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LET'S GET PHYSICAL: THE ROLE OF PHYSICAL ACTIVITY IN THE
TRAINING OF GRADUATE MENTAL HEALTH STUDENTS

A thesis submitted in partial fulfillment of the requirements for the degree of
Master of Science at Virginia Commonwealth University

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Abstract

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There is growing awareness of the role of physical activity (PA) in the prevention and treatment of health disorders. Mental health practitioners are well positioned to provide PA counseling and may have ethical obligations to address PA. Researchers have cited insufficient training as a barrier to PA counseling, yet little is known about training in mental health. This exploratory study examines the need for training students in PA counseling. A national sample of 361 current graduate students in psychology, social work, rehabilitation counseling, and psychiatric nursing completed a Web-based survey on their training, knowledge, attitude towards PA, personal PA, and use of PA with clients. Knowledge, training, and attitude significantly predicted use of PA in counseling. Psychiatric nursing

students reported significantly higher knowledge and use of PA, 75% of students reported no training in PA counseling, and 86% of students reported need for training. Implications for training are discussed.

Let's Get Physical: The Role of Physical Activity in the Training of Graduate Mental Health Students

In our sedentary society, there has been an increased awareness of the importance of physical activity. Blair (2009) argues that physical inactivity is the biggest public health problem of the 21st century. As a result, physical activity has become a public health priority. This priority, however, faces an enormous challenge as the rates of child and adult obesity increase and the funding for physical activity programs decrease. Scholars and researchers argue that the trend towards physical inactivity was brought on by the Industrial Revolution and specifically, by the growth in technology (Hays, 1999). Furthermore, reduced needs for physical activity in occupational settings and increased demands on our time have resulted in far less physical activity overall. While physical activity has been linked to the prevention of numerous chronic diseases and conditions, a large percentage of the U.S. population is considered inactive and an increasingly alarming rate of children and youth between the ages of five and 17 do not participate in adequate levels of physical activity (Haskell et al., 2007). In addition, current guidelines set by the American College of Sports Medicine (ACSM) and the American Heart Association (AHA) highlight the gap between minimum suggested physical activity and the 49.1% of U.S. adults who do not meet these minimum requirements (Haskell et al.). Many different United States governmental agencies acknowledge the problem and are addressing the physical inactivity epidemic. The U.S. Department of Health and Human Services published a series of Healthy People Physical Activity and Fitness Objectives for both 2000 and 2010, but the objectives were not met. The most relevant objective states the need to increase the proportion of individuals who are appropriately counseled about health behavior, including physical activity.

Mental health practitioners play a unique role in addressing health related behaviors with their clients. Recent research has addressed the physical inactivity epidemic and there is strong evidence that supports the role of physical activity in the promotion of emotional well-being. Research shows a connection between the growing lack of physical activity and increasing prevalence of mental health problems (Daley, 2008). Recent, more rigorous studies have been published suggesting that regular physical activity can be useful in preventing mental health disorders or in reducing their risk of occurrence (Stathopoulos, Powers, Berry, Smits, & Otto, 2006). The overall consensus is that exercise can be associated with a decreased level of mild to moderate depression (Daley). Recently positive effects of physical activity have been demonstrated in individuals with bipolar disorder (Sylvia, Ametrano, & Nierenberg, 2010) and children with ADHD (Kiluk, Weden, & Culotta, 2009). In their innovative workbook for clinicians, *Exercise for Mood and Anxiety Disorders*, Smits and Otto (2009) describe how therapists and clients can work together to use exercise as a form of treatment.

However, there is a gap between the research that supports the use of physical activity in mental health settings and the inclusion of physical activity in counseling (Biddle & Mutrie, 2008). Despite the existence of substantial information about the health benefits of physical activity, only a small percentage of mental health practitioners discuss physical activity with their clients (Barrow, English, & Pinkerton, 1987; Hays, 1999; McEntee & Halgin, 1996). Because of the strong evidence for the physical and psychological health benefits of physical activity, health care practitioners may have an ethical obligation to prescribe physical activity to their clients (Sallis, 2011). General Principle A of the American Psychological Association's Ethical Principles of Psychologists and Code of

Conduct (2002) states, “Psychologists strive to benefit those with whom they work”). If exercise is beneficial and mental health practitioners are not addressing it as a health behavior, are clinicians acting unethically?

The disconnect between research and practice can be explained by a number of barriers that may be preventing physical activity counseling (Smits & Otto, 2009). Barriers in the literature include negative perceptions of physical activity, limited knowledge of physical activity, obesity and weight bias, and lack of training in the use of physical activity in counseling (Olofsgard, 2009; Chambliss & Blair, 2005; Davis-Coelho, Waltz, & Davis-Coelho, 2000).

To summarize, there are three key reasons why it is important to study the use of physical activity in counseling. First, while the research is strong in supporting the use of physical activity in the treatment of mental illness, there is a large gap between research and application. Second, there is a proposed ethical obligation of mental health professionals to address physical activity as a health behavior that can help in the prevention and treatment of mental illness. Third, limited research suggests few mental health practitioners discuss physical activity with their clients. The research on physical activity in the training of graduate mental health students is lacking and is in need of further investigation.

Review of the Literature

Overview

The review of the literature is divided into six sections. The first section defines key terms such as physical activity, exercise, mental health student, clients, physical activity counseling, and the use of exercise in therapy. The intention of this section is to provide the reader with an understanding of the key terms used in the literature. The second section

outlines the theoretical frameworks that attempt to explain the role of physical activity on mental health well-being, including, the theory of mind-body dualism, the biopsychosocial model, and the mechanism of change theory. The third section reviews health promotion of physical activity and the fourth section reviews literature on the role of physical activity in health care. The fifth section outlines the role of physical activity in mental health, including, the benefits of physical activity for individuals with mental illness, the use of physical activity counseling over time in mental health, and the barriers to using physical activity in mental health. Finally, the specific aims and hypotheses of this study are discussed.

Defining Physical Activity

When trying to better understand the gap between research and practice, it is imperative to define the language being used in order to facilitate communication between scientists, practitioners, professionals, and trainees. In her groundbreaking book, *Working It Out*, Kate Hays (1999) defined key terms. Using her model, important terms such as physical activity, exercise, mental health student, client, physical activity counseling, and the use of exercise in therapy were defined in order to establish the framework for the review of the literature below.

Physical activity. The term physical activity is preferred to exercise, as it does not have the same pejorative tone of obligation that exercise carries. Because of this, many leaders in physical activity promotion such as the United States Surgeon General (1998) and the American College of Sports Medicine (ACSM; Haskell et al. 2007) use the term physical activity in their current recommendations.

Exercise. The term exercise can be defined as organized, focused physical activity, that is of a certain level of exertion (Hays, 1999). However, as mentioned above, exercise can be interpreted as obligatory and seen as a chore or something one “should do” (Hays, 1999). Throughout this paper, exercise and physical activity are used interchangeably as is typical in the more recent literature.

Mental health student. The term mental health student refers to graduate students in clinical psychology, counseling psychology, psychiatric nursing, and clinical social work, and rehabilitation counseling.

Client. The term client is used to denote individuals seen by mental health practitioners. For the purpose of this paper, the term client will be used even though mental health professionals often debate the terms client and patient.

Physical activity counseling. Physical activity counseling is defined as the provision of advice and guidance to a client by a health professional (Olofsgard, 2009). The advice can be verbal or written (prescription) and should be individualized with regard to the client’s mental health disorder or somatic disease. The advice should include mode, frequency, duration, intensity, length of program, restrictions, but the content may vary in detail and specificity.

Use of exercise in therapy. Use of exercise in therapy is defined as a range of scenarios from brief discussion of exercise during the first session, to routine discussion of exercise, to using exercise in conjunction with psychotherapy, to using exercise as the medium of therapy, to walk or run therapy (Hays, 1999). Throughout this paper, the use of exercise in therapy primarily means consistent or routine discussion with a client about their

physical activity level and how that health behavior may be contributing to their emotional state.

How Does Physical Activity Influence Mental Well-Being? Theoretical Frameworks

Over the years, researchers have cited theories and hypotheses that attempt to explain the effect of physical activity on mental well-being. The sections below highlight three established philosophies and theories that have used to explain the relationship between physical activity and mental health: Mind-Body Dualism, the Biopsychosocial Model, and Mechanism of Change Theory

Mind-Body Dualism. For hundreds of years, the theory of mind-body dualism has strongly informed our views of the relationship between the mind and the body. Plato, Galen, and Descartes set the foundation for both the traditional medical model and the mental health model of disregarding anything below the neck (Hays, 1999). Over the years, mental health practitioners have been trained to focus solely on the mind. However, since Ancient Greece, there has been advocacy for the mind-body connection. According to Homer, “mens sano in corpore sano,” a healthy mind in a healthy body was ideal for Grecians who spent most of their day engaged in physical activity (Hays, 1999). It is said that Hippocrates prescribed physical activity for patients with mental illness centuries ago (Hays, 2002), Sigmund Freud worked with some of his patients while walking or hiking (Jones, 1967), and traditional Eastern practices of yoga have been connecting the mind to the body for thousands of years (Yuasa, 1987).

Biopsychosocial Model. While mind-body dualism remains prevalent, for the past 25 years the biopsychosocial model has emerged on the forefront of healthcare as both a philosophy and a practical clinical guide (Borrell-Carrio, Suchman, & Epstein, 2004). When

working with a client, the biopsychosocial model purports that it is important to acknowledge the various factors surrounding the individual's diagnosis: the client's biology or physiology, psychology (e.g. personality style, sense of self, locus of control, methods of coping), and social support (e.g. ethnic and cultural values and beliefs, neighborhood, family/friend support). Almost 20 years ago, Dubbert (1992) described the potential of using physical activity in a scientific manner to promote mental health through "biological, psychosocial, and cognitive mechanisms." More recently, Ratey and colleagues (2008) at Harvard University have studied the body-mind connection through the effects of exercise on the brain. Ratey explained that exercise improves learning in three ways: it creates a "mindset" of alertness, attention, and motivation; sets the stage for taking in new information as nerve cells bind to one another; and it jump starts the momentum for new nerve cells to develop from hippocampus stem cells. The advancement of research connecting the science of psychobiology to exercise is a testament to the biopsychosocial model.

The biopsychosocial model embodies the holistic perspective necessary to understand the individual needs of the client. Instead of perpetuating the theory of mind-body dualism from past centuries, it is important to recognize and acknowledge the connection, independence, and overlap of the biological, psychological, and the social aspects of an individual. As mental health practitioners, it is imperative to not fall prey to the strong pull in the field to only focus on the mind (Hays, 1999). Instead, it is the role of mental health clinicians to address the mind, the body, and the social world of our clients in accordance with the biopsychosocial model (Smits & Otto, 2009). Because of these reasons, the biopsychosocial model served as the theoretical basis for this paper.

Mechanism of Change Theory. While the biopsychosocial model is beginning to take hold, researchers express concern over the limited number of theoretical models that explain the mechanism of change in physical activity (Dixon, Mauzey, & Hall, 2003). For individuals with mental illness, researchers explain that there is scarce research in how to both understand and influence change in physical activity behavior (Baranowski, Anderson, & Carmack, 1998). Current theoretical models on the mechanism of change in physical activity fall into two domains: physiology and psychology.

Theoretical models from the physiological perspective focus on the biochemistry of the individual and, in particular, the metabolism and availability of central neurotransmitters and sleep regulation (Stathopoulou et al., 2006). Preliminary research conducted by Sylvia and colleagues (2010) on individuals diagnosed with bipolar depression found that the antidepressant mechanism of physical activity can manifest in three different pathways: (1) physical activity leads to an increase in levels of brain-derived neurotrophic factor (BDNF), which in turn increases neurogenesis; (2) physical activity induced BDNF, through the process of neurogenesis, can lead to the reduction of allostatic load; and (3) physical activity can directly impact a decrease in allostatic load. As neurogenesis increases and the allostatic load decreases, the individual begins to experience some of the positive physiological effects of physical activity. More research is needed to determine the impact of physical activity on mood and to examine whether physical activity can play a role in buffering future high and low episodes experienced by individuals with bipolar disorder.

In line with the physiological perspective, the social zeitgeber theory argues that physical activity (among other activities) may improve the consistency of daily life, which may in turn improve mood (Ehlers, Frank, & Kupfer, 1988). Physical activity may also

affect the normalization of the sleep cycle, another positive effect of exercise (Stathopoulou et al., 2006). Moreover, Johnsgard (2004) explained that the effects of physical activity can exert antidepressant effects similar to current antidepressant medications and may also have additional beneficial effects beyond the normal outcomes of psychopharmacotherapy.

In addition to physiological theories, the psychological perspective of the mechanism of change in physical activity is also important to recognize. In a pioneering study on the antidepressive effects of exercise in 1979, Greist speculated that exercise could encourage an individual to feel hopeful and in control. Greist purported that feelings of hope increase as the client's feelings of depression. The individual gains a sense of control over their depression by being physically active; he or she slowly begins to feel better. Similar to Greist, Johnsgard (2004), claimed that the psychological mechanisms of change of include self-efficacy, skills mastery, and distraction for those that are physically active. Johnsgard explained that regular physical activity can aid individuals in building their sense of self or self-efficacy, sense of skill mastery or sense of accomplishment, and can give individuals a break from routine or 'time-out' from the routines of daily life. Together the domains of psychology and physiology offer two different, yet important perspectives on the mechanisms of change of physical activity.

Physical Activity as Health Promotion

In addition to the theoretical work understanding the mechanisms of change in physical activity, there has been an increased number of health promotion in the physical activity domain. In 1990, the ACSM both updated its physical activity guidelines to include resistance training and acknowledged the strong connection between exercise and decreased risk of chronic disease. Then in 1996, the National Institutes of Health published a

Consensus Statement on Physical Activity and Cardiovascular Health recommending at least 30 minutes daily of moderate intensity activity for children and adults. Importantly, the first and only United States Surgeon General's Report on Physical Activity and Health was released in 1996 and highlighted health benefits of moderate-level and vigorous physical activity. In the late 1990s, two important books connecting physical activity to mental health were published. In 1998, Leith, a Canadian professor in both Physical and Health Education and Behavioral Sciences published a self-help book entitled, *Exercising Your Way to Better Mental Health*, connecting the mental to the physical parts of the body through physical activity. And in 1999, Hays, published, *Working It Out: Using Exercise in Psychotherapy*, a monumental book in which she described the role of exercise in the prevention and treatment of mental illness and how to use exercise as a therapeutic tool.

Furthermore, for the past 15 years, the Center for Disease Control (CDC) has issued guidelines for youth programs promoting physical activity in schools and in the community. Current ACSM and AHA recommendations include the following guidelines to promote and maintain health: all healthy adults aged 18 to 65 years need moderate-intensity aerobic physical activity for a minimum of 30 minutes on five days each week or vigorous-intensity aerobic physical activity for a minimum of 20 minutes on three days each week (Haskell et al., 2007). The ACSM and the AHA further define and provide examples of moderate and vigorous activity and also set forth different guidelines for children and for older adults. Most importantly, the ACSM and the AHA suggest that because of the dose-response relation between physical activity and health, persons who wish to further their personal fitness, reduce their risk for chronic diseases and disabilities, and/or prevent unhealthy

weight gain, may benefit by exceeding the minimum recommended amounts of physical activity.

In addition to the CDC, ACSM, and AHA, United States First Lady Michelle Obama has chosen to address the problem of childhood obesity by joining together with community leaders, doctors, teachers, nurses, moms and dads. In naming her campaign, *Let's Move: America's Move to Raise a Healthier Generation of Kids*, First Lady Michelle Obama includes physical activity as an integral component (Let's Move). Obama's website suggests that children need 60 minutes of active and vigorous play each day and acknowledges the disproportionate amount of time (7.5 hours/day) children currently spend using entertainment media including, cell phones, TV, video games, and computers (Let's Move). Because the *Let's Move* initiative is new, there is no published research on its effectiveness. More research is needed in order to evaluate Let's Move and determine its effectiveness.

As noted by the *Let's Move* campaign, it is well understood that children are currently spending less time outdoors overall and therefore less time engaged in outdoor physical activity. Andersen, Crespo, Bartlett, Cheskin, and Pratt (1998) argued that children and adolescents are spending more time watching television and engaging in other sedentary behaviors that are associated with an increased risk of becoming obese. Recent trends in interactive video games such as Wii Fit have changed the nature of sedentary couch behavior. Researchers and leaders in health promotion agree that that while most interactive video games do not provide enough physical activity to meet the present ACSM/AHA guidelines, some physical activity is better than none, especially for individuals who are unable to do other types of moderate or vigorous physical activity (Mark et al., 2008). Mark and her colleague's highlight that the ACSM has acknowledged that two interactive video

games, Dance Dance Revolution and Gamebike, that meet the recommendations for developing, maintaining and improving cardiovascular fitness. Meeting clients in their more sedentary behavior is a difficult challenge for all health professionals. Health practitioners are faced with the challenge of promoting physical activity as a health related behavior.

Physical Activity in Health Care

The U.S. Surgeon General's Report on Physical Activity and Health (U.S. Department of Health and Human Services, 1996) highlighted the benefits of consistent physical activity: reduces risk of dying prematurely; reduces risk of dying from heart disease; reduces risk of developing diabetes or high blood pressure; helps reduce blood pressure in people who already have high blood pressure; reduces the risk of developing colon cancer; reduces feeling of depression and anxiety; helps control weight; helps build and maintain healthy bones, muscles, and joints; helps older adults become stronger and better able to move about without falling; and promotes psychological well-being.

A recent review of the research discussed the efficacy for prescribing exercise as therapy in chronic disease (Pedersen & Saltin, 2006). In their review, Pedersen and Saltin discussed the evidence behind using physical activity in the treatment of heart and pulmonary diseases (coronary heart disease, chronic heart failure, intermittent claudication, chronic obstructive pulmonary disease), metabolic syndrome-related disorders (obesity, hypertension, dyslipidemia, type 2 diabetes, insulin resistance), muscle, bone and joint diseases (osteoporosis, fibromyalgia, chronic fatigue syndrome, rheumatoid arthritis, osteoarthritis) and cancer, asthma, depression, and type 1 diabetes. Importantly, Pedersen and Saltin stated principles for prescribing exercise therapy: (1) type of exercise, (2) amount of exercise and (3) possible reasons why exercise could be contra-indicated.

Despite the strong evidence for the use of physical activity in the treatment of chronic disease (Smits & Otto, 2009), there is only limited use of physical activity counseling in health care settings (Lobelo, Duperly, & Frank, 2009). In medical schools, only 13% of all training includes curricula on physical activity (Garry, Diamond, & Whitley, 2002). However, 78% of practicing physicians reported a need for a physical activity related course in medical school (Williford, Barfield, Lazenby, & Olson, 1992). Additionally, in a survey of 1,906 first year medical students in 17 medical schools, 64% complied with minimum physical activity guidelines put forth by the ACSM & AHA and 79% believed it would be important to their future medical practices to counsel patients about physical activity (Frank, Galuska, Elon, & Wright, 2004).

While there is scarce physical activity counseling training in medical school, research suggests that the personal physical activity level of medical student contributes to whether or not these students address physical activity with patients (Lobelo, Duperly, & Frank, 2009). Lobelo and colleagues discussed that there is a robust association between medical students who were more physically active and their likelihood to counsel their patients on physical activity. Lobelo and colleagues highlight that few interventions have focused on the personal health behaviors of medical students and residents; doing so may improve counseling practices in physical activity. The researchers argued that physicians may have an ethical obligation to use physical activity in their work with patients, and conclude that training future medical professionals in physical activity counseling is imperative (Lobelo, Duperly, & Frank).

There is a strong movement by the ACSM to recognize the need to encourage healthcare professionals to implement physical activity counseling in their practice. *Exercise*

is Medicine (ACSM) is a global initiative launched in 2007 calling on all health care providers to assess and review every patient's physical activity at every visit. Sallis (2011), a physician and a leader in the *Exercise is Medicine* initiative, argued that physical activity should be the fifth vital sign and all health care practitioners should ask two questions related to physical activity in one minute at every clinical consult. The goal of the initiative is to improve worldwide public health through an international network of health practitioners and to make physical activity a standard part of disease prevention and medical treatment. Included in the ACSM's Health Care Providers' Action online guide are steps to prescribing exercise and other steps to make a referral to an exercise specialist. In addition, the ACSM promotes three supplemental documents: the Thomas, Reading, & Shephard's Physical Activity Readiness Questionnaire (PAR-Q; 1992), an exercise prescription referral form, and a physical activity clearance form. Because the *Exercise is Medicine* initiative is new, there has been no published evaluation on the effectiveness of this initiative and a thorough evaluation is necessary before we can determine the effectiveness of the campaign.

Part of the *Exercise is Medicine* initiative is to bridge relationships between health professionals. Sallis (2011) argued that collaboration between the health care industry and the fitness industry is necessary to address the physical inactivity epidemic. While it is imperative for health care professionals to discuss physical activity with their patients, it is also important for them to partner with local fitness professionals and exercise scientists to learn from one another and to set up referral networks (Dixon, Mauzey, & Hall, 2003; Sallis, 2009). Hays (1999) also emphasized a team approach when working with clients and suggested that collaborating with other health professionals may provide clients the best treatment. Taken together, these leaders in physical activity and health emphasize the point

that health care professionals cannot address the obesity epidemic alone. Instead, a collaborative approach is warranted to bridge the resources and support individuals need to increase their physical activity.

Physical Activity in Mental Health

Benefits of physical activity. In addition to the need to establish regular physical activity assessment and prescription in health care settings and the importance of collaboration among health professionals, there is a preponderance of research citing the psychological benefits of consistent physical activity. In the past 20 years, there has been an increasing emphasis on the link between physical activity and mental health (Smits & Otto, 2009). Although the majority of the studies in the past have been promising, the research methodology has been poor; that is most studies were cross-sectional in design with very small subject numbers, some were antidotal, and others were retrospective (Daley, 2008). However, recent studies have begun to use more stringent experimental research design (Olofsgard, 2009).

The most promising literature in the field of exercise and mental health highlights the effect of physical activity on mild depression. Over 20 years ago, Doyne and colleagues (1987) discussed the differences in the use of running versus weight lifting in the treatment of depression. In a review, Stathopoulou and her colleagues provided evidence for using exercise as an adjunctive treatment for depression (2006). Her meta-analysis on randomly controlled trials (RCTs) of 11 exercise treatment studies with clinically depressed individuals (2006) yielded a large effect size ($g = 1.39, 95\%$; $d = 1.42, 95\%$) for the intervention of physical activity for clinically depressed individuals as compared to control conditions of no treatment (5 studies), treatment as usual (1), lower level exercise (1), meditation/relaxation

(1), and health education (1). Stathopoulou et al.'s review provides empirical evidence that physical activity should be considered as an adjunctive treatment option for individuals with clinical levels of depression.

Similar to Stathopoulou, in 2008, the U.S. Department of Health and Human Services outlined evidence for the correlation between physical activity and reduced depression in the first publication of the *Physical Activity Guidelines for Americans*. Similarly, the United Kingdom Department of Health recommended physical activity as a treatment modality for the treatment of clinical depression, "Physical activity is effective in the treatment of clinical depression and can be as successful as psychotherapy or medication, particularly in the longer term" (U.S. Department of Health and Human Services, 2004, p. 58).

In addition to the treatment of depression, Stathopoulou et al. (2006) suggested that physical activity may also have a significant effect among clinical populations with other mental disorders. The researchers reported that physical activity aided in symptom reduction associated with alcohol cravings and consumption, anxiety, exercise abuse in residential patients with eating disorders, body satisfaction in patients with bulimia, depressed mood and anxiety in binge eating disorder, and increased weight gain in females with anorexia. Furthermore, Elavsky and McAuley (2005) found that physical activity may lessen the risk and aid in the treatment of somatic symptoms. Additional benefits of physical activity include increased protection from adolescent depression (Sallis, Prochaska, & Taylor, 2000). Richardson and colleagues (2005) advocated for integrating physical activity into mental health services not only for individuals with mild to moderate depression, but also for individuals with serious mental illness such as schizophrenia and bipolar disorder. Overall,

there is a growing body of evidence that supports the use of physical activity in preventing and treating mental illness.

Role of physical activity in counseling. While there is established evidence on the connection between mental health and exercise, the mental health field has been slow to endorse the research supporting the use of physical activity in the treatment of mental illness. In their seminal article on therapist's attitudes about exercise, Barrow, English, and Pinkerton (1987) surveyed 196 psychologists and found that while 93.57% stated that they would recommend physical activity to other mental health professionals, only 52.86% recommended it "occasionally" to their clients and only 10% recommended it "all the time" during session with clients. Similarly, McEntee and Halgin (1996) provided evidence that while most therapists engage in regular physical activity, very few use physical activity as an intervention with their clients.

The theory of mind-body dualism appears to be present, as there still appears to be a significant gap between the literature supporting the efficacy of physical activity and the application within psychotherapy. In her article discussing the recent advances and current challenges of physical activity and exercise, Dubbert (2002) noted the important role mental health practitioners can play in addressing physical activity with clients. She highlighted the importance of the physical and mental health benefits of physical activity. Based on Dubbert's article, Dixon, Mauzey, and Hall (2003), described implications for counselors. Their first implication was a perceived training gap between the application of physical activity interventions by mental health practitioners who have not been trained in the area of exercise and mental health. Together, Dixon and colleagues argued that as the physical activity research base continues to expand, it will be important for counselors in training to

be educated on the relationship between physical activity and mental health interventions. Also, they purport that including physical activity in therapy is a cost-effective adjunctive treatment option for many individuals suffering from mental illness. Furthermore, the researchers suggest that counselors should learn about the ACSM physical activity guidelines. They suggest that mental health professionals use a cautious approach in advising physical activity. Introducing an exercise program gradually is often more effective. Finally, Dixon, Mauzey, and Hall encouraged counselors to provide psychoeducation to their clients about the physical and mental health benefits of consistent physical activity.

In her thesis on physical activity counseling of 529 Swedish mental health professionals, Olofsgard (2009) discussed the importance of improving the acceptance and the use of physical activity as an adjunctive treatment in health care settings. Olofsgard named four key factors that affect physical activity counseling: (1) personal level of physical activity of clinician, (2) knowledge of physical activity, (3) attitude towards the use of physical activity in the prevention and treatment of mental illness, (4) and frequency and behavior associated with physical activity counseling. Correlations suggested that clinicians who rated high levels across the four key factors were more likely to utilize physical activity counseling with their patients. Similar to the aforementioned literature with medical students and physicians, Olofsgard found that the more physically active the practitioners, the more likely they were to counsel physical activity with their clients. Personal physical activity was significantly correlated with frequency ($r^2 = .16, p < .001$), behavior ($r^2 = .20, p < .001$), attitude ($r^2 = .09, p < .05$), and knowledge ($r^2 = .18, p < .001$). Olofsgard developed scales related to the four key factors and demonstrated the need to develop reliable scales to assist

in the assessment of physical activity knowledge for the purposes of training and assessing health care practitioners. Moreover, she explained the need to develop theoretical models to predict physical activity counseling.

Other researchers have also encouraged the role of exercise in clinical practice. Stathopoulou and her colleagues (2006) recommend that mental health clinicians assess each individual client's needs in order to determine whether physical activity should be implemented into the therapeutic model of care. Moreover, Stathopoulou et al. encouraged mental health practitioners to refer to exercise specialists if they felt untrained or under qualified to provide independent physical activity planning and monitoring as part of the treatment plan. Stathopoulou et al. explained that physical activity counseling is an elaborate, time intensive, and lengthy process. Similar to Stathopoulou, Dunn and colleagues (2005) encouraged exercise prescribers and mental health practitioners to assess clients for physical activity readiness by using the Physical Activity Readiness-Questionnaire (PAR-Q; 2002) to determine the dose of exercise for each individual client. The PAR-Q is the same questionnaire that is promoted by the *Exercise is Medicine* initiative of the ACSM and a helpful objective tool.

Overall, the mental health field has made significant progress in moving toward physical activity as an adjunctive form of treatment. However, research suggests that many mental health practitioners are not currently using physical activity counseling in their work with their clients. Mental health care practitioners now have an opportunity to take an active role in addressing the physical activity health behaviors of their clients.

Barriers to the use of physical activity. While there has been advocacy by researchers and clinicians for implementation, there are a number of potential barriers to

addressing physical activity with clients. First, the style of physical activity intervention is very different from more traditional interventions in psychological treatments (Stathopoulou et al., 2006). Traditionally, counseling is less directive and more collaborative than the physical activity counseling that occurs in medical settings. Second, as cited above, the research of the efficacy of exercise therapy has historically had poor methodology and therefore findings were questioned (Daley, 2008). However, in the past ten years, more scientifically rigorous studies have been published in peer reviewed journals (Olofsgard, 2009). Third, the application of physical activity in counseling in medical settings has not been met with success as noted above (Lobelo, Duperly, & Frank, 2009).

Furthermore, researchers cite biases of health care professionals that may be inhibiting mental health practitioners from using physical activity in their work with clients. Many health practitioners are susceptible to the weight bias (Chambliss & Blair, 2005; Davis-Coelho, Waltz, & Davis-Coelho, 2000; Hassel, Amici, Thurston, & Gorsuch, 2001). Chambliss and Blair discuss weight bias as prejudicial attitudes, stigma, and negative stereotypes toward individuals who are obese or overweight. Researchers argue that because of the weight bias, psychologists are more likely to ascribe more pathology, more severe symptoms, more negative attributes, and worse prognosis to obese clients (Davis-Coelho et al.; Hassel et al.). These biases may inhibit mental health practitioners from discussing physical activity with clients who appear to be overweight or obese. Similarly, these biases may also inhibit assessing physical activity in clients who appear to be of normal weight. Fifth, clinicians may lack basic knowledge about physical activity and the competency to use the knowledge in working with clients' individual level of physical activity (Dixon, Mauzey, & Hall, 2003). Sixth, mental health professionals may be unsure of how physical activity fits

in with individual clients' own cultural values, beliefs, goals, and expectations of therapy (Stathopoulou et al.). Seventh, there are logistical barriers to physical activity counseling, such as lack of time in session and lack of reimbursement (Lobel et al.). Eighth, some mental health clinicians may believe that discussing physical activity with their client is outside their scope of expertise. Finally, there is a perceived lack of training physical activity counseling among mental health professionals (Dixon, Mauzey, & Hall, 2003).

Specific Aims

The present study examined the characteristics and experiences of mental health trainees, including their attitudes toward the use of physical activity in the prevention and treatment of mental illness, their frequency of addressing physical activity in counseling, their behaviors associated with physical activity counseling, their knowledge of physical activity as it relates to mental illness and personal well-being, their personal level of physical activity, and their training in the use of physical activity in counseling. Furthering our understanding of the role of physical activity in the training of future mental health professionals can help us identify whether there is a need to train mental health students in physical activity counseling.

This study also investigated the absence or presence of a “gap” between research and practice among the participants. If a gap was found, this study sought to examine the gap for meaning and offer implications. Results from this exploratory study will provide knowledge to support innovation in training procedures and clinical programs at training facilities across the fields of counseling and clinical psychology, social work, rehabilitation counseling, and psychiatric nursing. Additionally, results from this study will provide a foundation from which to build guidelines on physical activity for mental health graduate training programs.

Specifically, the following aims are of interest:

Aim 1: The first aim of this exploratory study is to examine the use of physical activity in the clinical work of graduate students in mental health. This aim will be explored by hypothesis 1. See hypothesis 1 below.

Aim 2: The second aim of this exploratory study is to examine the training of graduate students in mental health in physical activity as a health behavior. This aim will be explored by hypotheses 1 and 2 in addition to examining all items on the questionnaire related to training. See hypotheses 1 and 2 below.

Aim 3: The third aim of this exploratory study is to examine the perceived barriers of addressing physical activity in counseling by mental health students. This aim will be explored by examining the items on the questionnaire related to barriers, in addition to aspects of hypotheses 1 and 2. See hypotheses 1 and 2 below.

Hypotheses

Two specific hypotheses were proposed to inferentially assess the relationships between key variables. Analyses of demographics, attitude, knowledge, training, level of personal physical activity, and frequency and behavior of physical activity counseling were conducted. The following two research hypotheses were examined.

Hypothesis 1: *Attitude towards the use of physical activity in counseling, knowledge about the effects of physical activity on mental disorders, training in the use of physical activity in counseling, and personal level of physical activity, would explain a significant portion of variance in the frequency of using physical activity in counseling with clients of graduates students in mental health.* Graduate students who reported more positive attitude, higher knowledge, more training, and higher

levels of personal activity would have a higher frequency of using physical activity in counseling.

Hypothesis 2: *There would be significant differences between the graduate students in the five mental health domains (clinical psychology, counseling psychology, social work, rehabilitation counseling, and psychiatric nursing) in their:*

- i. Frequency of using physical activity in counseling;*
- ii. Behavior of using physical activity in counseling;*
- iii. Attitude toward use of physical activity in counseling;*
- iv. Knowledge about the effects of physical activity on diseases and mental disorders;*
- v. Training in the use of physical activity in counseling;*
- vi. Personal level of physical activity*

Method

Research Design

The present study was cross-sectional in design and utilized national survey data to examine the training of graduate mental health students in the use of physical activity with their clients. Internet based questionnaires were administered to the participants at one point in time.

Despite the stigma against Internet based surveys, Gosling and colleagues (2004) compared a large Internet sample with traditional paper and pencil samples. Gosling et al. found that Internet samples are typically congruent with findings from more traditional surveys. Six preconceptions of online surveys were contested by Gosling et al. as he and his colleagues argued that web-based studies should be trusted and considered valid forms of

data collection. The researchers also acknowledged that Internet based questionnaires have shortcomings as do traditional paper and pencil methods. For example, web-based surveys have no control over the test taker's environment and the increased likelihood of fake responses. However, in their discussion, Gosling et al. described the need for both types of surveys in the field of psychology.

Participants

Eligible participants for this study were graduate students in the mental health programs of clinical psychology, counseling psychology, social work, psychiatric nursing, and rehabilitation counseling. To participate, graduate students had to be at least 18 years of age, have current direct client contact, and be a United States (U.S.) resident. Four hundred graduate students in mental health from accredited programs across the U.S. took part in the study in May 2011. Participants in this study were recruited through their clinical training or program directors.

Out of the 400 participants, 39 participants were excluded from the analyses because they reported not having current direct client contact (9 %). The final sample was comprised of 361 participants, of which 315 (87%) were female, the average age was 30.17 years ($SD = 9.06$), 80% described their racial/ethnic background as White, and 89% identified as heterosexual. See Table 1 for detailed socio-demographic data for the sample. The majority of the sample was White and female which is consistent with ratios found in applied psychology departments (Keilin, 2010). Twenty four percent of the sample reported their program affiliation as Social Work, 50% reported being enrolled in a master's program, 43% reported being in the second year of graduate training, 23% reported living in the Midwest region of the U.S., and 34% reported that their primary theoretical orientation was Cognitive-

Behavioral. According to Cohen (1992), this overall N should reveal a medium effect size with a $\alpha = .05$ and Power = 0.80 in the analyses that follow.

Table 1.

Sample characteristics.

		<u>%</u>	<u>N</u>
Gender	Female	87	315
	Male	12	45
	Other	<1	1
Race/Ethnicity	White	80	289
	Hispanic/Latina	6	22
	African American	5	19
	Biracial or Multiracial	3	15
	Asian American	3	12
	Other	2	1
Mental Health Domain	Social Work	24	110
	Clinical Psychology	22	104
	Counseling Psychology	18	84
	Psychiatric Nursing	8	36
	Rehabilitation Counseling	3	15
U.S. Geographic Region	Midwest	23	111
	South	18	86
	West	12	56
	Mid Atlantic	9	42
	Southwest	9	41
	New England	5	24
Sexual Identity	Heterosexual	89	327
	Bisexual	6	22
	Lesbian	2	8
	Gay	2	6
	Not sure	<1	2
Level of Graduate Program	Masters	50	180
	Doctoral	44	159
	Other (Post masters; Dual degree)	6	21
Year in Training Program	Second	43	145
	First	19	64
	Third	16	54
	Fourth	10	34
	Fifth	8	28

	6 or higher	4	13
Theoretical Orientation	Cognitive Behavioral	34	159
	Eclectic/Integrative	17	80
	Humanistic	6	25
	Psychodynamic	5	22
	Interpersonal	4	17
	Behavioral	3	13
	Solution Focused	2	10
	Other (e.g. Family Systems; Gestalt)	4	19

Age [Mean (*SD*)] 30.17 (*SD* = 9.06)

Note. *N* ranged from 339 to 361 due to missing data.

Procedure

A large attitudinal survey was emailed to 427 clinical training directors and department chairs at select mental health graduate programs across the U.S., describing the study and requesting that they distribute the invitation to participate email to the students in their program. Approximately ten accredited graduate programs per state were emailed (approximately 2 programs per mental health discipline per state). Each program was accredited by its respective governing body, counseling and clinical psychology by the American Psychological Association; social work by the Council on Social Work Education; rehabilitation counseling by the Council on Rehabilitation Education; psychiatric nursing by the American Psychiatric Nurses Association. The initial email was sent to 112 clinical psychology programs, 94 social work programs, 85 psychiatric nursing programs, 73 rehabilitation counseling programs, and 62 counseling psychology programs. The numbers of emails sent reflect the number of accredited programs in the U.S per mental health domain. See Appendix A for the initial email.

The initial email to the training directors and department chairs included a brief description of the study and the inclusion criteria for participants: the participant must be a

graduate student in mental health (counseling or clinical psychology, social work, rehabilitation counseling, or psychiatric nursing), currently working directly with clients/patients, 18 years or older, and an U.S. resident. The email also included a link to a questionnaire on the online survey website Inquisite, and an option to reply to the email in order to opt-out of the two week follow-up email. Twelve clinical training directors and department chairs replied to the email and chose to opt-out due to no longer having students in their program or violation of their Institutional Review Board. Two weeks after the initial email, a follow-up email was emailed to 415 clinical training directors and department chairs. See Appendix B for the follow-up email.

This study protocol qualified for exemption by the Virginia Commonwealth University Institutional Review Board under the study title, “Let’s get physical: The role of physical activity in the training of graduate mental health students” (IRB# HM13665). Participants gave informed consent via the internet prior to beginning the survey. See Appendix C for the opening text of the survey. Participants read an online consent form that explained the procedures of the study, their rights as a participant, and information about entering to win a VISA gift card upon completion of the study. Participants indicated their consent to participate in the study on the website. See Appendix D for the Information Sheet for Consent. To enhance response rate, participants were asked if they would like to enter a drawing to win one of three \$50 VISA gift cards and 238 students entered the drawing after survey completion. See Appendix E for the survey closing text.

Measures

A survey instrument was compiled for use in this study and based, in part, on those used in previous studies. The questionnaire was divided into five sections (demographics,

personal level of physical activity, physical activity counseling, knowledge and attitude toward physical activity, and training in physical activity counseling). The questionnaire was intentionally informative; that is, no action was taken to avoid revealing the desired behavior of the use of physical activity in counseling. Content validity of the survey was established through the standard practice of using an expert review. Five graduate students in psychology and two faculty members in psychology were administered pilot questionnaires and refinements were made to achieve clarity and succinct wording. The survey was designed to take approximately 20-30 minutes to complete. The measures are described below.

Demographics. Participants were asked to provide demographic information. The demographics questionnaire was developed from Olofsgard (2009) and Hays (2010b) demographic sections of their respective surveys. Included in the demographics questionnaire were questions regarding age, gender, ethnicity/race, sexual identity, and state of residence. Also included in the questionnaire was information related to their graduate program, including, mental health domain, year in training program, primary theoretical orientation, practice setting, client age range, types of care provided and disorders treated.

Physical activity counseling. An adapted version of the Questionnaire used by Olofsgard (2009) was used to assess the mental health student's practice, attitude, knowledge, and training of physical activity counseling. A 33-item Physical Activity Counseling Questionnaire was developed based on Olofsgard's work with Swedish psychiatrists. Three items were added from Hays' (2010b) Survey on Psychotherapy and Exercise including: "What are your reasons for discussing physical activity with your clients?" "Do you exercise with your clients during treatment?" "And are their clients or

situations where you would consider exercising with them to be contra-indicated?” An additional scale on training was added to her original four scale questionnaire (see below for details). Four additional items related to training were also added to the questionnaire including, “Describe what was the nature of the training (classroom, at clinic, how long, by whom, what was covered).” “Would you like to have (additional) training in physical activity counseling?” “Please list the type of training would be most helpful to you.” “What do you believe would help facilitate the training and use of counseling physical activity in your graduate program?”

From the individual items on the Physical Activity Counseling Questionnaire, five categorical scales were developed. The five scales used in the present study were developed using Olofsgard’s (2009) four scales (Frequency of Physical Activity Counseling, Behavior of Physical Activity Counseling, Attitude Toward Physical Activity Counseling, & Knowledge about Physical Activity). Olofsgard’s scales were modified by changing the word “patient” to “client” and by adding one additional scale (Training of Physical Activity Counseling). Olofsgard determined the internal consistency reliability among the items among her original four scales using Cronbach alpha ($r = .70$). Further explanation of the five scales is outlined below.

Frequency of physical activity counseling. The frequency of physical activity counseling scale (Frequency) was measured using Olofsgard’s (2009) Frequency in Physical Activity scale. Students rated the 5-item scale along a 5-point Likert scale ranging from 1(*never*) to 5 (*always*). Items were summed to arrive at a total score, with higher scores reflecting greater use of physical activity in counseling with clients. Items include, “How often do you discuss physical activity with your clients?” and “How often do you counsel

physical activity for the purpose of preventing mental/psychiatric disorders?” Previous use of this scale with Swedish mental health professionals indicates good reliability with an alpha score of .85 (Olofsgard). For this study, the alpha coefficient of the frequency scale was .87.

Behavior of physical activity counseling. The behavior of physical activity counseling scale (Behavior) was based on Olofsgard’s (2009) Behavior in Physical Activity scale. One additional item was added to her 6-item scale. Students rated the 7-item scale along a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*). Items were summed to arrive at a total score, with higher scores reflecting greater frequency of methods and procedures used by participants when counseling physical activity with clients. Items include, “How often do you document your clients’ current level of physical activity?” and “How often do you refer your clients to an exercise specialist?” Previous use of the original 6-item Behavior scale with Swedish mental health professionals indicated an alpha coefficient of .68 (Olofsgard). For the 7-item modified Behavior scale in this study, the alpha coefficient was .77.

Knowledge about Physical Activity. Knowledge of physical activity was based on Olofsgard’s (2009) Knowledge in Physical Activity scale. One additional item was added to her 2-item scale. Students rated the 3-item scale along a 5-point Likert scale ranging from 1 (*poor/no knowledge*) to 5 (*excellent*). Items were summed to arrive at a total score, with higher scores reflecting greater self-reported knowledge of physical activity in the prevention and treatment of mental illness. Items include, “How would you rate your knowledge about the effects (therapeutic/preventive) of physical activity on mental/psychiatric disorders?” and “How would you rate your knowledge about the minimum physical activity guidelines set by the American College of Sports Medicine (ACSM) and the American Heart Association

(AHA)?” No reliability was reported for the original 2-item Knowledge scale (Olofsgard, 2009). For the 3-item modified Knowledge scale in this study, the alpha coefficient was .70.

Attitude toward physical activity counseling. Attitude toward physical activity counseling was based on Olofsgard’s (2009) Attitude toward Physical Activity Counseling scale. Two items were removed from her 5-item scale because they were more related to training than to attitude. Students rated two of the three items along a 5-point Likert scale ranging from 1 (*highly negative*) to 5 (*highly positive*). Items were summed to arrive at a total score, with higher scores reflecting a more positive attitude towards the role of physical activity in the prevention and treatment of mental illness. The first two items include, “What is your attitude toward using physical activity in the prevention of mental/psychiatric disorders?” and “What is your attitude toward using physical activity in the treatment of mental/psychiatric disorders?” Participants rated the third item, “There are barriers to using physical activity in prevention and treatment within mental health” along a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The third item was reversed scored. For the 3-item modified Attitude scale in this study, the alpha coefficient was .38. However, when the third item was removed the alpha coefficient improved to .84. Similarly, in Olofsgard’s original 5-item Attitude scale, the reliability coefficient with the barrier variable was .58, but when it was removed, the alpha coefficient improved to .68. After examining the reliabilities of Olofsgard’s original scale and the present Attitude scale, it was concluded that the barrier variable was not a good fit for the Attitude scale and it was determined that for all remaining analyses, the Attitude scale would only include 2-items.

Training of physical activity counseling. Training of physical activity counseling scale was partially based on Olofsgard’s Attitude scale, but the items were reworded to fit a

graduate school population instead of a professional population. For example, Olofsgard's item, "My management supports the use of physical activity in my work with patients" was changed to "My training program supports the use of physical activity in my work with clients." Similarly, Olofsgard's item, "My colleagues support the use of physical activity in my work with patients" was changed to "My peers in my graduate program support the use of physical activity in my work with clients." Students rated the 4-item scale along a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Items were summed to arrive at a total score, with higher scores reflecting higher levels of training in physical activity counseling. The two additional items include, "I have been trained in physical activity counseling" and "My professors' support the use of physical activity in my work with clients." For the 4-item Training scale in this study, the alpha coefficient was .77.

Personal level of physical activity. The International Physical Activity Questionnaire-Short Form (IPAQ), developed by the IPAQ Research Committee in (2005), was used to assess personal physical activity levels of the mental health students. The IPAQ was developed with the aim of determining self-reported levels of physical activity with populations' aged 15-69 (similar to this study's population). Specifically, the short form of the IPAQ determines scale scores on walking, moderate-intensity, and vigorous-intensity activity, in addition to a total score for all physical activity. The short form of the IPAQ has been used extensively in the literature and has established validity and reliability with acceptable levels of criterion-related validity ($\rho = 0.3$), test-retest reliability (intra-scale correlations range from 0.7-0.8) and moderate reliability for assessing total minutes of physical activity (intra-scale correlations 0.68) (Bauman et al., 2009). Prior to analyzing the data, the published IPAQ data cleaning steps were followed. Cases were removed from

analysis where data was missing for time or days. One case was re-coded from three minutes of moderate activity to zero minutes because only values of 10 or more minutes of activity are valid data. Also, two participants indicated an impossible amount of moderate activity minutes per week (>40,000) and both cases were removed from analyses. After the data was cleaned, IPAQ short-form scoring protocol was followed. For each participant, the number of days of exercise were multiplied by the reported duration (hours per day or minutes per day) for each level of physical activity (walking, moderate, vigorous) and then converted to minutes by week (MET) by multiplying the total number of minutes by 3.3 (walking), 4.0 (moderate), and 8.0 (vigorous). The mental health student's overall level of physical activity was obtained by summing the MET and resulted in a continuous variable of personal level of physical activity.

Data Analysis

Primary data, collected by the Inquisite survey company, was downloaded into an Excel file, and adapted for data analyses. The Excel file was imported to SPSS Statistics 19.0 (SPSS Inc., Illinois, USA), and was used for calculation of all descriptive and inferential statistics. To begin, all data was inspected for conformance to the assumptions of the General Linear Model (GLM; Tabachnick & Fidell, 2007). First, the assumptions of normality, outliers, multicollinearity and missing values were examined using SPSS. Survey data was then analyzed using descriptive statistics. Frequencies and percentages were computed on demographic and scale variables and scales. Next, correlations among all study variables, including demographic variables (e.g., gender, mental health domain, race/ethnicity, and geographic region), were calculated.

After the assumptions were met and frequencies and correlations were examined, hypothesis testing began. To test hypothesis one, *graduate students' attitude towards the use of physical activity in counseling, knowledge about the effects of physical activity on mental disorders, training in the use of physical activity in counseling, and personal level of physical activity, would significantly predict frequency of using physical activity in counseling with clients*, a multiple regression was used with attitude, knowledge, training, and personal level of physical activity as the predictors and frequency as the outcome. A multiple regression was used because there are no a-priori hypotheses regarding the amount of variance each predictor would contribute to the overall model. This analysis demonstrated the amount of variance each predictor contributed as well as the overall predictive ability of the model (Tabachnick & Fidell, 2007).

Hypothesis two, *There will be significant differences between the graduate students in the five mental health domains (clinical psychology, counseling psychology, social work, rehabilitation counseling, and psychiatric nursing) in their: Frequency of using physical activity in counseling, Behavior of using physical activity in counseling, Attitude toward use of physical activity in counseling, Knowledge about the effects of physical activity on diseases and mental disorders, Training in the use of physical activity in counseling, Personal level of physical activity*. To test hypothesis two, a series of one-way ANOVAs were conducted to determine if the five groups were significantly different on each of the outcome variables (Tabachnick & Fidell, 2007).

Results

Statistical Assumptions

Prior to running analyses, the data set was examined to meet the assumptions of the General Linear Model (GLM). The dataset was reviewed for missing data, multicollinearity, and univariate and multivariate normality. To meet the assumptions for univariate normality, the data was assessed for outliers and by examining skewness and kurtosis statistics. To review the data for outliers, variables were transformed into z-scores. Two variables, attitude toward the use of physical activity in counseling and personal level of physical activity, had outliers. The attitude variable had a single participant whose z-score was above the suggested 3.29 standard deviations from the mean (Tabachnick & Fidell, 2007). Based on Tabachnick and Fidell's standard, the outlier with a z-score of -6.12 was excluded from analysis of the attitude scale. In regards to the personal physical activity variable, guidelines for data cleaning were followed for the IPAQ and cases with missing data were removed from analysis and values less than 10 minutes of activity were recoded to zero (see measures above). Additionally, because the personal physical activity variable was both kurtotic (2.97) and had outliers, the variable was transformed using log transformation. After transformation, the personal level of physical activity variable was no longer kurtotic (.02), nor were there any outliers. All other variables, frequency, behavior, knowledge, and training, were within the standard -1 to 1 range in their skewness and kurtosis statistics (Tabachnick & Fidell).

To check for multivariate normality, multivariate outliers and multicollinearity of the data was reviewed. To assess for multicollinearity, inter-correlations among all variables were performed by examining Tolerance and VIF scores. The assumption of

multicollinearity was met because all Tolerance scores were greater than .10 and all VIF scores were less than 10 (Tabachnick & Fidell, 2007). Further, the data was assessed for multivariate outliers using Mahalanobis distance and all variables were below the 18.47 critical value.

Descriptive Statistics

The means and standard deviations for all key variables analyzed in the present study are presented in Table 2.

Table 2.

Means and standard deviations for all predictor variables.

Scale	Mean	SD	N
Frequency	14.26	4.07	251
Behavior	18.82	4.74	236
Knowledge	7.84	2.47	280
Attitude	9.22	1.02	241
Training	11.95	2.66	275
Personal Level of Physical Activity	2009.45	1910.04	265

Note. N ranged from 236 to 280 due to missing data.

On average, participants indicated that they have not been trained in physical activity counseling and reported agreeing that their graduate programs support the use of physical activity with their clients. In addition, participants appeared to have an overall positive attitude towards the use of physical activity in the prevention and treatment of psychiatric disorders. In regards to knowledge of the role of physical activity in the treatment of mental disorders, participants in the study on average reported fair to poor knowledge. Furthermore, on average, participants reported that they sometimes or seldom discussed or counseled their

clients on physical activity and sometimes or seldom referred their clients to exercise specialists or other health care providers for concerns related to physical activity. Also, on average participants reported moderate levels of physical activity.

Correlations among Predictor Variables

Pearson correlations were conducted between all predictor variables and are presented in Table 3. Significant positive correlations were found among all predictor variables, with the exception of a marginally significant association between personal levels of physical activity and training, and personal level of physical activity and knowledge. That is, participants who endorsed higher levels of personal physical activity were more likely to be trained in the use of physical activity in counseling. Similarly, those participants whose reported higher levels of personal physical activity were more likely to be knowledgeable about the role of physical activity in mental disorders. As expected, significant positive correlations were found between training and the four predictor variables, knowledge, frequency, attitude, and behavior. Those participants who were more trained in using physical activity in counseling reported higher knowledge in the role of physical activity in counseling. Additionally, those who reported more training also reported higher frequency of using physical activity in their work with clients. Furthermore, those who reported higher levels of training were also more likely to have a positive attitude towards the use of physical activity in treatment and prevention of mental disorders. And those who reported high levels of training were also more likely to report positive behaviors related to the use of physical activity in counseling, such as documenting their client's level of physical activity or referring their client to an exercise specialist.

Moreover, participants who reported to be more physically active were more likely to report that they frequently used physical activity in their work with their clients. Similarly, participants who endorsed higher levels of personal physical activity were also more likely to report a more positive attitude towards the use of physical activity in the prevention and treatment of mental disorders. Finally, participants who reported higher levels of personal physical activity were more likely to report that they regularly engage in behaviors such as follow-up on their physical activity advice or referral to a health care professional after discussing physical activity with their clients.

Knowledge of the role of physical activity in the treatment of mental illness and somatic disorders was also significantly associated with positive attitude towards physical activity in the treatment and prevention of psychiatric disorders in this sample of graduate students. Being more knowledgeable in physical activity was also significantly correlated with frequency of using physical activity in session. As expected, those that reported higher levels of knowledge were more likely to report that they discussed physical activity with their clients. Similarly, those with perceived higher levels of knowledge also endorsed using more behaviors associated with physical activity in their work with clients. For example, those that were higher in their knowledge about the ACSM and AHA minimum physical activity guidelines reported that they were more likely to refer their client to an exercise specialist.

Frequency of the use of physical activity with clients was also significantly correlated with both attitude and behavior. For instance, participants who endorsed more positive attitude towards the use of physical activity in the prevention and treatment of psychiatric disorders also reported higher frequency of using physical activity in their counseling. Similarly, those participants who reported higher frequency of using physical activity with

their clients were also more likely to report behaviors such as documenting their client’s level of physical activity or documenting their physical activity advice. Lastly, participants who endorsed a more positive attitude towards physical activity in counseling were also more likely to report that they used behaviors associated with physical activity, such as, discussing the client’s motivation to change their physical activity habits or referring their clients to exercise specialists.

Table 3.

Correlation matrix of predictor variables.

Scales Behavior	Training	Personal PA	Knowledge	Frequency	Attitude	
Training	--					
Personal PA	0.12+	--				
Knowledge	0.32**	0.11+	--			
Frequency	0.36**	0.20**	0.41**	--		
Attitude	0.20**	0.20**	0.26**	0.31**	--	
Behavior	0.31**	0.14*	0.33**	0.53**	0.20**	--

Note. N ranged from 236 to 338 due to missing data.

+ $p < .10$, * $p < .05$, ** $p < .01$

Knowledge. Participants reported on their perceived knowledge related to the association of physical activity and mental health as presented in Table 4. Approximately one quarter of respondents indicated that they had no knowledge or fair knowledge about the therapeutic and preventative effects of physical activity on mental disorders; another one quarter of participants reported very good or excellent knowledge about the therapeutic and preventative effects of physical activity on mental disorders. For the next two items on the scale, there was more of a difference between the participants who reported more knowledge

versus those that reported fair or poor knowledge. That is, 46% of participants reported that they had poor or fair knowledge about the preventative or therapeutic effects of physical activity on somatic diseases and symptoms, whereas only 19% of participants indicated that they had very good to excellent knowledge about physical activity and somatic diseases. Similarly, 63% of respondents reported that they have poor or fair knowledge about the minimum physical activity guidelines by the ACSM and AHA, whereas only 18% of participants reported that they have very good to excellent knowledge about the guidelines. Descriptive statistics of the knowledge scale are presented in Table 4.

Table 4.

Knowledge of physical activity.

	Poor/No Knowledge & Fair	Very Good & Excellent	<i>N</i>
Therapeutic/ Preventive effects of PA on mental/ psychiatric disorders	26%	26%	282
Therapeutic/ Preventive effects of PA on somatic diseases and symptoms	46%	19%	280
Minimum PA Guidelines by ACSM & AHA	63%	18%	282

Note. *N* ranged from 280 to 282 due to missing data.

Attitude. Participants also reported on their attitudes towards the use of physical activity in mental health. Overall, participants reported primarily positive attitudes toward the use of physical activity in the prevention and treatment of mental disorders. Zero percent of participants stated that they have a highly negative or somewhat negative attitude toward the use of physical activity in prevention and only 1% of participants reported a highly

negative to somewhat negative attitude toward the use of physical activity in the treatment of mental illness. Descriptive statistics of the attitude scale are presented in Table 5.

Table 5.

Attitude towards using physical activity in mental health.

	Highly & Somewhat Negative	Somewhat & Highly Positive	<i>N</i>
Attitude toward use of PA in prevention of mental/psychiatric disorders	0%	89%	278
Attitude toward use of PA in treatment of mental/psychiatric disorders	1%	92%	275

Note. *N* ranged from 275 to 278 due to missing data.

Personal Physical Activity. In the present study, there were no significant differences between the mental health domains (clinical psychology, counseling psychology, social work, rehabilitation counseling, and psychiatric nursing). See hypothesis 2 below for details. Overall level of physical activity for the participants was in the moderate range according to the IPAQ standards ($M = 2009.45$).

Gender. In the present study, independent samples t-tests were used to determine whether there were gender differences among the key variables of interest. However, no significant relationships were found. There was no significant relationship between gender and personal level of physical activity, $t(261) = -1.05, p = .30$, gender and mental health domain, $t(361) = 1.02, p = .31$, gender and training in physical activity counseling, $t(271) = -.40, p = .69$, gender and knowledge of physical activity, $t(275) = -.19, p = .85$, gender and attitude towards the use of physical activity in counseling, $t(40.93) = .71, p = .48$, gender and

behavior of the methods and procedures of using physical activity in counseling, $t(232) = .23$, $p = .82$, and gender and frequency of using physical activity in counseling, $t(246) = -.30$, $p = .77$.

Analyses of Specific Aims

The first aim of this study was to examine the role of physical activity in the work of graduate students in mental health. This aim was explored through the frequency and behavior scales, and through additional items related to using physical activity in counseling. Participants reported their frequency of using physical activity in their work with clients as presented in Table 6. Twenty percent of participants indicated that they never or seldom discuss physical activity with their clients, while 35% reported that they often or always discuss physical activity. Approximately one-third of participants reported that they often or always counsel their clients in physical activity, whereas 30% indicated that they never or seldom counsel physical activity. The discrepancy was larger between the 43% of participants who reported that they never or seldom counsel physical activity for the prevention of mental disorders, whereas only 22% of participants reported that they often or always counsel from a prevention approach. An even number of participants reported that they either often or always counsel physical activity for the treatment of mental disorders, versus never or seldom counsel it for treatment purposes (29%, $N = 302$). Finally, 36% of participants reported that they never or seldom counsel physical activity for somatic diseases and only 18% stated that they often or always counsel physical activity related to somatic diseases. Table 6 presents participants' responses on their current frequency of use of physical activity with their clients.

Table 6.

Frequency of discussing and counseling physical activity.

	Never & Seldom	Often & Always	<i>N</i>
Discussing PA	20%	35%	304
Counseling PA	30%	28%	301
Counseling PA for Prevention of Mental Disorders	43%	22%	302
Counseling PA for Treatment of Mental Disorders	29%	29%	302
Counseling PA for Somatic Diseases	36%	18%	302

Note. *N* ranged from 301 to 304 due to missing data.

In addition to frequency, the first aim of the study was also examined through participants' ratings of their own behavior associated with physical activity counseling as presented in Table 7. Fifty three percent of participants reported that they never or seldom document their client's current level of physical activity, while only 16% often or always document it. Almost three-quarters of participants reported that they never or seldom refer their clients to an exercise specialist, whereas only 2% often or always refer. Thirty seven percent of respondents never to seldom (37%) document the physical activity advice they give to their clients, while 35% often to always document their physical activity advice. Twenty three percent of participants reported that they never to seldom discuss their clients' motivation to change their physical activity behavior, while 39% of participants reported that they do discuss their clients' motivation to change. Only 13% of respondents reported that they seldom to never give verbal physical activity advice, whereas 51% reported that they do give verbal advice. Seventy one percent of participants reported that they never to seldom

refer their clients to another healthcare professional while 4% reported that they often to always refer. Finally, 21% of participants stated that they never or seldom follow-up on their physical activity advice, while 41% of participants reported that they often or always follow-up. Table 7 presents participants' responses on their current behavior associated with the use of physical activity.

Table 7.

Behavior of discussing and counseling physical activity.

	Never & Seldom	Often & Always	<i>N</i>
Document clients current PA level	53%	16%	302
Refer to exercise specialist	74%	2%	304
Document PA advice	37%	35%	302
Discuss clients' motivation to change their PA behavior and comply with advice	23%	39%	300
Verbal PA advice	13%	51%	300
Refer to another health care professional	71%	4%	302
Follow-up on PA advice	21%	41%	301

Note. *N* ranged from 300 to 304 due to missing data.

Participants responded to additional questions related to physical activity counseling. Eighty one percent of participants cited “promote general well-being” as the primary reason for discussing physical activity with their clients (*N* = 289). Eighty percent of participants reported that they counseled physical activity for clients with depression and also clients with anxiety (*N* = 289). Ninety percent of participants reported that they use verbal advice to discuss physical activity with their clients (*N* = 286). In responses to the question, “what

does your physical activity advice contain?" ($N = 286$), 83% of participants reported mode (type of activity); 72% reported frequency (how many times per week); 56% reported duration (how many minutes each time); 26% reported restrictions; 20% reported intensity (grade of effort); and 14% reported duration of the exercise program (number of weeks). Additionally, students reported that they use various theories and experience to guide their discussion on physical activity behavior change: 58% of participants reported that they use the clinical knowledge about motivation acquired through client interactions; 55% reported using motivational interviewing; 31% reported that they do not use a special consultation technique or behavior change model; 28% reported that they use the Stages of Change Model-Transtheoretical Model (TTM); and 6% use Social Cognitive Theory (SCT) ($N = 286$). Seventy three percent of participants reported that they discuss physical activity with their clients' midway through treatment; 41% reported that they discuss physical activity at intake; and 20% reported that they discuss physical activity at termination ($N = 288$). Furthermore, 80% of participants reported that they do not exercise with their clients during treatment, while 20% endorsed that they do exercise with their clients ($N = 287$). For participants that endorsed exercising with the clients during treatment, 64% reported that they use physical activity as a method of helping the client open up more fully in subsequent therapy and 59% reported that they use exercising with their clients to help start the physical activity habit ($N = 58$). Moreover, for those that exercise with their clients during treatment, 64% reported treating their clients during walk-talk therapy; 53% reported that they engage in non-competitive exercise (e.g., throwing softball, shooting hoops); and 7% reported run-talk therapy with their clients ($N = 58$). Seventy two percent of participants reported that they typically follow-up with their clients on physical activity advice ($N = 289$). One

hundred percent of participants ($N = 208$) reported that they follow-up the next time they see their clients, while 3% reported that they follow-up with a phone call and 2% reported that they follow-up with an email.

Lastly, 49% of participants reported that there are “clients or situations where you would consider exercising with them to be contra-indicated,” whereas, 51% indicated that there are no situations where exercise is contra-indicated ($N = 277$). When asked to list in what situations and for which clients is exercise contra-indicated, 127 participants wrote examples, including, 70 participants cited physical health concerns of clients; 45 participants reported concern about clients with eating disorders; 10 reported concern about clients who were psychotic or unstable; 2 reported concern about clients with recent trauma; and two reported concern about physical activity counseling in inpatient settings.

The second aim of this study was to examine the training of graduate students in mental health. Training, the primary outcome variable for this study, was measured through the training scale and additional items related to training. Table 8 presents participants’ responses to the training scale questions regarding their training experience in physical activity counseling. Descriptive statistics indicated that 75% of participants ($n = 211$) reported that they disagree or strongly disagree with the statement that I have been trained in physical activity counseling, while 10% ($n = 27$) reported agreed or strongly agreed that that they have been trained. Further, participants reported that they agree to strongly agree that their training program, professors, and peers support the use of physical activity in their work with client, 35%, 39%, and 49%, respectively; whereas, participants reported that they strongly disagree to disagree that their training program, professors, and peers support the use of physical activity in their work with clients, 22%, 15%, and 9%, respectively.

Table 8.

Training of the use of physical activity.

	Strongly Disagree & Disagree	Agree & Strongly Agree	<i>N</i>
My training program supports the use of PA in my work with clients	22%	35%	281
My professors support the use of PA in my work with clients	15%	39%	280
My peers in my graduate program support the use of PA in my work with clients	9%	49%	277
I have been trained in PA counseling	75%	10%	280

Note. *N* ranged from 277 to 281 due to missing data.

Participants also answered additional questions about training. Eighty six percent ($n = 239$) of participants stated that they would like to have training in physical activity counseling included in their educational programs, while 14% ($n = 40$) indicated that they would not. In response to the question, “what type of training would be most helpful to you” ($N = 240$), 81% of participants reported that “research on the use of physical activity in the treatment of psychological disorders;” 73% of participants reported “information about the psychological and social benefits of physical activity;” 69% of participants reported “information about the minimum physical activity guidelines set by the ACSM and the AHA;” 68% reported “referral information about exercise specialists;” 52% reported “training on how to follow-up with clients about physical activity advice;” 46% reported “training on how to ask about physical activity during intake.” Further, participants wrote 25 additional types of training in the open answered box including, the information about

liability, ethics, and scope of practice; general physical activity information, continuing education opportunities related to physical activity; how to use physical activity with specific clients (e.g., eating disorders, families with limited resources, medically complex); how and what to ask; and more training in motivational interviewing.

In response to the question, “what do you believe would help facilitate the training and use of counseling physical activity in your graduate program?” ($N = 270$), 74% of participants reported “education on physical activity;” 70% reported “easily accessible guidelines with routines and methods for physical activity counseling;” 63% reported “access to the latest research on the links between physical activity in the prevention and treatment of disease;” 51% reported “education on motivational interviewing.”

The third aim of this study was to examine the perceived barriers the mental health students held when addressing physical activity in counseling. Participants rated the statement, “there are barriers to using physical activity in prevention and treatment within mental health,” on a 5-point Likert scale ranging from (*strongly disagree*) to (*strongly agree*). Seventy four percent ($n = 208$) of participants strongly agree that there are barriers, whereas only nine percent ($n = 24$) disagree or agree that there are barriers ($N = 280$). Out of a list of possible barriers to addressing physical activity in counseling, participants most frequently reported “inadequate training about how to counsel physical activity” (70%), “due to lack of time during client’s visit, counseling of physical activity has a low priority” (53%), “I don’t know to whom I may refer a client that needs to be more physically active” (44%), “my clients are not interested in getting advice for physical activity” (37%), “I have insufficient knowledge about counseling physical activity” (34%), “I believe my clients expect to get psychotherapy/ psychopharmacology and not counseling about physical

activity” (28%), and “insufficient routines in following up physical activity advice” (23%). The three barriers least reported by the participants were, “I do not have time to follow-up the clients’ advice about physical activity” (8%), “I do not have time to learn a new methodology” (4%), and “I do not consider it is scientifically proven that physical activity is beneficial for the disorders I treat” (2%). Further, participants wrote 48 additional barriers in the other barriers open answered box including, the perceived cost related to exercise (e.g., gym membership, transportation, referral to exercise specialist), not knowing when to consult a physician or health care professional, low motivation of client, when exercise is contra-indicated, physical restrictions of client, when safety of client is the first priority, and compliance to treatment. Additionally, participants named the following barriers, “protocols don’t allow me to counsel physical activity, but I think it’s a great idea,” “not encouraged by my agency. It’s seen as a taboo/sensitive area,” “due to inadequate training and not being my specialty there is an increased fear of being sued,” and “I don’t want to inadvertently send the message, ‘well, you’d be less dissatisfied with life if you just lose weight.’” Results indicate that there are a plethora of barriers that were perceived by the graduate students in this study.

Hypothesis Testing

After examining the relationships between demographic variables and the main variables of interest for this study, analyses to test this study’s hypotheses were conducted. Hypothesis 1 indicated that *graduate students’ attitude towards the use of physical activity in counseling, knowledge about the effects of physical activity on mental disorders, training in the use of physical activity in counseling, and personal level of physical activity, would significantly predict frequency of using physical activity in counseling with clients.* It asserted that those graduate students’ attitude, knowledge, training, and personal level of

physical activity would be significant predictors of their frequency of discussing and counseling physical activity with their clients. A multiple regression analysis was conducted to examine the predictors of the frequency of using physical activity in counseling. Four predictors were simultaneously entered into the model: Attitude toward use of physical activity in counseling, Knowledge about the effects of physical activity on diseases and mental disorders, Training in the use of physical activity in counseling, and Personal level of physical activity. The multiple regression is presented in Table 9. Together, these predictors accounted for 25% of the variance in the frequency of using physical activity in counseling. All of the variables except for personal level of physical activity were significant predictors of frequency of using physical activity in counseling, $F(4, 192) = 15.57, p < .001$. Knowledge of physical activity ($\beta = .28$), training in the use of physical activity in counseling activity ($\beta = .22$), and attitude toward the use of physical activity in counseling ($\beta = .17$), were positively associated with frequency.

Table 9.

Predictors of the frequency of the use of physical activity in counseling.

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t Value	p Value
Knowledge	.46	.11	.28	4.23	.000**
Training	.34	.10	.22	3.33	.001**
Attitude	.74	.28	.17	2.62	.010*
Personal Level of PA	.38	.23	.11	1.681	.094+
(Constant)	-2.97	2.78		-1.07	.287

+ $p < .10$, * $p < .05$, ** $p < .01$

The second hypothesis stated that *there will be significant differences between the five mental health domains (clinical psychology, counseling psychology, social work, rehabilitation counseling, and psychiatric nursing) in their frequency of using physical activity in counseling, behavior of using physical activity in counseling, attitude toward use of physical activity in counseling, knowledge about the effects of physical activity on diseases and mental disorders, training in the use of physical activity in counseling, and personal level of physical activity.* It was expected that there would be significant differences in each of the variables based on the different mental health domains. A series of one-way ANOVAs were performed to compare the five mental health domains with the variables of interest (frequency, behavior, attitude, knowledge, training, personal levels of physical activity). The first one-way ANOVA comparing the mental health domains by their frequency of using physical activity in counseling was statistically significant $F(5, 244) = 4.45, p < .01$. Post hoc Tukey tests revealed that the significant difference between domains was found between psychiatric nursing ($M = 16.68$) and three of the other domains: social work ($M = 13.84$), clinical psychology ($M = 13.70$), and rehabilitation counseling ($M = 10.63$). Psychiatric nursing students more frequently discussed and counseled their clients on physical activity than social work, clinical psychology, or rehabilitation counseling students. The second one-way ANOVA comparing the mental health domains by their knowledge of physical activity in the treatment of mental disorders and somatic diseases was statistically significant $F(5, 273) = 4.29, p < .01$. Similar to the previous analysis, post hoc Tukey tests revealed that the significant difference between domains was found between psychiatric nursing students ($M = 9.43$) and all four other mental health domains: counseling psychology ($M = 7.71$), social work ($M = 7.65$), clinical psychology ($M = 7.60$), and rehabilitation counseling ($M = 5.88$),

with the psychiatric nursing students reporting more knowledge about the use of physical activity in mental health and somatic diseases than students in clinical and counseling psychology, social work, and rehabilitation counseling. The third one-way ANOVA comparing the mental health domains by their behavior associated with using physical activity in counseling was marginally significant $F(5, 229) = 2.32, p = .05$. Post hoc Tukey tests were reviewed and revealed no significant differences between domains. In the fourth one-way ANOVA comparing the mental health domains by their personal level of physical activity, no significant relationship was found $F(5, 258) = 0.91, p = .48$. In the fifth one-way ANOVA comparing the mental health domains by their training associated with the use of physical activity in counseling, no significant relationship was found $F(5, 268) = .63, p = .68$. The sixth and final one-way ANOVA comparing the five mental health domains by their attitude towards the use of physical activity in the prevention and treatment of psychiatric disorders also revealed no significant relationship $F(5, 233) = .59, p = .71$.

Discussion

Previous literature has established a link between physical activity and mental well-being (Daley, 2008; Dubbert, 2002; Hays, 1999; Stathopoulou et al., 2006). This study is the first to address the role of physical activity in the training of graduate students in mental health. In this exploratory study, frequency and behavior of physical activity counseling, knowledge of the relationship between physical activity and wellbeing, attitude towards physical activity counseling, training in physical activity, and personal levels of physical activity were examined. Gaining a better understanding of the variables that influence the use of physical activity counseling, including the role of training in physical activity, can help to improve graduate programs in mental health.

Overall, results indicate that there are gaps in training in physical activity counseling for graduate students in mental health. Based on the findings, (a) training education on physical activity in counseling is rarely provided to trainees, with only 10% of graduate students indicating they have been trained in physical activity counseling; (b) there is an interest in gaining physical activity training among 86% of graduate students; (c) knowledge, positive attitude, and more training significantly predicted use of physical activity in counseling; and (d) psychiatric nursing graduate students reported significantly higher knowledge and use of physical activity in their work with patients.

Specific Aims

Frequency and Behaviors associated with Physical Activity Counseling

The first aim of this study was to examine the frequency and behavior of physical activity counseling in graduate mental health students. Approximately one-third of mental health trainees in this study discussed physical activity with their clients. These findings are lower than in previous research with mental health professionals where nearly all (98%) discussed the importance of physical activity with their patients (Olofsgard, 2009). However, Olofsgard conducted her study on Swedish mental health professionals who had a standard protocol of physical activity counseling with patients. Results from this study also vary from Barrow, English, and Pinkerton (1987) who reported that 52% of the 196 psychologists they surveyed discuss physical activity “occasionally,” while 10% recommend it “all the time.” Similarly, McEntee and Halgin (1996) argued that while most therapists engage in personal physical activity, very few use physical activity as an intervention with their clients. The results of this study are more consistent with the second half of McEntee and Halgin’s argument. It was found that very few students reported the use physical activity

interventions with their clients. This finding is consistent with Hay's (1999) claim that only a small percentage of mental health practitioners discuss physical activity with their clients.

Additionally, mental health students used physical activity in counseling less frequently in comparison to the professionals in Olofsgard's (2009) work. For instance, 28% of students in this study counsel their clients on the importance of physical activity, 22% counsel physical activity for the purpose of preventing mental disorders and 29% counsel physical activity for the treatment of mental disorders. These percentages compare with Olofsgard's work, counseling 55%, 39%, 52% treatment, respectively. These professionals used physical activity counseling with their patients as part of their protocol.

In this study, the trainees were asked many different behaviors related to methods and procedures of physical activity counseling. Similar to the results on frequency, 74% of trainees in this study seldom to never refer their clients to exercise specialists, whereas 73% of Olofsgard's (2009) Swedish mental health professional population reported to refer at some point. When asked about their reasons for using physical activity in counseling, promotion of general well-being (81%) was the most frequently cited reason. This outcome is consistent with the results of Olofsgard's study with Swedish mental health professionals. These consistent results indicate that clinicians in both studies use physical activity to promote general well-being with their clients.

Further, both frequency and behavior associated with physical activity counseling were significantly correlated with several variables in this study. Correlations between frequency and knowledge were the highest suggesting that if mental health students are more knowledgeable about the connection between physical activity and mental health, they are more likely to use physical activity in counseling with their clients. Similarly, training was

also correlated with frequency. This is an important correlation because it suggests that if graduate students are trained in physical activity counseling, they may be more likely to use it with their clients. This conclusion is supported by Dixon, Hall, and Mauzey (2003) who strongly encouraged more training in the use of physical activity in order to increase the number of mental health practitioners using physical activity in their counseling. Frequency and behavior were also significantly correlated with each other, which is consistent with Olofsgard's (2009) work. Thus, the results from this study suggest that the frequency of using physical activity counseling and the behaviors associated with using physical activity counseling often occur in sequence. One limitation of these scales and questions is that they have only been used once before in Olofsgard's study, a non-peer reviewed Master's thesis. In future research, more extensive measures of frequency and behavior of physical activity counseling should be utilized to gain a more complete picture of frequency and behavior of physical activity counseling.

Eighty percent of participants reported that they counseled physical activity for clients with depression and clients with anxiety. This rate is consistent with the research that supports the use of physical activity in the treatment of depression and anxiety (Daley, 2008; Stathopoulou et al., 2006). Additionally, over half of the participants use motivational interviewing or basic clinical knowledge about motivation to guide their discussion on physical activity change, while one third of the sample reported that they do not use a special consultation technique or behavior change model. More research is needed to determine if one particular framework (e.g., Motivational Interviewing, Transtheoretical Stages of Change Model, Social Cognitive Theory) provides the best approach to address clients in a mental health setting. Research from exercise science perspectives suggests that using a theoretical

behavior change framework, is necessary, to create change in clients (Smits & Otto, 2009). Interestingly, three quarters of participants reported that they discuss physical activity with their clients' midway through treatment, while only 41% reported that they discuss physical activity at intake, and 20% reported that they discuss physical activity at termination. Because there is no literature on the timing of physical activity counseling in mental health, further research is needed to determine the best timeline for discussing physical activity with clients.

The *Exercise is Medicine* initiative strongly encourages physicians and other health professionals to ask two questions about physical activity in one minute every time they see their patients (Sallis, 2011). More research is needed to determine if mental health professionals should mirror that precedent. In addition to timing of physical activity counseling, more research is needed on what type of information mental health practitioners should incorporate (e.g., mode, frequency, duration, intensity, restrictions) as many of the trainees in this study only discuss mode and frequency in their physical activity counseling. Furthermore, it was found that 20% of trainees exercise with their clients. More research is needed to determine specific types of exercise that are generally appropriate for different populations of individuals, as well as how to best decide which exercise to use with specific clients.

Training

The second aim of this study was to examine the training of graduate students in mental health. This study found that mental health graduate students receive minimal, if any, training about physical activity. Ten percent of participants reported that they have received training in physical activity. When asked to discuss the types of training, most reported

Motivational Interviewing and training outside of their graduate program, such as during internship or in their personal life. Only one third of the participants reported that their actual training program supports the use of physical activity counseling. Additionally, 86% of the students reported that they would like training in physical activity counseling. These results are consistent with Dixon, Mauzey, and Hall (2003) who claimed that there is a need important for counselors to be trained on the relationship between physical activity and mental health interventions.

Therefore, this study demonstrated a need for training in the use of physical activity with mental health providers. This need for training on the use of physical activity in counseling has been emphasized in the literature (Dixon et al., 2003; Hays, 1999). Low percentages of students being trained combined with a high percentage of students that would like to be trained strongly demonstrated a need for more training. Results of this study support earlier findings of medical students who believed it would be important to future practice to counsel patients about physical activity (Frank et al., 2004). Participants in this study reported wanting to be trained in the basic knowledge of the connection between physical activity, information about the psychological and social benefits of physical activity, ACSM & AHA minimum guidelines of physical activity, and research about physical activity and mental health. Dixon and colleagues (2003) argue that counselors should have the knowledge to provide general information about the mental and physical benefits of physical activity. The results of this study suggest that students are not being trained in the knowledge necessary to meet the expectations of Dixon and colleagues. However, these current results showing students' desire to be trained and their stated specific training needs can serve to inspire programs to provide this much needed training. In spite of a documented

need for this training in medical and psychological literature, there is little collaboration between mental health and physical activity programs. Relationships between these programs appear to be lacking and are in need of further study.

Further, the results in this study suggest that basic training for graduate students is needed. Specifically, training in how to determine when physical activity is relevant to clients, how to ask assess for physical activity level at intake, how to consistently discuss physical activity, how to use specific frameworks, and how to follow-up on physical activity advice, are needed. In previous research, frameworks such as Motivational Interviewing, Transtheoretical Model of Change (Prochaska, Norcross, & DiClemente, 1994), Social Cognitive Theory (Bandura, 1986) were used guide interventions. It will be important to include these frameworks in future training.

Also, future training should focus on assessment of when physical activity is contra-indicated. This notion is supported by Hays (2010a) who suggests that it is imperative to assess for contra-indication and to refer to a medical professional if you are unsure. Graduate students in this study suggested that with clients with eating disorders or physical health concerns, a consultation from a health care professional is necessary. Following the recommendation of the ACSM & AHA and the *Exercise is Medicine* movement, clinicians could use the PAR-Q to assess for physical activity readiness (Sallis, 2009; Thomas, Reading, & Shephard, 1992). Additionally in this study, clients working on trauma, safety, psychosis, and unstable inpatients were also cited by participants as clients for whom physical activity might be contra-indicated. Finally, the results of this study indicate that almost three quarters of the students reported that easily accessible guidelines with routines and methods for physical activity counseling would help facilitate the training and use of

counseling physical activity in their graduate program. Therefore, training should include a basic protocol with routines and methods for addressing physical activity in counseling.

Barriers

The third aim of this study was to examine the barriers mental health students perceive in addressing physical activity in counseling. While this study demonstrated a need for students to have additional training in physical activity counseling, there are a number of barriers that trainees currently face. The barriers perceived by participants in this study are consistent with the barriers in the research (Daley, 2008; Lobelo, Duperly, & Frank, 2009; Olofsgard, 2009; Stathopoulou et al., 2006).

This study found that lack of training is a significant barrier amongst graduate mental health students. Dixon and colleagues (2003) strongly argue there is a wide gap between research and the actual training of mental health professionals. Likewise, it was revealed that many of the barriers that students reported in this study were consistent with the literature. These barriers include, inadequate guidelines (Olofsgard, 2009), clients are not interested in physical activity (Dixon et al.), lack of time (Olofsgard), insufficient routines to follow-up on physical activity (Olofsgard), weight bias (Chambliss & Blair, 2005; Davis-Coelho, Walt, & Davis-Coelho, 2000), and scope of practice (Dixon et al.). Many of these barriers could be addressed in future research and training in order to better understand the nature of the barriers and to try to overcome them.

Another perceived barrier by students in this study is “physical and mental health are just now beginning to move toward preventative models. Unfortunately, in place are the overall societal and medical paradigms on health focus on waiting until something is broken in order to fix it.” In other words, there is a perceived overarching barrier that overshadows

the prevention model that physical activity counseling prescribes to. In spite of this, it is imperative that we try to continue to shift the emphasis from the medical model of treatment and remediation to prevention and health promotion.

Hypothesis Testing

The multiple regression analysis demonstrated that, as hypothesized, knowledge, attitude, and training, were significant predictors of the frequency of physical activity counseling. Table 9 illustrates that participants who had more knowledge, more positive attitude, and more training, were more likely to use physical activity counseling. These findings are consistent with the results of previous studies (Olofsgard, 2009). However, unlike the other aforementioned variables, personal physical activity was not a significant predictor of the frequency of physical activity counseling. One explanation of this finding is the lack of variance within the participant physical activity level. On average, participants in this study were moderately physically active. Another explanation of this finding is that the other three predictive variables (knowledge, attitude, and training), were stronger predictors of the variance; thus there was no variance leftover to be accounted for by personal physical activity. It is recommended that this discrepancy between correlation and prediction of the frequency of using physical activity be explored in future studies.

The series of one-way ANOVA analyses show that, as hypothesized, there exists a significant discrepancy between psychiatric nursing students and other students in their reported knowledge of physical activity and use of physical activity in counseling. In this research, through examination of the different mental health domains according to the five scales, two variables of interest, knowledge and frequency emerge. Psychiatric nursing students reported higher use of physical activity counseling than any of the four other

domains of mental health students. Similarly, psychiatric nursing students reported significantly higher knowledge of the relationship of physical activity on mental and physical health than three of the other domains of students, social work, clinical psychology, and rehabilitation counseling. The differences were not significant between psychiatric nursing students and counseling psychology students. This study's findings showing no difference between these two domains may be explained by the growing movement and interest in health psychology among counseling psychology programs, students, and faculty, and by their increased exposure to research and knowledge in this area. Another explanation is that there may be more similarities between the mental health domains than differences. Because no other literature has compared these populations, further research is needed to better understand the relationship between the knowledge of physical activity in graduate students across different mental health programs.

Additional Findings

Attitude

Previous research indicates that positive attitude toward physical activity counseling is an important determinant in the use of physical activity with clients (McEntee & Halgin, 1996; Olofsgard, 2009). Trainees were very positive toward using physical activity towards the prevention of mental health disorders (89% somewhat positive to highly positive) and toward treatment of mental disorder (92%). The Attitude toward Physical Activity scale was significantly correlated with Frequency. This finding is consistent with previous research (Olofsgard, 2009) and is evidence of the relationship between attitude and behavior of physical activity counseling in this study. One limitation of the attitude scale was that it only included two questions. Further research is warranted using more extensive measures of

attitude towards physical activity counseling in order to gain a more complete picture of how attitude affects mental health providers' use of physical activity.

Knowledge

In the present study, only 26% of participants reported that they have very good to excellent knowledge of the role of physical activity in the prevention and treatment of mental illness, while 26% stated that have fair to poor knowledge. It is important to ask the question, is this minimal level of knowledge adequate enough to support our future mental health practitioners? Secondly, 63% of participants in this study reported that that they have fair to poor knowledge of the minimum physical activity guidelines put forth by the ACSM and AHA, while only 18% have very good knowledge. This research speaks to the need for more basic training in the relationship between physical activity and mental health and is supported in the literature by Hays (1999) and Dixon, Hall, and Mauzey (2003).

Personal Level of Physical Activity

Previous research indicated that personal physical activity correlates positively with the use of physical activity in counseling (Dubbert, 2002; McEntee & Halgin, 1996; Olofsgard, 2009). The results of this study support previous research in that personal physical activity was correlated positively with Frequency. However, while there was correlation, personal physical activity was not a significant predictor of frequency in hypothesis one. The findings from this study are therefore partially consistent with previous research that suggests that medical students who are more physically active are more likely to address physical activity with their patients (Lobelo, Duperly, & Frank, 2009). This inconsistency may be explained by the difference in approach of medical versus mental health students. That is, the mental health model is typically less directive than the medical

model and doesn't typically contain advice giving (Stathopoulou et al., 2006). Further research is needed to explain the relationship of personal physical activity and use of physical activity in counseling among graduate students in mental health.

Additionally, Table 3 presents the significant correlations between personal physical activity and Attitude, Behavior, Frequency, and Knowledge. However, while these correlations were significant they were weak in their strength of correlation. More research is needed to determine the relationship between personal physical activity and the other key variables to better understand the role of personal physical activity on physical activity counseling. Also, there were no significant differences in personal physical activity among the mental health domains. One way to explain this finding is that graduate students typically are very busy and have little time for self care and physical activity. Further, this research suggests that the majority of training programs and professors do not support the use of physical activity in counseling. This absence of emphasis on physical activity may result in physically inactive graduate students. However, further research is necessary to determine the role of physical activity in the lives of graduate students in mental health.

Overall, students in the study reported low to moderate levels of physical activity. This finding is lower than in previous studies where physical activity levels of mental health practitioners were moderate to high (McEntee & Halgin, 199; Olofsgard, 2009). These results may be due to the erratic schedules and poor self-care habits; graduate students either don't have the time or are not making the time to be physically active. More research is needed to determine the level of physical activity of graduate students and how to help graduate students meet the minimum physical activity standards set forth by the ACSM and AHA.

Gender

Previous research indicates that female professionals counseled physical activity significantly more often than males (Olofsgard, 2009). However, results of this study demonstrated no differences between female and male trainees. An explanation may be the large discrepancy between the number of females and males in this study. Further, results of this study indicate that there were no differences between female and males participants on any of the variables of interest (knowledge, behavior, attitude, personal physical activity, or training). Further research is needed with a larger and more evenly distributed population of males and females to explore gender differences in physical activity counseling. Nevertheless, these findings may indicate that male trainees are shifting their focus and becoming more open to recommending physical activity to mental health clients.

Limitations

The results of this study are limited by methodological issues. As is the case with other online surveys, the researchers were unable to control the testing environment. Similarly, because the survey is self-report, it is difficult to know if the responder is being accurate and precise in their responses. Also the nature of the non-experimental cross-sectional design is not experimental and data is only collected at one time point. However for the purposes of an exploratory study on the training of physical activity counseling in mental health graduate programs, a non-experimental design was warranted.

In addition, the sampling procedure used allowed for little control over the type or number of responders. Potential participants were contacted through online resources, such as emails to training directors and department chairs of graduate mental health programs. Thus, there may have been a response bias in those participants who self-selected to

participate in this study. Additionally, due to the anonymous nature of the survey, it was impossible to return to participants to further query responses or gather additional information from students who have been trained in physical activity counseling. This study focused on clinical training opportunities, and did not inquire about ongoing student involvement in physical activity-related research studies. It is possible that the training received in experimental psychology research labs or studies of behavioral interventions for physical activity were not accounted for in this study. Also, this study focused on five mental health domains. Future research should include additional mental health domains, in addition to comparisons between trainees in mental health and other health professionals (e.g. physical therapy, occupational therapy, community health, nursing, public health).

Finally, it is important to recognize the design, hypotheses, and title of this study have an underlying bias towards the need for more training of physical activity counseling in mental health graduate programs. Furthermore, the order of the sections of the survey may have contributed to biased responses. For instance, because frequency, behavior, attitude, knowledge and personal physical activity came before training, the content of earlier scales could have impacted responses on later scales. Lastly, the Inquisite online survey software collects data on every item of the survey regardless if the participant completes the entire survey. Therefore, while there were 361 total participants, fewer and fewer participants answered the questions as the survey continued. In other words, participants stopped taking the survey at different points, thus missing data varied throughout the survey.

Strengths

While there are limitations to this study, there are also a number of strengths. The findings of this study have implications for our understanding of the role of physical activity

in the training of graduate students in mental health and for the discussion of the responsibility of mental practitioners regarding physical activity as a health behavior. This is the first study to address the role of physical activity in graduate mental health training. The sample is geographically representative of the United States and of mental health domains. This study employed a web-based survey, which afforded the researcher the opportunity to collect a large amount of data and a diverse sample. Gosling and colleagues (2004) compared a large Internet sample with traditional paper and pencil samples and suggest that internet based questionnaires are sometimes a better method of assessment. Previous studies have focused on only one professional domain, either medicine or psychology (Lobel, Duperly, & Frank, 2009; McEntee & Halgin, 1996), except for Olofsgard's (2009) work with Swedish mental health professionals. This study adds to the literature by addressing graduate students from five mental health domains, which is more representative than previous studies.

Additionally, this study increases mental health graduates' and training directors' awareness of the subject of physical activity. This awareness may indirectly or directly affect how graduate students and faculty alike approach their own personal physical activity and how they approach their clients and training. More research is needed to determine this relationship.

Implications and Conclusion

This study suggests that there is a need for the development of standard curriculum that can be implemented by current faculty at graduate programs in mental health. In particular, core curricula are needed for basic knowledge of physical activity, minimum physical activity guidelines, behavior and methodology associated with physical activity

counseling, and theoretical frameworks of physical activity behavior change. These curricula must be based on current and ongoing research on the relationship between physical activity and mental well-being. Basic guidelines of physical activity counseling must be defined and followed. Because lack of education and training was the primary barrier to its use by the students in this study, strong curricula would provide needed support for these graduate students. This broader training would emphasize the biopsychosocial model being promoted more and more by various health domains.

Results from this study indicate that training aimed at modifying and improving physical activity counseling, attitudes, or knowledge, may improve any of the intercorrelated variables because significant intercorrelations existed among all four scales. With today's technology, a combination of online and video modules would make training in these clinical practices more accessible and affordable. Modules could be designed and tested to train both professionals and mental health students. Each module would be designed for the intended audience (mental health profession and level of experience in the field). Training modules could be used as continuing education units for psychologists and other mental health professionals. The content in the training modules for both the professionals and students would be the same but the delivery could be different. If the modules were created for online learning, they would be dynamic, interactive, and would require blog entries and exchanges between students. This would enhance learning. Online learning may be the best way to reach the most people, even though modules in the form of workshops could also be designed to train individuals in physical activity counseling.

However, pre-work needs to be accomplished to assess whether mental health faculty have the knowledge and training themselves to be able to train their students. Further

research to assess curricula in physical activity across training programs is needed. Also, continued work on ways to overcome perceived and actual barriers to implementing treatment is also necessary.

Additionally, if psychiatric nursing students are the most knowledgeable and they use physical activity the most, perhaps other mental health programs should network with nursing programs to learn what they are teaching their students about physical activity. Examples of physical activity training in nursing could be adapted for other mental health programs. Similarly, there is a need to collaborate and network between mental health and exercise science programs in order to share knowledge between both domains. By gaining access to resources and knowledge about physical activity, faculty in mental health programs may be more willing to support their students in physical activity counseling and to train their students about the role of physical activity in mental health.

In addition to collaboration across university departments, there is a need for the mental health field to collaborate with the fitness industry (Sallis, 2009) and exercise science professionals in the community (Dixon et al., 2003). Further, formal partnerships between mental health professionals and the American College of Sports Medicine (ACSM), along with the *Exercise is Medicine* initiative are warranted. Also, in collaboration with the ACSM, it may be helpful to add a guide for mental health professionals on the *Exercise is Medicine* website. Additionally, the Health Psychology division of the American Psychological Association (APA) is rapidly becoming the second largest division of APA and may be a good platform to further the discussion and research on the topic of physical activity and mental health. Further, the APA Mind and Body Health Campaign (2011)

acknowledges the importance of physical activity in healthy living, and may be an avenue to gain momentum on this important topic.

One of the most important implications is to continue the discussion about scope of practice and ethical responsibilities. While some mental health professionals believe it is outside their scope of practice to discuss physical activity with their clients, other health professionals argue that it is part of their responsibility to discuss health behaviors. As mental health clinicians, it is important that we are knowledgeable about the minimum physical activity guidelines set forth by the ACSM and AHA in 2007 (Haskell et al., 2007). Obesity is a problem, and as behavior specialists, mental health clinicians have an ethical and professional responsibility to do something more about than to just talk about it. The benefits of physical activity for the prevention and treatment of mental health are becoming more and more clear in the research and in the broader awareness of the general public.

Further, many of the students wrote that we have not been addressing the entire person in psychotherapy and the broader focus of including physical activity as a health behavior can result in long-term more helpful therapy that encourages more sustainable lifestyle behaviors and greater emotional well-being in the clients.

In summary, this study sought to explore the role of physical activity in the training of graduate mental health students. Results from this exploratory study provide data to support innovation in training procedures and clinic programs at mental health training facilities nationally across the fields of counseling and clinical psychology, social work, rehabilitation counseling, and psychiatric nursing. In addition, results from this study provide a foundation from which to build guidelines on physical activity for mental health graduate training programs. As our country faces an explosion in obesity and chronic illness, future mental

health practitioners will play an even greater role in addressing physical inactivity. To do this not just competently, but exceptionally, graduate students will need more training in the use of physical activity in their counseling practice. Only then can they best serve their clients in the most ethical and responsible manner.

References

- American College of Sports Medicine. (2008). *Exercise is medicine health care providers' action guide*. Retrieved November 15, 2010, from <http://www.exerciseismedicine.org/physicians.htm>
- American Psychological Association. (2002). *American Psychological Association ethical principles of psychologists and code of conduct*. Retrieved August 17, 2010, from <http://www.apa.org/ethics/code/index.aspx>
- American Psychological Association. (2011). *Mind/Body Health Campaign*. Retrieved May, 10, 2011, from <http://www.apa.org/practice/programs/campaign/pec-report.pdf>
- Andersen, R. E., Crespo, C. J., Bartlett, S. J., Cheskin, L. J., & Pratt, M. (1998). Relationship of physical activity and television watching with body weight and level of fatness among children. *Journal of the American Medical Association*, 279, 938-942.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Baranowski, T., Anderson, C., & Carmack, C. (1998). Mediating variable framework in physical activity interventions: How are we doing? How might we do better? *American Journal of Preventive Medicine*, 15, 266-297.
- Barrow, J. C., English, T., & Pinkerton, R. S. (1987). Physical fitness training: Beneficial for professional psychologists? *Professional Psychology: Research and Practice*, 18, 66-70.
- Bauman, A., Bull, F., Chey, T., Craig, C. L., Ainsworth, B. E., Sallis, J. F.,...Hagstromer, M. The International prevalence study on physical activity: Results from 20 countries. *International Journal of Behavioral Nutrition and Physical Activity*, 6, 21. doi:10.1186/1479-5868-6-21
- Biddle, S. H. & Mutrie, N. (2008). *Psychology of physical activity*. 2nd Ed. London, United Kingdom: Routledge.

- Blair, S. N. (2009). Physical inactivity: The biggest public health problem of the 21st century. *British Journal of Sports Medicine*, *43*, 1-2.
- Borrell-Carrio, F., Suchman, A. L., & Epstein, R. M. (2004). The biopsychosocial model 25 years later: Principles, practice, and scientific inquiry. *Annals of Family Medicine*, *2*, 576-582. doi:10.1370/afm.245
- Chambliss, H. O. & Blair, S. N. (2005). Improving the fitness landscape. In Brownell, K. D., Puhl, R. M., Schwartz, M. B., & Rudd, L. (Eds.), *Weight bias: Nature, consequences, and remedies* (pp. 248-264). New York: Guilford Press.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*, 155-159.
- Daley, A. (2008). Exercise and depression: A review of reviews. *Journal of Clinical Psychology in Medical Settings*, *15*, 140-147. doi:10.1007/s10880-008-9105-z
- Davis-Coelho, K., Waltz, J., & Davis-Coelho, B. (2000). Awareness and prevention of bias against fat clients in psychotherapy. *Profession Psychology: Research and Practice*, *31*, 682-684. doi:[10.1037/0735-7028.31.6.682](https://doi.org/10.1037/0735-7028.31.6.682)
- Dixon, W. A., Mauzey, E. D., & Hall, C. R. (2003). Physical activity and exercise: Implications for counselors. *Journal of Counseling and Development*, *81*, 502-505.
- Doyne, E. J., Ossip-Klein, D. J., Bowman, E. D., Osborn, K. M., McDougall-Wilson, J. B., & Neimeyer, R. A. (1987). Running versus weight lifting in the treatment of depression. *Journal of Consulting and Clinical Psychology*, *55*, 748-754. doi:[10.1037/0022-006X.55.5.748](https://doi.org/10.1037/0022-006X.55.5.748)
- Dubbert, P. M. (1992). Exercise in behavioral medicine. *Journal of Consulting and Clinical Psychology*, *60*, 613-618. doi:10.1037/0022-006X.60.4.613
- Dubbert, P. M. (2002). Physical activity and exercise: Recent advances and current challenges. *Journal of Consulting and Clinical Psychology*, *70*, 526-536. doi:10.1037//0022-006X.70.3.526
- Ehlers, C. L., Frank, E., & Kupfer, D. J. (1998). Social zeitgebers and biological rhythms: a unified approach to understanding the etiology of depression. *Archives of General Psychiatry*, *45*, 948-952.
- Elavsky, S. & McAuley, E. (2005). Physical activity, symptoms, esteem, and life satisfaction during menopause. *Maturitas*, *52*, 374-385. doi:10.1016/j.maturitas.2004.07.014
- Frank, E., Galuska, D. A., Elon, L. K., & Wright, E. H. (2004). Personal and clinical exercise-related attitudes and behaviors of freshman U.S. medical students. *Research Quarterly for Exercise and Sport*, *75*, 112-121.

- Garry, J. P., Diamond, J. J., & Whitley, T. W. (2002). Physical activity curricula in medical schools. *Academic Medicine*, 77, 818-820.
- Gosling, S. D., Vazire, S., Srivastava, S., & John, O. P. (2004). Should we trust web-based studies? A comparative analysis of six preconceptions about Internet questionnaires. *The American Psychologist*, 59, 93-104. doi:10.1037/0003-066X.59.2.93
- Greist, J. H., Klein, M. H., Eischens, R. R., Faris, J., Gurman, A. S., & Morgan, W. P. (1979). Running as treatment for depression. *Comprehensive Psychiatry*, 20, 41-54. [doi:10.1016/0010-440X\(79\)90058-0](https://doi.org/10.1016/0010-440X(79)90058-0)
- Haskell, W. L., Lee, I., Pate, R. R., Powell, K. E., Blair, S. N., Franklin, B. A.,...Bauman, A. (2007). Physical activity and public health: Updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Circulation*, 116, 1081-1093. doi:10.1161/circulationaha.107.185649
- Hassel, T. D., Amici, C. J., Thurston, N. S., & Gorsuch, R. L. (2001). Client weight as a barrier to non-biased clinical judgment. *Journal of Psychology & Christianity*, 20, 145-161.
- Hays, K. F. (1999). *Working it out: Using exercise in psychotherapy*. Washington D.C.: American Psychological Association.
- Hays, K. F. (2002). *Move your body tone your mood*. Oakland, CA: New Harbinger Publications.
- Hays, K. F. (2010a). Exercise and well-being. Symposium presented at the Association of Applied Sport Psychology, Providence, Rhode Island.
- Hays, K. F. (2010b). Exercise and psychotherapy. Unpublished instrument. Retrieved October 15, 2010 from <http://www.surveymonkey.com/s/YN53HNG>
- Inquisite Certified Anonymous Survey [Web-based Software]. Austin, TX: Inquisite Inc.
- International Physical Activity Questionnaire Research Committee. (2005). Guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ). Retrieved November 15, 2010 from www.ipaq.ki.se/scoring.pdf
- Johnsgard, K. (2004). *Conquering depression and anxiety through exercise*. Amherst, NY: Prometheus Books.
- Jones, E. (1967). *Sigmund Freud life and work: Years of maturity, 1901-1919* Vol. 2. London: Hogarth.

- Keilin, G. (2010). 2010 APPIC Match: Survey of internship applicants. Retrieved November, 2010 from APPIC website:
http://www.appic.org/match/5_2_2_4_12a_match_about_statistics_surveys_2010a.ht
- Kiluk, B. D., Weden, S., & Culotta, V. P. (2009). Sport participation and anxiety in children with ADHD. *Journal of Attention Disorders, 12*, 499-506.
 doi:10.1177/1087054708320400
- Leith, L. M. (1998). *Exercising your way to better mental health*. Morgantown, WV: Fitness Information Technology.
- Let's Move: America's move to raise a healthier generation of kids. Retrieved November 15, 2010 from <http://www.letsmove.gov/about.php>
- Lobelo, F., Duperly, J., & Frank, E. (2009). Physical activity habits of doctors and medical student influence their counseling practices. *British Journal of Sports Medicine, 43*, 89-92. doi:10.1136/bjism.2008.055426
- Mark, R., Thodes, R. E., Warburton, D. R., & Bredin, S. E. (2008). Interactive video games and physical activity: A review of the literature and future directions. *Health and Fitness Journal of Canada, 1*, 14-24.
- McEntee, D. J. & Halgin, R. P. (1996). Therapists' attitudes about addressing the role of exercise in psychotherapy. *Journal of Clinical Psychology, 52*, 48-60.
 doi:10.1002/(SICI)1097-4679(199601)52:1<48::AID-JCLP7>3.0.CO;2-S
- Olofsgard, M. J. (2009). *Physical activity counseling and prescription in psychiatry: Swedish mental health professionals' clinical practices, attitudes, and knowledge*. (Master's thesis). Retrieved from Mason Archival Repository Service. (<http://hdl.handle.net/1920/5600>)
- Pedersen, B. K. & Saltin., B. (2006). Evidence for prescribing exercise as therapy in chronic disease. *Scandinavian Journal of Medicine and Science in Sports, 16*, 3-63.
 doi:10.1111/j.1600-0838.2006.00520.x
- Prochaska, J. O., Norcross, J. C. & DiClemente, C. C. (1994). *Changing for good*. New York: William Morrow.
- Ratey, J. J. (2008). *Spark: The revolutionary new science of exercise and the brain*. New York: Little, Brown and Company.
- Richardson, C. R., Faulkner, G., McDevitt, J., Skrinar, G.S., Hutchinson, D. S., & Piette, J. D. (2005). Integrating physical activity into mental health services for persons with serious mental illness. *Psychiatric Services, 56*, 324-331.

- Sallis, J. F., Prochaska, J. J. & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Medicine & Science in Sports and Exercise*, 35, 963-975.
- Sallis, R. (2009). Exercise is medicine and physicians need to prescribe it! *British Journal of Sports Medicine*, 43, 3-4. doi:10.1136/bjism.2008.054825
- Sallis, R. (2011). Developing healthcare systems to support exercise: Exercise as the fifth vital sign. *British Journal of Sports Medicine*, 45, 473-474. doi:10.1136/bjism.2010.083469
- Smits, J. A. & Otto, M. W. (2009). *Exercise for mood and anxiety disorders*. New York: Oxford University Press.
- SPSS for Macintosh (Version 19.0) [Computer software]. Chicago: SPSS Inc.
- Stathopoulou, G., Powers, M. B., Berry, A. C., Smits, J. A., & M. Otto. (2006). Exercise interventions for mental health: A quantitative and qualitative review. *Clinical Psychology: Science and Practice*, 13, 179-193. doi:10.1111/j.1468-2850.2006.00021.x
- Sylvia, L. G., Ametrano, R. M., & Nierenberg, A. A. (2010). Exercise treatment for bipolar disorder: Potential mechanisms of action mediated through increased neurogenesis and decreased allostatic load. *Psychotherapy and Psychosomatics*, 79, 87-96. doi:10.1159/000270916
- Tabachnick, B. & Fidell, L. (2007). *Using multivariate statistics*. Boston, MA: Pearson Education.
- Thomas, S., Reading, J., & Shephard, R. J. (1992). Revision of the physical activity readiness questionnaire (PAR-Q). *Canadian Journal of Sport Science*, 17, 338-345.
- U.S. Department of Health and Human Services. (1996). *Physical activity and health: A report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.
- U.S. Department of Health and Human Services. (2004). *Healthy People 2010*. Washington, DC: U.S. Government Printing Office.
- U.S. Department of Health and Human Services (2008). *Physical Activity Guidelines for Americans*. Rockville, MD. Retrieved August 17, 2010, from www.health.gov/paguidelines.

Williford, H. N., Barfield, B. R., Lazenby, R. B., & Olson, M. S. (1992). A survey of physicians' attitudes and practices related to exercise promotion. *Preventive Medicine, 21*, 630-636. [doi:10.1016/0091-7435\(92\)90070-X](https://doi.org/10.1016/0091-7435(92)90070-X)

Yuasa, Y. (1987). *The body: Toward an Eastern mind-body theory*. Kasulis, T. P. (Ed.). Albany, NY: State University of New York Press.

Appendix A

Initial Email to Training Directors and/or Department Chairs

Dear Director of Clinical Training and/or Department Chair,

My name is Cassandra Pasquariello, and I am a graduate student at Virginia Commonwealth University. In an effort to obtain research participants for my thesis, I am emailing to ask if you would be willing to forward the information below to your graduate students. Thank you for your assistance in this effort. Feel free to contact me at pasquarielcd@vcu.edu or my advisor, Dr. Micah McCreary at mccreary@vcu.edu if you have any questions or concerns. One reminder email will be sent to you in approximately two weeks. If you would like to have your name removed from this mailing list, please respond to this email at pasquarielcd@vcu.edu and indicate that you opt-out from future contact via email.

Sincerely,
Cassandra Pasquariello, Ed.M.

SEEKING GRADUATE STUDENTS IN MENTAL HEALTH

ARE YOU ENROLLED IN AN ACCREDITED GRADUATE PROGRAM IN COUNSELING or CLINICAL PSYCHOLOGY, SOCIAL WORK, REHABILITATION COUNSELING, or PSYCHIATRIC NURSING?

DO YOU CURRENTLY HAVE DIRECT CLIENT/PATIENT CONTACT?

HELP US BETTER UNDERSTAND PHYSICAL ACTIVITY IN YOUR PROFESSIONAL TRAINING & IN YOUR PERSONAL LIFE!

PARTICIPATE IN A *NATIONAL* ONLINE SURVEY OF GRADUATE STUDENTS LIKE YOU!

With the permission of the Virginia Commonwealth University Institutional Review Board, I am conducting a study on the role of physical activity in counseling. Specifically, my thesis project seeks to explore your perception, training, and knowledge in the use of physical activity in counseling, in addition to your personal level of physical activity.

I know your time is valuable, so this study was designed to be brief. The survey takes approximately 20-30 minutes to complete. If you would like to participate, please click on the following link to learn more about the survey.

Link to web-based survey

As a token of my appreciation for your time, you will have the option of entering a drawing for one of three \$50 Visa gift cards at the completion of the study. I appreciate your time and effort dedicated to thesis and dissertation research endeavors as well as advancing psychological research. You are under no pressure to participate and if you decide to do the survey, you may stop at any time. Your information will be handled confidentially and all responses will be analyzed without identifying data.

If you would like to speak with my advisor or myself about this study, please contact us at the information below. Please feel free to forward this e-mail announcement to eligible friends/student colleagues.

Thank you in advance for your help.

Gratefully,

Cassandra Pasquariello, Ed.M.
Graduate Student, Counseling Psychology
Virginia Commonwealth University
Email: pasquarielcd@vcu.edu
Phone: (804) 828-1889

Micah L. McCreary, Ph.D.
Graduate Advisor, Dept. of Counseling Psychology
Virginia Commonwealth University
Email: mccreary@vcu.edu
Phone: (804) 828-1889

Appendix B

Follow-up Email to Training Directors and/or Department Chairs

Dear Director of Clinical Training and/or Department Chair,

This is a follow-up email for the research study about the role of physical activity in counseling conducted by Cassandra Pasquariello. If you have already forwarded this survey to your graduate students, we thank you. However, if you have not, this is a friendly reminder and last email request that you forward the invitation to your graduate students.

I am a doctoral student under the supervision of Dr. Micah McCreary at Virginia Commonwealth University and have gained IRB approval for the current study. The purpose of the research is to address a gap in the literature examining the role of physical activity in counseling and the personal lives of graduate students in mental health. We sincerely invite you to forward the invitation to participate to help us learn more about the perspectives and experiences of your graduate students.

Sincerely,
Cassandra Pasquariello, Ed.M.

SEEKING GRADUATE STUDENTS IN MENTAL HEALTH

ARE YOU ENROLLED IN AN ACCREDITED GRADUATE PROGRAM IN COUNSELING or CLINICAL PSYCHOLOGY, SOCIAL WORK, REHABILITATION COUNSELING, or PSYCHIATRIC NURSING?

DO YOU CURRENTLY HAVE DIRECT CLIENT/PATIENT CONTACT?

HELP US BETTER UNDERSTAND PHYSICAL ACTIVITY IN YOUR PROFESSIONAL TRAINING & IN YOUR PERSONAL LIFE!

PARTICIPATE IN A *NATIONAL* ONLINE SURVEY OF GRADUATE STUDENTS LIKE YOU!

With the permission of the Virginia Commonwealth University Institutional Review Board, I am conducting a study on the role of physical activity in counseling. Specifically, my thesis project seeks to explore your perception, training, and knowledge in the use of physical activity in counseling, in addition to your personal level of physical activity.

I know your time is valuable, so this study was designed to be brief. The survey takes approximately 20-30 minutes to complete. If you would like to participate, please click on the following link to learn more about the survey.

Link to web-based survey

As a token of my appreciation for your time, you will have the option of entering a drawing for one of three \$50 Visa gift cards at the completion of the study. I appreciate your time and effort dedicated to thesis and dissertation research endeavors as well as advancing psychological research. You are under no pressure to participate and if you decide to do the survey, you may stop at any time. Your information will be handled confidentially and all responses will be analyzed without identifying data.

If you would like to speak with my advisor or myself about this study, please contact us at the information below.

Please feel free to forward this e-mail announcement to eligible friends/student colleagues. Thank you in advance for your help with this project, and we sincerely thank all of you who have already taken the time to participate!!

Gratefully,

Cassandra Pasquariello, Ed.M.
Graduate Student, Counseling Psychology
Virginia Commonwealth University
Email: pasquarielcd@vcu.edu
Phone: (804) 828-1889

Micah L. McCreary, Ph.D.
Graduate Advisor, Dept. of Counseling Psychology
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Appendix C

Opening Survey Text

Let's Get Physical: The Role of Physical Activity in the Training of Graduate Students in Mental Health

You are being asked to be in a research study. The next screen will provide you with information about the study. If you have questions about the study, you can contact the study investigators by emailing pasquarielcd@vcu.edu (Cassandra Pasquariello). You can also contact the lead investigator of the study, Micah McCreary, at 804-828-1889.

This research is being conducted by Virginia Commonwealth University (VCU).

You may have questions about your rights as someone participating in this study. You can call Dr. McCreary with questions about your rights. You may also call the VCU Office for Research at 804-827-2157.

Please click one: *I wish to continue and learn more about the study*
 I do NOT provide consent and wish to withdraw from the study

Appendix D

Information Sheet for Consent

RESEARCH INFORMATION SHEET FOR CONSENT TO PARTICIPATE IN A RESEARCH STUDY

My name is Cassandra Pasquariello, and I am a doctoral student under the supervision of Dr. Micah McCreary in the Department of Counseling Psychology at Virginia Commonwealth University. I am requesting that you volunteer to participate in a research study titled Let's Get Physical: The Role of Physical Activity in the Training of Graduate Students in Mental Health. You were selected as a possible participant because you are a therapist-in-training with direct client contact and/or a mental health graduate student with direct patient contact, are at least 18 years of age, and reside in the United States. Please read this information sheet and contact me to ask any questions that you may have before agreeing to take part in this study.

Purpose of the Research Study: The purpose of this study is to explore the role of physical activity in the training of mental health graduate students.

Description of the Study & Your Involvement: If you agree to be in this study, you will be asked to complete a demographic form, and two brief questionnaires. These questionnaires will take a total of about 20-30 minutes to complete. They will contain questions about your training and use of physical activity with clients and your current personal level of physical activity. Approximately 850-1000 students will participate in this study.

Risks and Discomforts of Being in the Study: There are no known risks to you if you choose to participate in this study.

Benefits to You and Others of Being in the Study: You may not get any direct benefit from this study, but, the information we learn from people in this study may help us understand more about the role of physical activity in the training of mental health graduate students.

Costs: There is no cost to you for participating in this study other than the time it takes for you to complete the survey.

Payment for Participation: You will have the option to join the drawing to win one of three \$50 Visa gift cards (the odds of winning are about 1 in 300). The drawing will be done after data collection is complete. The winner will be notified via email.

Confidentiality: The records of this study will be kept private. Research records will be

stored securely in a password protected database and will be destroyed at the conclusion of the study. Only approved researchers will have access to the records. Data is being collected only for research purposes. In published reports, there will be no information included that will make it possible to identify you as a research participant.

Voluntary Participation and Withdrawal: Participation in this study is voluntary. Your decision whether or not to participate will not result in penalty or loss of benefits to which you are otherwise entitled. If you decide to participate, you are free not to answer any question or discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled.

Contacts and Questions: If you have questions, concerns, or complaints about the research, the researchers conducting this study can be contacted by phone at [\(804\) 828-1889](tel:8048281889) or by e-mail at pasquarielcd@vcu.edu (Cassandra Pasquariello) and mmcreary@vcu.edu (Dr. Micah McCreary). In the event of a research-related injury, contact the researchers. You are encouraged to contact the researchers if you have any questions. If you have any questions, concerns, or complaints about the research and wish to talk to someone other than the individuals on the research team, or if you cannot reach the research team, you may contact the Office for Research at Virginia Commonwealth University at [\(804\) 827-2157](tel:8048272157) or 800 East Leigh Street, Ste 113, P.O. Box 980568, Richmond, VA 23298.

Please keep this information sheet for your records. By completing this questionnaire, I am agreeing to participate in this study.

Please click one: *I wish to continue and I am willing to participate in this study*
 I do NOT provide consent and wish to withdraw from the study

Appendix E

Closing Survey Text

You have now completed the survey. We want to sincerely thank you again for participation in the study. We would also like to take this opportunity to encourage you to forward the survey link to others who may fit the participation criteria.

The purpose of this project is to explore the role of physical activity in the training of mental health graduate students. It is hoped that the information gained in this study will provide valuable information for the training of physical activity in mental health in the future.

If you have any questions, please contact Dr. Micah McCreary at (804) 828-1889 or email Cassandra Pasquariello pasquarielcd@vcu.edu.

You are welcome to join the drawing to win one of three \$50 Visa gift card (the odds of winning are about 1 in 300). The drawing will take place after data collection is complete. The winner will be notified via email. Please click the “done” button below to enter your information to join the drawing. When you post your email address below it will not be connected to your survey answers in order to protect your privacy.

Sincerely,

Cassandra & Dr. McCreary

Please enter the following information to join the drawing for one of three \$50 VISA gift cards. Your personal information will not be linked to your answers to the survey questions. Three participants will win the drawing.

Your email address:

First name:

Thank you for your participation!

Vita

Cassandra Demetria Pasquariello was born on November 27, 1979 in Panorama City, California. She graduated from St. Helena High School in St. Helena, California in 1997. She earned her Bachelor of Science in Behavioral Science from Pacific Union College, Angwin, California, in 2003 and moved to San Francisco, California where she worked as a National Football Foundation and College Hall of Fame Play It Smart Academic Coach with student-athletes in an underserved public high school. She returned to graduate school in the fall of 2006 and earned her Masters of Education in Counseling Psychology with a specialization in Sport Psychology from Boston University in 2007. She began the doctoral program in Counseling Psychology at Virginia Commonwealth University in 2008.