01	.03	-.04
Work setting	-.01	.04	-.04
Client SES	.07	.14	.07
Year in school	.18	.08	.32*

Note. Model 1: R^2 = .42.
*p < .05.

Given that variables a) age and b) years in school, offer similar information, I decided to test for any multicollinearity that may be present within the regression model. Running a bivariate correlation matrix resulted in a Pearson correlation score of r (144) = .34, p = .012, between the variables a) age and b) years in school. Additionally, collinearity statistical tests indicated that multicollinearity was not a concern (Age, Tolerance = .55, VIF = 1.81; Years in School, Tolerance = .80, VIF = 1.24). Both tests

suggest it is safe to assume that the two variables are not significantly intercorrelated and act as independent predictor variables within the regression model.

Participant exercise habits and exercise prescription. The second research question aimed to discover what percentage, and for what duration, psychotherapists are performing moderate and vigorous exercise. As seen in in Table 3.4, results revealed that respondents exercise at vigorous intensities for an average of 2 to 3 days a week (M = 2.58, SD = 1.97), and a comparable amount in regards to moderate physical exercise (M = 2.75, SD = 2.23). Respondents exercised vigorously (M = 41.83 min, SD = 32.24) and moderately (M = 40.81 min, SD = 33.29) for an average duration of about 40 minutes within both categories, respectively. It should be noted that respondents can, and most likely are, represented within both categories (i.e., respondents could indicate both, how often they exercise at vigorous and moderate intensities).

The second hypothesis stated that a comparable percentage of my sample, around 70% (Barrow et al., 1987; McEntee & Halgin, 1996), will report exercising at least two or more days, at a moderate intensity level. Descriptive statistics revealed that 65.8% of the sample exercises, at a moderate intensity, at least twice per week or more. These findings are comparable to previous literature which showcased that about 70% of psychotherapists exercise regularly (Barrow et al., 1987; McEntee & Halgin, 1996).

Hypothesis 2a states that higher self-reported exercise habits of therapists will predict increases in exercise prescription. Psychotherapists who exercise are more likely to recommend it to their clients (Barrow et al., 1987; Burton et al., 2010; McEntee & Halgin, 1996).

Table 3.4

Psychotherapists' Exercise Characteristics

Variables	*n*	%	*Cumulative %*	*M*	*SD*
Vigorous[a], days/week (*n* = 146)				2.58	1.97
0	32	21.9	21.9		
1	15	10.3	32.2		
2	25	17.1	49.3		
3	32	21.9	71.2		
4	14	9.6	80.8		
5	11	7.5	88.3		
6	16	11	99.3		
7	1	.7	100		
Vigorous[a], minutes/session (*n* = 143)				41.83	32.24
0	32	22.4	22.4		
10	1	.7	23.1		
20	5	3.5	26.6		
30	24	16.8	43.4		
40	5	3.5	46.9		
50	21	14.7	61.6		
60	39	27.3	88.9		
Above 60	16	11.1	100		
Moderate[b], days/week (*n* = 146)				2.75	2.23
0	28	19.1	19.1		
1	22	15.1	34.2		
2	26	17.8	52		
3	23	15.8	67.8		
4	14	9.6	77.4		
5	10	6.8	84.2		
6	8	5.5	89.7		
7	15	10.3	100		
Moderate[b], minutes/session (*n* = 138)				40.81	33.29
0	28	20.3	20.3		
10	4	2.9	23.2		
20	7	5	28.2		
30	33	23.9	52.1		
40	18	13	65.1		
50	3	2.2	67.3		
60	29	21	88.3		
Above 60	16	11.7	100		

[a]Vigorous activity defined as "activities that take hard physical effort and make you breathe much harder than normal." [b]Moderate activity defined as "activities that take moderate physical effort and make you breathe somewhat harder than normal."

Before running a regression model, I tested the collinearity between the predictor variables vigorous and moderate exercise, by running a bivariate correlation matrix. Results revealed a Pearson correlation score of r (144) = .42, $p < .001$ between the two variables, indicating significant correlation. However, further collinearity statistical testing indicated that multicollinearity was not a concern (Vigorous exercise, Tolerance = .83, VIF = 1.21; Moderate exercise, Tolerance = .83, VIF = 1.21). Multicollinearity becomes more prevalent and problematic when tolerance levels are below .40 and when VIFs are over 2.5 (Marquardt, 1970), both tenants which have not been met with my two variables. Given the tolerance levels and the VIF, it is safe to assume that the two variables are not highly intercorrelated and as such act as independent predictor variables within the regression model.

Once any potential multicollinearity issues were addressed, I tested the hypothesis by running a multiple regression analysis using the enter method, with the two variables: vigorous and moderate intensity (days per week), acting as predictor variables, and exercise prescription as the outcome variable. The two variables accounted for 5.7% of the variance in exercise prescription, [$F(1, 144) = 4.34$, $p = .015$; with $R^2 = .057$], which is a small effect size. Consequentially, regression model results indicated that neither the vigorous intensity ($\beta = .16$, $p = .08$) nor the moderate intensity variables ($\beta = .125$, $p = .17$) were significant predictors of exercise prescription. Table 3.5 illustrates the results of the multiple regression analysis utilized to answer the second hypothesis.

Table 3.5

Multiple Regression of Exercise Variables (Outcome: Exercise Prescription)

	b	SE *b*	*β*
Model 1			
Constant	2.19	.12	
Vigorous (days/week)	.07	.04	.16
Moderate (days/week)	.05	.03	.13

Note. Model 1 R^2 = .057.
*p < .05.

Formal training in exercise prescription. Research question 3 aimed to discover what percentage of the sample acknowledges having received formal education in exercise prescription, and how does their training impact their exercise prescription. For the current sample, 22.6% (n = 33) reported receiving some form of formal training in exercise prescription. Results revealed that 11 responders had received formal training via their health specific degree (e.g., masters in physical education, PhD in clinical health psychology), seven attended an in-service or workshop, four received special exercise training via their postdoctoral training, four indicated they were certified personal trainers, four had taken graduate level courses on exercise prescription, one person read and analyzed exercise research over a 30 year span, and one person received formal training at his medical setting place of work. The majority of the sample (77.4%, n = 1130) did not receive formal training, which is generally comparable with findings of previous studies (Burks & Keeley, 1989; Burton et al., 2010).

The third hypothesis stated that psychotherapists will be more likely to prescribe exercise to clients when they report having received formal training. Previous literature

has reported that approximately only 10-13% of psychotherapists appear to have received any formal education in exercise prescription (Burks & Keeley, 1989; Burton et al., 2010). To evaluate if having formal training predicted their exercise prescription, I ran a regression model, with the enter method, utilizing formal training as the predictor variable and exercise prescription as the outcome. Results revealed formal training (β = .39, $p < .001$) was a significant predictor variable and accounted for 15.8% of the variance within exercise prescription [$F(1, 144) = 26.99$, $p < .001$; with $R^2 = .158$]. The formal training variable had a small effect size within the model. Receiving formal training in prescribing exercise to clients significantly predicted an increase in exercise prescription.

Barriers to exercise prescription. The fourth research question aimed to determine what client and therapist perceived barriers, to prescribing exercise to clients with mental illness, do psychotherapists acknowledge, and how do client barriers and therapist barriers, as perceived by the psychotherapists, impact their tendencies to prescribe exercise to clients? Descriptive analytical results of the barriers domain of the EMIQ, for which complete results can be found in Table 3.6, indicated that for the most part respondents reported neither agreeing nor disagreeing across the different variables.

Table 3.6

Summary Statistics of Barriers to Exercise Prescription

		Distribution		Central Tendency		Dispersion	
Variable	*n*	Kurtosis (*SE*)	Skewness (*SE*)	*Mdn*	*M*	*SD*	*SEM*
Their mental health makes it impossible for them to participate in exercise [a]	146	-.06(.4)	.77(.2)	2	1.88	.86	.07

Table 3.6 Continued

Variable	*n*	Distribution		Central Tendency		Dispersion	
		Kurtosis (*SE*)	Skewness (*SE*)	*Mdn*	*M*	*SD*	*SEM*
I'm concerned exercise might make their condition worse [a]	146	2.5(.4)	1.31(.2)	2	1.62	.69	.06
I am not interested in prescribing exercise for people with a mental illness [a]	146	1.0(.4)	1.24(.2)	1	1.47	.66	.05
I don't believe exercise will help people with a mental illness [a]	146	-.10(.4)	1.07(.2)	1	1.33	.50	.04
Their physical health makes it impossible for them to participate in exercise [a]	146	-.69(.4)	.32(.2)	2	2.40	1.02	.08
I'm concerned they might get injured while exercising [a]	146	-.54(.4)	.37(.2)	2	2.42	.94	.08
People with a mental illness won't adhere to an exercise program [a]	146	-.53(.4)	.43(.2)	2	2.25	.91	.08
My workload is already too excessive to include prescribing exercise to people with a mental illness [a]	146	.70(.4)	.95(.2)	2	1.61	.69	.06
Prescribing exercise to people with a mental illness is not part of my job [a]	146	2.91(.4)	1.54(.2)	1.5	1.67	.84	.07

Table 3.6 Continued

Variable	*n*	Distribution		Central Tendency		Dispersion	
		Kurtosis (*SE*)	Skewness (*SE*)	*Mdn*	*M*	*SD*	*SEM*
I do not know how to prescribe exercise to people with a mental illness [a]	146	-.72(.4)	.51(.2)	2	2.53	1.24	.10
"Prescription of exercise to people with mental illness is best delivered by an exercise professional such as an exercise physiologist [a]	146	-.73(.4)	.31(.2)	2	2.43	1.02	.09
All Therapist Barriers	146	-.55(.4)	.13(.20)	2	1.97	.49	.04
I am too unwell to exercise [b]	146	-.40(.4)	.50(.2)	2	2.11	.89	.07
It takes too much time [b]	146	.79(.4)	.89(.2)	2	2.11	.89	.07
There is too much stigma attached to having a mental illness [b]	146	-1.21(.4)	.04(.2)	3	2.7	1.14	.10
I don't know what I should do [b]	146	-.53(.4)	-.64(.2)	4	3.23	1.06	.09
My friends or family won't exercise with me [b]	146	-.97(.4)	-.25(.2)	3	2.97	.93	.08
There are too many side effects from the medications [b]	146	-.75(.4)	-.1(.2)	3	3.02	.92	.08
	146	-.69(.4)	-.28(.2)	3	3.08	1.05	.09

Table 3.6 Continued

Variable	*n*	Distribution		Central Tendency		Dispersion	
		Kurtosis (*SE*)	Skewness (*SE*)	*Mdn*	*M*	*SD*	*SEM*
I'm too fat to exercise [b]	146	-.44(.4)	.59(.2)	2	2.19	.99	.08
I am afraid I will get hurt [b]	146	-.72(.4)	.15(.20)	3	2.65	.97	.08
I have too many physical health problems [b]	146	-.85(.4)	-.09(.20)	3	2.78	1.03	.09
There is no safe place for me to exercise [b]	146	-.81(.4)	-.29(.20)	3	2.77	1.04	.09
I do not have any equipment to do exercise with [b]	146	-.94(.4)	.35(.20)	2	2.38	1.09	.09
All Client Barriers	146	.32(.4)	-.29(.20)	2.67	2.67	.63	.05
All Barriers	146	-.35(.4)	-.23(.20)	2.30	2.33	.48	.04

Note. Mdn = median; M = mean; SD = standard deviation; SEM = standard error of mean; SE = standard error. Likert anchors:1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree, 5 = strongly agree. All therapist Barriers = sum of all individual therapist barrier means, divided by 11. All client barriers = sum of all individual client barrier means, divided by 12. All barriers = sum of all barrier means, divided by 23.
[a]Individual therapist perceived barriers. [b]Individual client barriers.

In order to provide a more concise picture regarding perceived prescription barriers, Table 3.7 presents a general breakdown between respondents who agreed and those who disagreed with each barrier (anchors strongly disagree and disagree were combined, as well as anchors agree and strongly agree). It is evident from looking at

Table 3.7, that most respondents generally disagreed with acknowledging the various therapist-perceived barriers present in the study. However, the biggest therapist barrier that respondents did express agreement with, was the "I do not know how to prescribe exercise" (23.3%, *n* = 34). Regarding the other barriers, that therapist perceive client's experience, respondents agreed highly with the barrier "I don't know what I should do" (52.1%, *n* = 76). It appears that barrier variables relating to knowledge and competency appear to hold the most weight among respondents.

Table 3.7

Respondent Agreement Regarding Exercise Prescription Barriers

Barrier	Disagree % (*n*)	Agree % (*n*)
Their mental health makes it impossible for them to participate in exercise [a]	79.5% (116)	5.5% (8)
I'm concerned exercise might make their condition worse [a]	94.6% (138)	3.4% (5)
I am not interested in prescribing exercise for people with a mental illness [a]	92.4% (135)	.7% (1)
I don't believe exercise will help people with a mental illness [a]	98.6% (144)	0% (0)
Their physical health makes it impossible for them to participate in exercise [a]	57.5% (84)	16.5% (24)
I'm concerned they might get injured while exercising [a]	59.6% (87)	15.8% (23)
People with a mental illness won't adhere to an exercise program [a]	66.5% (97)	11.6% (17)
My workload is already too excessive to include prescribing exercise to people with a mental illness [a]	91.1% (133)	1.4% (2)
Prescribing exercise to people with a mental illness is not part of my job [a]	88.4% (129)	4.1% (6)

Table 3.7 Continued

Barrier	Disagree % (*n*)	Agree % (*n*)
I do not know how to prescribe exercise to people with a mental illness [a]	56.2% (82)	23.3% (34)
"Prescription of exercise to people with mental illness is best delivered by an exercise professional such as an exercise physiologist [a]	56.9% (83)	17.8% (26)
I am too unwell to exercise [b]	71.2% (104)	8.2% (12)
It takes too much time [b]	76.1% (111)	8.9% (13)
There is too much stigma attached to having a mental illness [b]	49.3% (72)	30.9% (45)
I don't know what I should do [b]	26% (38)	52.1% (76)
My friends or family won't exercise with me [b]	34.3% (50)	34.9% (51)
There are too many side effects from the medications [b]	31.5% (46)	34.2% (50)
I lack the confidence to do any exercise [b]	30.1% (44)	40.4% (59)
I'm too fat to exercise [b]	69.2% (101)	13.7% (20)
I am afraid I will get hurt [b]	48% (70)	21.9% (32)
I have too many physical health problems [b]	40.4% (59)	28.1% (41)
There is no safe place for me to exercise [b]	35.6% (52)	26.7% (39)
I do not have any equipment to do exercise with [b]	59.6% (87)	20.6% (30)

Note. Disagree % = sum of strongly disagree and disagree responses, per barrier. Agree % = sum of strongly agree and agree responses, per barriers.
[a]Individual Therapist Perceived Barriers; [b]Individual Client Barriers.

In order to test how the variables: a) client barriers, b) therapist barriers, and c) overall combined barriers influence exercise prescription, a multiple regression analysis was utilized to evaluate if the variables predicted exercise prescription. Prior to running the regression model, multicollinearity between the three variables was addressed using a correlation matrix. Results revealed a Pearson correlation score of r (146) = .896, $p <$ .001, between variables overall combined barriers and client barriers, indicating a high

probability of collinearity. A high collinearity also existed between variables therapist barriers and combined barriers of r (146) = .784, $p < .001$. Due to the likelihood of high multicollinearity, and since the variable overall combined barriers contained data from both the therapist barriers variable and the client barriers variable, I decided to exclude the variable overall combined barriers from the regression model. I proceeded to test the collinearity between the remaining two predictor variables, therapist barriers and client barriers. Results revealed a Pearson correlation score of r (145) = .43, $p < .001$ between the two variables, indicating a significant correlation. However, further collinearity statistical testing revealed that multicollinearity was not a concern (Therapist barriers, Tolerance = .82, VIF = 1.2; Client barriers, Tolerance = .82, VIF = 1.2). Given the tolerance levels are below .40, and the VIFs are over 2.5 (Marquardt, 1970), it is safe to assume that variables therapist barriers and client barriers are not highly intercorrelated and as such act as independent predictor variables within the regression model.

Once multicollinearity was addressed, I utilized a enter elimination method in order to discover which of the two remaining barrier variables, if any, had a significant influence on exercise prescription. Model results indicated that the therapist (β = -.47, $p < .001$) and client barrier (β = -.11, p = .17) variables accounted for 27.4% of the variance within exercise prescription (F[2,143] = 27.03, $p < .001$, R^2 = .274,), indicating a medium effect size. Within the model, the therapist barriers variable (β = -.47, $p < .001$) was the only variable significantly inversely related with exercise prescription. The client barriers variable (β = -.11, p = .17) was not significantly related to exercise prescription. Table 3.8 illustrates the regression findings.

Table 3.8

Multiple Regression of Barrier Variables (Outcome: Exercise Prescription)

	b	SE *b*	*β*
Model 1			
Constant	4.39	.29	
Therapist Barriers	-.77	.13	-.47*
Client Barriers	-.14	.10	-.11

Note. Model 1 R^2 = .274.
*p < .001.

Chapter 4: Discussion and Conclusion

In this chapter I discuss the results and findings of the study as they relate to the literature regarding exercise prescription and mental health. Additionally, I provide a comparison between this study's findings and those of studies reviewed in Chapter one of this manuscript. I will also discuss the implications this study has for the field of counseling psychology, and the field's various contexts: scientific research, clinical practice, and its graduate training programs. Consistent with this study's findings, I will offer recommendations for how these findings may be used to inform different parts of the field, particularly regarding training, research, and clinical practice. This chapter will conclude with sections dedicated to addressing the strengths and limitations of the present study, as well as a guide regarding possible future research endeavors.

Contribution to Mental Health and Exercise Prescription Literature

Previous studies have noted the robust relationship among regular physical exercise and various mental health outcomes (Bartley, Hay, & Bloch, 2013; Deslandes et al., 2009; Dunn et al., 2005). However, only a select few studies over the past three decades have actively explored the relationship between physical exercise and its use by mental health practitioners such as psychologists (Burks & Keeley, 1989; Burton et al., 2010; McEntee & Halgin, 1996; Phongsavan et al., 2007). This study contributes to the mental illness and exercise prescription literature by examining factors that effect the prescription of exercise by U.S. psychologists, to their clients suffering from mental illness. This study is innovative in that it is the very first study that utilizes the distribution of a newly standardized and validated scale, the EMIQ-HP (Stanton et al., 2014), in order to evaluate how a multitude of factors (training, beliefs, attitudes, exercise

self-habits, etc.) impact the exercise prescription trends of U.S. psychologists and trainees. Additionally, the EMIQ-HP's barrier to exercise prescription subscale has not been previously use with such a sample. Finally, this study's statistics permit comparison to previous studies in order to better understand what changes, if any, have been implemented in the training of psychologists and mental health practitioners.

Review of Findings

This study employed Stanton and colleagues' (2014) EMIQ-HP in order to test which factors impacted psychotherapist tendencies to prescribe exercise to clients with mental illness. Multiple regression analyses were utilized to test for said relationships. Based on the comprehensive literature review presented within the first chapter, four hypotheses and or research questions were generated to test what factors influence exercise prescription among my sample of psychologists.

Exercise prescription. My first hypothesis stated that I expect comparably half of my sample will acknowledge prescribing exercise occasionally to clients. As previous studies have noted, around 12 to 13% of psychologists actively prescribe exercise to clients with mental illnesses, while a majority, about 53 to 59%, engage in general discussion and recommendation of exercise in psychotherapy (Burton et al., 2010). Other studies have found that 53% recommend exercise only occasionally (Barrow et al., 1987). The current study found that about 40% of the sample reported prescribing exercise only "occasionally." These results are slightly lowered from previous study findings but not statistically different (Barrow et al., 1987).

Also, it is important to note that certain demographic variables, specifically the participant's age, and year in graduate program (for trainee respondents), were all

significant predictors of higher rates of exercise prescription. Meaning the older the psychologist, and the further along in training the trainee is, the more likely they were to prescribe exercise to their clients. This would make sense, as doctoral level providers have extended time in school and training, and older providers have had more time to gain experience in deciding what interventions are effective alongside psychotherapy. These participants would have potentially had more time to read current research on the benefits of exercise on mental health, and simply have more experience in the field.

Participants exercise habits. My second hypothesis stated that, comparable to other studies, around 70% of my sample would report exercising around two to five days a week at moderate intensity levels, and that higher reports of exercise among the respondents would predict increased exercise prescription. I also included a research question intending to find out what percentage of psychotherapists report exercising at both moderate and vigorous intensity levels and for how long they are performing each? Across three decades, several studies have noted that practitioners' own exercise habits have a significant impact on exercise prescription. These studies have found that approximately two thirds of practitioners are themselves actively engaged in regular physical exercise, and that higher reports of exercise predict higher probabilities of utilizing exercise in psychotherapy (Barrow et al., 1987; Burton et al., 2010; McEntee & Halgin, 1996). My study found some evidence to corroborate, at least partially, some of the previous findings. In the current sample, 65.8% of the participants reported exercising, at a moderate intensity, at least twice a week or more. Respondents reported exercising an average of two to three days at vigorous and moderate intensities, for an

average duration of about 40 minutes, within both categories respectively. These findings are consistent with national physical activity recommendations.

However, contrary to previous research, this study did not find significant relationships between respondents' exercise habits and their prescription of exercise to clients. Neither the vigorous nor the moderate exercise variable predicted a significant change in exercise prescription. This would indicate that in regard to exercise prescription, it is of little value whether psychotherapists exercised themselves; it did not directly impact whether they prescribed exercise in psychotherapy. Although it is unclear why the current sample's results deviate from previous research findings, one can speculate that the tendency to prescribe exercise to clients is not closely tied to the psychotherapist's own exercise identity. As such, we can assume that psychotherapists are not projecting their own motives and values of exercise onto their clients. However, it is also plausible that today, more psychologists are receiving formal training in exercise prescription, whereas before only people who directly experienced the benefits of exercise.

Formal training. My third hypothesis proposed that those who acknowledge having received formal training in exercise prescription will report prescribing exercise more frequently. I also intended to discover what percentage of my sample will report having received formal training in exercise prescription, and what type of training are psychologists reporting? Former studies have reported that approximately 10-13% of psychotherapists have received some type of formal education in exercise prescription (Burks & Keeley, 1989; Burton et al., 2010). This study revealed a slightly higher percentage of formal training in exercise prescription among the respondents. A little

less than a quarter of the sample reported having received some sort of training in prescribing exercise. Of those who had received formal training, most did so because of their health specific degree (e.g., clinical health psychology), some via exercise specific workshops, and a couple received training within their postdoctoral training experience. The question that remains is why this increase has occurred? I speculate that over time graduate programs have increased their efforts to train students in a holistic model towards mental well-being, incorporating exercise into the training curriculum. However, previous literature has shown the contrary (Petrie & Watkins, 1994; Raque-Bogdan, Torrey, Lewis, Borges, 2013). Additionally, trainees and psychologists may have taken it upon themselves to seek out training opportunities given the strong literature supporting the use of exercise for mentally ill clients. Other explanations could be that participants were liberal in their definitions of formal training, identifying a variety of educational opportunities as "formal training."

Another interesting finding was that having received formal training predicted higher levels of exercise prescription. It seems logical that if practitioners have been trained in prescribing exercise, they would have a bigger buy-in regarding carrying out exercise prescription within psychotherapy. However, model results showcased a rather small effect size, with an R^2 value of .158. Despite the small effect size, the hypothesis was supported; formal training in exercise prescription was positively related with exercise prescription.

Barriers to exercise prescription. My final research question asked what client and therapist perceived barriers, to prescribing exercise to clients with mental illness, do psychotherapist acknowledge? In addition, how do a) client barriers, b) therapist barriers,

and c) overall combined barriers to exercise prescription, as perceived by the psychotherapist,' impact their tendencies to prescribe exercise to clients? A major contribution of this study was the inclusion of evaluating perceived barriers to prescribing exercise. Limited research has been conducted on what barriers hinder practitioners from prescribing exercise to clients with mental health issues. A previous study highlighted that practitioners refrain from prescribing exercise because they hold onto beliefs such as: believing exercise prescription to be inappropriate in psychotherapy, exercise prescription creating a confusion in the therapeutic relationship, believing practitioners are setting clients up for failure when clients don't succeed in exercising regularly, thinking practitioners will come off as insensitive, generally feeling unfamiliar with exercise prescription, and also general client resistance to exercise (McEntee & Halgin, 1996). Others studies have highlighted that practitioners tend to favor more conventional methods of treatment such as CBT, believing clients would not benefit from physical activity, believing physical activity is not important for managing mental illness, experiencing multiple time constraints regarding practitioner's clinical work, believing they lack the knowledge on the efficacy of exercise's effect on mental health, and overall reporting a general lack of experience, knowledge, training, and or confidence in prescribing exercise (Burks & Keeley, 1989; Burton et al., 2010; Phongsavan et al., 2007).

Interestingly, the current study found that most participants had a high level of disagreement with the barriers on the EMIQ-HP. The select few barriers that a larger percentage, at least 25% or more of the sample, agreed with were barriers that signal the practitioner having a lack of knowledge, confidence, and experience in exercise

prescription; agreeing that clients feel as though there is still too much stigma attached to having a mental illness, believing clients lack good social supports to help engagement in exercise, and believing clients suffer from too many side effects from their psychotropic medications.

One particular client barrier that about a quarter of the sample agreed with was "there is no safe place for me to exercise" signaling practitioners feel clients have no safe place where they can perform exercise safely and comfortably. This particular barrier can be supported by existing literature which highlights that people need access to safe neighborhoods and fitness facilities in order to engage in physical exercise (Coday et al., 2002; Horwitz et al., 2008). This obviously is a significant barrier for clients, especially for those who are from low socioeconomic backgrounds. These particular findings make sense on a practical level, if you believe your client does not have access to a safe training facility it can make it less likely to talk about or even prescribe exercise in such circumstances. Overall, only a select few barriers, however, were negatively correlated with exercise prescription. These significant barriers dealt with the psychotherapist having a lack of knowledge and interest in exercise prescription. In general, participants had little consensus on barriers and the percentage of any of the barriers was essentially low.

The multiple regression model revealed that the variable 'therapist barriers' was the only significant predictor that negatively influenced exercise prescription. This makes sense since respondents who believed they did not possess the confidence and/or knowledge to prescribe, would generally refrain from doing so. The variable 'client barriers' was however not a significant barrier variable. This may indicate that

respondents generally viewed their clients as likely more well-adjusted and having access and availability to various resources. However, since respondents did not endorse many client barriers, one would expect exercise prescription trends to be higher among psychotherapists.

Implications for the Field of Counseling Psychology

It is the calling of counseling psychologists to enhance the welfare of others, integrate science and practice, and utilize a holistic framework to promote and foster strength, resilience, and positive coping (Packard, 2009). This study aimed to address these founding principles and core values. This study revealed that although there is still much work to be done in regards to increasing psychologist buy-in into exercise prescription, things appear to be moving in a positive trajectory. Results indicated that as counseling psychologists we need to evaluate and help clients find ways to exercise safely and readily, and it is our duty to help clients develop positive means of dealing with mental illness in addition to psychotherapy. Utilizing exercise within and/or alongside psychotherapy has the potential to ultimately help clients psychologically.

Suggestions for Clinical Intervention

Some things are evident from the results of this study, regarding changes in interventions. It is the duty of counseling psychologists to continue to educate themselves on interventions, methods, and treatments which are based in sound science and evidence, in addition to focusing on wellness and wellbeing. As such I suggest that more psychologists attempt to receive and seek some type of formal training in exercise prescription, whether it be via a continued education (CE) credit in a workshop, some form of specialized training received during internship or postdoctoral training, and or

enrolling in a physical health class during graduate school. Webinars taught by knowledgeable experts in the field of mental health and exercise would also be a cost effective and worthwhile solution. Psychologists and mental health practitioners alike would benefit greatly from learning how to prescribe and discuss the physical exercise habits of clients in psychotherapy, in order to help clients feel better and function at higher levels. Learning how to engage in behavioral activation, in regards to physical exercise, would also be a worthwhile venture, as mental illnesses such as depression, anxiety, and trauma related disorders often inhibit people from leaving their beds and or homes.

Suggestions for Training Programs

A recent study conducted by the American Psychological Association (APA), surveyed APA approved doctoral programs in order to evaluate whether future counseling psychologists are being trained in health psychology topics such as physical exercise, whether they are involved in health-related research, practice, and teaching, and whether their programs are increasing health-related training programs and curriculum (Raque-Bogdan et al., 2013). The survey showed that both faculty and students consider health related topics, such as exercise, areas of emphasis and generally show interest in learning more. However, results also revealed that only a select few programs have concretely and intentionally developed structured education and or curriculum in health related areas, leaving other larger numbers of students and faculty disadvantaged when it comes to discussing health related issues with clients outside of psychotherapy (Raque-Bogdan et al., 2013). This is evident with the results of this study as well, with less than a quarter of participants acknowledging having received formal training. Only four

participants in the sample, acknowledged having received formal training by enrolling in a graduate level course centered on exercise prescription. This indicates that exercise prescription is not a regular standard of most graduate training programs.

Further inquiry questions what students, faculty, and training programs can do to rectify the deficit in graduate training, and the disconnect between the science of exercise and mental health and the practice of psychotherapy. An older study by Petrie and Watkins (1994) showed similar results as those reported by Raque-Bogdan and colleagues (2013). Forty-one APA accredited counseling psychology programs were surveyed to find out if students and faculty were engaging in sport psychology academic curriculum and/or research. Their conclusion was that despite the push towards a more holistic approach to health, there are very few counseling psychology programs that offer training or education within the fields of exercise, physical activity, and or sport psychology (Petrie & Watkins, 1994). Despite these two studies dating two decades apart, similar findings hold true today, as evidenced by the results of this study. No major changes have been implemented regarding the training of psychologists in exercise prescription. Students within counseling psychology programs receive little to no training and education when it comes to exercise, and as such, the argument could be made that students leave graduate school without the competence to recommend and/or prescribe exercise to clients. It is the recommendation of this study that graduate programs revamp their current curriculum in order to either a) add an additional class which centers on exercise and other holistic health and wellbeing topics, and or b) include physical exercise related topics such as exercise prescription within already established classes.

Strengths and Limitations

This study was intended and designed to be limited to practitioners who are psychologists and trainees in the field of professional psychology, and who have experience conducting psychotherapy with clients suffering from mental illness. Also, it was restricted to individuals who had access to a computer and email, and who were also a registered member of the APA divisions previously mentioned. Since I employed an Internet-based email listserv recruitment strategy, internal validity may have been compromised. There was little to no control over the setting or environment in which the research participants complete the surveys. Also there was limited to no control on who completed the survey, participants only needed access to the survey link. Being that the EMIQ-HP is a self-reported measure, it is also possible that participants were not honest, simply incorrect, or not genuine when responding.

Also, since a correlational design was used, causal statements are unable to be made due to the inability to account for other factors that may be potentially present. Hence, the conclusions and results of this study are only based on relationships between variables, and not causality. Another limitation was the study's sampling method. Utilizing the small percentage of respondents via listserv recruitment brings into question how representative the sample is of those listservs themselves, in addition to all other psychologists who provide psychotherapy. This in turn may lead to samples not representative of the actual real-world population. Another limitation to this study's design is that I have only one question which serves as the sole outcome variable (exercise prescription). This compromises construct reliability regarding the exercise prescription variable. However, no other current scales exist in the literature which could

have been utilized for my outcome variable, and the EMIQ-HP is the best measure currently available. This is also one of the strengths of the study. The EMIQ-HP is a standardized and previously validated measure for assessing various elements of exercise prescription among health professionals and providers. This measure has never before been administered among APA psychologists and trainees, and as such, is the first study to do so. Previous studies all utilized self-formulated measures and questionnaires which lacked construct validity and standardization. An additional strength of this study is that it employed a strict recruitment strategy; specifically, the link for the study was sent via email to the APA listservs mentioned. Participants were not recruited via any social media platforms, individual emails, and or mass emails sent to organizations and facilities not part of APA division listservs. The steps taken, which are mentioned above, should serve to make the data less likely to contain errors.

Future Research

This study design utilized a simple yet direct approach to survey the factors influencing exercise prescription among psychologists and trainees. Future studies could attempt to survey a greater number of APA psychologists and trainees, as well as those from other countries, in order to observe cultural similarities and differences. This in turn could help us identify how U.S. psychologists compare to those of other locations; maybe there are philosophical and or concrete training differences when conducting psychotherapy and engaging in exercise prescription. Additional questions could be developed within the EMIQ-HP in order to elucidate what words like "occasionally" mean, when studying exercise prescription. Also future researchers could work alongside the creators of the EMIQ-HP such as Dr. Stanton and colleagues, in order to create a

more robust measure, which can be used by more researchers. Future naturalistic and randomized clinical trial studies that evaluate the impact of exercise prescription on client outcomes need to be done. One would expect to see individual differences between clients who worked with psychotherapists who prescribe exercise, versus clients who worked with practitioners who did not prescribe exercise.

In addition, this study could be further developed by surveying both clients and practitioners, instead of solely the latter. Surveying clients in addition to psychologists would help identify how client experiences differ or relate to that of psychologists. Such studies may find that clients experience a greater level of barriers to exercising, making exercise prescription a mute intervention. Understanding things from the clients' perspectives could inform how psychologists train, educate, and prescribe exercise within the field of psychotherapy. The findings of such future studies would further contribute to the evidence-based practice of exercise and psychotherapy.

Conclusion

The current study increases our understanding of how much training psychologists are receiving, how many of them prescribe exercise to their clients, and what barriers to prescription they are endorsing. The findings indicate that only about a quarter of psychologists receive formal training in exercise prescription, and those who have formal training are more likely to prescribe. Older psychologists and trainees further along in their graduate program are more likely to prescribe, although only about half of psychologists prescribe exercise regularly. Therapist barriers to exercise prescription significantly decreased the likelihood practitioners prescribe exercise. These findings lend support for further training, increased incorporation, and further growth needed in

psychologists' self-efficacy in the prescription of exercise. In conclusion, results indicated that exercise prescription is moving in a positive direction, however very slowly. It can be concluded that more psychologists and trainees are buying-into its usefulness and effectiveness, but there is still large room for growth.

Appendix A

The Exercise in Mental Illness Questionnaire (EMIQ)

Knowledge, attitudes and behaviors regarding exercise for people with a mental illness

Health Practitioner Version

This questionnaire asks questions regarding your knowledge, your attitudes and your behaviors regarding exercise for people with a mental illness. We ask you to complete all questions. There is no right or wrong answer and it is important that we obtain an answer that represents your view as a health professional. For the purpose of this questionnaire, the term 'mental illness' means any mental illness including but not limited to depression, schizophrenia, bipolar disorders I and II, post- traumatic stress disorder and other mental illnesses.

Part 1. Knowledge.
This sections asks about your formal training regarding exercise and your knowledge about the benefits of exercise

1. Have you had any formal training in exercise prescription (e.g. University degree in a related area, Vocational training, In-service)?

   Yes / No (If no, skip to question 5)

2. If you answered yes, please provide details including course duration, on who provided this formal training (e.g. University degree, Vocational training, In-service)

   _____

3. How would you rate your knowledge of exercise prescription for people with a mental illness? (Please circle)

1	2	3	4	5
Very poor	Poor	Average	Good	Excellent

4. How would you rate your confidence to prescribe exercise for people with mental illness? (Please circle)

1	2	3	4	5
Very poor	Poor	Average	Good	Excellent

To what extent do you agree or disagree with the following statements (for the purpose of this section, 'Physical activity' refers to activity undertaken according to population health guidelines i.e. 30 minutes of moderate intensity activity performed on all or most days of the week)

5. Maintaining a healthy weight can prevent you from developing chronic diseases such as cardiovascular disease or type II diabetes.

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

6. Physical activity can lower your total blood cholesterol.

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

7. Physical activity can lower your blood pressure.

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

8. People who undertake regular physical activity are less likely to develop depression than those who do not

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

9. Physical activity can reduce the risk of some forms of cancer including

colorectal cancer, breast cancer (women) and prostate cancer (men).

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

10. The benefits of exercise will still accrue if 30 minutes of exercise is undertaken in shorter blocks of time such as 10 minutes

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

Part 2. Beliefs.

The next few questions ask about your beliefs regarding exercise for people with a mental illness

11. Listed below are some treatment strategies with demonstrated evidence for effectiveness. Rate how valuable you believe each treatment strategy is compared to exercise.

a) Medication

1	2	3	4	5
Significantly less than exercise	Somewhat less than exercise	Of equal value to exercise	Somewhat better than exercise	Significantly better than exercise

b) Social support

1	2	3	4	5
Significantly less than exercise	Somewhat less than exercise	Of equal value to exercise	Somewhat better than exercise	Significantly better than exercise

c) Electroconvulsive therapy

1	2	3	4	5
Significantly less than exercise	Somewhat less than exercise	Of equal value to exercise	Somewhat better than exercise	Significantly better than exercise

d) Bright light therapy

1	2	3	4	5
Significantly less than exercise	Somewhat less than exercise	Of equal value to exercise	Somewhat better than exercise	Significantly better than exercise

e) Family therapy

1	2	3	4	5
Significantly less than exercise	Somewhat less than exercise	Of equal value to exercise	Somewhat better than exercise	Significantly better than exercise

f) Social skills training

1	2	3	4	5
Significantly less than exercise	Somewhat less than exercise	Of equal value to exercise	Somewhat better than exercise	Significantly better than exercise

g) Cognitive behavioral therapy

1	2	3	4	5
Significantly less than exercise	Somewhat less than exercise	Of equal value to exercise	Somewhat better than exercise	Significantly better than

h) Vocational rehabilitation

1	2	3	4	5

Significantly less than exercise	Somewhat less than exercise	Of equal value to exercise	Somewhat better than exercise	Significantly better than exercise

To what extent do you agree or disagree with the following statements

12. People with a mental illness know that exercise is good for their **physical** health

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

13. People with a mental illness know that exercise is good for their **mental** health

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

14. People with a mental illness do not exercise because they don't think they can

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

15. Exercise is valuable for patients ***hospitalized*** with a mental illness in the same manner as outpatients

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

16. The physical and mental health benefits of exercise for people with a mental illness are not long lasting

1	2	3	4	5

Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

17. People with a mental illness who are prescribed exercise will not adhere to it

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

18. Using numbers 1 – 10 with 1 as the most important, rank the importance of the following treatment strategies in the care of people with mental illness

------ Medication (e.g anti-depressants)
------ Social support
------ Electroconvulsive therapy
------ Bright light therapy
------ Family therapy
------ Social skills training
------ Cognitive behavioral therapy
------ Vocational rehabilitation
------ Exercise
------ Hospitalization

If there are other treatment strategies not listed above which you feel are important please list them here including why you believe they are important

_____

_____

_____

Part 3. Behaviors.
The next few questions ask about your prescription of exercise (describing what they should do and how they should do it) for people with a mental illness

Please circle your response

19. Do you prescribe exercise to people with a mental illness

1	2	3	4

Never	Occasionally	Most of the time	Always

If you answered 'Never' above, skip to Question 26

20. Do you undertake a formal assessment of the clients' suitability for exercise prior to prescribing a program?

    Yes / No If you answered 'Yes, please describe what assessment tools or items you use. If you answered 'No', please provide a reason for not undertaking some form of assessment.

    _____

21. When you prescribe exercise to people with a mental illness, what methods do you use? (Please tick all that apply)

    1) Personal discussion
    2) Brochures or pamphlets
    3) Referral to community based programs
    4) Referral to an exercise professional (Exercise Physiologist, Gymnasium, etc.)
    5) Nothing specific
    6) Other _____

22. When you prescribe exercise to people with a mental illness, how often do you recommend they exercise? (Please select only one response)
    1) Every day
    2) Most days of the week
    3) Once to twice a week
    4) As often as they feel they can
    5) Other _____

23. When you prescribe exercise to people with a mental illness, how hard (what intensity) do you recommend they exercise? (Please select only one response)
    1) Low intensity (a slight rise in heart rate and breathing, talking remains easy)
    2) Moderate intensity (a noticeable rise in heart rate and breathing but talking is still possible)
    3) Vigorous intensity (getting out of breath, talking is not possible)
    4) At a level that makes them feel good
    5) I do not suggest an intensity
    6) Other _____

24. When you prescribe exercise to people with a mental illness, how long do you suggest people try to exercise for at any one time? (Please select only one response)
    1) 10 minutes per session
    2) 20 minutes per session
    3) 30 minutes per session
    4) 60 minutes per session
    5) As long as they can
    6) Other _____

25. When you prescribe exercise to people with a mental illness, what type of exercise do you suggest? (Please tick all that apply)
    1) Aerobic exercise (e.g. Walking, cycling)
    2) Weight training or resistance training
    3) Swimming
    4) Team sports (touch football, soccer, netball)
    5) Combat sports (Boxing, Karate etc)
    6) Relaxation activities (Tai Chi, Yoga)
    7) Other _____

Part 4. Barriers to exercise participation for people with a mental illness

To what extent do ***you*** agree with the following statements regarding the barriers to prescribing exercise to people with a mental illness?

26. Their mental health makes it impossible for them to participate in exercise

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

27. I'm concerned exercise might make their condition worse

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

28. I am not interested in prescribing exercise for people with a mental illness

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

29. I don't believe exercise will help people with a mental illness

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

30. Their physical health makes it impossible for them to participate in exercise

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

31. I'm concerned they might get injured while exercising

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

32. People with a mental illness won't adhere to an exercise program

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

33. My workload is already too excessive to include prescribing exercise to people with a mental illness

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

34. Prescribing exercise to people with a mental illness is not part of my job

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

35. I do not know how to prescribe exercise to people with a mental illness

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

36. Prescription of exercise to people with mental illness is best delivered by an exercise professional such as an exercise physiologist

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

People with a mental illness report many barriers to exercise. These are some statements expressed by people with a mental illness about barriers to exercise.

To what extent do you agree with ***their*** statements below?

37. I am too unwell to exercise

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

38. It takes too much time

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

39. There is too much stigma attached to having a mental illness

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

40. I don't know what I should do

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

41. My friends or family won't exercise with me

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

42. There are too many side effects from the medications

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

43. I lack the confidence to do any exercise

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

44. I'm too fat to exercise

1	2	3	4	5

Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

45. I am afraid I will get hurt

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

46. I have too many physical health problems

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

47. There is no safe place for me to exercise

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

48. I don't have any equipment to do exercise with

1	2	3	4	5
Strongly disagree	Disagree	Neither disagree nor	Agree	Strongly agree

Part 5. Exercise participation.

This section asks about your own personal physical activity participation

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask you about the time *you* spent being physically active in the **last 7 days**. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

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

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

_____ Days per week
If you report no vigorous physical activities, skip to question 52

50. How much time did you usually spend doing **vigorous** physical activities on one of those days?
_____ Hours per day

_____ **minutes per day**

☐ Don't know/Not sure

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

51. During the **last 7 days**, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.
_____ Days per week
If you report no moderate physical activities, skip to question 54
52. How much time did you usually spend doing **moderate** physical activities on one of those days?
_____ Hours per day

_____ **minutes per day**

☐ Don't know/Not sure

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

53. During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time?
_____ Days per week
If you report no walking, skip to question 56

54. How much time did you usually spend **walking** on one of those days?

_____ Hours per day

_____ **minutes per day**

☐ Don't know/Not sure

The last question is about the time you spent **sitting** on weekdays during the **last 7 days**. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

55. During the **last 7 days**, how much time did you spend **sitting** on a **week day**?

_____ Hours per day

_____ **minutes per day**

☐ Don't know/Not sure

Appendix B

Sociodemographics

1. Gender identity?

    a. Male
    b. Female
    c. Genderqueer
    d. Transgender
    e. Other

2. Ethnicity?

    a. White/Caucasian/European American
    b. Black/African American/African descent
    c. Asian/Asian American/Pacific Islander
    d. Latino/Latina/Hispanic
    e. Native American/First Nations/Inuit
    f. Other

3. What is your current age? _____

4. Highest level of education completed?

    a. Bachelors degree (e.g., BA, BS)
    b. Masters degree (e.g., MS, MA, Med, EdS)
    c. Doctoral degree (e.g., PhD, PsyD)

5. What area of psychology is your work in? _____

6. Are you currently liscenced?

    a. Yes
    b. No
    c. Currently attaining liscencure

7. How many years have you been practicing? _____

8. How would you describe the setting that you work in?

    a. Community Mental Health
    b. Inpatient/Outpatient Hospital
    c. VA Medical Center
    d. Bureau of Prisons

e. College Counseling Center
f. Private Practice
g. Non-profit mental health agency
h. Substance use treatment center
i. Other _____

9. What is the SES background of the majority of your clients?

a. Low SES
b. Middle SES
c. Upper Middle SES
d. High SES

10. What is the racial/cultural makeup of the majority of the clients you see?
_____

11. If you are still in school, how far along are you in your program?

a. First year masters
b. Second year masters
c. First year doctoral
d. Second year doctoral
e. Third year doctoral
f. Fourth year doctoral
g. Fifth year doctoral
h. On internship

12. What type of work do you primarily do with your clients?

13. What is your current employment status?

a. Full time
b. Part time
c. Currently seeking employment
d. Retired
e. In training (student, practicum, internship, etc.)
f. Other (Please specify) _____

Appendix C

Consent to Participate in a Research Study

EVALUATING THE ATTITUDES AND PRACTICES OF EXERCISE PRESCRIPTION AMONG PSYCHOTHERAPISTS

WHY ARE YOU BEING INVITED TO TAKE PART IN THIS RESEARCH?

You are being invited to take part in a research study about the attitudes and practices of exercise prescription in clinical practice. You are being invited to take part in this research study because you are a licensed psychologist or a graduate level trainee who is or has experience seeing clients. If you volunteer to take part in this study, you will be one of about 110 people to do so.

WHO IS DOING THE STUDY?

The person in charge of this study is Igor Vasilj, a doctoral graduate student at the University of Kentucky in the Department of Educational, School, and Counseling Psychology. Dr. Jeff Reese, department chair and dissertation advisor, is supervising the study. There may be other people on the research team assisting at different times during the study.

WHAT IS THE PURPOSE OF THIS STUDY?

The purpose of this study is to evaluate the practice, attitudes, and possible barriers to prescribing physical exercise to clients experiencing mental illness in psychotherapy. By doing this study, we hope to learn about the current trends of exercise prescription among psychotherapists as well as the barriers that hinder exercise prescription in the field.

ARE THERE REASONS WHY YOU SHOULD NOT TAKE PART IN THIS STUDY?

You should not take part in this study if you have never seen or worked with clients in psychotherapy. To the best of our knowledge, the things you will be doing in this research study have no more risk of harm than you would experience in everyday life.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?

This study consists of online survey that will be accessible through Qualtrics for three months. It will take you approximately 10-15 minutes to complete the survey. You may take more than one session for completion if needed.

WHAT WILL YOU BE ASKED TO DO?

You will be asked questions about your training, experience, use, attitudes, and potential barriers to prescribing exercise to your clients in your clinical practice. You will also be asked to share general demographic information and some general questions regarding your training and professional background.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

To the best of our knowledge there are no risks involved with participation in the study.

WILL YOU BENEFIT FROM TAKING PART IN THIS STUDY?

There are no benefits from taking part in this study. Your willingness to take part will facilitate understanding of how current research, training, and best practice recommendations have shaped the use of exercise prescription in clinical practice.

DO YOU HAVE TO TAKE PART IN THE STUDY?

You will not lose any benefits or rights you would normally have if you choose not to take part in the study. You can change your mind about participating in the study at any point.

IF YOU DON'T WANT TO TAKE PART IN THE STUDY, ARE THERE OTHER CHOICES?

If you do not want to be in the study, there are no other choices except not to take part in the study.

WHAT WILL IT COST YOU TO PARTICIPATE?

There are no costs associated with taking part in the study.

WILL YOU RECEIVE ANY REWARDS FOR TAKING PART IN THIS STUDY?

There are no financial incentives for taking part in this study.

WHO WILL SEE THE INFORMATION THAT YOU GIVE?

The information you provide will be aggregated with information from other participants taking part in the study. You will not be personally identified in any materials written for publication or presented publically. Of course, we will not request or have access to any information that would individually identify you.
The data collected in this study will be kept confidential. Data entered will not be linked to any identifying information. No data will be reported in such a manner that it could reveal your identity. Only data stripped of identifying information will be shared with the researchers to analyze. We will keep private all research records that identify you to the extent allowed by law.

Please be aware, while we make every effort to safeguard your data once received from the online survey/data gathering company, given the nature of online surveys, as with anything involving the Internet, we can never guarantee the confidentiality of the data while still on the survey/data gathering company's servers, or while en route to either them or us. It is also possible the raw data collected for research purposes may be used for marketing or reporting purposes by the survey/data gathering company after the research is concluded, depending on the company's Terms of Service and Privacy policies.

CAN YOUR TAKING PART IN THE STUDY END EARLY?

If you decide to take part in the study you still have the right to decide at any time that you no longer want to continue.

WHAT IF YOU HAVE QUESTIONS, SUGGESTIONS, CONCERNS, OR COMPLAINTS?

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions, suggestions, concerns, or complaints about the study, you can contact the investigator, Igor Vasilj at igor.vasilj@uky.edu.

This study has been approved by the University of Kentucky IRB (#16-0568-P4S). If you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky between the business hours of 8am and 5pm EST, Mon-Fri. at 859-257-9428 or toll free at 1-866-400-9428.

I have read through the informed consent and hereby acknowledge my participation in this research study:

__ YES

__ NO

Appendix D

Recruitment Email

Dear Esteemed Division __ Friends and Colleagues,

My name is Igor and I am a Division __ student member and a PhD Candidate at the University of Kentucky. I am currently recruiting participants for my dissertation. Specifically, I am investigating the attitudes and practices on the use of exercise prescription among practicing clinicians.

As fellow division __ members, who value a holistic approach to client well-being, I would like to formally invite you to participate in this study. Participation would require the completion of a brief survey which will take about **10-15 minutes**. The results from this study may add tremendously to the field of professional psychology and inform the work that we do with our clients.

Participation in this study is voluntary and confidential. The survey will not ask for any identifying information, and participants are free to withdraw at any time. All data will be stored securely by me and my dissertation advisor, Jeff Reese, Ph.D. Participant consent will be obtained by going to our survey link and beginning the survey.

Participants must be:

a) practicing psychologist and or graduate level trainees,
b) have clinical experiences of working with clients in psychotherapy, and
c) be willing to participate in this study.

If you meet these criteria and would like to participate, please click on the following link: https://uky.az1.qualtrics.com/SE/?SID=SV_3eXxY92JjuUIMp7

I greatly appreciate your assistance and support. Please contact me (igor.vasilj@uky.edu), or my research advisor, Jeff Reese, Ph.D. (jeff.reese@uky.edu) if you have any questions or concerns about the study. This study has been approved by the University of Kentucky IRB (#16-0568-P4S).

Thank you very much for your time and effort! I know we are all extremely busy.

With gratitude,

Igor

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Zschucke, E., Renneberg, B., Dimeo, F., Wüstenberg, T., & Ströhle, A. (2015). The stress-buffering effect of acute exercise: Evidence for HPA axis negative feedback. *Psychoneuroendocrinology, 51,* 414-425. doi:10.1016/j.psyneuen.2014.10.019

IGOR VASILJ

EDUCATION

2015	**Specialist in Education (Ed.S.)** in Counseling Psychology University of Kentucky, Lexington, KY
2013	**Master of Science (M.S.)** in Counseling Psychology University of Kentucky, Lexington, KY
2011	**Bachelor of Arts (B.A.)** in Psychology University of North Carolina Wilmington, Wilmington, NC Cum Laude
2011	**Bachelor of Arts (B.A.)** in German University of North Carolina Wilmington, Wilmington, NC Cum Laude
2011	**Minor** in Leadership Studies University of North Carolina Wilmington, Wilmington, NC

PROFESSIONAL/CLINICAL POSITIONS

Jun 2017 - Present	**Brooke Army Medical Center**, San Antonio, TX APA Accredited Pre-Doctoral Internship Clinical Supervisor: MAJ Michelle Kline, PhD
Aug 2016 – May 2017	**Lexington Veterans Affairs Medical Center**, Lexington KY Clinical Practicum Clinical Supervisor: Mindy Craft, PsyD
Aug 2013 - May 2017	**Office of Student Involvement, Leadership Education,** Lexington KY Graduate Assistantship
Aug 2016 – May 2017	**UK Counseling Center and Office of Residence Life**, Lexington KY On-call Crisis Counselor Clinical Supervisor: Jamie Hopkins, PhD
Aug 2013 - May 2017	**Faculty Instructor**, Lexington, KY University of Kentucky Gatton College of Business and Economics and Office of Student Involvement
Aug 2015 – May 2016	**Newtown Counseling Center/bluegrass.org (CMHC),** Lexington, KY Clinical Practicum Clinical Supervisor: Tripp Griesinger, PhD

Aug 2015 – Jan 2016	**Faculty Adjunct Instructor**, Lexington KY Transylvania University Department of Psychology
Aug 2014 – May 2015	**University of Kentucky Counseling Center**, Lexington KY Clinical Practicum Individual Supervisors: Nathaniel Hopkins, PhD; Jennifer Speisman, PsyD Group Supervisors: Felito Aldarondo PhD; Tina Bryant, PhD; Nate Miles, PhD
Jan 2013 – May 2013	**Jessamine County Adult Education and Family Literacy Program,** Nicholasville, KY Clinical Practicum Supervisor: Keisha Love, PhD
Aug 2012 – Dec 2013	**The Nest - Center for Women, Children, and Families** , Lexington, KY Clinical Practicum Supervisor: Jeff Reese, PhD
Aug 2008 - Jul 2011	**Housing and Residence Life**, Wilmington, NC Resident Assistant University of North Carolina Wilmington
Dec 2008 - Aug 2010	**Transition Programs**, Wilmington, NC Orientation Leader University of North Carolina Wilmington

JOURNAL PUBLICATIONS

Reese, R. J., Duncan, B. L., Kodet, J. D., Brown, H. M., Meiller, C., Farook, M., Lengerich, A. J., **Vasilj, I.**, Hong, S., & Bohanske, R. T. (in press). Patient feedback as a quality improvement strategy in an acute care, inpatient unit: An investigation of outcome and readmission rates. *Psychological Services.*

Reese, R. J., Mecham, M. R., **Vasilj, I**., Lengerich, A. J., Brown, H. M., Simpson, N. B., & Newsome, B. D. (2016). The effects of telepsychology format on empathic accuracy and the therapeutic alliance: An analogue counseling session. *Counselling and Psychotherapy Research, 16,* 256-265.

RESEARCH PRESENTATIONS

Vasilj, I., Reese, R. (2017, August). *Evaluating the Attitudes and Practices of Exercise Prescription Among Psychotherapists.* Poster presented at the 125th Annual Convention of the American Psychological Association, Washington, D.C.

Farook, M. W., Brown, H. M., Hong, S., Clemons, J. M., Lengerich, A. J., Meiller, C. E., **Vasilj, I.**, Reese, R. J. (2017, August). *Clients' Experiences of Providing Feedback in Psychotherapy: A Qualitative Study.* Poster presented at the 125th Annual Convention of the American Psychological Association, Washington, DC.

Vasilj, I., Hong, S., Brown, H., Lengerich, A., Meiller, C., Farook, M., Bohahske, R., Duncan, B., & Reese, R. (2016, August). *Client Feedback in an Inpatient Setting: Fidelity, Outcome, and Readmission Rates*. Poster presented at the 124th Annual Convention of the American Psychological Association, Denver, CO.

Meiller, C., **Vasilj, I**., Brown, H., Farook, M., Lengerich, A., & Reese, R. (2016, August). *The Use of Outcome Measurements by Psychologists in Clinical Practice: An Update.* Poster presented at the 124th Annual Convention of the American Psychological Association, Denver, CO.

Farook, M., Hong, S., Brown, H., Lengerich, A., Meiller, C., **Vasilj, I**., Bohahske, R., Duncan, B., & Reese, R. (2016, August). *Clients' Experiences of Providing Treatment Outcome and Alliance Feedback in Therapy*. Poster presented at the 124th Annual Convention of the American Psychological Association, Denver, CO.

Vasilj, I., Reese, R., & Hopkins, N. (2015, August). *Evaluating the Role of Exercise in Psychotherapy Outcomes*. Poster presented at the 123rd Annual Convention of the American Psychological Association, Toronto, Ontario.

Lengerich, A., Kodet, J., Brown, H., Meiller, C., **Vasilj, I**., Bohahske, R., Duncan, R., & Reese R. (2015, August). *Client Feedback, Outcome, and Recidivism in an Acute Care, Inpatient Setting.* Poster presented at the 123rd Annual Convention of the American Psychological Association, Toronto, Ontario.

Rosenkrantz, D., Abreu, R. L., **Vasilj, I**., Farook, M., Jordan, C., Glover, R. L (2015, August). *Social Justice Training in the Literature: Moving Forward.* Poster presented at the 123rd Annual Convention of the American Psychological Association, Toronto, Ontario.

Reese, R., Mecham, R., **Vasilj, I**., Simpson, N., Lengerich, A., Brown, H., & Cornett, H. (2014, August). *The Effects of Telepsychology Format on the Therapeutic Alliance and Empathic Accuracy.* Poster presented at the 122nd Annual Convention of the American Psychological Association, Washington, D.C.

Newsome, B., Simpson, N., Mecham, M., **Vasilj, I**., Lengerich, A., Hart, J., & Reese, R. (2013, August). *Evaluating Empathic Accuracy and the Therapeutic Alliance in Different Telepsychology Formats.* Poster presented at the 121st Annual Convention of the American Psychological Association, Honolulu, HI.

Moore, K., Kepley, H., **Vasilj, I**., Athanassiou, E., Gray, J., & Letchworth, W. (2010, November). *The Effects of ADHD on Self-Efficacy of College Students.* Poster presented at the 44th Annual Association for Behavioral and Cognitive Therapies Convention, San Francisco, CA.

Tinker, A., **Vasilj, I**., Gray, J., Machado, F., Craig, A., Wight, J., Letchworth, W., McCoy, K., & Kepley, H. (2010, April). *Academic and Social Outcomes of College Students with Attention-Deficit/Hyperactivity Disorder*. Poster presented at the North Carolina Psychological Association Student Poster Session, Charlotte, NC.

PROFESSIONAL ONLINE PUBLICATIONS

Vasilj, I. (2016, October 3). The pros and cons of working at a community mental health center. [Web log post.] Retrieved from http://blog.time2track.com/the-pros-and-cons-of-working-at-a-community-health-center?utm_source=hs_email&utm_medium=email&utm_content=35153232&_hsenc=p2ANqtz-_ytvQAY_wtyi-oB9iltdekCbJ5AvQhXoTVEzCxUIZF3DHgmGTJuvZJ4XhuDpdBKpRe1bRCaTQz2Yf9WWZQXJFyGxzgVQ&_hsmi=35254304

Vasilj, I. (2016, June 13). Should therapists encourage clients to exercise? [Web log post.] Retrieved from http://blog.time2track.com/should-therapists-encourage-clients-to-exercise?utm_source=hs_email&utm_medium=email&utm_content=30548942&_hsenc=p2ANqtz-8yYaqyWs5LUK1S9UHmjshbIvwfEdtZGR5Rj8eG5S_-bsi1qEwgTe8D065zudgSGSfjdO4EELueyJvBd3KsRqNEdiB1NQ&_hsmi=30548942

HONORS AND AWARDS

Aug 2016	**Conference Funding Award** University of Kentucky-The Graduate School
Aug 2015	**Conference Funding Award** University of Kentucky-The Graduate School
Aug 2014	**Conference Funding Award** University of Kentucky-The Graduate School
May 2011	**Distinguished Senior Service Award** University of North Carolina Wilmington
May 2010	**Leadership Excellence Award** University of North Carolina Wilmington
Jan 2010 - May 2011	**Psi Chi International Psychology Honor Society (Psi Chi)** University of North Carolina Wilmington
Jan 2010 - May 2011	**Omicron Delta Kappa National Leadership Honor Society (ODK)** University of North Carolina Wilmington
Jan 2010	**Ricky Hendricks Scholarship** Hendricks Automotive
Jan 2009 - May 2011	**Chancellors Achievement Award** University of North Carolina Wilmington
Aug 2008 – May 2011	**Dean's List** University of North Carolina Wilmington

Aug 2007 – May 2012 **Bill Beck Automotive Scholarship**
Beck Imports of the Carolinas Automotive Group