



Virginia Commonwealth University  
**VCU Scholars Compass**

---

Theses and Dissertations

Graduate School

---

2013

## Enhancing Self-Efficacy in the Utilization of Physical Activity Counseling: An Online Constructivist Approach with Psychologists-in-Training

Cassandra D. Pasquariello  
*Virginia Commonwealth University*

Follow this and additional works at: <https://scholarscompass.vcu.edu/etd>



Part of the [Counseling Psychology Commons](#)

© The Author

---

Downloaded from

<https://scholarscompass.vcu.edu/etd/3287>

This Dissertation is brought to you for free and open access by the Graduate School at VCU Scholars Compass. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of VCU Scholars Compass. For more information, please contact [libcompass@vcu.edu](mailto:libcompass@vcu.edu).

© Cassandra D. Pasquariello 2013

All Rights Reserved

ENHANCING SELF-EFFICACY IN THE UTILIZATION OF  
PHYSICAL ACTIVITY COUNSELING: AN ONLINE CONSTRUCTIVIST APPROACH  
WITH PSYCHOLOGISTS-IN-TRAINING

A dissertation submitted in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy at Virginia Commonwealth University

By: CASSANDRA DEMETRIA PASQUARIELLO  
Master's of Science, Virginia Commonwealth University, 2011  
Master's of Education, Boston University, 2007  
Bachelor of Science, Pacific Union College, 2003

Directors: Micah L. McCreary, Ph.D.  
Associate Professor of Psychology  
Department of Psychology

Edmund O. Acevedo, Ph.D.  
Professor & Chair of Health and Human Performance  
Department of Health and Human Performance

Virginia Commonwealth University  
Richmond, Virginia  
October 2013

## Acknowledgements

I would like to thank a number of individuals who have contributed to my ability to complete this dissertation today. First, I would like to thank the graduate students who participated in this study. This study would not have been possible without your precious and valuable time. Second, I would like to thank my dissertation committee members. Dr. Deb Getty, I appreciate your unconditional support, encouragement and enthusiasm. I appreciate your willingness to connect me to VCU Athletics early in my tenure at VCU and sincerely appreciate visits to your farm and your fresh egg deliveries. Dr. Lettie Flores, thank you for being a real supervisor, for teaching me about professionalism, boundaries, ethics, and the human spirit. I appreciate your mixed tapes and your mentorship. Dr. Eric Benotsch, thank you for representing the real research lens and for your patience and guidance throughout my thesis and dissertation projects. Dr. Ed Acevedo, thank you for everything, for believing in my research skills, for your persistence, challenge, and encouragement. I look forward to our continued work together. Dr. Micah McCreary, thank you for requesting that I become your student, for your support during my time at VCU. I would like to thank all of my mentors that have supported me throughout my educational path: Boston University Professors, Drs. Cottle, Dukes, McCarthy, Baltzel; my Pacific Union College professors, Drs. Fulton and Bainum; and my Play It Smart mentor, Dr. Al Petipas. It is because of many of you that I made it here today. Thank you to my villages along the way, from St. Town: Haley, Alma, Bridget, Ryan, Simone, Curtis, and Tyson, to Play It Smart: Caltha, Jane, Lynn, Anita, Lindsay, Nick, Kelley, and Miriam, to Boston University: Lindsay, Katie, Lauren, Stacey, Jeremy, Adrian, Greg, and Vernice, to VCU: Claire, Rebecca, Jessi, Janet, Hannah, Vivian, Jeff, Danielle, Vera, Anya, Sofia, Dorothy, Linda, Don, Diana, Carolyn, Pat, Corrie, and Rebecca, to UCSB: Gladys, Lindsay, Adam, Janet, Karen, Juan, Brett, Keith, Diane, Joshua, Kayla, Nicole, and Angela. I would like to thank Janet and Russ a thousand times over for your stats wisdom and support through my thesis and dissertation work. I would like to thank all of my sisters, parents, cousins, aunts, uncles, and grandparents for listening to me through this process and for all of your love and support. I would be remiss if I did not mention Lani, my partner during most of my time at VCU, and one of the main reasons I was able to make it through my time in Richmond, I could have never made it this far without you. Thank you to all of my personal and professional relationships through sport and exercise, and a huge thank you to my parents for teaching me the importance of physical activity. It certainly takes many villages for a dissertation to be completed and I appreciate everyone, both acknowledged and unacknowledged, along my journey that has supported me in accomplishing this feat. I am here because of you.

## Table of Contents

	Page
List of Tables .....	vii
List of Figures .....	viii
List of Abbreviations .....	ix
Abstract .....	x
Overview .....	1
Statement of the Problem .....	3
Overview of the Review of the Literature .....	4
Review of the Literature .....	5
Therapist Self-efficacy .....	5
Social Cognitive Theory .....	5
Self-Efficacy Development in Therapists .....	7
Health Behavior Change Theory .....	9
Health Belief Model .....	9
Transtheoretical Model .....	10
Cognitive Behavior Therapy .....	10
Motivational Interviewing .....	11
Physical Activity Counseling .....	12
Training in Psychology Doctoral Programs on Health Behavior Change .....	18
Health Benefits of Physical Activity .....	22
Physical Activity and Physical Health .....	22
Physical Activity and Mental Health .....	24

Physical Activity and Depression .....	25
Physical Activity and Other Psychological Disorders .....	29
Constructivism .....	34
Constructivist Pedagogy .....	34
Constructivism and Online Learning .....	35
Preparation Interaction Evaluation Model .....	37
Online Education in Psychology .....	38
Summary Statement .....	40
Method. ....	42
Aims of the Study .....	42
Hypotheses. ....	43
Participant Recruitment Procedures. ....	44
Design. ....	46
Measures. ....	47
Procedure. ....	53
Intervention Design. ....	55
Physical Activity Counseling Interactive Training Intervention. ....	59
Physical Activity Counseling Content Training Intervention .....	69
Training as Usual Control Group. ....	70
Data Analysis .....	70
Results .....	72
Description of the Sample. ....	72
Hypothesis Testing .....	80

Self-Efficacy of Practicing Physical Activity Counseling. . . . .	83
Knowledge of Health Benefits and Physical Activity Counseling.. . . .	84
Practice of Physical Activity Counseling . . . . .	86
Exploratory Hypotheses. . . . .	91
Qualitative Process and Evaluation Data. . . . .	100
Discussion. . . . .	102
Self-Efficacy of Practicing Physical Activity Counseling. . . . .	104
Knowledge of Health Benefits and Physical Activity Counseling.. . . .	106
Practice of Physical Activity Counseling . . . . .	108
Qualitative Process and Evaluation Data. . . . .	113
Strengths. . . . .	116
Limitations. . . . .	118
Implications for Practice. . . . .	120
Implications for Research. . . . .	122
Implications for Training. . . . .	123
Conclusions. . . . .	125
References. . . . .	127
Appendices. . . . .	142
A    Research Subject Information and Consent Form. . . . .	142
B    Knowledge of Physical Activity Counseling Questionnaire . . . . .	144
C    Demographic Questionnaire. . . . .	147
D    Intervention Evaluation Questionnaire. . . . .	150
E    Initial Email to Training Directors and Department Chairs . . . . .	151

F	Follow-up Email to Training Directors and Department Chairs. . . . .	153
G	Listserv email. . . . .	155
H	IRB Approval . . . . .	157
I	Protocols by Intervention Group. . . . .	159
J	Baseline Survey Email Invitation from REDCap. . . . .	162
K	CourseSites by Blackboard PACIT Email Invitation. . . . .	163
L	CourseSites by Blackboard PACCT Email Invitation. . . . .	164
M	CourseSites by Blackboard TAU Email Invitation.. . . .	165
N	Email with CourseSites by Blackboard PACIT Information. . . . .	166
O	Email with CourseSites by Blackboard PACCT Information. . . . .	167
P	Email with CourseSites by Blackboard TAU Information . . . . .	168
Q	PACIT Post-Intervention Survey Email from REDCap . . . . .	169
R	PACCT Post-Intervention Survey Email from REDCap . . . . .	170
S	TAU Follow-up/Post-Intervention Survey Email from REDCap . . . . .	171
T	PACIT and PACCT Course Description and Objectives . . . . .	172
U	Glossary of Key Terms from Blackboard by CourseSites . . . . .	173
V	Module Summary Quizzes. . . . .	174
W	Qualitative Evaluation and Feedback. . . . .	178
Vita.	. . . . .	187



## List of Tables

	Page
Table 1. Sample Characteristics. . . . .	73
Table 2. Frequency of Module Completion by Group. . . . .	78
Table 3. Correlations among Total Scale Scores at Baseline . . . . .	79
Table 4. Baseline and Post-Intervention Means and Standard Deviations by Group . . .	82
Table I1. Physical Activity Counseling Interactive Training Protocol . . . . .	159
Table I2. Physical Activity Counseling Content Training Protocol . . . . .	160
Table I3. Training as Usual Control Group Protocol . . . . .	161
Table W1. Qualitative Themes: PACIT Journal Reflections. . . . .	178
Table W2. Qualitative Themes: PACIT Module Summary Quizzes. . . . .	181
Table W3. Qualitative Themes: PACCT Module Summary Quizzes. . . . .	181
Table W4. Qualitative Themes: What Participants Found Most Helpful. . . . .	182
Table W5. Qualitative Themes: What Participants Found Least Helpful. . . . .	183
Table W6. Qualitative Themes: What Participants Would Improve. . . . .	184
Table W7. Qualitative Themes: Changes in Physical Activity. . . . .	185
Table W8. Qualitative Themes: Changes in Physical Activity Counseling. . . . .	186

## List of Figures

	Page
Figure 1. Participant Flow Chart . . . . .	77
Figure 2. Self-Efficacy of Practicing Physical Activity Counseling. . . . .	84
Figure 3. Targeted Physical Activity Counseling Knowledge. . . . .	85
Figure 4. Knowledge of Exercise Benefits and Barriers . . . . .	86
Figure 5. Practice of Physical Activity Counseling . . . . .	87
Figure 6. Personal Levels of Physical Activity. . . . .	89
Figure 7. Stages of Change of Practicing Physical Activity Counseling. . . . .	90
Figure 8. Theoretical Orientation and Physical Activity Counseling . . . . .	93
Figure 9. Theoretical Orientation and Stages of Change . . . . .	94

### **List of Abbreviations**

ACSM: American College of Sports Medicine

CBT: Cognitive Behavior Therapy

COM: Counseling Outcome Measure

CSES: Counseling Self-Efficacy Scale

EBBS: Exercise Benefits and Barriers Scale

IPAQ: International Physical Activity Questionnaire

KPAC: Knowledge of Physical Activity Counseling Questionnaire

MI: Motivational Interviewing

MSQ: Module Summary Quiz

PA: Physical Activity

PACCT: Physical Activity Counseling Content-Intervention

PACIT: Physical Activity Counseling Interactive-Intervention

PAR-Q: Physical Activity Readiness Questionnaire

PIE: Preparation Interaction Evaluation Model

PPS: Psychotherapy Practice Scale

SCT: Social Cognitive Theory

SOCS: Stage of Change Scale

TAU: Training as Usual Control Group

## **Abstract**

### **ENHANCING SELF-EFFICACY IN THE UTILIZATION OF PHYSICAL ACTIVITY COUNSELING: AN ONLINE CONSTRUCTIVIST APPROACH WITH PSYCHOLOGISTS-IN-TRAINING**

**By Cassandra Demetria Pasquariello, M.S., Ed.M.**

**A dissertation submitted in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy at Virginia Commonwealth University**

**Virginia Commonwealth University, 2013**

**Directors: Micah L. McCreary, Ph.D.  
Associate Professor of Psychology  
Department of Psychology**

**Edmund O. Acevedo, Ph.D.  
Professor & Chair of Health and Human Performance  
Department of Health and Human Performance**

In our sedentary society, physical inactivity has become the biggest public health concern of the 21<sup>st</sup> century. In addition to physical health promotion, physical activity has been associated with a number of positive psychological and social outcomes. Psychologists are well positioned to provide physical activity counseling and may have ethical obligations to address physical activity with their clients. Training the next generation of psychologists about the role of physical activity and health is critical to ensure best practices in graduate education. Researchers have cited insufficient training as a barrier to integrating physical activity into clinical work, yet little is known about effective training in physical activity counseling. One

way to address these barriers is to employ an online-based training program allowing greater accessibility for doctoral psychology students across the United States. This exploratory study evaluated the effectiveness of a constructivist online interactive intervention, and compared it with a more traditional online content intervention and a control group, for enhancing doctoral psychology students' self-efficacy in using physical activity counseling. It was hypothesized that 1) online interactive intervention would enhance self-efficacy, knowledge, and use of physical activity counseling compared to the online content intervention; and 2) both of these active treatments would yield improvements in physical activity counseling outcomes (e.g. self-efficacy, knowledge of health benefits of exercise, practice of physical activity counseling with clients, and personal level physical activity) compared with a control group. Results partially supported the original hypotheses. Mixed ANCOVA analyses indicated that participants in both intervention groups showed more self-efficacy at post-intervention assessment compared to their control group peers but the interactive intervention was not more effective than the content based intervention. Participants in the intervention groups demonstrated more targeted knowledge of physical activity counseling at post-intervention compared to their control group peers. No differences were found in the practice of physical activity counseling with clients post intervention. This study indicates there may be promise in using online platforms for enhancing physical activity counseling self-efficacy among psychologists in training. Future studies should continue to assess the effectiveness of physical activity counseling and refine training interventions to examine the effects of such interventions among the next generation of psychologists.

## Enhancing Self-Efficacy in the Utilization of Physical Activity Counseling: An Online Constructivist Approach with Psychologists-in-Training

As psychology broadens its reach within behavioral medicine (Castelnuovo, 2010), opportunities for behavioral health professionals are expanding. Given the established mental and physical health benefits of physical activity, psychologists have an opportunity to incorporate exercise into their clinical work in these new settings (Otto et al., 2008, Daley, 2002). However, evidence suggests that while psychologists feel comfortable addressing certain health behavior disorders (e.g., disrupted sleep, eating disorders, and substance abuse), they seem less comfortable addressing other areas of health. These health-related areas include diabetes control, dietary intake, and physical activity participation (Meltzer, Phillips, & Mitchell, 2009).

The discomfort of practicing physical activity counseling with clients (Seime & Vickers, 2006) exists across health disciplines (Callaghan, 2004; Lobelo, Duberly, & Frank, 2009), despite the clearly delineated health benefits of physical activity. Emerging research by the United States Department of Health and Human Services highlights the physical and mental health benefits of physical activity (US DHHS, 2008). Clear evidence has been established about the positive role of exercise in the prevention and treatment of depression (Daley, 2008). Mental health benefits of physical activity extend from the prevention and treatment of depression and anxiety to the treatment of more serious mental illnesses such as Schizophrenia, Bipolar Disorder, and psychosis (Stathopoulou et al., 2006; Richardson et al., 2005).

Given the large body of research that demonstrates the relationship between physical activity and health, there is a strong need for physical activity counseling to promote health and prevent disease. Increasing physical activity at the macro level can have tremendous beneficial

effects on two of our most costly health conditions, obesity and cardiovascular disease (Penedo & Dahn, 2005). In 1996, the United States Surgeon General's Report identified physical inactivity as the leading cause of death for Americans. This is of grave concern given the fact that less than 50% of adults in the United States currently meet the minimum standard recommendations for physical activity (Haskell et. al, 2007). Since the publication of that report, physical inactivity is estimated to have contributed to the deaths of approximately 200,000 Americans per year (Danaei, et al., 2009). The American College of Preventive Medicine recommends that healthcare providers routinely provide physical activity counseling (Jacobson, Strohecker, Compton, & Katz, 2005) and Dr. Robert Sallis, the past president of the American College of Sports Medicine (ACSM), suggests that healthcare providers have an ethical obligation to assess physical activity and to educate patients on the dangers of inactivity (2011).

Because of the strong link between physical and mental disorders, psychologists have a unique opportunity to address the physical inactivity epidemic by practicing physical activity counseling. While multiple studies have called for increased practice of physical activity counseling (Daley, 2002; Dubbert, 2002; Callaghan, 2004), most training programs have not adequately prepared psychologists to incorporate physical activity counseling into their clinical work (Meltzer et al., 2009; Seime & Vickers, 2006). Possible explanations for the lack of such training in doctoral programs include limited knowledge of the health benefits of physical activity and low levels of self-efficacy of practicing physical activity counseling with clients (Seime & Vickers, 2006). As is the case for other healthcare professionals (Callaghan, 2004; Happell, Platania-Phung, & Scott, 2011), ethical considerations, such as lack of training, lack of knowledge of exercise prescription, and scope of competence concerns, may also be barriers to training psychologists in physical activity counseling.

## **Statement of the Problem**

Previous literature has established a link between physical activity and mental well-being (US DHHS, 2008; Daley, 2008; Stathopoulou et al., 2006). Because of the global explosion of obesity and physical inactivity, there is a critical need for future health professionals to be trained in physical activity counseling. Psychologists have a critical role to play in the obesity epidemic (Dubbert, 2002; Hays & Sime, 2013). Yet, psychologists are faced with many barriers to practicing physical activity counseling. Although researchers and leaders in psychology have called for training (Daley, 2002; Seime & Vickers, 2006), no training in physical activity counseling has been documented to date. Thus, this study sought to address the dearth of physical activity counseling training for psychologists through an intervention training program designed to train Clinical and Counseling Psychology doctoral students on the practice of physical activity counseling.

Grounded in Social Cognitive Theory (SCT) (Bandura, 1986), this study recognizes the importance of the psychologist-in-training's sense of his/her ability to engage clients in physical activity counseling. The present study contributes to research on the self-efficacy of psychologists-in-training regarding the practice of physical activity counseling in three important ways. First, this study addresses the demonstrated gap in training regarding physical activity counseling in doctoral psychology programs. Second, this study seeks to increase knowledge among psychologists-in-training about the mental and physical health benefits of physical activity and establish the value of physical activity counseling. Third, this study examines the effectiveness of an online interactive intervention designed to enhance the self-efficacy among psychologists-in-training regarding the practice of physical activity counseling compared to an online content-based intervention and a traditional-based program for psychologists-in-training.



## **Overview of the Review of Literature**

Self-efficacy is the overarching construct within a Social Cognitive theoretical framework and is a factor in the development and implementation of therapy (Larson & Daniels, 2008); consequently, self-efficacy is the focus of the first section. Efforts to enhance self-efficacy in current Clinical and Counseling Psychology training programs are also reviewed, as these inform the proposed intervention for the current study.

In the second section, several theoretical approaches that underlie health behavior change are reviewed, including: the Health Beliefs Model, the Transtheoretical Model of Stages of Change, Cognitive Behavior Therapy, and Motivational Interviewing. In addition, current training curricula on health behavior change for Clinical and Counseling Psychology programs, are also reviewed.

The focus of the third section is on the health benefits of physical activity and current research that has investigated the relationships between physical activity and health, exercise and mental health (e.g., prevention and treatment of psychological disorders), as well as physical activity and special populations (e.g., older adults, pregnant women, children and adolescents).

The final section is devoted to Constructivism Theory, as a foundation to training where the learner incorporates past knowledge into making meaning of new concepts. Constructivism is defined and then research that relates the Constructivist perspective to pedagogy and learning is reviewed. Online training as a growing trend in Constructivism-based learning and the Preparation Interaction Evaluation Model is also addressed.

## **Review of the Literature**

### **Therapist Self-Efficacy**

#### **Social Cognitive Theory**

Social Cognitive Theory (SCT) posits that human beings are able to determine their thoughts, motivation, and actions through observing others (Bandura, 1986). Through self-determining mechanisms, people can affect change in themselves and in their environment. SCT is a learning theory that incorporates observation of others, behavior, cognition, and the environment into the learning process.

Central to SCT is the self-determined concept of self-efficacy (Bandura, 1986). Self-efficacy is defined as the degree to which an individual believes s/he is capable of performing a specific task. Beliefs about self-efficacy serve as determinants of human cognition, motivation, and behavior. Individuals derive self-efficacy through an integration of motivation, affective, and cognitive processes within themselves. Bandura (1986) highlights four components of self-efficacy: mastery experience, vicarious learning, verbal persuasion, and the physical and affective state of the individual. Of the four predictors of self-efficacy, evidence suggests that mastery experience is the strongest predictor of self-efficacy (Bandura, 1986). Mastery experience, by definition, is prior direct experience of successful completion of the same behavior. Vicarious learning is a form of social modeling where an individual can observe the successful use of the behavior from someone else. Vicarious learning takes place through modeling of the behavior and is most effective in enhancing self-efficacy when the individual is observing a peer or someone that is similar (e.g. age, gender, level of education, physical ability) to them. Additionally, self-efficacy theory suggests that vicarious learning can be particularly beneficial in enhancing self-efficacy when the individual not only observes the behavior of

another, but also receives guidance and instruction on how to specifically complete a behavior. Verbal persuasion uses encouragement or coaching to persuade the individual to use the specific behavior. Physiological responses also play a key role in self-efficacy. Self-interpretations of the physiological responses related to the behavior are critical. For example, if an individual is fearful of using the behavior and interprets their fear as negative, their self-efficacy of that behavior will most likely decrease. On the other hand, if the individual interprets the fear in a more positive manner, as ready or eager to perform that behavior, the individual's self efficacy for that behavior will most likely increase.

Bandura (1982) establishes a critical relationship between self-efficacy and knowledge. Health research indicates that solely having knowledge about a health behavior is not enough to change that behavior. "Indeed, people often do not behave optimally, even though they know full well what to do" (Bandura, 1982, p. 122). Bandura (1982) purports that self-efficacy may be the key link between knowledge and behavior change. He highlights avenues for behavior change, such as one of the four conditions of self-efficacy plus a challenging task. Further, a review of self-efficacy in health behavior research suggests that self-efficacy plays a critical role in initiating and maintaining health behavior change (Strecher, DeVellis, Becker & Rosenstock, 1986). This review calls for the use of self-efficacy in practice as a strategy to enhance health behavior change as a means for effective health promotion.

Critiques of self-efficacy theory distinguish between efficacy expectations and actual behavior outcomes. Marzillier and Eastmen (1984) and others (e.g., Borkovec, 1978; Teasdale, 1978) argued that Bandura's emphasis on self-efficacy can never be completely independent of actual behavioral outcome of the specific task. Further, Marzillier and Eastmen criticized Bandura's emphasis on self-efficacy accounting for the change in behavior. Marzillier and

Eastmen conclude that many other factors, such as perceptions about the specific behavior and consequences of the specific behavior, account for behavior and self-efficacy specifically does not account for the variance of those other factors.

Responding to this criticism, Bandura explained his theory by elaborating further on his original definition of self-efficacy. Bandura (1986) clarified that while self-efficacy is not the only predictor of behavior change, he argued that self-efficacy is a significant predictor of specific behavior change. Despite this criticism, self-efficacy theory is one of the most widely used theories of behavior change.

### **Self-Efficacy Development in Therapists**

In the relevant literature, counseling self-efficacy has been defined as an individual's beliefs about her or his capabilities to effectively work with a client (Larson et al., 1992). SCT has been adapted to counselor training (Larson & Daniels, 1998) suggesting that an individual's beliefs about their counseling self-efficacy affect their decision-making, effort expenditure, persistence, and behaviors associated with risk-taking (Bandura, 1986). Although Bandura did not mention SCT in terms of counselor training, counseling self-efficacy can be an important factor for psychologists in training. Larson and Daniels (1998) posit that the acquisition of self-generated processes such as affective, cognitive, and motivation-related processes are likely to be strongly influenced by self-efficacy beliefs of the novice counselor.

Social Cognitive Theory outlines the framework for counselors to become more aware of how their actions, thoughts and feelings are affecting their responses to their clients (Larson, 1998). Larson's Social Cognitive Model of Counselor Training incorporated elements of Bandura's SCT model. In her model, Larson emphasized the context of the situation and the use of environmental cues when counselors are determining how to respond to a client. She

highlighted the use of counselor performance (e.g. mastery experience), counselor anxiety (e.g. affective state of the counselor), and the supervision environment (e.g. vicarious learning), as important training variables among counselors. Larson encouraged graduate training programs to emphasize the predictors of self-efficacy when facilitating counseling skill development of new clinicians.

Further, Larson and Daniels's (1998) review of 32 studies highlights the importance of SCT and counseling self-efficacy. The review cites a majority of the studies focused on the relationship of counseling self-efficacy to counselor characteristics (44%) and interventions designed to enhance counseling self-efficacy (40%), while less attention was focused on the relationship of counseling self-efficacy to therapist performance (20%) and the environment of counseling (16%). Consequently, Larson and Daniels called for more studies that examined interventions to increase counseling self-efficacy and performance. These researchers specifically recommend pre-test, post-test designs to examine change in counseling self-efficacy and counseling performance. They were critical of the majority of studies in their review that poorly measured key constructs of SCT. Out of the 32 studies they reviewed, only three studies addressed affective dimensions of the therapist (e.g. anxiety). Additional significant predictors of counseling self-efficacy include counseling coursework and supervisory environment. Supervisees' perceptions of the supervisory environment and therapeutic alliance predicted some of the variance in counseling self-efficacy. Per their review, a number of articles related to self-efficacy in career counseling, school counseling, and multicultural counseling have been published; however, no studies were found related to self-efficacy and PA counseling.

In their 1998 review, Larson and Daniels specifically examine 12 intervention studies designed to enhance counseling self-efficacy. These intervention studies employed one or more

of the four primary sources designed to increase counselor self-efficacy (Bandura, 1986).

Significant increases in counselor self-efficacy were demonstrated in four of the five studies that examined the impact of vicarious learning and mastery experience among trainees. However, none of the studies included a control group and only one included a comparison group. Larson and Daniels provide tentative suggestions for how to enhance counselor self-efficacy, such as modeling, visual imagery, and role-play. They posit that these three strategies may be the most effective interventions for enhancing counselor self-efficacy in counseling training environments.

In summary, self-efficacy has been demonstrated to be an important construct in the training and development of counselors. Through the four primary sources of self-efficacy (mastery experience, vicarious learning, social persuasion, and affective arousal), a psychologist in training has the opportunity to learn and advance his/her clinical skills.

### **Health Behavior Change Theory**

In addition to SCT, there are many other theories of health behavior change cited in the literature. This section briefly highlights the Health Belief Model (Janz & Becker, 1984), the Transtheoretical Model of Behavior Change (Prochaska & DiClemente, 1982) and describes Cognitive Behavioral Therapy and Motivational Interviewing as they relate to health behavior change and graduate training in psychology.

**Health Belief Model.** Janz and Becker (1984) conceptualize health behavior change through the Health Belief Model. Health behavior is interpreted as an interactive effect between an individual's perceived benefits/barriers to taking action and his/her perceptions regarding the severity of and susceptibility to negative health outcomes. Unlike SCT, the Health Belief Model

does not include past experience such as prior health-related behaviors, nor does it explain how individuals develop their perceptions (Rimal, 2001).

**Transtheoretical Model.** The Transtheoretical Model of Behavior Change (TTM) developed by Prochaska and DiClemente (1982) highlights the progression by which an individual moves into a stage of readiness to change a specific behavior. The five “Stages of Change” of the TTM include precontemplation, contemplation, preparation, action, and maintenance. At the precontemplation stage, the individual has little to no interest about or recognition of the need to change his/her behavior. In the contemplation stage, the individual recognizes the need for change and develops an intention to initiate behavior change within a six-month time frame. The preparation stage marks when the individual both recognizes the need for change and intends to change the behavior within one month. The action stage marks when the individual has engaged in the behavior consistently for a consecutive period of time that is less than six months. Maintenance stage is reached when the change in behavior has been adopted by the individual for more than a six month time period. Oftentimes an individual cycles around and through the Stages of Change of the TTM on multiple occasions before they achieve consistent and successful long-term behavior change. Originally developed to understand the psychotherapy process in assisting individuals with smoking cessation, the TTM has been applied to other health behaviors including condom use, mammographic screening, cocaine use, and PA adherence (Prochaska et al., 1994).

**Cognitive Behavior Therapy.** Cognitive Behavior Therapy (CBT), originally developed by Aaron T. Beck (1964) as Cognitive Therapy, is a short-term, structured, present-oriented approach to psychotherapy. Originally developed for the treatment of depression, CBT has been used to address a multitude of problems and disorders, including health behavior change (Beck,

2011). The tenets of CBT claim that unhealthy cognitive processes underlie psychological disturbances, and therapy helps clients by modifying these dysfunctional thinking patterns and behavior. Thus, CBT suggests if an individual can learn to become more aware of his/her thinking patterns and to begin to evaluate his/her thinking more accurately, s/he may experience improvement in both his/her mood and behavior. It is increasingly common for clinicians to use cognitive therapy techniques without solely subscribing to CBT, and to use a CBT approach for shorter sessions than the traditional therapy hour, such as primary care clinics in hospital settings (Beck, 2011). A review of exercise interventions for mental health highlights studies that have used CBT with clinical populations to significantly decrease negative symptoms by enhancing PA behavior (Stathopoulou, Powers, Berry, Smits, & Otto, 2006).

**Motivational Interviewing.** Motivational Interviewing (MI), developed by Miller and Rollnick (2002), is an evidenced-based counseling approach to behavior change. MI is client-centered, directive and facilitates behavior change through exploring and resolving ambivalence (Miller & Rollnick, 2002). Similar to other counseling approaches, MI employs person-centered skills such as empathy, nonjudgment, and acceptance. Specific to MI are factors such as collaboration, evocation, and autonomy. The two phases of MI emphasize the common counseling factors listed above with a special emphasis on “rolling with resistance,” developing discrepancy between client values and behaviors, and supporting client self-efficacy about changing his/her behavior (Miller & Rollnick, 2002). Phase I specifically emphasizes building client motivation for change, while Phase 2 emphasizes strengthening client commitment and action-planning for change. Originally developed for substance abuse treatment, a meta-analysis of MI (Rubak, Sandbaek, Lauritzen, & Christensen, 2005) highlights the extension of MI to a plethora of other health behaviors including enhancing HIV testing, decreasing risky sexual



behaviors, enhancing healthy eating behaviors, increasing treatment adherence in therapy, and increasing consistent levels of PA.

**Physical Activity Counseling.** Physical Activity Counseling (PAC) is defined in the literature as the provision of advice and guidance about PA to a client by a healthcare professional (Olofsgard, 2009). This advice and guidance can be delivered in a verbal or written manner and should be individualized with regard to the client's specific presenting problem. A recent scientific statement by the American Heart Association names assessment as the most important aspect of PA counseling (Strath et al., 2013). The statement emphasizes the importance of assessing the current and past PA levels of the client and includes a review of objective and subjective tools for assessing PA levels. Physical activity counseling often includes a discussion of the mode, frequency, duration, intensity, and length of a PA program, and the acknowledgement of possible restrictions to the client initiating a PA program or increasing their level of PA.

The literature base for PA counseling is global and spans across health disciplines. While PA counseling has not been consistently observed in the literature among mental health practitioners, a number of leaders in the field of mental health (e.g., Dubbert, 2002; Dixon, Mauzey, & Hall, 2003; Stathopoulou et al., 2006) claim that addressing PA with clients is a viable and important role for mental health professionals. In their seminal article on therapists' attitudes about exercise, Barrow, English, and Pinkerton (1987) found that while the vast majority of therapists (93.57%) stated that they would recommend PA to other mental health professionals, only half (52.86%) recommended it "occasionally" and only 10% recommended it "all the time" during session with clients. Additionally, Barrow et al. (1987) found that psychologists from CBT, Humanistic, or Existential theoretical orientations were significantly

more likely to practice PA counseling than psychologists from other theoretical orientations. Similarly, McEntee and Halgin (1996) indicated that while most therapists engage in regular PA, very few use PA as an intervention with their clients.

In 1989, the United States Preventive Services Task Force adopted the first-ever national guidelines for PA counseling (Harris, Caspersen, DeFries, & Estes, 1989) instructing all healthcare providers to: 1) incorporate questions regarding the PA level of patients into history taking during routine healthcare visits; 2) identify inactive patients who do not appear to meet the minimal level of PA associated with gains in cardiorespiratory fitness; 3) attempt to interest those patients in adopting a program of regular PA by discussing the role of PA in disease prevention and by addressing the patient's individual risk of conditions associated with inactivity and his/her own perceived health status; 4) guide the patient in choosing an appropriate type of PA that would be efficacious for health; 5) guide the patient in choosing an appropriate level of participation in terms of intensity, duration, and frequency; 6) monitor compliance with PA and provide positive reinforcement during future healthcare visits; 7) discourage large increments in PA levels because of the increased risks for injury; 8) encourage the social support of significant others; 9) identify barriers that arise to optimal adherence and discuss strategies for overcoming them; and 10) encourage PA adherence, particularly after major lifestyle transitions. The guidelines also indicate that 11) an exercise electrocardiogram is not necessary for asymptomatic, generally healthy persons planning to increase their level of PA. It is also suggested that the Physical Activity Readiness Questionnaire (PAR-Q) may be useful in identifying persons needing specific medical attention. These guidelines are important because they highlight the critical need for healthcare professionals to address the physical inactivity epidemic through the practice of PA counseling.

Since the national guidelines for PA counseling were published, the US Preventive Services Task Force has adopted the Five A's construct- Assess, Advise, Agree, Assist, and Arrange,- as a key approach to facilitate and maintain positive behavior change (U.S. Preventive Services Task Force, 1996). Meriwether, Lee, Schroeder, & Wiseman (2008) adapted the Five A's Model for the practice of PA counseling by physicians. Further, these researchers adapted the TTM Stages of Change Model (Prochaska & DiClemente, 1982) for physicians to tailor their PA counseling approach based on the patient's Stage of Change. Like Meriwether and colleagues, other researchers continue to emphasize the dire need to address PA in health settings, citing that "failure in counseling younger, disease-free and sedentary adults and those from lower socioeconomic groups might represent important missed opportunities for primary prevention that could lead to adverse public health outcomes" (Wee, McCarthy, Davis, & Phillips, 1999, p. 1587). A review of the literature indicates that physically active healthcare providers are more likely to use PA counseling, their patients are more likely to initiate and maintain PA change (Weidinger, et al., 2008) and "psychologists can make important contributions to efforts to address this ongoing challenge to public health" (Dubbert, 2002, p. 526).

Across the globe, health practitioners are calling for more integration between physical and mental health. In their report on mental health and PA, the World Federation for Mental Health (2004) emphasizes the critical role of healthcare providers in mental health and highlights the evidence base of the relationship between PA and health. Nigerian medical researchers cited exercise as an infrequent practice in mental health treatment, and the authors call for all mental health practitioners to increase their practice PA counseling (Lawal & Abdullahi, 2008). Queensland Health (2003) in Australia published strategies for implementation of PA

interventions for mental health promotion including: 1) take a graded approach to introducing PA to clients, starting with small goals and increasing the amount of PA gradually; 2) use PA to enhance client employment opportunities through the increased socialization and motivation that PA participation can bring; 3) use the National Physical Activity Guidelines (for Australians) when conducting PA goal setting with clients; 4) use the ten-minute message to motivate clients who have reduced drive and interest; 5) use the ten-minute message three times a day so clients can incorporate PA into their regular day rather than an added extra.; and 6) when the clients are prescribed medication that has a weight gain side effect, discuss the PA guidelines with them. The physical inactivity epidemic is global and is being recognized as such by health professionals worldwide.

In addition to global partners, other health disciplines, like occupational therapists, have taken an active role in bridging the mind and body in treatment. In her strategies for facilitating PA and well-being, Reynolds (2001) calls upon occupational therapists to: 1) educate clients about health benefits of PA; 2) inform clients about current recommended minimum guidelines for PA; 3) explore perceived barriers to PA; 4) maximize rewards; 5) encourage goal setting and monitoring outcomes; 6) include strategies for helping clients to resist relapse; 7) build social support; and 8) provide cues to action or prompts. As health professionals from various disciplines continue to acknowledge the need for increasing the practice of PA counseling, it is important for continued dialogue and collaboration across disciplines to address the physical inactivity epidemic.

Hays and Sime (2013) outline specific practice guidelines for psychologists regarding exercise in therapy: 1) in taking client's history, include questions about current exercise habits; 2) recognize individual differences in ability and motivation; 3) take advantage of environmental

factors as natural reinforcers; 4) consider options to make exercise functional, especially when the client cannot afford home exercise equipment or a health club membership fees; 5) have clients consider a broad spectrum of activities - some may involve socializing with others, while some may be physically challenging, requiring conditioning for full enjoyment; and 6) set standards for frequency, intensity, and duration based on level of conditioning, tolerance for discomfort, and length of time since beginning an exercise program. According to Hays and Sime (2013), it is not enough to solely assess for exercise at intake; instead they recommend additional guidelines for practitioners. Dr. Michael Otto, a clinical psychologist, leading researcher in anxiety and PA, argues “We are experts in behavior change...we can help people become motivated to exercise” (as cited in Weir, 2011, p. 52). Taken together, these strategies, guidelines and calls to action are important for mental health practitioners to acknowledge in order to enhance their practice of PA counseling.

While many calls have been made for increasing the practice of PA counseling and guidelines have been established, there appears to be a large gap between the evidence base, acknowledgement of the need for more PA counseling, and practice (Seime & Vickers, 2006). This is the case not only in mental health, but also across medical disciplines. According to the medical literature, common barriers to provider-based PA counseling include cost, lack of time during visit, lack of financial reimbursement, lack of organizational support, perceived lack of knowledge or counseling skills, lack of training in the practice of PA counseling, lack of success with changing patient behavior, and lack of counseling protocols. Providers also report barriers such as there is not enough evidence for the benefits of PA, patients expect drug treatment, lifestyle is a “personal choice” so counseling is not appropriate, educational materials for patients are insufficient, and that recommending PA may cause harm to the patient and increase provider

liability. In addition, providers may doubt the patient's ability or intention to comply with the PA recommendations, deem some neighborhoods unsafe for PA, report language barriers, state that the issue is not a high priority, and believe that most clients are already physically active (Ainsworth & Youmans, 2002; Buchholz & Purath, 2007; Hebert, Caughy, & Shuval, 2012).

One barrier to the practice of PA counseling that is repeatedly cited across health disciplines is lack of training. In a study on PA curricula in medical schools, Garry, Diamond, and Whitely (2002) report that only 13% of medical school programs include training in PA and health. In a review on the relationship between PA levels of medical students and physicians, Lobelo, Duperly, and Frank (2009) report that medical students and physicians who are more physically active are more likely to practice PA counseling with their patients. "Because of the substantial evidence for the health benefits of PA, clinicians may have ethical obligations to prescribe PA" in line with beneficence - one of the basic ethical principles of medicine (Lobelo et al., p. 89). These researchers call for additional training on both the health benefits of PA and how to practice physician-delivered PA counseling. In a study on adult nurse practitioners (Buchholz & Purath, 2007), 61% of the 148 nurses surveyed reported no formal training in PA assessment and counseling. The nurses clarified that if they did have knowledge about PA, it came from one of two sources- through attendance at a professional development workshop or through self-study. Importantly, nurses who underwent a formal curriculum in PA reported higher knowledge of PA and confidence in assessing and prescribing PA.

In their review of nursing curricula, Happell, Platania-Phung, and Scott (2011) cite a dearth of training in the practice of PA counseling. Happell and her colleagues argue that training in PA "might aid in providing nurses with self-efficacy to more readily and regularly examine PA as a therapeutic intervention" (Happell et al., 2011, p. 314). These researchers call

for the practice of PA counseling to become an integral part of the healthcare model and not just something “extra” that nurses must train for on their own time. They describe the opportunity to practice PA as critical and state that it may be neglectful for nurses not to address PA with their patients. Happell and colleagues (2011) emphasize the role of self-efficacy in the training and practice of PA counseling.

While there is established evidence for the relationship between mental health and exercise (Saxena, Van Ommeren, Tang, & Armstrong, 2005), the mental health field has been slow to endorse the practice of PA counseling activity in the treatment of mental illness. While the health benefits of PA are clear and far outweigh the inherent risk of adverse injury (Powell, Paluch, & Blair, 2011), psychologists are hesitant to practice PA counseling. Some of the common barriers to practicing PA counseling include ethical considerations, time, reimbursement, safety, client interest and training. There is a strong need for psychologists, mental health practitioners, and other healthcare professionals alike, to work together to become trained and competent in the practice of PA counseling.

### **Training in Psychology Doctoral Programs on Health Behavior Change**

A review of the literature reveals a need for the training of psychology doctoral students on addressing health behaviors with clients. The World Federation supports this claim that mental health clinicians have little training in physical health behavior in their Mental Health Report (2004). APA-accredited Clinical, Counseling, and Combined graduate psychology programs are currently governed by the APA Committee on Accreditation (APACoA). Included in the APACoA Guidelines and Principles for Accreditation of Programs in Professional Psychology (2007), all Clinical, Counseling, and Combined program psychology doctoral students enrolled in APA-accredited programs are strongly encouraged to take a course in Health

Psychology. The past president of APA Division 47 Exercise and Sport Psychology states, “unfortunately graduate training programs rarely teach students how to help patients modify their exercise behavior...I think Clinical and Counseling psychologists could to a better job of incorporating exercise into treatment” (as cited in Weir, 2011, p. 49). Similarly, in her article on exercise therapy and mental health, health psychologist Amanda Daley (2002) states, “An important step forward would be the inclusion of information about the exercise and mental health relationship in the training of clinical psychologists and psychiatrists who are key stakeholders in the therapeutic process, and who are often involved in the implementation of treatment plans” (p. 268). Dr. Jasper Smits, a leading clinical psychology researcher in PA and therapy further argues, “Exercise has been shown to have tremendous benefits for mental health...the more therapists who are trained in exercise therapy, the better off patients will be” (2010, p. 1).

Faulkner and Biddle (2001), two university professors in the Department of Exercise Science at the University of Exeter, conducted semi-structured interviews with directors of Clinical Psychology doctoral programs in England. In their exploratory study, they asked directors about their attitudes towards exercise and mental health and the practice of PA counseling. Themes from the interviews revealed that the majority of directors agreed that while exercise can be a positive lifestyle activity, they were hesitant to recommend exercise as a treatment option. In reflecting on their findings, Faulkner and Biddle (2001) call for more collaboration among exercise and mental health professionals to connect exercise to therapy and also to incorporate fundamental counseling skills and techniques, such as CBT, into the PA counseling practice.



In line with Faulkner and Biddle's (2001) conclusions, it is important to consider the training of counseling skills that are transferable to addressing health behaviors such as PA. As described above, CBT and MI are two directive theoretical approaches that have been empirically shown to significantly help clients who are trying to change their health behaviors (Smits & Otto, 2009). The literature is sparse in distinguishing the nature of training received by doctoral psychology students in CBT and MI. While all Clinical and Counseling Psychology doctoral students in APA-accredited programs are strongly encouraged to take a course in Health Psychology, details regarding the curriculum, in addition to other training opportunities in CBT and MI, remain unclear. This may be due to the historical underpinnings of psychology and the historically more psychodynamic, less directive focus of many programs. Moreover, while some psychology doctoral students have been exposed to short-term training modules on MI, a recent review found no published studies that included graduate mental health students in psychology, social work or counseling as having been formally trained in motivational interviewing (Madson, Loignon, & Lane, 2009). While one article outlined a training sequence for Clinical Psychology graduate students, no empirical support for the MI training was described in the study (Arkowitz & Miller, 2008). Thus the nature, length and depth of MI training among graduate students is unclear and warrants further investigation.

Similar to limited training in CBT, MI, and other health behaviors, there is limited training among psychologists in PA counseling (PAC). In her article discussing the recent advances and challenges of PA and exercise, Dubbert (2002) notes the important role of mental health practitioners in addressing PA with clients. Dixon, Mauzey, and Hall (2003) detail the implications for counselors in a review of Dubbert's work. One implication is a perceived lack of training of mental health practitioners in the area of exercise and mental health. Dixon and

colleagues argue that as the PA research base continues to expand, it will be important for trainees to be educated on both the relationship between PA and mental health and on how to integrate PA into treatment planning with clients. They indicate that including PA in therapy is a cost-effective treatment for many individuals suffering from mental illness. The researchers suggest that counselors should become familiar with the ACSM PA guidelines, and encourage mental health professionals to provide psychoeducation to their clients about the physical and mental health benefits of consistent PA.

In her thesis on PA counseling of 529 Swedish mental health professionals, Olofsgard (2009) demonstrates the need for additional training in the practice of PA counseling among healthcare practitioners. In her study, she identified four key factors that enhance PA counseling: (1) the clinician's PA, (2) the clinician's knowledge about PA, (3) the clinician's attitude towards the practice of PA counseling activity in the prevention and treatment of mental illness, and (4) the frequency and behavior associated with PA counseling. In line with Olofsgard's work, Pasquariello (2011) conducted a national survey of 291 graduate students across mental health disciplines (e.g., psychology, social work, rehabilitation counseling, and psychiatric nursing) to assess current training of PA counseling among graduate students. Participants completed a web-based survey on their training, knowledge, attitude towards PA, personal level of PA, and use of PA with clients. Similar to Olofsgard (2009), knowledge of PA, training in PA counseling, and attitudes toward the practice of PA counseling significantly predicted the practice of PA counseling. Psychiatric nursing students reported significantly higher knowledge and practice of PA counseling activity (versus the other three domains), and while 75% of students reported no training in practicing PA counseling, 86% of the graduate students reported a need and desire for training in the practice of PA counseling. Both Olofsgard (2009) and

Pasquariello (2011) demonstrate the need and desire for training in PA counseling by current and future mental health professionals.

While a plethora of researchers have encouraged the inclusion of exercise in clinical practice, it is critical for doctoral psychology students to gain the training be able to ethically and competently practice PA counseling. Stathopoulou and colleagues (2006) explain that PA counseling is an elaborate, time intensive and lengthy process, and thus requires adequate training. Acknowledging ethical considerations including beneficence and scope of practice in addition to exercise and medical referral options are key considerations for training. Using a screening tool (e.g., Physical Activity Readiness Questionnaire-PAR-Q; Thomas, Reading, & Shephard, 1992) assists the practitioner in determining whether or not to refer the individual to a physician for clearance. Moreover, being trained on the contraindications of exercise (e.g., exercise addiction, over training, or physical health concerns) and possible barriers to exercise adherence, in addition to basic exercise prescription principles (e.g., when and how to increase PA; consistency with PA guidelines; at minimum assess PA at intake), will prepare doctoral psychology students and professionals to practice safe and ethical PA counseling.

### **Health Benefits of Physical Activity**

**Physical Activity and Physical Health.** Numerous governmental and community agencies have acknowledged the strong relationship between PA and health. The U.S. Surgeon General's Report on Physical Activity and Health (U.S. Department of Health and Human Services, 1996) highlights the major benefits of consistent PA: it reduces the risk of dying prematurely, dying from heart disease, and developing diabetes or high blood pressure. The report further cites that adhering to an exercise program helps reduce blood pressure in people who already have high blood pressure, reduces the risk of developing colon cancer, assists in

weight control, assists in fostering and maintaining healthy bones, muscles, and joints, assists older adults in becoming stronger and better able to move about without falling, reduces feelings of depression and anxiety, and promotes overall psychological well-being. A systematic review by Pedersen and Saltin (2006) discusses the efficacy of prescribing exercise to treat health concerns such as chronic heart and pulmonary diseases (e.g., coronary heart disease, chronic heart failure, intermittent claudication, chronic obstructive pulmonary disease), metabolic syndrome-related disorders (e.g., obesity, hypertension, dyslipidemia, type 2 diabetes, insulin resistance), muscle, bone and joint diseases (e.g., osteoporosis, fibromyalgia, chronic fatigue syndrome, rheumatoid arthritis, osteoarthritis) and cancer, asthma, depression, and type 1 diabetes. Given the strong evidence base regarding the positive relationship between PA and health, it is important for healthcare providers to consider practicing PA counseling as part of their treatment plan.

Based on the evidence base regarding the relationship between PA and health, the ACSM strongly encourages healthcare professionals to implement PA counseling in their practice. *Exercise is Medicine* (ACSM) is a global initiative launched in 2007 calling on all healthcare providers to assess and review every patient's PA level at every visit. Sallis (2011), Past President of ACSM and Founder of *Exercise is Medicine*, argues that PA should be the “fifth vital sign” of health (in addition to the other four vital signs: body temperature, heart rate, blood pressure, respiratory rate). He recommends that all healthcare practitioners ask two questions related to PA at every clinical consult (e.g., “On average, how many days/week do you engage in moderate or greater PA-like a brisk walk?” and “on those days, how many minutes do you engage in activity at this level?”). He suggests that using a computerized medical system allows for the calculation of average weekly PA for the patient, providing the healthcare professional

with measurable data to use in their discussion of PA that is tailored to their patient's current level of PA.

The goal of the *Exercise is Medicine* initiative is to address the current physical inactivity epidemic by improving worldwide public health through an international network of health practitioners committed to making PA a standard part of disease prevention and medical treatment. On the *Exercise is Medicine* website, the ACSM provides resources for healthcare professionals including the Healthcare Providers' Action Guide, an exercise prescription protocol with referral to an ACSM Certified Exercise Specialist, a PA clearance form, and the PAR-Q screening tool (Thomas et al., 1992). An important mission of the *Exercise is Medicine* initiative is to bridge relationships between health professionals from different disciplines. Sallis (2011) argues that collaboration between the healthcare and the fitness industries is necessary to address the physical inactivity epidemic. While it is imperative for healthcare professionals to discuss PA 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). Congruent with this mission, psychologists should emphasize the importance of using a multidisciplinary team approach to treatment that includes fitness and medical professionals (Hays & Sime, 2013; Faulkner & Biddle, 2001; Hays, 1999).

Given the empirical evidence of the physical benefits of exercise, and in line with the ACSM *Exercise is Medicine* initiative, psychologists and other healthcare professionals have a unique opportunity to engage their clients through multidisciplinary collaboration and the practice of PA counseling.

**Physical Activity and Mental Health.** The evidence base for the mental health benefits of PA is also important to recognize. The strongest evidence for the positive relationship

between PA and mental health is in the prevention and treatment of depression. In addition to depression, burgeoning research addresses the role of PA in relationship to anxiety disorders, attention deficit disorders, disordered eating, psychosis, and cognitive functioning (Stathopoulou et al., 2006; Richardson et al., 2005; Smits & Otto, 2011; Holley et al., 2011; Ellis, Crone, Davey & Grogan; Watson & Bulik, 2012; Erickson & Kramer, 2009; Kendall-Tackett, 2009). Research is also growing that ties the positive effects of PA to special populations such as trauma survivors, children and adolescents, older adults, and pregnant women. The APA has recently begun to more strongly acknowledge the role of psychologists in addressing PA and mental health through their APA Mind and Body Health Campaign (2011) and in APA Monitor in Psychology articles that highlight cognitive benefits of exercise, the effect of exercise on mental health, and the practice of exercise in therapy (Azar, 2010; Weir, 2011; DeAngelis, 2013).

In 2003, the U.S. National Comorbidity Survey addressed the relationship between PA and mental health in a sample of 8,098 adults aged 15-54 (Goodwin, 2003). The respondents were asked, “How often do you get physical exercise, either on your job or in a recreational activity?” and were given four response options: regular, occasional, rare, and never. Overall, 60% of respondents self-reported that they exercise “often.” Results indicate respondents who reported regular exercise were less likely to meet criteria in the previous year for both Major Depressive Disorder and a range of anxiety disorders. No relationship was found between regular exercise, Bipolar Disorder, alcohol and other substance dependence. While the data was collected through self-report, this survey provides important evidence of the relationship between PA and mental health.

**Physical Activity and Depression.** A plethora of research on mental health and exercise has focused on the relationship between PA and depression. Three seminal studies highlight this

important relationship: The Alameda County Study (Camacho, Roberts, Lazarus, Kaplan, & Cohen, 1991) followed participants ( $n = 4,848$ ) for 20 years and found that individuals reporting low levels of leisure activity reported significantly greater depressive symptomology than their more physically active peers at baseline. The Harvard Alumni Study (Paffenbarger, Lee, & Leung, 1994) measured PA habits from 1962-1966 and incidence of depression during a 23-27 year follow-up ( $n = 10,201$ ). Men who expended 1000-2500 kcal per week had 17% less risk for developing depression versus those who were less active. Further, those participants that expended more than 2500 kcal per week had 28% lower risk for developing depression. In the longitudinal analysis of the Alameda County Study (Camacho et al., 1991), physically inactive participants who did not meet criteria for depression in 1965, had a 70% increase in risk of developing depression in 1974; however, the risk of depression was alterable by increasing their level of PA. These two studies exemplify the role of PA in lowering the risk of developing depression.

While the majority of past studies on PA and depression were promising, the research methodology was poor (e.g., cross-sectional, small sample size, anecdotal, retrospective); however, experimental research design has become more stringent over time (Daley, 2008). Empirical studies have shown that consistent exercise facilitates the prevention of the onset of depression (Paffenbarger et al., 1994), and reduces symptoms of depression (Teychenne, Ball, & Salmon, 2008). In a meta-analysis of 57 observational and intervention studies, Teychenne and colleagues (2008) report the majority of the intervention studies were effective in reducing symptom intensity in depression. The researchers report decreases in depressive symptoms for studies that prescribed exercise at the minimum recommended PA standards of >150 minutes per week and reduced likelihood of depression with consistent PA (e.g., less than 90 minutes of

PA per week). In another review of the relationship between exercise and depression, Stathopoulou and her colleagues (2006) provide evidence for using exercise as part of the treatment plan for depression. Her meta-analysis of 11 randomized controlled trials (RCTs) of exercise treatment with clinically depressed individuals yielded a large effect size compared to control conditions of no treatment (5 studies), treatment as usual (1), lower level exercise (1), meditation/relaxation (1), and health education (1). Together, these reviews provide evidence that PA should be considered for both the prevention and treatment of depression.

Blumenthal and colleagues (2007) conducted a series of RCTs in which sedentary adult participants previously diagnosed with Major Depressive Disorder (MDD) were assigned to one of four groups: supervised exercise, home-based exercise, antidepressant pharmacotherapy, or placebo pill. Following four months of treatment, participants in both the supervised exercise and antidepressant groups reported higher rates of remission of negative depressive symptoms compared with the placebo group. Blumenthal and colleagues concluded that PA was generally comparable to antidepressants for sedentary adults with MDD. One year later, Blumenthal and colleagues (Hoffman et al., 2011) followed up with the participants and found that while the treatment condition did not predict remission, participants who reported consistent exercise at the one-year follow-up had lower scores on depression scales than their more sedentary peers. These studies demonstrate the important role of PA in the treatment of MDD and the reduction of depressive symptoms.

In addition to Blumenthal's work, other research studies have compared PA to psychopharmacological treatments of psychological disorders. When comparing PA to psychotropic medication for individuals diagnosed with MDD, significant improvements in depression were shown for individuals in the exercise condition (Babyak et al., 2000). A recent



parallel dose comparison study was done with sedentary individuals with MDD who had been prescribed selective serotonin reuptake inhibitors (SSRIs) but whose depressive symptoms had not remitted. Individuals in a minimal PA treatment group were compared to a group of individuals meeting the current national minimum PA standards (Trivedi et al., 2011).

Researchers demonstrated that after 12 weeks, individuals in both PA groups showed significantly decreased symptoms of depression. Trivedi and his colleagues (2011) found a trend for higher remission rates of depression symptoms in the higher-dose PA group and found significant moderating effects for family history of mental illness. These studies provide promising evidence for the consideration of PA as part of the treatment for depression, especially for individuals diagnosed with MDD who have been prescribed anti-depressant medication but are still experiencing negative symptoms associated with their depression.

Given the important research on exercise and mental health, governmental agencies have begun to recognize the evidence base of the relationship between PA and depression. In 2008, the U.S. Department of Health and Human Services (USDHHS) published the first-ever Physical Activity Guidelines for Americans. The USDHHS highlights the evidence for the relationship between PA and reduced depression in the guidelines. Similarly, the Chief Medical Officer of the United Kingdom Department of Health formally recommends PA as a treatment modality for clinical depression, stating “Physical activity is effective in the treatment of clinical depression and can be as successful as psychotherapy or medication, particularly in the longer term” (p. 58). The research on the relationship between PA and depression continues to grow and governmental officials are working on a policy level to connect the evidence base to the practice of PA counseling.

**Physical Activity and Other Psychological Disorders.** In addition to the treatment of depression, many researchers suggest that PA has a significant effect among clinical populations diagnosed with other psychological disorders. Research (Stathopoulou et al., 2006; Richardson et al., 2005) suggests that PA aids in reducing negative symptoms across disorders (e.g., alcohol cravings and consumption, anxiety, Bipolar disorder, Schizophrenia, somatic symptoms, exercise abuse in residential patients with eating disorders, depressed mood and anxiety in binge eating disorder, enhancing body satisfaction in patients with bulimia, and increasing weight gain in females with anorexia). Overall, there is a growing body of evidence that supports the practice of PA counseling in the prevention and treatment of a variety of mental disorders.

Similar to critiques of the research on PA and depression, many have argued that there is insufficient evidence of the positive relationship between PA and anxiety. Research has primarily focused on the treatment of anxiety with exercise and recently research has extended to include prevention of anxiety. In their book, *Exercise for Mood and Anxiety: Proven Strategies for Overcoming Depression and Enhancing Well-Being*, Smits and Otto (2011) explore the role of exercise in individuals who may be predisposed for developing panic disorders. Due to the similar physiological responses to exercise and panic, the researchers report that exercise may be an extension of exposure treatment and if properly treated, may prevent the onset of Panic Disorder by helping the individual to learn distress tolerance skills (Smits et al., 2008).

Additionally, there have been a number of studies that have addressed the relationship between PA and more severe psychological disorders. A recent meta-analysis (Holley et al., 2011) was conducted on the role of PA in the lives of individuals diagnosed with Schizophrenia. Of the 15 studies that met inclusion criteria, the meta analyses suggests overall benefits associated with regular PA among individuals with Schizophrenia which include positive

attributes of PA (e.g., enhanced components of autonomy-realms of self, social, physical), enhanced social interest, increased physiological health and well-being, improved self-image/concept, and reduced levels of anxiety and tension. A similar, systematic review (Ellis, Crone, Davey & Grogan, 2007) was conducted on the relationship between psychosis and PA. Based on the review of 10 studies, Ellis and colleagues (2007) report a general positive trend in reducing negative symptoms of psychosis. The researchers state more research is needed with larger sample sizes to continue to better understand the relationship between PA and more severe symptoms of mental illness such as psychosis.

For many years, exercise was generally not included in treatment planning for individuals diagnosed with an eating disorder. However, in recent years, eating disorder treatment facilities include PA in the multidisciplinary comprehensive treatment plan for their clients. Many factors contribute to developing a treatment plan for an individual with an eating disorder. In order for the treatment team to determine the role of PA in the treatment plan, careful consideration of factors is warranted (e.g., weight, amenorrhea, relationship history with exercise, physical condition, level of care). A recent meta-analysis (Watson & Bulik, 2012) on the best practices in the treatment of Anorexia Nervosa highlights the importance of graded exercise as part of treatment and of addressing excessive exercise as relevant to the clinical case. More research is needed to continue to understand the role of PA in the treatment and maintenance of eating disorders.

Numerous pilot studies and editorial articles, in addition to a number of robust research studies, have been published on the role of PA with other negative symptomology associated with psychological distress. Physical activity can play a key role in substance abuse treatment depending on the individual's presenting concern (Stathopoulou et al., 2006). Providing the

individual struggling with substance abuse or dependence with a healthier way to engage their body through exercise can help facilitate the treatment process. Moreover, a growing body of research in the past decade has consistently suggested an increase in cognitive functioning in relationship to exercise (Erickson & Kramer, 2009). Enhanced cognitive functioning following PA appears to be consistent across populations and has resounding practice implications from academic achievement to delaying or preventing age-related cognitive decline. Additionally, recent research has begun to address the role of PA in trauma work suggesting that providing the trauma survivor with the opportunity to regain control through PA has been associated with reducing negative symptoms associated with trauma (Kendall-Tackett, 2009). Additional research is warranted to better understand the role of PA in reducing negative symptoms associated with psychological distress.

In addition to the relationships between PA and psychological disorders are a number of special populations that have unique characteristics that need to be taken into consideration when practicing PA counseling. This section will briefly highlight these considerations for older adults and children and adolescents. For these populations, there are specific guidelines for PA to be taken under consideration.

One important population to consider is older adults. The minimum PA published by the ACSM and American Heart Association includes specific guidelines for older adults (Nelson et al., 2007). In addition to the minimum PA guidelines, key recommendations specific to the older adult population include: reducing sedentary behavior; increasing moderate activity with less emphasis on attaining high levels of activity; taking gradual or stepwise approaches to minimize the risk of overuse; performing muscle strengthening activities; and using risk management strategies to prevent injury. In addition to more specific exercise prescription guidelines, a

systematic review on PA and depression in older adults suggests a reduction of negative symptoms of depression (Blake, Malik, & Thomas, 2009). In addition to reducing depressive symptoms, PA has also been correlated with enhanced cognitive functioning among older adults, as well as other populations as previously mentioned (Erickson & Kramer, 2009). For the older adult population it is important to recognize the critical impact of PA on mental health.

In addition to older adults, other unique populations are children and adolescents. Similar to guidelines published for the older adult population, the ACSM and AHA have published guidelines for minimum PA specific to children and adolescents (Haskell et al., 2007). There is a growing body of research that suggests that the first 10 years of age are critical to engage children in regular PA, and that learning to live a more sedentary lifestyle early in life can have a grave impact. In a consensus statement by the International Olympic Committee (IOC) on the promotion of PA to young people, the IOC calls on various entities such as community and governmental partners to address the physical inactivity epidemic. Specifically, the IOC calls on healthcare providers to continue to promote the health and fitness of children and adolescents; however, the IOC argues that first healthcare providers need adequate education on PA (Mountjoy et al., 2011). In a recent systematic review of PA and mental health in children and adolescents, Biddle and Asare (2011) report overall positive trends between exercise and pillars of mental health. The researchers emphasize that across the majority of the 27 studies reviewed, higher rates of sedentary behavior among children and adolescents are linked to more negative symptoms associated with psychological disorders. Further, the researchers report improvements in cognitive performance and academic achievement in children and adolescents who routinely engage in PA. The researchers report enhancements in self-esteem primarily in the short-term, in addition to a reduction of negative symptoms associated

with depression. Biddle and Asare (2011) call for additional research with more robust research methodology to continue to address the relationship between PA and mental health among children and adolescents.

A number of studies have recently been conducted on the role of PA in children diagnosed with Attention Deficit Hyperactivity Disorder (ADHD). One study (Kiluk, Weden, & Culotta, 2009) compared 65 children diagnosed with ADHD to 32 children diagnosed with a learning disorder (LD). Based on retrospective parent reports of their child's behavior, the study found that children with ADHD who played three or more sports had significantly lower symptoms of depression, whereas no such effect was evident in the LD group. Another pilot study (Gawrilow, Stadler, Langguth, Naumann, & Boeck, 2013) with children diagnosed with ADHD assessed baseline PA levels in addition to affect, then randomly assigned the children to either a PA task or a sedentary task before assessing executive control. At baseline, children who reported lower levels of PA reported more severe depressive symptomology. Additionally, children in the PA condition demonstrated improved executive functioning after only five minutes of vigorous activity, whereas the sedentary condition demonstrated no significant improvement. More research is warranted to continue to better understand the relationship between PA and attention particularly in children diagnosed with ADHD.

Overall, there is a growing body of empirical support demonstrating the mental health benefits of PA. These benefits of PA include both prevention and treatment of negative symptoms associated with psychological disorders. Based on their unique needs, special consideration is warranted when working with populations such as older adults and children and adolescents on the relationship of PA and health.

## **Constructivism**

In recent years, Constructivism has become a predominant educational theory. From a Constructivist point of view, learning is based on integrating new exposure from multiple perspectives with previous learning experiences (Gold, 2001). Constructivism is an alternative philosophical approach to the tradition of Objectivism. While Objectivism is based on complete and correct understanding, Constructivism is rooted in the importance of incorporating experience (Duffy & Jonassen, 1992). Constructivism assumes that people learn and assimilate new knowledge by developing cognitive structures based on experiences (Black & McClintock, 1996). People then adapt to their new knowledge structures and use them to guide how they interact with the environment. Constructivism denotes that learning is a search for meaning (Cavana, 2009). Knowledge is a combination of what the individual already understands with the process of constructing the meaning of the new information integrated with current understanding (Nunes, McPherson, & Rico, 2001). Thus, according to Constructivist philosophy, it is impossible to isolate “modules” of knowledge.

Theoretical critiques of Constructivism argue that it is not important to emphasize context and experience in making meaning (Allen, 1992). Allen claims that many theorists challenge Constructivist philosophy and offer an alternative approach that is inclusive of both Objectivism and Constructivism. Instead of being separate constructs, Allen suggests that the overlap of the theories enhances learning. Through integration, learning can be both knowledge-based and gained through the context of the learning environment in addition to the prior knowledge and experience of the learner.

**Constructivist Pedagogy.** Constructivist pedagogy is the employment of Constructivism theory in an academic learning environment. Laurillard (1993) described Constructivism as an

active process in which the student makes meaning of new concepts based on his or her own experience. According to Nunes et al. (2001), a Constructivist pedagogical approach is based on the following assumptions: learning is an active process where the knowledge is constructed by the student; the role of the instructor is to facilitate the active process of constructing meaning by giving the student access to multiple resources; curriculum design should both engage the student's unique experience while encouraging the student to be motivated to learn. These assumptions require the student to be self-disciplined by taking ownership over their learning experience.

Constructivism allows the instructor to select tasks and learning material based on the student's lived experience (Cunningham, 1992). Additionally, when using a Constructivist pedagogical approach, an instructor must design a curriculum that includes multiple perspectives on the subject being taught (Nunes et al., 2001). Nunes and colleagues (2001) also recommend that an educational curriculum include perspectives of both experts and peers of the students in addition to including examples that are meaningful to the students. Cavana (2009) argues that this process applies directly to the field of psychology, where Constructivism can be viewed as a learning process through reconstruction and meaning-making. This is relevant to both using this theoretical framework as a platform for clinical work in the classroom and the clinical training of psychologists. Constructivism calls for both the client and the graduate psychology student to make meaning of their new knowledge by drawing on their learned and lived experience.

**Constructivism and Online Learning.** Recently, Constructivist approaches to learning have been extended to online educational theory and practice. Thorpe (2002) argues that Constructivism is currently the most widely used theoretical approach to online learning. The online format gives the students the opportunity to be directly involved in their own learning



process. While classroom learning at the university level is traditionally guided by higher education faculty, online learning is typically self-guided. The professor becomes more of a facilitator of learning than a lecturer (Tan & Hung, 2002). Through the recent growth in online learning, there has been a significant shift from an instructor-centered to a learner-centered focus in education and training (Garrison, 2003). Constructivist approaches in online program design and implementation provide students the framework to engage in a learning environment that is supportive but allows the student independence in understanding their own experience of learning (Kaye & Volkers, 2007). Further, Constructivism employs the student's active participation in constructing meaning rather than passively learning the material (Kaye & Volkers, 2007). Through a Constructivist approach, student's perceptions of themselves as independent learners can be enhanced by their ability to engage the learning process on their own time through the accessibility and ease of online learning (Kaye & Volkers, 2007). Thus, through Constructivism, learning becomes student-centered.

According to Ertmer and Newby (1993) and Wilson (1993) important elements of Constructivist theory to remember in online course design include: emphasis on the context and the environment in which skills will be learned; providing the student with meaningful contexts to apply what they are learning; emphasizing the student's control over their learning process; presenting material using many different approaches; encouraging the learner to use their own experience and knowledge to think beyond the material presented; and focusing the assessment of learning on the transfer of knowledge and skills. Similar to Nunes et al. (2001), these researchers outlined important considerations for professors to consider when approaching instruction from a Constructivist perspective.

In addition, Doolittle (1999) emphasized the importance of eight Constructivist learning strategies: 1) provide an authentic real-world environment; 2) provide an environment that allows social negotiation and mediation; 3) provide relevant content; 4) recognize prior knowledge; 5) formatively assess students; 6) provide opportunities for reflection and self-mediation; 7) promote teacher as facilitator; and 8) provide multiple representations of content. She highlights that these strategies will promote a Constructivist learning environment by engaging the students through various means that extend beyond the more traditional, teacher-centered model of educational pedagogy.

During the past ten years, online learning has been extended to various health science training programs. Across disciplines, health science educators have been strongly encouraged to expand their use of online technology in their curricula (McLoughlin & Luca, 2002; Vroman & Kovacich, 2002). Online learning has been used among medical, nursing, pharmacy, occupational therapy, physical therapy, dentistry, dental hygiene, and nutrition professional school settings (Carbonaro et al., 2008). A review of physical therapy education by Veneri (2011) specifically outlined the role and effectiveness of computer-assisted learning (CAL). In his review, Veneri (2011) found evidence to support CAL as effective as traditional face-to-face learning, but noted the small sample size of most of the comparison studies in his review. In his implications, Veneri (2011) highlighted the importance of CAL and emphasized that theoretical foundations of learning theory can be used in traditional and CAL.

**Preparation Interaction Evaluation Model.** Congruent with the Constructivism approach, the Preparation Interaction Evaluation (P.I.E.) Model (Nastanksi & Colaric, 2008) provides a foundation for student-centered learning through online education. Similar to Constructivist pedagogy, the authors emphasize an engaging and interactive learning platform.

The three sections of the P.I.E. Model, Preparation, Interaction, and Evaluation, are designed to guide the student through the distance-learning course. Preparation enables the student to gain perspective, acknowledge course objectives, and be provided with an assignment or task overview. Interaction is the core of the model where the student interacts with new material through four possible avenues: student with content; student to student; student to instructor; and student with self. The P.I.E. model argues that interactions with the material, with others, and with self are critical to learning new knowledge. Unlike more traditional online learning models, the P.I.E. model heavily emphasizes the role of self-reflection, which needs to be weaved into the structure of the course and facilitated by the instructor to be most effective. One way to enhance self-reflection is through journal writing. Where the student has the opportunity to learn through various occasions of reflective practice: in anticipation of events, during events, and after the event (Boud, 2001), journaling can provide a reflective experience that is more similar to traditional face-to-face classroom learning environments. The third component of P.I.E., Evaluation, engages the student with the opportunity to demonstrate their mastery of the course objectives through either formal assessments or informal feedback. Further, Zhang (2005) argues that students in more engaging and interactive learning environments are more satisfied with their learning experience and achieve higher scores on objective assessments. Together, the emphasis on engagement, interaction, and self-reflection facilitates an optimal framework for learning to occur using an online platform.

**Online Education in Psychology.** In 2001, a task force was assembled by the APA to address distance education in the professional training of psychology (APA, 2002). The task force emphasized the significant role of online education in the training of psychologists. A review of the task force (Murphy, Levant, Hall, & Glueckauf, 2007) highlighted best practices of

distance education and quality assurance, as well as accreditation standards for distance-based programs. The task force identified new challenges in accrediting distance learning programs in professional psychology including: access to online materials, competence of faculty in technology and distance pedagogy, supervision and mentoring, library and learning resources, and institutional context and commitment (APA, 2002). This review by Murphy and colleagues also acknowledged the potential challenges of integrating online education methods for campus-based doctoral psychology programs and noted some of the same challenges identified by the task force for accrediting distance learning programs listed above.

A survey of APA-accredited psychology doctoral programs assessed the recent trend in internet use among training programs. Wiswall (2010) demonstrated that current training programs tend to use the internet for email communication, psychology department web-pages, and online access to resources and journal research articles. This survey found limited integration of online pedagogical teaching methods among psychology doctoral programs. Wiswall indicated the need for implementing online education into professional psychology training and strongly encouraged psychology educators to face the paradigm shift of pedagogy based on recent advances in technology. Congruent with Wiswall's push for incorporating online training in psychology, DeLeon, Crimmins, and Wolf (2003) supported the need for training future psychologists in the use of new technology. These researchers suggested that training should include both building skills in using technology in clinical settings and specific training in telehealth.

One study employing online education to train doctoral psychology students in dialectical behavior therapy (DBT) was recently conducted by Worrall and Fruzzetti (2009). This education program was designed to engage students in identifying effective aspects of DBT among peer-

supervisors of psychologists-in-training. Worrall and Fruzzetti (2009) found that students were able to identify effective therapy interventions and guide peer evaluation and feedback using the online education format. The researchers proposed that similar online training programs could be implemented to provide doctoral psychology students with alternative opportunities to develop clinical skills.

Given the shift toward technology in society at large and in education, it appears that more doctoral psychology programs will begin to use additional modes of technology to train their students (Wiswall, 2011; Worrall & Fruzzetti, 2009). While the majority of programs tend to use the internet for other forms of communication and access to resources, it is recommended that more graduate programs consider using online education training opportunities for their students.

### **Summary Statement**

Despite the emergence of guidelines and PA recommendations, and support from governmental agencies, PA counseling is underutilized and often a neglected intervention in mental health (Faulkner & Biddle, 2001; Callaghan, 2004; Seime & Vickers, 2006). Doctoral psychology students can play a critical role as future mental health professionals as an access point to connect individuals with PA resources in addition to providing psychoeducation on the health benefits of PA (Crone & Guy, 2008). Given these theoretical (SCT, Constructivism, P.I.E. Model) and empirical findings (physical and mental health benefits of PA), it seems important to consider an online training intervention that targets social cognitive factors related to the practice of PA counseling. Health behaviors in general, and PA in particular, provide a specific opportunity for psychologists to play an active role in addressing the current physical inactivity epidemic. In order for psychologists to ethically practice PA counseling with their

clients, psychologists must both gain knowledge of the health benefits of PA and learn how to address PA behavior in their clinical work.

Self-efficacy enhancement can be particularly effective in the training and development of counselors (Larson, 1998). Self-efficacy focuses on four processes that may serve to help practitioners feel more efficacious in practicing PA counseling with their clients. Enhancing PA counseling self-efficacy among psychologists-in-training allows the trainee to build upon their counseling skills (e.g. behavior based approaches such as CBT and MI; and basic helping skills). In line with increasing knowledge and enhancing self-efficacy, Constructivist-based online learning environments may facilitate and guide students to connect the new course material to their previous knowledge, skills, and experience (Gold, 2001), training students to transfer their basic counseling skills to their practice of PA counseling.

Drawing heavily on exercise prescription and the health behavior modification literature, a Constructivist online intervention program was developed to enhance self-efficacy in the practice of PA counseling among psychologists in training. In the United States, no such training program exists, despite the strong base of literature on the mental health benefits derived from PA and the demonstrated need for training in PA counseling (Seime & Vickers, 2006; Pasquariello, 2011).

Thus, this intervention study addressed a critical gap in the literature on PA counseling self-efficacy, mental health benefits of PA, and the training of psychologists. Based on Social Cognitive Theory (Bandura, 1986), Constructivism (Black & McClintock, 1996), and the P.I.E. Model (Nastanksi & Colaric, 2008), this online intervention was designed to enhance self-efficacy of practicing PA counseling, increase knowledge of the health benefits of PA and PA counseling, and increase the practice of PA counseling, among psychologists in training.

## Method

Information in this section details and describes the aims of the study, hypotheses, recruitment procedures, study design, measures implemented, procedure, intervention development, intervention implementation, and statistical analyses.

### Aims of the Study

**Primary Aim:** The primary aim of this study was to compare different training interventions that can be employed in preparing Clinical and Counseling Psychology doctoral candidates in the practice of physical activity counseling. Three training programs were evaluated: Physical Activity Counseling Interactive Training (PACIT), an online interactive intervention, Physical Activity Counseling Content Training (PACCT), an online content intervention, and Training as Usual (TAU), a control group (with an option for delayed intervention). The interventions were evaluated regarding the participants' relative ability to 1) enhance self-efficacy of physical activity counseling, 2) improve knowledge of the health benefits of physical activity and physical activity counseling, and 3) increase practice of physical activity counseling with clients from pre-to-post-intervention. Additionally, interventions were evaluated regarding participant's personal level of physical activity and Stage of Change regarding their practice of physical activity counseling.

**Exploratory Aim:** An additional aim was to explore differences between pre-and post-intervention groups regarding 1) knowledge of physical activity and physical activity counseling, 2) theory-based determinants of health-behavior change (e.g., self-efficacy, Stages of Change), and 3) behavioral outcomes (e.g., physical activity, practice of physical activity counseling with clients).

## **Primary Hypotheses**

**Hypothesis 1:** It was hypothesized that participants in the PACIT group, compared to participants in the PACCT and TAU groups, would demonstrate: 1) a significantly greater enhancement of self-efficacy regarding the practice of physical activity counseling with clients from pre-to-post-intervention; 2) a significantly greater increase in knowledge of the health benefits of physical activity and physical activity counseling from pre-to-post-intervention; and 3) a significantly greater increase in the practice of physical activity counseling with clients from pre-to-post-intervention.

**Hypothesis 2:** It was hypothesized that participants in the PACIT group and the PACCT group compared to participants in the TAU group would be more likely to: 1) demonstrate a significantly greater increase in personal level of physical activity from pre-to-post-intervention; and 2) advance significantly further along the Stages of Change regarding practicing physical activity counseling with clients from pre-to-post-intervention.

**Hypothesis 3:** It was hypothesized that participants in all three groups (PACIT, PACCT, and TAU) who are more physically active at pre-intervention would be more likely to: 1) demonstrate a significantly greater level of knowledge regarding physical activity and physical activity counseling at pre-and-post-intervention; 2) practice a significantly greater level of physical activity counseling with clients at pre-and-post-intervention.

## **Exploratory Hypotheses**

**Exploratory Hypothesis 1:** It was hypothesized that across in all three groups (PACIT, PACCT, and TAU), participants who come from a Cognitive Behavioral Therapy, Humanistic, or Existential theoretical orientation would be more likely to: 1) demonstrate a significantly greater level of knowledge of the health benefits of physical activity and physical activity



counseling at pre-and-post-intervention; and 2) practice a significantly greater level of physical activity counseling with clients at pre-and-post-intervention.

**Exploratory Hypothesis 2:** It was hypothesized that across all three groups (PACIT, PACCT, and TAU), participants whose current supervisor is theoretically flexible and/or feels more autonomous in their treatment planning with clients would be more likely to: 1) practice a significantly greater level of physical activity counseling with clients at post-intervention; and 2) advance significantly further along the Stages of Change regarding practicing physical activity counseling with clients from pre-to-post-intervention.

**Exploratory Hypothesis 3:** It was hypothesized that across all three groups (PACIT, PACCT, and TAU), participants who had more knowledge of physical activity and physical activity counseling at pre-intervention would be more likely to: 1) practice a significantly greater level of physical activity counseling with clients at pre-and-post-intervention; and 2) advance significantly further along the Stages of Change regarding practicing physical activity counseling with clients from pre-to-post-intervention.

**Exploratory Hypothesis 4:** It was hypothesized that across all three groups (PACIT, PACCT, and TAU), participants who reported more self-efficacy in practicing physical activity counseling at pre-intervention would be more likely to: 1) practice a significantly greater level of physical activity counseling with clients at pre-and-post-intervention; and 2) advance significantly further along the Stages of Change regarding practicing physical activity counseling with clients from pre-to-post-intervention.

### **Participant Recruitment Procedures**

**Participant recruitment.** Participants were doctoral students in Clinical and Counseling Psychology programs recruited from research request emails acquired from electronic mailing

listserves or their respective graduate program directors of clinical training or department chairs. Potential participants received emails via their graduate program director of clinical training, department chair, or via organizational electronic mailing listserves, including Exercise and Sport Psychology-Sportpsy, Association of Directors of Psychology Training Clinics-ADPTC, Association of Counseling Center Training Agencies-ACCTA, American Psychological Association Division 38 Health Psychology, American Psychological Association Division 38 Students Health Psychology, and American Psychological Association Division 47 Exercise and Sport Psychology.

**Inclusion criteria.** To be included in the current study, participants had to be a doctoral graduate student or recent graduate of a Clinical Psychology or Counseling Psychology program. Other criteria for participation in this study included: a) having current direct client contact, b) being a current or recent student of an APA accredited program (unlicensed and under current supervision), and c) having a current supervisor of their clinical work.

**Exclusion criteria.** Participants were excluded from the current study if they a) were licensed psychologists, b) had no current direct client contact, c) were not enrolled in or a recent graduate of an APA accredited program, and/or d) had no current supervisor of their clinical work.

**Informed consent.** Prior to completing any component of the current study, participants provided consent online via REDCap (Research Electronic Data Capture). REDCap is a web-based application that establishes a secure connection using encryption between the computer and the Virginia Commonwealth University (VCU) network, ensuring that communication is protected and cannot be viewed by other devices (Harris et al., 2009). Informed consent procedures were conducted in accordance with the VCU Institutional Review Board (IRB).

Participants were asked to provide informed consent for the current study acknowledging that they were informed of the purpose, description, potential risks or discomforts, benefits, cost of participation, payment for participation, confidentiality, and withdrawal procedures associated with this study (see Appendix A).

**Sample size.** Sample size was calculated a priori based on the primary aim. Using G\*Power 3.1 (Faul, Erdfelder, Lang, & Buchner, 2007), a power analysis was conducted with five predictor variables, including group assignment and three covariates (self-efficacy regarding practicing physical activity counseling, knowledge of the health benefits of physical activity and physical activity counseling, and the practice of physical activity counseling). The sample size required to detect a medium effect size with a power level of .80 and alpha set at .05 was 55 total participants. This effect size was selected based on the pilot nature of the current study. Because 55 does not evenly divide into three (groups), the target sample size for this study was 60 total participants (20 participants per group).

## **Design**

The current study used a three-arm, pre-test post-test control group design (Shadish, Cook, & Campbell, 2002; Larson & Daniels, 1998) that included two online training programs and a control group (with an option for delayed intervention), to examine changes in each participant's self-efficacy of practicing physical activity counseling with clients, each participant's knowledge of the health benefits of physical activity and physical activity counseling, and their practice of physical activity counseling. Upon completing the informed consent, participants were randomly assigned using a computer random number generator (Paul, Seib, & Prescott, 2005) to one of the following groups: (1) PACIT, (2) PACCT, or (3) TAU. This experimental design minimizes potential threat to both internal and external validity. In

particular, using random assignment eliminates several threats to internal validity such as regression to the mean and maturity. Further, this study design controls for history and maturation effects as all three groups were evaluated post-intervention (Shadish et al., 2002).

## **Measures**

Measures were administered to participants at pre-and-post-intervention. Per a review of the literature, it is evident that psychometric analyses for Physical Activity Counseling are not present; thus, many of the measures used in this study were adapted to include Physical Activity Counseling. For each adapted measure, reliability analyses were calculated. Measures administered included adapted versions of the following: the Counseling Self-Efficacy Scale (CSES; Melchert, Hays, Wiljanen, & Kolocek, 1996), Exercise Benefits/Barriers Scale (EBBS; Sechrist, Walker, & Pender, 1987), Psychotherapy Practice Scale-Clinician Depression Care Version (PPS; Hepner, Azocar, Greenwood, Miranda, & Burnam, 2010), Stages of Change Scale (SOCS; McCrea & Pritchard, 2010), and the Counseling Outcome Measure (COM, Adelstein, Gelso, Haws, Reed, & Spiegel, 1983). Additional measures included: the Knowledge of Physical Activity Counseling Scale (KPAC) (see Appendix B), the International Physical Activity Questionnaire-Short Form (IPAQ; IPAQ Research Committee, 2005), a Demographic Form (see Appendix C), and the Intervention Evaluation Questionnaire (IEQ) (see Appendix D). The Demographic Form was administered only at baseline, and participants in the TAU group were not administered the IEQ.

**Self-Efficacy of Physical Activity Counseling.** Self-efficacy was assessed by adapting the Counseling Self-Efficacy Scale (CSES), a self-report measure of the self-efficacy of counselors with individual and group therapy skills (Melchert et al., 1996). The CSES is a 20-item measure demonstrating internally consistent scores (*Cronbach's*  $\alpha = 0.91$ ) that asks

participants to rate their level of agreement with each statement on a five-point scale from 1 = *agree strongly* to 5 = *disagree strongly*. For the purposes of this study, each item of the CSES was adapted to include physical activity counseling. For example, the original item ‘My knowledge of personality development is adequate for counseling effectively’ was adapted to ‘My knowledge of physical activity is adequate for counseling my clients on physical activity effectively’ and the original item, ‘My knowledge of ethical issues related to counseling is adequate for me to perform professionally’ was adapted to ‘My knowledge of ethical issues related to physical activity counseling is adequate for me to perform professionally.’ The adapted CSES yielded internally consistent scores (*Cronbach’s*  $\alpha = 0.85-0.93$ ).

**Knowledge of the Benefits and Barriers of Physical Activity.** Knowledge and attitudes regarding the benefits and barriers of physical activity and the practice of physical activity counseling with clients were assessed by adapting the Exercise Benefits/Barriers Scale (EBBS), a self-report measure of perceived exercise benefits and barriers to exercise (Sechrist et al., 1987). The EBBS is a 43-item measure demonstrating internally consistent scores (*Cronbach’s*  $\alpha = 0.95$ ) that asks participants to rate their level of agreement with each statement on a four-point scale from *SA = strongly agree* to *SD = strongly disagree*. The EBBS has two subscales, the 29-item Benefits Scale and the 14-item Barriers Scale that demonstrate internally consistent scores, (*Cronbach’s*  $\alpha = 0.95$ ) and (*Cronbach’s*  $\alpha = 0.87$ ), respectively. Two week temporal stability was good for the total measure ( $r = 0.89$ ), Benefits Scale ( $r = 0.89$ ), and the Barriers Scale ( $r = 0.77$ ). For the purposes of this study, each item of the EBBS was adapted to include physical activity counseling. For example, the original item, ‘Exercise decreases feelings of stress and tension for me’ was adapted to ‘Exercise decreases feelings of stress and tension for my clients’ and the original item, ‘I have improved feelings of well being from

exercise,’ was adapted to ‘My clients will have improved feelings of well being from exercise.’ The adapted EBBS yielded internally consistent scores (*Cronbach’s*  $\alpha = 0.82-0.89$ ).

**Knowledge of Physical Activity Counseling.** Targeted knowledge of physical activity counseling was assessed by the Knowledge of Physical Activity Counseling (KPAC), a self-report measure developed by adapting items from the Module Summary Quizzes (see Intervention Design below) most representative of the learning goals and objectives from the four-modules of the PACIT and PACCT online interventions. The KPAC is a 15-item measure that includes multiple choice, fill in the blank, and true/false items related to physical activity counseling. The KPAC yielded internally consistent scores (*Cronbach’s*  $\alpha = 0.65-0.76$ ).

**Practice of Physical Activity Counseling.** The practice of physical activity counseling was assessed by adapting the Psychotherapy Practice Scale-Clinician Depression Care Version (PPS), a therapist self-report measure of psychotherapeutic techniques used in the treatment of depression (Hepner et al., 2010). The PPS is a 16-item measure that demonstrates internally consistent scores across the three subscales, cognitive-behavioral (*Cronbach’s*  $\alpha = 0.84$ ), psychodynamic (*Cronbach’s*  $\alpha = 0.82$ ), and interpersonal techniques (*Cronbach’s*  $\alpha = 0.79$ ). The measure asks participants how frequently they use specific techniques in the course of treating a client on a seven-point scale from *1 = never* to *7 = always*. For the purposes of this study, each item of the five-item CBT subscale of the PPS was adapted to include physical activity counseling. For example, the original item, ‘Did you help this patient understand the beliefs and assumptions behind their thinking (e.g. core beliefs, cognitive schemas)?’ was adapted to ‘Did you help a client understand the relationship between mood and physical activity (e.g. decrease of anxiety and depression negative symptoms)?’ The original item, ‘Did you assign ‘homework’ between sessions (e.g., asked patient to complete Mood Rating Scale or

record thoughts, feelings, or activities)?’ was adapted to ‘Did you assign ‘homework’ related to physical activity between sessions (e.g. specific exercise prescription, referral to exercise specialist, referral to physician for physical activity clearance)?’ The adapted PPS yielded internally consistent scores (*Cronbach’s*  $\alpha = 0.87-0.92$ ).

**Physical Activity.** Physical activity was assessed by the International Physical Activity Questionnaire-Short Form (IPAQ), a self-report measure (IPAQ Research Committee, 2005). The IPAQ was developed with the aim of determining self-reported levels of physical activity among populations aged 15-69, which is consistent with the age range of participants in this study. Specifically, the short form of the IPAQ provides 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). Once the data was collected, the published IPAQ data cleaning steps were followed. After the data was cleaned, the established IPAQ short-form scoring protocol was followed. Per the protocol, the number of days of exercise for each participant was multiplied by the reported duration (minutes per day) for each level of physical activity (walking, moderate, vigorous) and then was converted to minutes by week, or Metabolic Equivalent (MET), by multiplying the total number of minutes by 3.3 (walking), 4.0 (moderate), and 8.0 (vigorous). The participants’ overall level of physical activity was obtained by summing the MET, resulting in a continuous variable of personal level of physical activity.

**Stages of Change.** Each participant was assessed by the Stages of Change Scale (SOCS), a five-item self-report measure of Stages of Change of the therapist in the use of a specific treatment modality (McCrea & Pritchard, 2010). For the purposes of this study, each item of the SOCS was adapted to include physical activity counseling as the treatment modality. For example, the original item, ‘I have just begun to implement this method into my practice’ was adapted to ‘I have just begun to implement Physical Activity Counseling with my clients.’ The original item, ‘I already use this method and have measures in place to maintain its use’ was adapted to ‘I already use Physical Activity Counseling with my clients.’ The adapted SOCS yielded internally consistent scores (*Cronbach’s*  $\alpha = 0.70-0.82$ ).

**Physical Activity Behavior Change of Client.** Physical activity behavior change of clients was assessed by adapting the Counseling Outcome Measure (COM), a therapist-completed measure that rates the degree of client improvement during counseling (Adelstein et al., 1983). The COM is a 4-item measure that demonstrates two-week temporal stability for each of the four items respectively, ( $r = 0.81$ ,  $r = 0.74$ ,  $r = 0.63$ ,  $r = 0.73$ ). No other reliability or validity data for the COM was reported by Adelstein and colleagues. The COM asks participants to rate their level of agreement with each statement on a seven-point scale from  $1 = much\ worse$  to  $7 = much\ improved$ . The following prompt was used in this study, ‘Please recall a client you have worked with since you began this Physical Activity Counseling training in which you incorporated Physical Activity Counseling into their treatment plan. To the best of your recall, please answer the following questions using the scale below.’ For the purposes of this study, each item of the COM was adapted to include physical activity. For example, the original item, ‘How did this client seem to feel at the end of counseling?’ was adapted to ‘How did this client seem to feel about physical activity at the end of counseling?’ and the original item, ‘To what



extent did this client seem to show change in behavior at the end of counseling?’ was adapted to ‘To what extent did this client seem to change in physical activity behavior at the end of counseling?’ Two additional items, ‘Since you began this Physical Activity Counseling training, how many clients have you integrated physical activity into their treatment plan?’ and ‘Since you began this Physical Activity Counseling training, how many clients have enhanced their physical activity behavior?’ were added to provide additional information about client physical activity behavior change. The adapted COM yielded internally consistent scores (*Cronbach’s  $\alpha$*  = 0.97).

**Demographic Questionnaire.** Participants were asked to provide demographic information. The 22-item demographics questionnaire was developed from the demographic sections of surveys utilized by Olofsgard (2009), Hays (2010), and Pasquariello (2011). 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 current direct client contact, program of psychology, year in training program, anticipated graduate degree, primary theoretical orientation, experience and training in CBT, MI, and physical activity counseling, flexibility regarding theoretical approach, current supervisor’s theoretical approach, current supervisor’s flexibility regarding supervisee’s theoretical approach, current supervisor’s autonomy in selecting individualized treatment approach for each client, current setting of clinical work, barriers to using PA counseling, and practice of PA counseling strategies.

**Intervention Evaluation Questionnaire.** The online intervention was assessed by the Intervention Evaluation Questionnaire (IEQ), a self-report measure designed to evaluate the participant’s experience of the process. The IEQ included both closed and open-ended questions. The closed-ended items on the IEQ asked participants to rate their level of agreement

with each statement on a five-point scale from *SA = strongly agree* to *SD = strongly disagree*. For example, the statements included: ‘The information presented in the training modules is applicable to my work with clients,’ ‘The instructors in the training modules showed enthusiasm about Physical Activity Counseling,’ and ‘The various modes of instruction in the training modules helped me to stay motivated to complete the entire training.’ The IEQ also included seven open-ended questions designed to gather more in-depth information about the intervention. For example: ‘What was most helpful about this training course?’, ‘How could this training course be improved?’, ‘How was your physical activity affected by the training?’, ‘How was your Physical Activity Counseling affected by the training?’, ‘Would you recommend this training course to your peers, colleagues, professors, supervisors, etc.? Why or why not?’ The close-ended items of the IEQ yielded internally consistent scores (*Cronbach’s  $\alpha = 0.90$* ).

## **Procedure**

Invitations to participate in this research study were emailed to 306 directors of clinical training or department chairs at APA-accredited doctoral programs in Clinical Psychology and Counseling Psychology (see Appendix E). In the pursuit of geographical representation, the researcher emailed a minimum of two graduate programs per state. The research request email described the study, included a link to the informed consent, asked the director of clinical training or department chair to disseminate the invitation to their graduate students, and included an option for the director of clinical training or department chair to opt-out of the follow-up email. To enhance the response rate (Mehta & Sivadas, 1995; Smith & Leigh, 1997), a follow-up email was sent to the directors of clinical training and department chairs one week later as a reminder to forward the research request (see Appendix F). Additionally, requests for participation (see Appendix G) were emailed through professional psychology electronic mailing

listservs (e.g., Exercise and Sport Psychology-Sportpsy, Association of Directors of Psychology Training Clinics-ADPTC, Association of Counseling Center Training Agencies-ACCTA, APA Division 38 Health Psychology, APA Division 38 Students Health Psychology, APA Division 47 Exercise and Sport Psychology). A review of online surveys indicates that surveys with a monetary incentive show enhanced completion rates in comparison to surveys that either included a non-monetary incentive or no incentive (Goritz, 2006), thus the research request emails included a chance to enter a raffle to win one of ten \$20 VISA gift cards upon completion of the study.

The current study qualified for exemption by the Virginia Commonwealth University IRB under the study title, “Enhancing self-efficacy in the utilization of physical activity counseling: An online Constructivist approach with psychologists-in-training” (IRB# HM14579) (see Appendix H).

Those who chose to participate followed the link in the research request email to the informed consent on REDCap, where they were given the opportunity to either participate or opt out of the study. After consenting to participate in the study, participants were asked to provide their best email address for further communication about the study and were randomly assigned to one of three groups: PACIT, PACCT, or TAU (see Appendix I for step by step protocol for each group). Participants used an assigned participant identifier that protected their confidentiality and linked their pre- and post-intervention data. Only the research team (Primary Investigator and doctoral student) had access to the separate confidential spreadsheet linking the participant identifiers to the participant email addresses. Immediately following submission of the consent form, REDCap auto-generated an email to the participant from the researcher with a unique link to the baseline pre-intervention survey (see Appendix J). The baseline pre-

intervention survey included the CSES, EBBS, PPS Clinician, SOCS, COM, IPAQ, KPAC, and Demographic Questionnaire. Because the study was implemented entirely online, there was no way to counterbalance the measures; however, careful consideration was given to the order of the instruments in an attempt to minimize order effects.

Upon completion of the baseline pre-intervention survey and based on their random assignment, researchers emailed participants an invitation to enroll in one of the three groups, PACIT, PACCT, or TAU via Blackboard by CourseSites, a secure password protected online education platform (see Appendices K-M). Researchers also emailed participants instructions on how to enroll in their respective group (see Appendices N-P). Based on individual progress, participants periodically received reminder emails to complete the baseline pre-intervention survey, to enroll in Blackboard, to continue through the Blackboard training modules, and to complete the post-intervention survey. Upon completion of the online interventions, participants received via email an invitation via REDCap to complete the post-intervention survey (see Appendices Q-S). In line with the control group protocol, participants in both the PACCT and TAU groups were given the opportunity to complete the hypothesized most effective intervention (PACIT) upon completion of the study.

### **Intervention Design**

Two online intervention training programs were designed using Blackboard by CourseSites, a platform for online education. CourseSites is a no-cost online learning environment that allows the instructor to match personal teaching style and curricula with student needs, and is available to the instructor and students 24 hours/7 days a week via the Internet. Moreover, CourseSites provides a variety of course structures, such as those that are activity-based or grounded in Constructivism. Despite the utility of face-to-face training, online

education allows for greater accessibility of the information (Veneri, 2011). Given the potential reach of online training, the United States Department of Education published the Evaluation of Evidence-Based Practices in Online Learning Report (2009) stating that online education should be trusted and considered a valid form of sharing and learning knowledge. Benefits of computer-delivered interventions (CDIs) consist of 24-hour access, uniformity of intervention delivery, and ability to individualize the intervention (Budman, Portnoy, & Villapiano, 2003). It can be argued that a computer-based approach makes information dissemination more accessible than the traditional face-face approach. Thus, in the current study, online CDIs were used via CourseSites.

In the development phase of the intervention design, the researcher met with two staff members from the VCU Center for Teaching Excellence (CTE). The consultations with CTE staff provided support on the course design and use of technology for the online interventions. The CTE staff guided the researcher in online pedagogy, online learning models, and Evidence Based Practice considerations in online learning (Nastanski & Colaric, 2008; Zhang, 2005; Pirrie, 2001). The online interventions were designed based on a review of the resources and recommendations provided by the CTE staff.

Both intervention training programs were grounded in Social Cognitive Theory (Bandura, 1986), as they were designed to 1) enhance the participant's self-efficacy for practicing Physical Activity Counseling; 2) increase knowledge of the health benefits of physical activity and physical activity counseling; and 3) increase practice of physical activity counseling. The core content of both the PACIT and PACCT interventions was identical. (See descriptions of PACIT and PACCT below for key differences between the two intervention groups.) Both online intervention groups included identical course descriptions and objectives (see Appendix T) and a

four-module sequence. The four modules were designed using the Preparation, Interaction, and Evaluation (P.I.E.) model (Nastanski & Colaric, 2008). Preparation included the listed objectives and table of contents. Interaction included the specific module and journal reflection (PACIT only). Evaluation included the brief quiz following each module based on course objectives and facilitating process evaluation and feedback based on the participant's experience of the intervention. Curricula for the four modules was intentionally developed by the research team based on a review of the literature and findings from a study on graduate students and their training in physical activity counseling (Pasquariello, 2011). Development of the modules entailed creating PowerPoint presentations with targeted physical activity counseling knowledge and gathering resources on physical activity and physical activity counseling, such as web links, national physical activity guidelines, podcasts, YouTube videos, and TEDTalks. Podcasts and videos by the research team were edited to include the most relevant content related to physical activity counseling. The PowerPoint modules were saved and uploaded to CourseSites as portable document format files (PDFs) in order to avoid potential technical difficulties with different versions of PowerPoint, to protect content, and to prevent them from being edited.

An overview of the content of the four modules is as follows: Module 1 is introductory in nature and highlights epidemiological data supporting the importance of physical activity as a health behavior. Module 2 focuses on the mental and physical health benefits of physical activity and introduces Physical Activity Counseling. Module 3 focuses on addressing safety concerns in prescribing exercise and basic guidelines to exercise prescription. Module 4 focuses on how to use Physical Activity Counseling.

The four modules were designed to be self-paced and to take approximately 15-40 minutes per module. In an effort to facilitate the learning process, the online interventions were

designed to enable participants to complete one module per week for four weeks (or at minimum one module per sitting). To enhance ease of navigation through the modules and in line with the P.I.E. model, a Table of Contents was included on the left side display of each module. The start of each of the four modules began with instructions on how to begin the module. For purposes of consistency for each participant, each module was designed with sequential viewing such that participants were directed to progress through the module content in the set order and were unable to advance to a page within the module without viewing the previous page. In order to enhance ease of navigating the modules (and due to differences among operating systems, web browsers, computer software versions, and settings), transition cues were intentionally included between content items. For example, following the Introductory Module 1 PowerPoint, the last slide notes, ‘Return to Blackboard/ CourseSites and click on Course Modules, return to Introductory Module 1 and resume with the Module 1 Brief Quiz.’ Further, a glossary of key terms was added to the left menu in order to facilitate ease of learning targeted physical activity counseling knowledge (see Appendix U). The glossary included terms such as ACSM, exercise, physical activity counseling, and the PAR-Q.

At the culmination of each of the four modules of both online interventions, a Module Summary Quiz (MSQ) was designed to assess whether and how the learning goals and objectives of the respective module were met and to allow the researchers to track the progress of each participant (see Appendix V). In addition to content, each MSQ included process evaluation questions for the participants to provide feedback on each module. In line with the Evaluation component of the P.I.E. Method (Nastanski & Colaric, 2008) to online learning, the MSQs were designed to enhance the learning of the participants by providing feedback. Following

submission of their answers to the MSQ items, participants were provided immediate feedback via CourseSites on items answered correctly and incorrectly.

Content validity of the two online interventions was established through standard practice of an expert review. Following the design and development of the online interactive intervention (PACIT), it was pilot tested by five graduate students in Clinical and Counseling psychology and two faculty members (one in Exercise Science and one in Psychology). Each pilot participant reviewed the online intervention programs and completed process evaluations for each of the four modules on ease of use of technology, module content, and usefulness of the Module Summary Quizzes. The pilot participants gave feedback on the training course and the online interactive intervention was adapted based on the suggestions (e.g., clarifying instructions, reordering module content, ease of navigating through module content). Further pilot testing of the modules was conducted by the research team to test the technology ease-of-use on various types of operating systems with multiple web browsers.

### **Online Interactive Intervention: Physical Activity Counseling Interactive Training (PACIT)**

In addition to SCT and P.I.E., PACIT was grounded in Constructivism theory (Black & McClintock, 1996), thus designed to engage the participant through a multitude of learning opportunities. Interactive learning included videos of the research team, podcasts, TEDTalks, PowerPoint with audio voiceover, web links, resources, and journal reflections. PACIT was designed to be self-paced to facilitate the Constructivist learning process by allowing the participants to make meaning of the information and to reflect on their new knowledge at their own pace. This allowed for time to learn, self-reflect, and actively engage in each of the four modules. The Constructivism course structure was used on CourseSites, which allows the



instructor to facilitate the learning process while students develop knowledge. While many different options were considered to implement components of the online interactive intervention (e.g., having synchronous lectures and discussion boards), this study only utilized an asynchronous format because it was reasoned that this delivery format would be more accessible given the inconsistency of graduate student schedules and the time zone differences among participants. An important Constructivism and P.I.E. model-based interactive component of the PACIT design was the journal reflections, where the participants were asked to reflect on their experience of each of the modules and voice questions and concerns about the module and training experience. The researcher replied to each participant comment, acknowledged the content of the journal and responded to questions and concerns about the modules and training.

Following completion of each of the four MSQs, the participant was given feedback immediately following submission of their responses. In line with Constructivism theory and the P.I.E. model, the PACIT feedback included a thorough explanation of the correct answer and encouraged the participant to return to the module to clarify their questions, address misunderstandings, and continue to learn more about Physical Activity Counseling. Further, upon completion of the entire study, participants in the PACIT group were emailed a Certificate of Completion for purposes of documentation of participation and as an incentive to complete the training.

**Module 1.** Module 1 is a 15-minute overview of the entire PACIT training course. Module 1 includes: Instructions and Objectives, Introductory Video, Introductory PowerPoint, Brief Summary Video, Journal Reflection, Brief Quiz, and Web Links. Learning Goal and Objectives for Module 1 are as follows:

*Learning goal:* To introduce the importance of physical activity to physical and mental health, the epidemiological data that supports the importance of physical activity as a health behavior, and to consider the role of health professionals in the current physical inactivity epidemic.

*Objective 1:* To learn epidemiological data about physical activity and health.

*Objective 2:* To learn about the Exercise is Medicine initiative by the ACSM.

*Objective 3:* To understand physical activity as a means to improve overall mental and physical health.

*Objective 4:* To learn about Physical Activity Counseling among physicians and to consider the role of psychologists in the current physical inactivity epidemic.

*Module 1 content.* The Introductory Video includes introductions by the research team (Primary Investigator and doctoral student) and orients the participant to the training (Acevedo & Pasquariello, 2013a). The PowerPoint focuses on the epidemiological data that supports the importance of physical activity for health across the lifespan. Module 1 includes numerous informational segments, starting with a short video clip of gratitude towards the participants (Acevedo & Pasquariello, 2013b), an obesity map of the United States (CDC, 2011), and current physical inactivity rates (U.S. DHHS, 2008). The module also highlights actual causes of death in the U.S. including tobacco use, poor diet and physical inactivity (Mokdad, Marks, Stroup, & Gerberding, 2004) and outlines benefits of physical activity for children and adolescents (US DHHS, 2008). Module 1 then presents seminal articles on physical activity and depression (Camacho et al., 1991; Paffenbarger et al., 1994), introduces ACSM's Exercise is Medicine website, highlights both physician and psychologists' views towards the practice of physical activity counseling (Lobelo et. al, 2009; Hebert et al., 2012; McEntee & Halgin, 1996; Royak-

Schaler & Feldman, 1984; Barrow et al., 1987), presents current news and journal articles on the topic of mental health and exercise (Callaghan, 2004; Sallis, 2011; Blue, 2010; Reynolds, 2013), and highlights the important role of psychologists (Stathopoulou et al., 2006) in the physical inactivity epidemic. The module ends with a short video clip outlining the training by the research team (Acevedo, 2013a). The Brief Summary Video includes an overview of the training and encouragement to complete the training (Acevedo, 2013b). The Journal Reflection prompts the participant to reflect on the first module and voice questions and concerns about the module and/or the training. The Brief Quiz is the MSQ described above that includes both physical activity counseling content items in addition to process evaluation questions. The Web Links in Module 1 (highlighted in the Introductory PowerPoint and Videos) include the ACSM Exercise is Medicine, Healthy People 2020, and the Physical Activity Guidelines for Americans (US DHHS, 2008).

**Module 2.** Module 2 is a 30-minute overview of the mental and physical health benefits of physical activity, the need for training, and an introduction to of physical activity counseling and the need for training in this kind of counseling.. Module 2 segments include: Instructions and Objectives, Introduction to Module 2 Video, a Module 2 PowerPoint, a Brief Summary Video, a Journal Reflection, a Brief Quiz, Web Links, a Podcast on Exercise and Mental Health, and a TEDTalk on Exercise and the Brain. The Learning Goals and Objectives for Module 2 are as follows:

*Learning goal.* To become familiar with the empirical support for the mental health benefits of physical activity and to be introduced to Physical Activity Counseling.

*Objective 1.* To learn how physical activity can be effective in the prevention and treatment of mood and anxiety disorders.

*Objective 2.* To learn about Physical Activity Counseling.

*Objective 3.* To relate physical activity to other health behaviors that are more often discussed in therapy (e.g., sleep, nutritional intake, substance use).

*Objective 4.* To integrate Physical Activity Counseling with transferable pre-learned counseling skills (e.g., helping skills, motivational interviewing, Cognitive Behavior Therapy, behavior modification).

*Module 2 content.* The Introduction to Module 2 Video acknowledges that most graduate students in psychology have not been trained in Physical Activity Counseling and may have some skepticism toward it. A PowerPoint segment highlights two APA Monitor on Psychology articles related to physical activity, mental health, and cognition (Weir, 2011; Azar, 2010), and includes a short video clip on the mental and physical health benefits of exercise by the research team (Acevedo, 2013c). Other segments demonstrate research on exercise as treatment for depression versus other treatments (Dunn, Trivedi, Kampert, Clark, & Chambliss, 2005), point out the relationship between physical activity and Panic Disorder (Otto & Smits, 2011), and provide examples of exercise and mental health books (Leith, 2009; Smits & Otto, 2009; Johnsgard, 2004, Otto & Smits, 2011; Hays, 1999; Otto & Smits, 2009). Additional segments list common methods of physical activity counseling, include a video clip on transferable counseling skills by the research team (Pasquariello, 2013a) and a video clip on physical activity as a unique health behavior by the research team (Acevedo, 2013d). Final segments highlight the need for training in physical activity counseling (Dixon et al., 2003; Daley, 2002; Trivedi et al., 2008), and end with a video clip on the responsibility to learn more about physical activity by the research team (Acevedo & Pasquariello, 2013c). The Brief Summary Video by the research team discusses negligence, the importance of training in physical activity counseling and the

responsibility of psychologists in training to learn more about physical activity (Acevedo & Pasquariello, 2013d). The Journal Reflection prompts the participant to reflect on the second module and to share reactions, questions, concerns about the information presented or the training, and asks the participant to share personal or professional experiences with physical activity. The Brief quiz is the MSQ described above that asks content questions based on the Module 2 objectives and process evaluation questions related to the PACIT training experience. The Web Links in Module 2 (highlighted in the PowerPoint and videos) include the two APA Monitor on Psychology articles, The Exercise Effect on exercise and mental health (Weir, 2011) and Another Reason to Break a Sweat on the cognitive benefits of physical activity (Azar, 2010). Two optional components of the module include a Podcast on Exercise for Mood and Anxiety (Otto, 2011) and a TEDTalk on Exercise and the Brain (Suzuki, 2011).

**Module 3.** Module 3 is a 40-minute discussion about exercise prescription and the safety and scope of competence of psychologists implementing physical activity counseling with clients. Module 3 includes: Instructions and Objectives, Introduction to Module 3 Video, Module 3 PowerPoint on Ethical Considerations and Scope of Competence, Podcast on Exercise and Pregnancy, Module 3 PowerPoint on Exercise Prescription, Summary Video, Journal Reflection, Brief Quiz, and Web Links. Learning Goals and Objectives for Module 3 are as follows:

*Learning goal.* To become familiar with basic exercise prescription and to address safety concerns of Physical Activity Counseling.

*Objective 1.* To learn basic fundamentals of exercise prescription for healthy adults including frequency, intensity, time and type.

*Objective 2.* To learn about the ethical considerations and scope of competence of psychologists in regards to Physical Activity Counseling.

*Objective 3.* To learn the current ACSM physical activity guidelines.

*Objective 4.* To learn referral options for exercise to Certified Exercise Specialists and physicians and how to use the Physical Activity Readiness Questionnaire (PAR-Q).

*Objective 5.* To learn about safety concerns related to Physical Activity Counseling and exercise prescription.

*Module 3 content.* The Introduction to Module 3 Video introduces ethical considerations, scope of competence, and exercise prescription (Acevedo & Pasquariello, 2013e). The first of two Module 3 PowerPoints focuses on ethical considerations and scope of competence. It introduces Healthy People 2010 and exercise prescription considerations (U.S. DHHS, 2000; Phillips & Kennedy, 2012;), current physical activity recommendations for healthy adults (ACSM & AHA, 2007), exercise referral options to a physician using the PAR-Q (Thomas et al., 1992) and a brief video clip by the researchers that explains referral to an ACSM Certified Exercise Specialist (Acevedo & Pasquariello 2013f). Module segments also include information on stages of change and physical activity (Prochaska & DiClemente, 1982; Meriwether et al., 2008), exercise adherence and drop out rates (Morgan, 1977; Morgan & O'Connor, 1988), contraindications of physical activity (Landolfi, 2013), physical activity and psychosis (Ellis, Crone, Davey, & Grogan, 2007; Scheewe et al., 2013; Holley et al., 2011), pregnancy and exercise (Daley, Macarthur, & Winter, 2007), exercise and cognitive benefits in older adults (Hillman et al., 2004), physical activity and eating disorders (J. E. Carter, personal communication, August 6, 2012; J. Moran, personal communication, July 12, 2012), and a call to action. The Podcast on Exercise and Pregnancy by the British Journal of Sports Medicine

discusses the benefits and risks of exercise and pregnancy from conception to postpartum. The second Module 3 PowerPoint focuses on the basics of Exercise Prescription (Frequency, Intensity, Time, Type) and Muscular Strengthening, highlights specific populations including older adults (Nelson, et al., 2007), and includes an audio component by the research team (Acevedo & Pasquariello, 2013g). The Summary Video by the research team discusses scope of competence and the role of psychologists in exercise prescription in relation to the current physical inactivity epidemic (Acevedo & Pasquariello, 2013h). The Journal Reflection prompts the participant to reflect on the third module and to comment on any conversations related to this training with a colleague, peer, or supervisor, and/or any changes in personal physical activity and/or in practicing physical activity with clients. The Brief quiz is the MSQ described above that asks content questions based on the Module 3 objectives and process evaluation questions related to the PACIT training experience. The three Web links (highlighted in the Module 3 PowerPoints and videos) include the ACSM's guide on When to See a Physician Before Exercising (Kohl, n.d.), ACSM's guide on How to Start an Exercise Plan ("Starting an Exercise Program," n.d.), and U.S. Physical Activity Guidelines that include Pregnant Women (US DHHS, 2008).

**Module 4.** Module 4 is a 35-minute instruction on the basics of physical activity counseling and how to use physical activity counseling with clients. Module 4 includes: Instructions and Objectives, Introduction to Module 4 Video, Module 4 PowerPoint on Physical Activity Counseling, Brief YouTube Clip Example of a Physician Practicing Physical Activity Counseling, Podcast on Benefits of Green Exercise, Summary Video, Journal Reflection, Brief Quiz, Web Link, TEDTalk on Genes and a TEDTalk on Cognitive Benefits of Exercise. The Learning Goal and Objectives for Module 4 are as follows:

*Learning goal.* To learn the fundamentals of Physical Activity Counseling and how to use Physical Activity Counseling with clients.

*Objective 1.* To learn basic steps on how to discuss physical activity with clients.

*Objective 2.* To learn basic fundamentals of incorporating exercise behavior with clients into treatment plan.

*Objective 3.* To review the current ACSM physical activity guidelines.

*Objective 4.* To integrate Physical Activity Counseling with transferable counseling skills (e.g., helping skills, MI, CBT, behavior modification).

*Module 4 content.* In the Introduction Module 4 Video, the research team highlights how to use Physical Activity Counseling (Acevedo & Pasquariello, 2013i). The Module 4 PowerPoint discusses which exercise is best for an individual, re-emphasizes tools for physical activity counseling (e.g., FITT Exercise Prescription principles, Physical Activity Guidelines, MI, CBT, Behavior Modification Strategies, Stages of Change model), includes Physical Activity Counseling Guidelines (U.S. Preventative Services Task Force, 1989), discusses physical activity promotion from the perspective of both occupational therapists (Reynolds, 2001) and mental health providers in Australia (Queensland Health, 2003), lists exercise therapy guidelines (Hays & Sime, 2013), notes physical activity counseling by physicians (Ribeiro, Martins, & Carvalho, 2007), includes the 5 A's Model for changing physical activity behavior (Meriwether et al., 2008), connects Motivational Interviewing and exercise (Health Agency of Canada, 2003), argues the responsibility of healthcare during the first 10 years of life as the critical window for children to become consistently physically active (International Olympic Committee, 2011; designedtomove.org), highlights common barriers to exercise including limited time and financial resources (ETR, 2012), discusses the relationship between children



with ADHD and physical activity (Richardson, 2009; Azrin et al., 2006), mentions the relationship between yoga and mental health (Streeter, et al., 2010), and provides examples of university system level change to promote physical activity (e.g., Virginia Tech Counseling Center provides vouchers for students to receive personal training sessions at the recreation center as part of their holistic treatment model (V. Arbuckle, personal communication, July 29, 2012); UC San Diego Counseling and Psychological Services provides vouchers for students to take a group exercise class at the Recreation Center (S. Parks, personal communication, January 11, 2013); The Ohio State University has run CBT groups with a group exercise component (Lutkenhouse, 2012); Westmont College's library has walking treadmill desks for students to use while studying), and highlights two TEDTalks on exercise and health (see details below). The Podcast on Benefits of Green Exercise includes a report on a recent research study in United Kingdom that found a dose response relationship between the positive effects of nature and human mental health. The Web link (highlighted in previous modules, the Module 4 PowerPoint, and videos) includes [designedtomove.org](http://designedtomove.org), a physical activity action agenda. The two optional TEDTalks include "Genes are NOT Your Fate" on physical activity, health and genetics (Ornish, 2009) and "Run, Jump, Learn! How Exercise can Transform our Schools" on exercise and learning (Ratey, 2012). The Journal Reflection prompts the participant to reflect on the fourth module and to discuss changes in physical activity (both personally and professionally) and any final comments or questions about the training. The Brief quiz is the MSQ described above that asks content questions based on the Module 4 objectives and process evaluation questions related to the PACIT training experience.

## **Online Content Intervention: Physical Activity Counseling Content Training (PACCT)**

The content, learning goals, and objectives of the four-modules of the PACCT were identical to the PACIT intervention. However, the delivery of the module content varied from the PACIT intervention. For example, instead of using the Constructivism Course Structure by CourseSites, the Traditional Course Structure was used. Because Traditional Course Structure organizes the online environment by content type, the PACCT group course was organized by the four modules. Instead of employing a multitude of learning methods, the PACCT content was provided primarily via text on PowerPoint slides. Key content from the additional modes of learning in the PACIT were highlighted on additional PowerPoint slides with text, including content from videos, podcasts and TEDTalks. Hyperlinks to resources in the PowerPoint presentations were deleted and replaced with a list of web links at the end of each module. Additionally, some of the slide headings were changed to be less interactive and engaging. For example, in the first module on the Obesity Map of the United States, the PACIT header of ‘Where Do You Live Now?’ was changed to ‘Obesity Epidemic.’ Moreover, the immediate feedback following the completion of each PACCT MSQ only contained the correct answer and a shorter description of the correct answer content.

***Module 1.*** The PACCT Module 1 includes: Instructions and Objectives, Introductory PowerPoint, Brief Quiz, and Web Links.

***Module 2.*** The PACCT Module 2 includes: Instructions and Objectives, Module 2 PowerPoint, Brief Quiz, and Web Links.

***Module 3.*** The PACCT Module 3 includes: Instructions and Objectives, Module 3 PowerPoint on Ethical Considerations and Scope of Competence, Module 3 PowerPoint on Exercise Prescription, Brief Quiz, and Web Links.

**Module 4.** The PACCT Module 4 includes: Instructions and Objectives, Module 4 PowerPoint on Physical Activity Counseling, Brief Quiz, and Web Links.

**Delayed Intervention Control Group: Training as Usual (TAU)**

Participants in the delayed intervention control group completed baseline pre-intervention and post-intervention measures. They did not receive any intervention during the course of this study. Following completion of the baseline pre-intervention survey, they received an email informing them that they had been randomly assigned to the TAU control group and were encouraged to continue their doctoral studies, internship, or postdoctoral fellowship as directed by their graduate program (see Appendices I and M). Participants in TAU were informed that they would have the opportunity to complete the PACIT training at the completion of the study. They were asked to enroll in the TAU Blackboard course in order to keep up to date with follow-up surveys and to be easily enrolled in the PACIT course following the completion of the study.

**Participant compensation.** At the completion of the study, those participants who completed the entire study were offered an opportunity to enter a raffle for one of 10 \$20 Visa gift cards. Entrance into the raffle required participants to enter a valid email address, which was kept in a separate database and not connected to survey responses in order to maintain confidentiality.

**Data Analysis**

IBM SPSS 21 for Macintosh (IBM Corp., 2012) was used for data analyses. Survey data was collected and managed by the REDCap online survey system (Harris et al., 2009) and downloaded into SPSS. All identifying information (e.g. email address and name) was separated from the dataset by the research team in order to protect participant confidentiality. Repeated measures from pre- and post-intervention were paired and verified for accurate pairing. To begin

with, 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 and addressed. One dependent variable, the post-intervention KPAC scale was negatively skewed and was transformed in order to meet normality assumptions. Descriptive statistics were calculated to summarize demographic information and instrument scores. Frequencies and percentages were computed on demographic and scale variables and scales. Next, correlations among all study variables, including demographic variables (e.g., psychology domain, age, gender, race/ethnicity) and training variables (e.g., experience and training in MI, CBT, PA counseling) were calculated. Internal consistencies were calculated using Cronbach's alphas to assess reliability of all measures used in this study. One-way analyses of variance (ANOVAs) were used to examine whether the two intervention groups and the delayed intervention control group differed significantly on any of the outcome variables at pre-intervention. Chi-square tests of independence were also conducted to examine whether the three groups differed on categorical variables such as doctoral program, sex, and theoretical orientation. Hypothesis testing began after the assumptions were met and frequencies and correlations were examined.

**Primary aim analyses.** To assess the study's primary hypotheses, a series of repeated measures analyses of covariance (ANCOVAs) were conducted, with baseline pre-intervention scores on the dependent measures and demographic variables entered as covariates. ANCOVA is a statistical technique that is useful in intervention research because it enables the researcher to control for individual differences in the scores at baseline, thus reducing error variance (Huck & McLean, 1975). For the purpose of analyses in the current study, time of assessment served as the within-subjects variable and group assignment (PACIT, PACCT, TAU) served as the

between-subjects variable. Outcomes were the scores on the dependent measures at post-intervention testing.

**Exploratory aim analyses.** To assess the study's exploratory hypotheses, repeated measures analyses of variance (ANOVAs) were conducted. Exploratory ANCOVAs were also conducted to examine how intervention dosage (time taken to complete training) related to outcomes. Chi square analyses were also conducted to determine whether rates of attrition differed by group assignments.

## **Results**

This chapter reports the statistical analyses conducted on the data received and the qualitative information provided by participants in their baseline questionnaires, module quizzes, journal entries, and post-intervention evaluation and questionnaires. This study assessed an online interactive intervention, PACIT, an online content intervention, PACCT, and a control group (with an option for delayed intervention), TAU, and assessed self-efficacy of practicing PA counseling with clients, knowledge of the health benefits of PA and PA counseling, personal level of PA, and the practice of PA counseling with clients. The following sections are included in this chapter: Description of the Sample, Baseline Analyses, Analyses of Attrition and Intervention Compliance, Correlations, Covariates, Hypothesis Testing, Exploratory Hypothesis Testing, Additional Analyses, and Qualitative Process and Evaluation Data. Tables and figures to clarify the results found are also provided in this chapter.

### **Description of the Sample**

A total of 189 doctoral psychology students responded to the initial request for participants; 64 completed online informed consent and subsequently dropped out of the study; 3 were excluded for not meeting inclusion criteria (1 was a licensed psychologist; 2 did not have

current client contact); 122 (64.5%) completed online surveys; 58 completed post-test questionnaires. The final sample was comprised of 58 participants, of which 43 (74.1%) were female, 47.5% described their age range as 29-33 years old, 81.5% described their racial/ethnic background as Caucasian, and 90.5% identified as heterosexual. See Table 1 for detailed sample characteristics for both pre-test and post-test participants. The majority of the sample was Caucasian and female which is consistent with ratios found in applied psychology departments (Keilin, 2010). Fifty six percent of the sample reported their graduate program was in Clinical Psychology, 30% reported being in their 6<sup>th</sup> year of graduate training, 11% reported they had recently graduated and were completing their postdoctoral fellowship, 45% reported that their primary theoretical orientation was Cognitive-Behavioral, and 38% reported living in the Southeast region of the U.S.

Table 1.

*Sample Characteristics*

		Baseline		Post-Test	
		%	N	%	N
<b>Gender</b>	Female	78.7	96	74.1	43
	Male	20.5	25	25.9	15
	Other	<1	1	0	0
<b>Age Range</b>	24-28	6.2	8	4.9	6
	29-33	47.5	57	44.4	53
	34-38	33.6	41	38.1	46
	19-23	8.1	10	11.1	13
	39-43	1.6	2	1.6	2
	44-48	1.6	2	1.6	2
<b>Race/Ethnicity</b>	Caucasian	79.3	96	81.0	47
	Biracial or Multiracial	6.6	8	5.1	3
	Latino/a	4.1	5	5.1	3
	African American	4.1	5	6.8	4
	Asian American	3.2	4	0	0
	International Student	2.5	3	1.7	1
	Other	<1	1	0	0

<b>Sexual Orientation</b>	Heterosexual	81.3	99	89.6	52
	Bisexual	5.7	7	3.4	2
	Lesbian	4.9	6	1.7	1
	Gay	4.9	6	3.4	2
	Other	3.2	4	1.7	1
<b>Graduate Program</b>	Clinical Psychology	59.0	72	56.8	33
	Counseling Psychology	36.9	45	39.6	23
	Other (Combined Program)	4.1	5	1.6	2
<b>Year in Graduate Program</b>	First	4.2	5	3.2	2
	Second	17.5	21	10.1	6
	Third	15.8	19	12.9	8
	Fourth	18.9	22	14.5	9
	Fifth	20.0	24	22.6	14
	6 <sup>th</sup> or higher	25.8	31	30.6	19
<b>Postdoctoral Fellow</b>	Recent Graduate/Fellow	10.1	12	11.1	7
	Current Graduate Student	89.9	11	88.9	51
<b>Primary Theoretical Orientation</b>	Cognitive Behavioral	42	51	45	54
	Eclectic/Integrative	8.3	10	8.1	8
	Humanistic/Rogerian	18.0	21	19.2	22
	Psychodynamic	9.7	11	8.9	9
	Interpersonal	20	12	18.1	16
	Behavioral	3.1	2	1.6	2
	Existential	6.2	7	5.2	6
	Gestalt	1.6	2	1.1	1
	Feminist	1.6	2	1.6	2
	Psychoanalytic	3.1	4	2.4	2
	Relational-Cultural	1.6	2	1.6	2
	Other	1.6	2	1.1	1
<b>U.S. Region</b>	Southwest	38.2	47	41.3	24
	Midwest	20.1	25	18.9	11
	West	19.3	24	17.2	10
	Northeast	12.2	14	10.3	6
	Southwest	10.1	12	12.1	7
<b>Degree Sought</b>	Ph.D.	75.4	92	79.4	48
	Psy.D.	24.6	30	20.6	10
<b>Flexibility towards Theoretical Approach</b>	Very Flexible	25.8	31	23.2	14
	Flexible	65.0	78	62.5	39
	Neither Flexible nor Inflexible	5.8	7	6.3	4
	Inflexible	3.3	4	1.6	1
	Very Inflexible	0	0	0	0
<b>Current Supervisor's Flexibility towards Trainee's Theoretical Approach</b>	Very Flexible	22.7	27	23.8	15
	Flexible	52.9	63	45.2	30
	Neither Flexible nor Inflexible	16.8	20	14.3	9
	Inflexible	7.6	9	6.3	4
	Very Inflexible	0	0	0	0

<b>Autonomy in Individualizing Treatment Approach</b>	Full Autonomy	39.7	48	46.0	29
	A Little Autonomy	52.1	64	44.8	26
	Neutral	5.8	7	3.2	2
	Almost completely outside of my control	2.5	3	1.6	1
	Completely outside of my control	0	0	0	0
<b>Training in CBT</b>	Familiar/exposed in academic course(s)	56.9	82	66.7	42
	Completed semester/quarter CBT course	34.0	49	38.1	24
	Obtained clinical supervision in CBT	56.9	82	68.3	43
	Provided supervision in CBT to peers	24.3	35	28.6	18
<b>Training in MI</b>	Familiar/exposed in academic course(s)	55.6	80	63.5	40
	Completed day(s) long workshop in MI	27.8	40	30.2	19
	Completed semester/quarter MI course	10.4	15	14.3	9
	Obtained clinical supervision in MI	41.7	60	55.6	35
	Provided supervision in MI to peers	7.6	11	7.9	5
<b>Training in Physical Activity Counseling</b>	Familiar/exposed in academic course(s)	29.2	42	41.3	26
	Completed day(s) long workshop on PAC	0.7	1	0	0
	Completed semester/quarter PAC course	2.8	4	6.3	4
	Obtained clinical supervision in PAC	11.8	17	12.7	8
	Provided supervision in PAC to peers	0.6	1	1	1

## Baseline Analyses

Analyses were conducted to determine whether there were any significant differences among groups on the outcome measures at baseline. One-way analyses of variance (ANOVAs) did not reveal any significant group differences on the continuous outcome measures. Chi-square analyses were conducted to examine significant group differences on categorical variables such as psychology domain, age, race/ethnicity, and year in school. Results indicated there was a significant difference in the participants' year in their graduate program,  $\chi^2(10, n = 122) = 18.81, p = .04$ . Contrasts revealed that this difference may be better accounted for by time and intervention interaction. To account for differences at baseline, year in graduate program was entered in future analyses as a covariate. No other significant differences among the groups at baseline were found.



## **Analyses of Attrition and Intervention Compliance**

Of the participants randomized to interventions ( $N = 122$ ), a total of 58 (47.5%) completed post-test questionnaires. See Figure 1 for an overview of sample sizes throughout the project. Chi-square analyses were conducted to determine if completion of post-test questionnaires differed by intervention. Results indicated significant differences in post-test completion among groups. Independent samples t-tests examined whether there were differences in baseline scores for participants who did and did not complete post-test questionnaires. Results indicated a significant difference between completers and non-completers,  $t(120) = 3.02, p = .003$ . Specifically those who did not complete post-test questionnaires had higher baseline scores on the Exercise Benefits/Barriers Scale (EBBS) ( $M = 85.89, S = 10.06$ ) than individuals who completed post testing ( $M = 80.65, S = 9.97$ ). Results found no significant differences for other variables. Of those that consented, a total of 64 (33.8%) dropped out of the study (did not list their email address to continue participation). After randomization, among intervention participants, a total of 22 (26.8.3%) did not follow the emailed directions to register for the intervention on CourseSites. Chi-square analyses indicated that dropout after randomization did not significantly differ between the two intervention groups. Of those that registered for CourseSites, a total of 9 (15.0%) did not begin the training. Overall module participation was as follows: 62.2% completed module one; 56.1% completed module two; 51.2% completed module three; and 51.2% completed module four. Chi-square analyses indicated no significant differences between groups in the percentage of participants who completed all modules. Table 2 provides percentages of module completion by group.

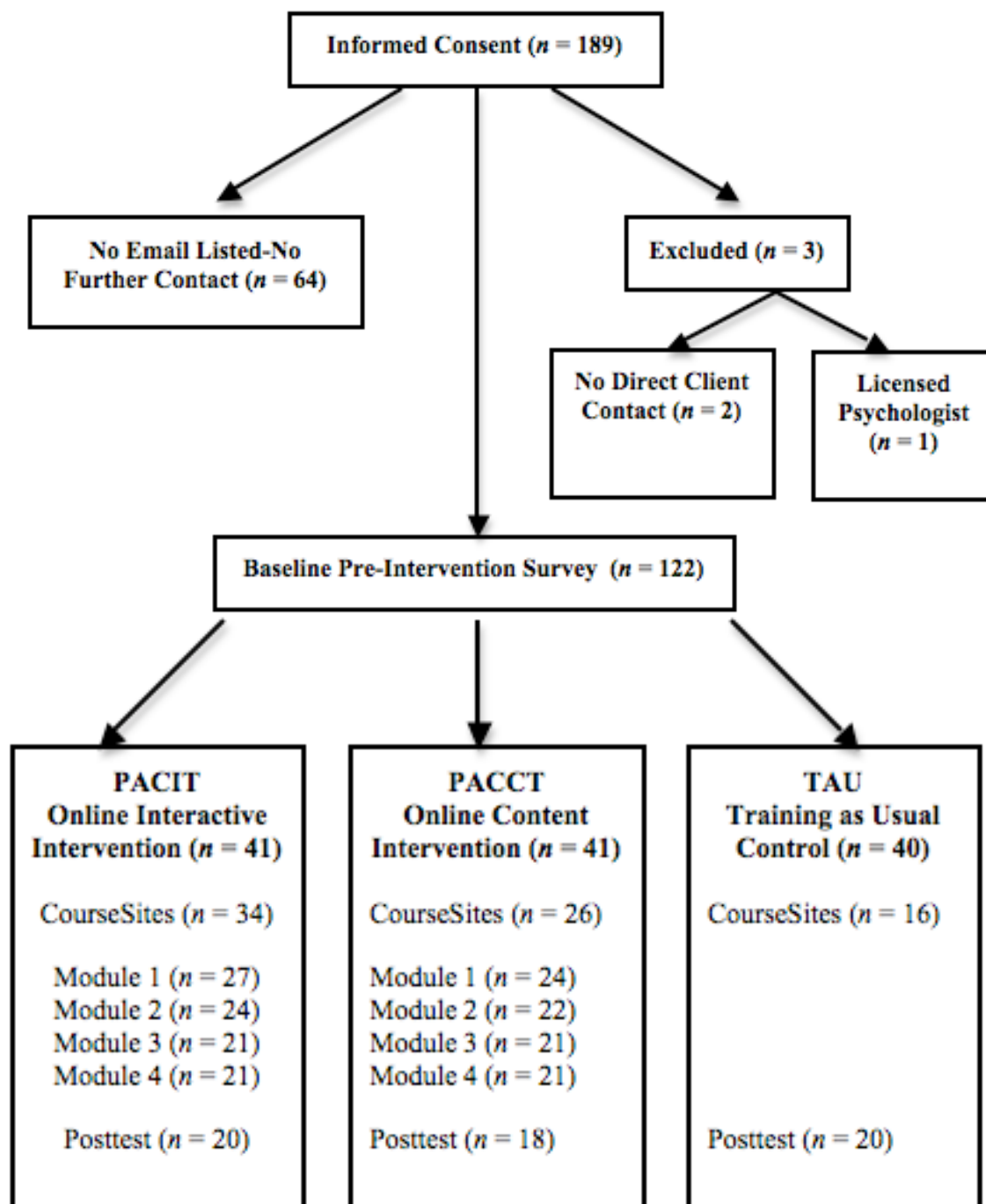


Figure 1. Participant Flow Chart

Table 2

*Frequency of Module Completion by Group*

	Online Interactive PACIT		Online Content PACCT		Control Group TAU	
	<i>N</i>	%	<i>N</i>	%		
<b>Module 1 Completed</b>	27	65.9	24	58.5	---	---
<b>Module 2 Completed</b>	24	58.5	22	53.7	---	---
<b>Module 3 Completed</b>	21	51.2	21	51.2	---	---
<b>Module 4 Completed</b>	21	51.2	21	51.2	---	---

**Correlations**

A correlational analysis was conducted prior to analysis to investigate the relationships among outcome variables. Results of the correlation analysis were promising and yielded several significant correlations among variables. Results indicated high self-efficacy in PA counseling was associated with high PA counseling practice, higher Stage of Change, and higher targeted PA counseling knowledge. Also, correlational analysis results indicated that higher self-efficacy in PA counseling was associated with lower knowledge of exercise barriers and benefits. Correlations among the total scale scores of the outcome variables at pre-intervention are listed in Table 3.

Table 3.

*Correlations among Total Scale Scores at Baseline*

<b>Total Scale Scores</b>	<b>Counseling Self-Efficacy (CSES)</b>	<b>Knowledge: Barriers and Benefits (EBBS)</b>	<b>Knowledge: Physical Activity Counseling (KPAC)</b>	<b>Physical Activity Counseling Practice (PPS)</b>	<b>Physical Activity (IPAQ)</b>
<b>Counseling Self-Efficacy (CSES)</b>					
<b>Knowledge: Barriers and Benefits (EBBS)</b>	-0.34**				
<b>Knowledge: Physical Activity Counseling (KPAC)</b>	0.25**	-0.12			
<b>Physical Activity Counseling Practice (PPS)</b>	0.64**	-0.27**	0.20*		
<b>Physical Activity (IPAQ)</b>	0.27	0.17	0.01	0.24**	
<b>Stages of Change (SOCS)</b>	0.62**	-0.22*	0.24**	0.64**	0.16

\*  $p < .05$ , \*\*  $p < .01$

**Covariates**

The covariates for this study were the participant's pretest scores on the variables of interest: Counseling Self-Efficacy Scale (CSES; Melchert et al., 1996); Exercise Benefits/Barriers Scale (EBBS; Sechrist et al., 1987); Knowledge of Physical Activity Counseling (KPAC); Psychotherapy Practice Scale-Clinician Depression Care Version (PPS; Hepner et al., 2010); the International Physical Activity Questionnaire-Short Form (IPAQ; IPAQ Research Committee, 2005); and the Stages of Change Scale (SOCS; McCrea & Pritchard, 2010). Based on group differences at baseline and post-intervention for participants year of program, the variable of the graduate students' year in graduate psychology program was entered as a covariate in repeated measures ANCOVAs for all variables of interest: self-efficacy of PA counseling practice (CSES), knowledge of exercise benefits and barriers (EBBS), targeted PA

counseling knowledge (KPAC), PA counseling practice (PPS), personal level of physical activity (IPAQ), and Stage of Change (SOCS).

### **Hypothesis Testing**

To test the main hypothesis, that target variables (self-efficacy regarding practicing PA counseling, knowledge of the health benefits of PA and PA counseling, and practice of PA counseling) would significantly increase following intervention (with PACIT participants in comparison to TAU and PACCT participants; and PACCT participants in comparison to TAU participants), repeated measures analyses of co-variance (ANCOVAs) were used. One Repeated Measures ANCOVA was conducted for each target variable, with within-subjects factors consisting of the dependent variables measured at each time point and group intervention entered as the between-subjects factor, and year in graduate program entered as a covariate.

Prior to the primary analysis, data were checked for statistical assumptions, including independence of observations, normality, homogeneity of variance, homogeneity of covariance matrices, and sphericity. Univariate and multivariate outliers were identified using mahalanobis distance and by examining boxplots. Although several outliers were identified, these were judged to be real values of the population and thus were included in the analysis. Variables were checked for normality using statistics of skewness and kurtosis. Values greater than one were observed for the KPAC post-test variable, indicating that the assumption of normality was violated. Due to a severe negative skew, KPAC post-test was reflected prior to inverse transformation. Following these adjustments, skewness and kurtosis were reduced and normality for this variable was significantly improved. Following transformation of the KPAC post-test variable, the KPAC pre-test variable was also transformed (Field, 2009).

After running the Repeated Measures ANCOVAs for each dependent variable, the assumption of homogeneity of variance was checked using Box's M Test of Equality of Covariance Matrices. This test was not significant for the CSES, KPAC, and the PPS, indicating that the assumption was met, but was significant for the EBBS. Because sample sizes between groups are nearly equal, this poses little threat to the assumption; however, Pillai's Trace will be the test statistic reported for all Repeated Measures ANCOVAs because of its known robustness when sample sizes are equal (Field, 2009). To test for equality of error variances, Levene's test was used. Levene's test was not significant for any of the variables, indicating that the assumption was met. Mauchly's W was used to test for sphericity; however, due to only having two levels (baseline and post-intervention), SPSS computed no value. Because at least three levels are needed for sphericity to be of concern, the assumption of sphericity was not relevant (Field, 2013).

Table 4 provides pre-and-post-intervention means for all pre-and-post-intervention measures. To more meaningfully interpret patterns observed pre-and-post-intervention, means of original variables (prior to transformations) are included in the table. Consistent with the first hypothesis, Repeated Measures ANCOVAs demonstrated that individuals in the online-interactive intervention endorsed significantly higher levels of self-efficacy regarding their practice of physical activity counseling, and reported more targeted physical activity counseling knowledge than individuals in the control group. Contrary to the first hypothesis, individuals in the online-interactive intervention group did not report significantly higher levels of self-efficacy or demonstrate higher levels of knowledge than individuals in the online-content intervention group. Contrary to hypotheses, there were no significant increases in practice of physical activity counseling among individuals in all three groups.

Table 4.

*Baseline and Post-Intervention Means and Standard Deviations by Group*

Scales	Online Interactive PACIT		Online Content PACCT		Control Group TAU	
	Baseline Mean (SD)	Post Mean (SD)	Baseline Mean (SD)	Post Mean (SD)	Baseline Mean (SD)	Post Mean (SD)
<b>Counseling Self-Efficacy (CSES)</b>	66.52 (13.52)	84.90 (8.94)**	68.89 (14.30)	81.53 (8.02)*	67.95 (13.92)	66.06 (11.74)
<b>Knowledge: Exercise Barriers and Benefits (EBBS)</b>	79.80 (8.57)	76.30 (12.33)	76.78 (12.44)	67.95 (13.92)	84.50 (8.40)	85.95 (9.75)
<b>Knowledge Physical Activity Counseling (KPAC)</b>	13.65 (1.18)	14.50 (0.68)*	13.56 (1.04)	14.44 (0.61)*	13.45 (1.31)	13.15 (2.13)
<b>Physical Activity Counseling Practice (PPS)</b>	19.15 (7.93)	19.10 (10.60)	19.67 (7.22)	18.56 9.26	18.70 (5.98)	17.50 (6.82)
<b>Physical Activity (IPAQ)</b>	2678.750 (1332.892)	3182.500 (2887.714)	1836.972 (1235.975)	1820.833 (979.653)	2179.125 (1382.187)	2678.750 (1332.892)
<b>Stages of Change (SOCS)</b>	2.80 (1.60)	4.00 (0.72)**	3.67 (1.28)	4.06 (0.87)*	3.35 (1.69)	2.90 (1.74)

---

\*  $p < .05$ , \*\*  $p < .01$

**Self-Efficacy.** Repeated Measures ANCOVAs examined participants' self-reported self-efficacy in practicing PA counseling before and after the intervention using the CSES. There was a significant time by intervention group interaction,  $F(2, 57) = 17.66, p < .001$ , partial  $\eta^2 = .38$ . The interaction was such that there was significant difference in reported levels of self-efficacy for practicing PA counseling following the intervention by group (PACIT, PACCT, TAU). See Table 4 for means and standard deviations. There was a significant main effect of intervention,  $F(2, 55) = 3.92, p = .02$ , partial  $\eta^2 = .12$ . Simple effects contrast analyses revealed that participants in the PACIT intervention reported significantly more self-efficacy compared to the TAU group ( $p = .01$ ), and participants in the PACCT intervention reported significantly more self-efficacy compared to the TAU group ( $p = .01$ ), but there were no significant differences of self-reported levels of self-efficacy between participants in the PACIT and PACCT groups. As illustrated in Figure 2 below, these results provide partial support for the main hypothesis. While there were significant differences between the reported levels of self-efficacy in practicing PA counseling by participants in the online intervention groups and the control group, the level of self-efficacy reported by the participants in the interactive intervention was not significantly different than the level of self-efficacy reported by participants in the content-based intervention.



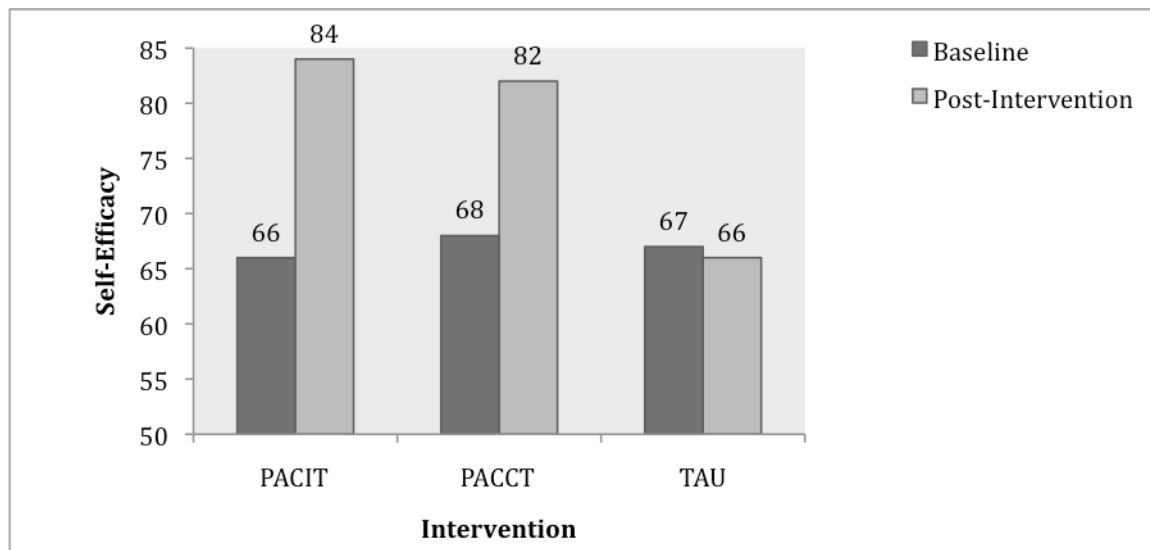


Figure 2. Self-efficacy of practicing physical activity counseling.

**Knowledge.** Repeated Measures ANCOVAs examined participants' self-reported knowledge in the health benefits of PA and PA counseling before and after the intervention using both the KPAC and the EBBS. For the KPAC, there was a significant time by intervention group interaction,  $F(2, 53) = 4.22, p = .02$ , partial  $\eta^2 = .13$ . The interaction was such that there was significant difference in targeted PA counseling knowledge following the intervention by group (PACIT, PACCT, TAU). See Table 4 for means and standard deviations. Simple effects contrast analyses revealed that participants in the PACIT demonstrated significantly higher levels of knowledge compared to participants in the TAU group ( $p = .04$ ), and participants in the PACCT demonstrated significantly higher levels of knowledge compared to participants in the TAU group ( $p = .02$ ), but there were no significant differences of demonstrated targeted PA counseling knowledge between participants in the PACIT and PACCT groups. As illustrated in Figure 3 below, these results provide partial support for the main hypothesis. While there were significant differences in the levels of demonstrated targeted PA counseling knowledge between participants in the intervention groups and participants in the control group, participants in the

interactive intervention did not demonstrate significantly different levels of targeted PA counseling knowledge compared with participants in the content only intervention.

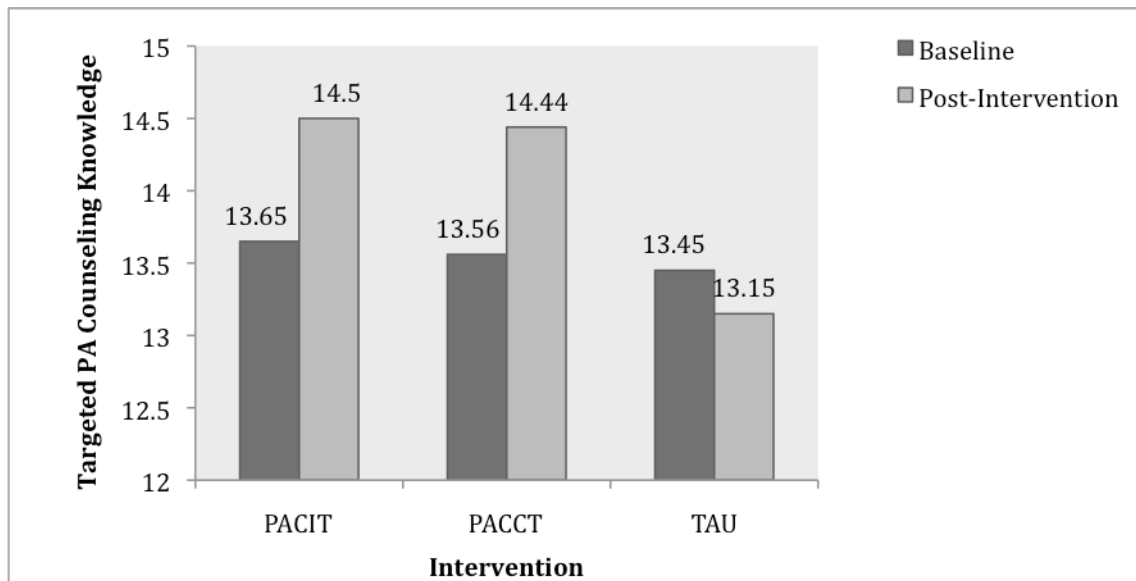


Figure 3. Targeted physical activity counseling knowledge.

For the EBBS, there was a significant main effect of intervention,  $F(2, 54) = 4.96, p = .01$ , partial  $\eta^2 = .15$ . No significant differences were found across time points (within-subjects effects) or for the interaction. This main effect suggests that there was a significant difference in PA counseling knowledge by participants in each of the three groups (PACIT, PACCT, TAU). See Table 4 for means and standard deviations. As illustrated in Figure 4 below, these results do not provide support for the main hypothesis. While there are demonstrated differences between the three groups, Figure 4 suggests that participants in both intervention groups demonstrated lower knowledge of PA counseling from pre-to-post-intervention, while participants in the control group demonstrated little change in their knowledge of PA counseling.

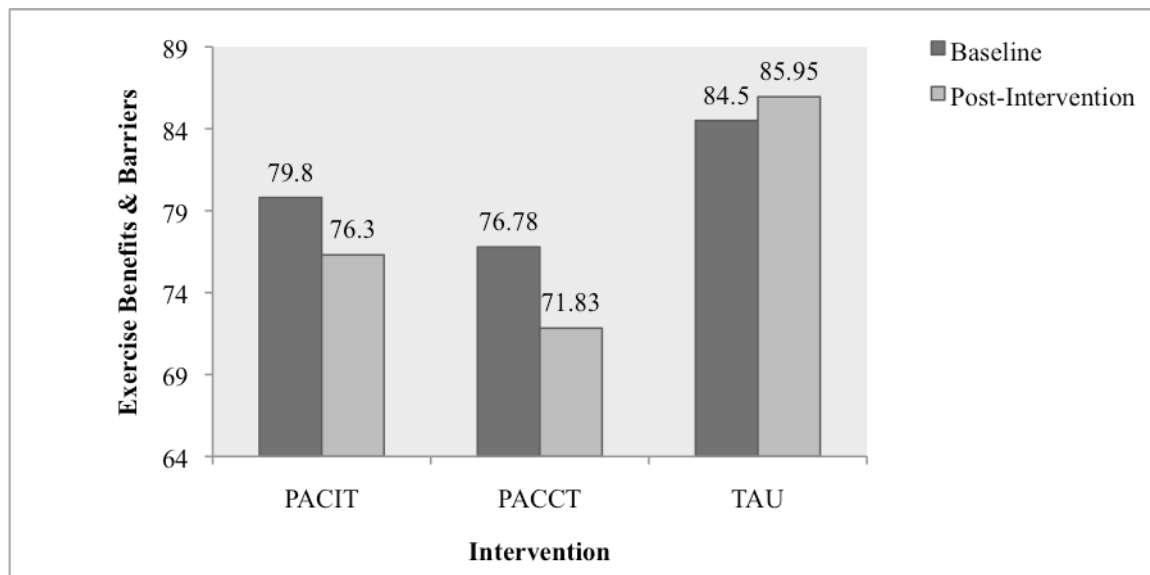
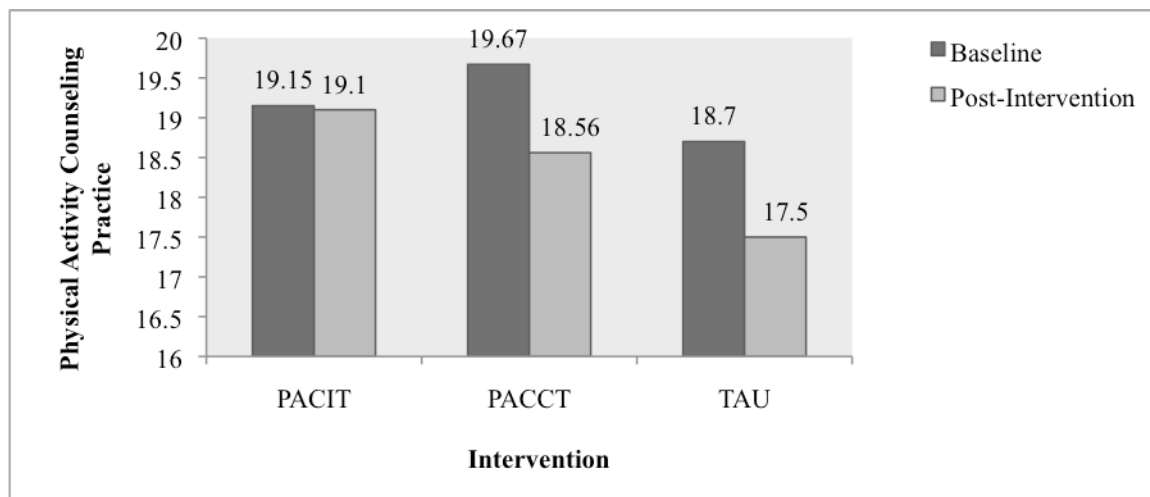


Figure 4. Physical activity counseling knowledge of exercise benefits and barriers.

**Practice of Physical Activity Counseling.** Repeated Measures ANCOVAs examined participants' self-reported practice of PA counseling before and after the intervention using the PPS. No significant differences were found for intervention (between subjects-effects), across time points (within-subjects effects) or for the interaction,  $F(2, 54) = 0.12, p = .87$ , partial  $\eta^2 = .005$ . As illustrated in Figure 5 below, these results are contrary to the main hypothesis. There were no significant differences in participants' practice of PA counseling. Figure 5 illustrates that, contrary to the main hypotheses, participants from all three groups, (PACIT, PACCT, TAU), minimally decreased their self-reported practice of PA counseling.



*Figure 5.* Practice of physical activity counseling.

To test the second hypothesis, that participants in the PACIT and PACCT groups compared to participants in the TAU group would demonstrate an increase in their personal level of PA from pre-to-post-intervention and demonstrate advancement along the Stages of Change Model regarding change of practicing PA counseling with clients from pre-to-post-intervention, Repeated Measures ANCOVAs were used. One Repeated Measures ANCOVA was conducted for each target variable, with within-subjects factors consisting of the dependent variables measured at each time point, and group intervention entered as the between-subjects factor, and year in graduate program entered as a covariate.

Prior to the primary analysis, data were checked for statistical assumptions, including independence of observations, normality, homogeneity of variance, homogeneity of covariance matrices, and sphericity. Univariate and multivariate outliers were identified using mahalanobis distance and by examining boxplots. Although several outliers were identified, these were judged to be real values of the population and were thus included in the analyses. After running the Repeated Measures ANCOVAs for each dependent variable, the assumption of homogeneity of variance was checked using Box's M Test of Equality of Covariance Matrices. This test was

nonsignificant for the SOCS, indicating that the assumption was met, but was significant for the IPAQ. Because sample sizes between groups are nearly equal, this poses little threat to the assumption; however, Pillai's Trace will be the test statistic reported for all Repeated Measures ANCOVAs because of its known robustness when sample sizes are equal (Field, 2009). To test for equality of error variances, Levene's test was used. Significant results for this test for SOCS measured at post-test suggested possible violation of the assumption; however, because Box's M Test was nonsignificant, this is not of concern. Levene's test was not significant for the IPAQ, indicating that the assumption was met. Mauchly's W was used to test for sphericity; however, due to only having two levels (pre and post-intervention), SPSS computed no value. Because at least three levels are needed for sphericity to be of concern, the assumption of sphericity was not relevant (Field, 2013).

Table 4 provides baseline and post-intervention means for all pre-and-post-intervention measures. To more meaningfully interpret patterns observed in pre-and-post-intervention, means of original variables (prior to transformations) are included in the table. Repeated Measures ANCOVA results showed significant differences between self-efficacy and intervention and knowledge of targeted PA.

**Physical Activity.** Repeated Measures ANCOVAs examined participants' self-reported level of PA before and after the intervention using the IPAQ. No significant differences were found for intervention (between subjects-effects), across time points (within-subjects effects), or for the interaction. As illustrated in Figure 6 below, these results do not provide support for the second hypothesis. Figure 6 suggests that participants in the PACCT reported consistent moderate levels of PA (according to the IPAQ criteria) from pre-to-post-intervention. While

there are no significant differences, Figure 6 illustrates that participants in the PACIT group increased their PA levels from moderate to high from pre-to-post-intervention.

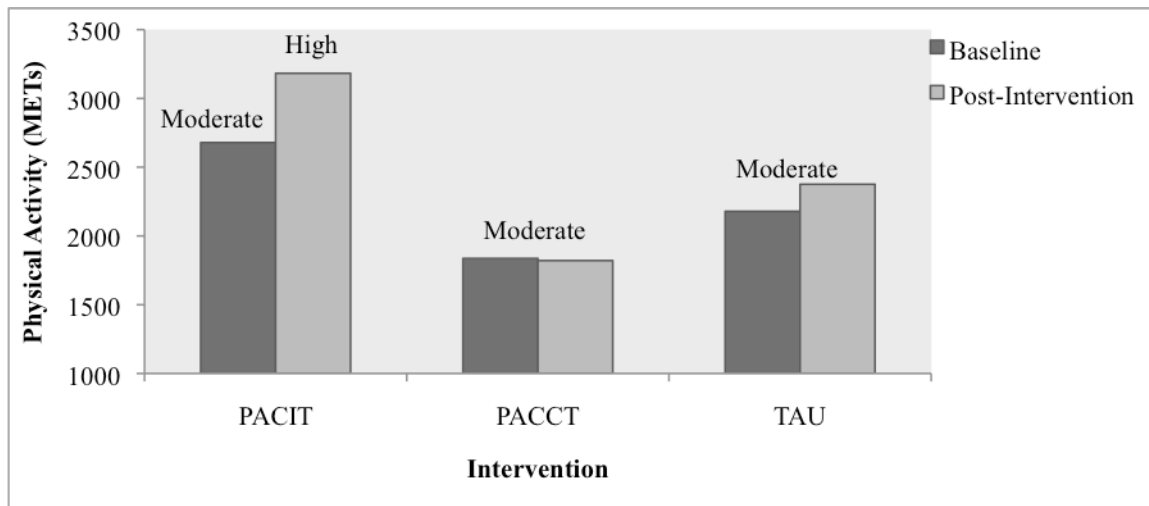


Figure 6. Personal levels of physical activity.

**Stages of Change.** Repeated Measures ANCOVAs examined participants' self-reported Stage of Change (Prochaska & DiClemente, 1982) in practicing PA counseling before and after the intervention using the SOCS. There was a significant time by intervention group interaction,  $F(2, 54) = 8.69, p = .001$ , partial  $\eta^2 = .24$ . The interaction was such that there was a significant difference in reported levels of Stage of Change for practicing PA counseling following the intervention by participants in each of the three groups (PACIT, PACCT, TAU). See Table 4 for means and standard deviations. No significant differences were found for intervention (between subjects-effects) or across time points (within-subjects effects). As illustrated in Figure 7 below, these results provide support for the second hypothesis. Figure 7 demonstrates participants in the PACIT group went from the Contemplation Stage (pre-intervention) to the Action Stage (post-intervention) of practicing PA counseling and participants in the PACCT group increased their Stage of Change from the Preparation Stage to the Action Stage, while participants in the TAU group went from the Preparation Stage to the Contemplation Stage.

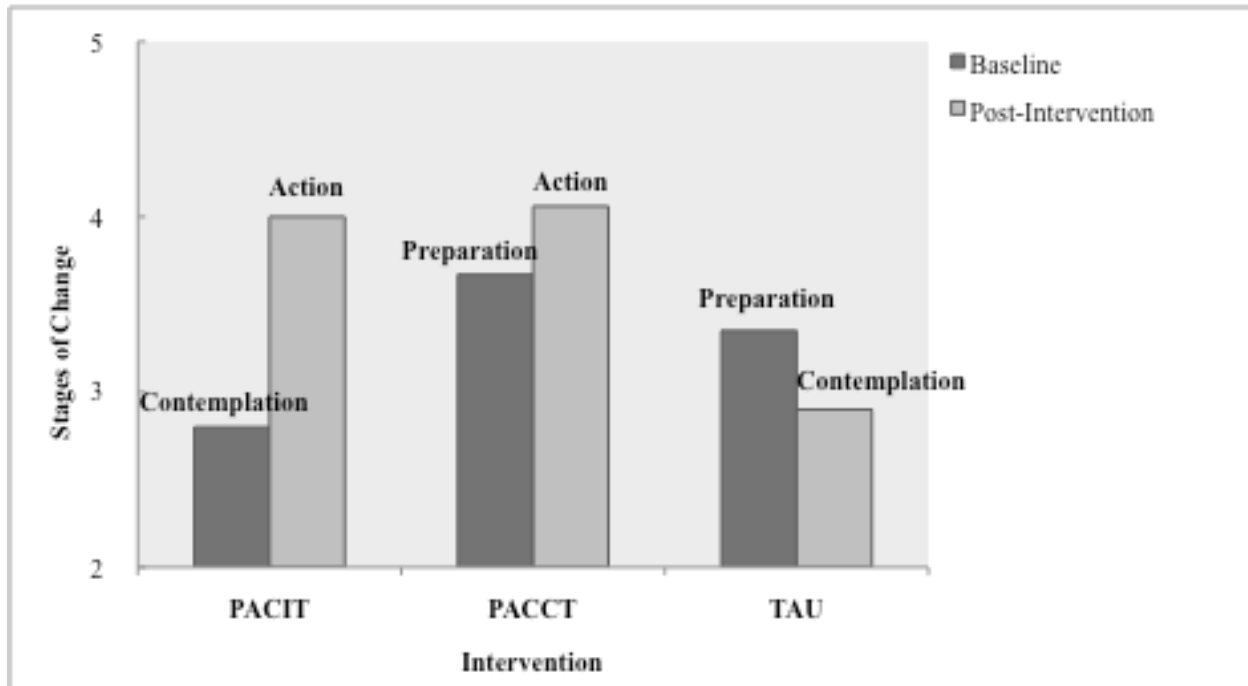


Figure 7. Stages of Change of Practicing Physical Activity Counseling.

To test the third hypothesis, that participants in all three groups (PACIT, PACCT, TAU) who were more physically active at pre-intervention would demonstrate more knowledge of PA and PA counseling at pre-and post-intervention and report increased levels of practicing PA counseling with clients at pre-intervention and post-intervention, Repeated Measures ANCOVAs were used. One Repeated Measures ANCOVA was conducted for each target variable, with within-subjects factors consisting of the dependent variables measured at each time point and group intervention entered as the between-subjects factor, and year in graduate program entered as a covariate. Per IPAQ scoring protocol (IPAQ Research Committee, 2005), participants were categorized into low, medium, and high levels of PA. Prior to the primary analysis, all statistical assumptions were met.

**Knowledge.** Repeated Measures ANCOVAs examined participants' self-reported PA levels and knowledge in the health benefits of PA and PA counseling before and after the

intervention using the KPAC and the EBBS. For the KPAC, there was a significant main effect of time,  $F(1, 55) = 4.70, p = .03$ , partial  $\eta^2 = .07$ . The main effect suggested that the significant difference in knowledge was better accounted for by time than by levels of PA. No other significant differences were found between subjects or for the interaction. For the EBBS, no significant differences were found for level of PA (between-subjects effects), across time points (within-subjects effects), or for the interaction,  $F(2, 56) = 0.29, p = .78$ , partial  $\eta^2 = .009$ . These results do not provide support for the third hypothesis. Participants who were more physically active at pre-intervention did not demonstrate more knowledge of PA and PA counseling at pre-or-post-intervention.

**Practice of Physical Activity Counseling.** Repeated Measures ANCOVAs examined participants' self-reported PA levels and practice of PA counseling before and after the intervention using the PPS. No significant differences were found for level of PA (between subjects-effects), across time points (within-subjects effects), or for the interaction,  $F(2, 56) = 0.03, p = .98$ , partial  $\eta^2 = .007$ . These results do not provide support for the third hypothesis. Participants who were more physically active at pre-intervention did not report more practice of PA counseling at pre- or post-intervention.

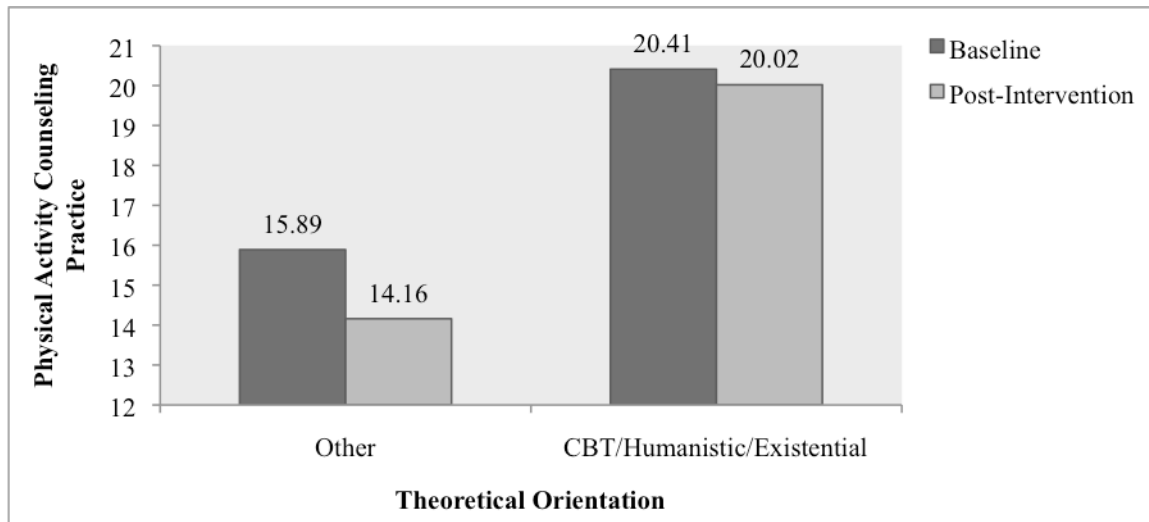
### **Exploratory Hypothesis Testing**

Analyses were conducted to explore other variables of interest such as theoretical orientation of the participant, the theoretical flexibility of the participant's supervisor, the participant's current autonomy in designing treatment plans for their clients, and baseline knowledge of the health benefits of physical activity and physical activity counseling and baseline self-efficacy in their practice of PA counseling. After assumptions were met, exploratory hypotheses testing began.



**Theoretical Orientation.** To test the first exploratory hypothesis, that participants in all three groups (PACIT, PACCT, TAU) who come from a Cognitive Behavior Therapy, Humanistic, or Existential theoretical orientation would report increased levels of practicing PA counseling with clients at pre-intervention and post-intervention and demonstrate advancement along the Stages of Change Model regarding change of practicing PA counseling with clients from pre-to-post-intervention, Repeated Measures ANCOVAs were used. Repeated Measures ANOVAs examined participants' primary theoretical orientation based on their self-reported practice of PA counseling and their Stage of Change of practicing PA counseling before and after the intervention using the PPS and the SOCS. After assumptions were met, repeated measures ANOVA analyses were conducted for practicing PA counseling and Stage of Change outcomes with time and theoretical orientation as the independent variables. Individuals with primary theoretical orientations of CBT, Humanistic, and Existential were collapsed into a categorical variable and compared with participants from other theoretical orientations. For the PPS, main effects revealed a significant difference between participants with theoretical orientations of CBT/Humanistic/Existential and participants with other primary theoretical orientations,  $F(1, 57) = 6.41, p = .01$ , partial  $\eta^2 = .10$ . Simple contrasts revealed significant differences in their reported practice of PA counseling between CBT/Humanistic/Existential and participants who come from other primary theoretical orientations,  $p = .01$ . CBT/Humanistic/Existential participants had a baseline mean of 20.42 ( $SD = 1.05$ ) and a post-test mean of 20.02 ( $SD = 1.33$ ), while participant with other theoretical orientations had a baseline mean of 15.89 ( $SD = 1.58$ ) and a post-test mean of 14.17 ( $SD = 2.01$ ). This main effect suggests that participants from CBT/Humanistic/Existential theoretical orientations reported significantly more practice of PA counseling both at pre-and-post-intervention in comparison to participants

who work primarily from other theoretical orientations. As illustrated in Figure 8 below, these results provide support for the first exploratory hypothesis. Participants from a primary theoretical orientation of CBT, Humanistic, or Existential theory practiced higher levels of PA counseling practice at pre-and-post-intervention in comparison to participants from other theoretical orientations.



*Figure 8.* Theoretical orientation and physical activity counseling

For the SOCS, main effects revealed a significant difference between participants with theoretical orientations of CBT/Humanistic/Existential and participants who come from other primary theoretical orientations,  $F(1, 57) = 5.26, p = .02$ , partial  $\eta^2 = .08$ .

CBT/Humanistic/Existential participants had a baseline mean of 3.44 (SD = 1.55) and a post-test mean of 3.76 (SD = 1.35), while the Other Theories participants had a baseline mean of 2.72 (SD = 1.56) and a post-intervention mean of 3.33 (SD = 1.13). Participants from other theoretical backgrounds moved from the Contemplation Stage of Change to the Preparation Stage of Change, while participants from CBT/Humanistic/Existential theories, remained in the Preparation Stage of Change from pre-to-post intervention. As illustrated in Figure 9 below,

these results provide partial support for the first exploratory hypothesis. While participants from a primary theoretical orientation of CBT, Humanistic, or Existential theory practiced higher levels of PA counseling at pre-and-post-intervention compared to participants from other theoretical orientations, only participants from other theoretical orientations advanced across the Stages of Change Model from pre-to-post-intervention in comparison to participants from CBT, Humanistic, or Existential theories.

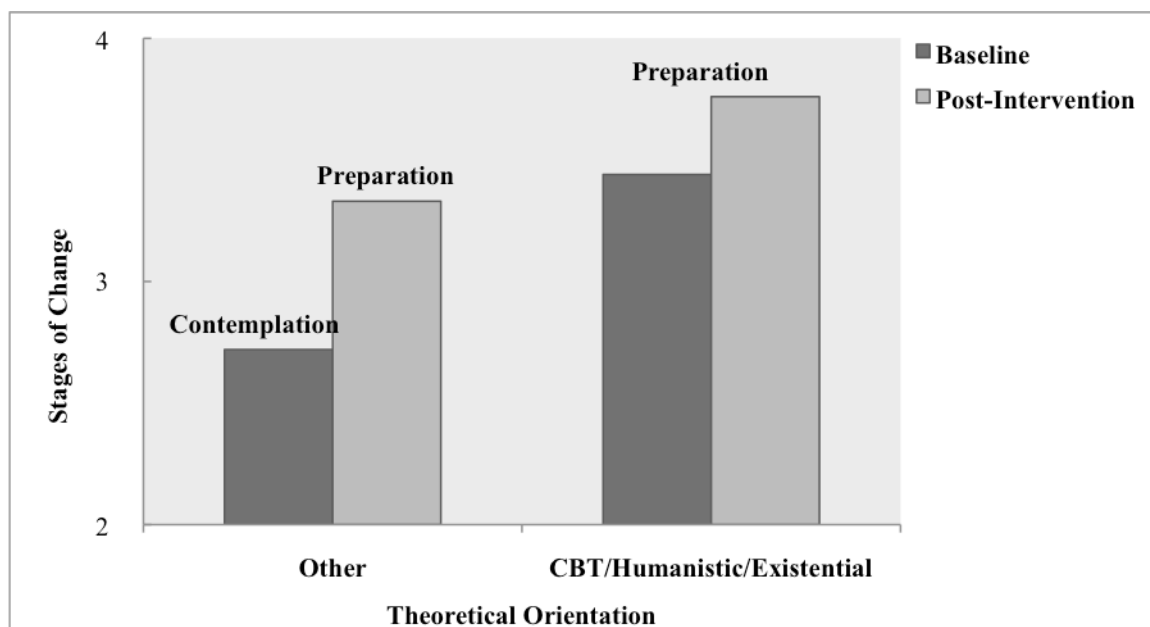


Figure 9. Theoretical orientation and stages of change

**Supervision and Autonomy.** To test the second exploratory hypothesis, that participants in all three groups (PACIT, PACCT, TAU) whose current supervisor is theoretically flexible and/or felt more autonomous in their treatment planning with clients would demonstrate higher levels of practicing PA counseling with clients at post-intervention and demonstrate advancement along the Stages of Change Model regarding change of practicing PA counseling with clients from pre-to-post-intervention, Repeated Measures ANCOVAs were used. Repeated Measures ANCOVAs examined participants' supervisor flexibility and the participants' autonomy in treatment planning in relation to their self-reported practice of PA counseling and

their reported Stage of Change in practicing PA counseling before and after the intervention using the PPS and the SOCS. There were significant differences for both supervisor flexibility and autonomy in treatment planning. Main effects revealed a significant difference between participants with theoretically flexible supervisors and participants who reported having a theoretically inflexible supervisor on their self-reported Stage of Change in practicing PA counseling,  $F(1, 57) = 5.21, p = .02$ , partial  $\eta^2 = .08$ . Participants with theoretically flexible supervisors had a baseline mean of 3.29 (SD = 1.63) and a post-intervention mean of 3.62 (SD = 1.30). Participants with theoretically inflexible supervisors had a baseline mean of 3.00 (SD = 1.41) and a post-intervention mean of 3.64 (SD = 1.33). While there is statistical significance, according to the Stages of Change Model, all pre-and-post-intervention means are in the Preparation Stage. Thus, while significant main effects were found, there are no meaningful Stage of Change differences between participants with theoretically flexible supervisors versus participants with theoretically inflexible supervisors on their Stage of Change of practicing PA counseling.

In addition, significant differences were found for participants who reported feeling more autonomy in treatment planning. Main effects revealed a significant difference between participants who reported feeling more autonomous in their treatment planning with clients compared with participants who reported feeling less autonomous in their treatment planning with clients,  $F(1, 57) = 4.79, p = .03$ , partial  $\eta^2 = .07$ . Participants with more autonomy in their treatment planning with clients had a baseline mean of 3.50 (SD = 1.50) and a post-intervention mean of 3.64 (SD = 1.36). Participants with less autonomy in their treatment planning with clients had a baseline mean of 3.00 (SD = 1.62) and a post-intervention mean of 3.61 (SD = 1.25). While there is statistical significance, according to the Stages of Change

Model, all pre-and-post-intervention means are in the Preparation Stage. Thus, while significant main effects were found, there are no meaningful Stage of Change differences between participants with more autonomy in their treatment planning with clients versus participants with less autonomy in their treatment planning with clients on their Stage of Change of practicing PA counseling.

For the PPS, no significant differences were found for either supervisor theoretical flexibility or participant sense of autonomy by intervention (between subjects-effects), across time points (within-subjects effects), or for the interactions. This finding suggests that the theoretical flexibility of the participants' supervisor and the participant's sense of autonomy in treatment planning with clients did not significantly impact their self-reported practice of PA counseling at pre or post-intervention.

In sum, these results do not support the second exploratory hypothesis. While both participants with theoretically flexible supervisors and the participants with higher sense of autonomy in treatment planning with clients were significantly more likely to advance along the Stages of Change regarding their practice of PA counseling from pre-to-post intervention, there was no meaningful advancement along the Stages of Change Model. In other words, there was only significant movement within Preparation Stage, one particular Stage of Change, but no progression to Action, the next Stage of Change.

**Knowledge.** To test the third exploratory hypothesis, that is participants in all three groups (PACIT, PACCT, TAU) who have more knowledge of PA and PA counseling at pre-intervention would demonstrate higher levels of practicing PA counseling with clients at post-intervention and demonstrate advancement along the Stages of Change Model regarding change of practicing PA counseling with clients from pre-to-post-intervention, Repeated Measures

ANCOVAs were used. Repeated Measures ANCOVAs examined participants' baseline knowledge of PA and PA counseling in relation to their self-reported practice of PA counseling and their reported Stage of Change in practicing PA counseling before and after the intervention using the PPS and the SOCS. No significant differences were found for intervention (between subjects-effects), across time points (within-subjects effects), or for the interaction. Contrary to the third exploratory hypothesis, participants with more knowledge of the health benefits of PA and PA counseling at pre-intervention did not significantly differ on their practice of PA counseling, nor their Stage of Change associated with their practice of PA counseling than participants with less knowledge of PA and PA counseling.

**Self-Efficacy.** To test the fourth exploratory hypothesis, that is participants in all three groups (PACIT, PACCT, TAU) who reported more self-efficacy of practicing PA counseling at pre-intervention would demonstrate higher levels of practicing PA counseling with clients at post-intervention and demonstrate advancement along the Stages of Change Model regarding change of practicing PA counseling with clients from pre-to-post-intervention, Repeated Measures ANCOVAs were used. Repeated Measures ANCOVAs examined participants' baseline self-reported self-efficacy of practicing PA counseling in relation to their self-reported practice of PA counseling and their reported Stage of Change in practicing PA counseling before and after the intervention using the PPS and the SOCS. For the SOCS, main effects revealed a significant difference between those who reported higher self-efficacy of practicing PA counseling and those who did not,  $F(1, 35) = 2.45$ ,  $p = .01$ ,  $\text{partial } \eta^2 = .79$ . Participants with higher levels of self-efficacy of practicing PA counseling had a baseline mean of 3.75 (SD = 1.52) and a post-intervention mean of 3.92 (SD = 1.26). Participants with lower reported levels of self-efficacy of practicing PA counseling had a baseline mean of 3.07 (SD = 1.52) and a post-

intervention mean of 3.42 (SD = 1.17). While there is statistical significance, according to the Stages of Change Model, all pre and post-intervention means are in the Preparation Stage. This main effect suggests that participants who reported a higher level of self-efficacy for practicing PA counseling at baseline, were more likely to be further along the Stages of Change Model regarding their change of practicing PA. These results partially support the fourth exploratory hypothesis. Participants who reported higher levels of self-efficacy of practicing PA counseling were further along the Stages of Change Model than participants who reported lower levels of self-efficacy. However, participants with more self-efficacy of practicing PA counseling at pre-intervention did not significantly differ on their practice of PA counseling than participants with less self-efficacy of practicing PA counseling. Even though participants who reported higher levels of self-efficacy were significantly more likely to advance along the Stages of Change regarding their practice of PA counseling from pre-to-post intervention, there was no meaningful advancement along the Stages of Change Model. In other words, there was only significant movement within Preparation Stage, one particular Stage of Change, but no progression to Action, the next Stage of Change. Thus, while significant main effects were found, there are no meaningful Stage of Change differences between participants with more self-reported self-efficacy of practicing PA counseling versus participants with lower levels of self-efficacy in their practice of PA counseling.

### **Additional Analyses**

Analyses were conducted to explore variables such as participant reported counseling outcome, differences between psychology domain, intervention dosage, and training. After assumptions were met, additional analyses testing began.

**Counseling Outcome.** At post-test, participants were asked to reflect on their recent practice of PA counseling with a client using the COM. A one-way ANOVA examined participants' reported outcomes of their client by intervention (e.g., PACIT, PACCT, TAU). No significant differences were found on reported counseling outcomes related to PA counseling between participants from each of the three groups.

**Training.** To assess differences among the training of participants in CBT, MI, and PA counseling, three new variables were created. Based on their self-reported experience and training in CBT, MI, and PA counseling at pre-intervention, participants were categorized into no training, low training and experience, or moderate-high training and experience for each of the three approaches. Fifty four percent of participants reported moderate to high levels of training and experience in CBT, 46% reported low levels of training and experience in CBT, and no participants reported no training or experience in CBT. Forty seven percent of participants reported moderate-high training and experience in MI, 46% reported low training and experience in MI and 5% reported no experience or training in MI. Only 5% of participants had moderate-high training and experience in PA counseling, 47% reported low experience and training in PA counseling and 48% reported no experience or training in PA counseling.

**Differences between Psychology Domains.** Two-way ANCOVAs examined whether there were differences in intervention effects between participants from Clinical Psychology, Counseling Psychology, and Other Combined program participants. Two-way ANCOVAs were conducted for all outcome variables with group membership (e.g., PACIT, PACCT, TAU) and psychology domain as independent variables and pretest scores and Year in Graduate Program entered as covariates. Results of all analyses indicated that there were no significant differences between participants from different programs.



**Intervention Dosage.** Due to the self-paced design of participant progress through the interventions, exploratory analyses were conducted to examine whether intervention dosage (e.g., participant length of engagement in the online intervention) was associated with outcomes among intervention group participants. While the intervention was designed to be four weeks in length (one module per week), most participants completed the intervention in two days. One participant completed the four-module intervention in 18 days, while most (97%) completed the intervention in less than 10 days, 52% in less than a day, and 42% in less than four hours.

For participants in the intervention groups (PACIT, PACCT), a new variable was created based on the number of days (or fraction thereof) from participant start time of accessing the first module on CourseSites. With the new variable, skewness and kurtosis values greater than one were observed, indicating that the assumption of normality was violated. To address this, the affected variable was subsequently transformed using inverse transformations. Following these adjustments, skewness and kurtosis were reduced and normality for variable was significantly improved. All other assumptions were met. A one-way ANOVA revealed no significant differences between the length of engagement of the participant in the intervention and their outcome variables on aforementioned scales.

### **Qualitative Process and Evaluation Data**

Throughout the interventions, participants in the intervention interventions were asked to provide process feedback and evaluation. Participants in the PACIT and PACCT intervention groups were given one qualitative question at the end of each module summary quiz. Following the completion of each module, participants in the PACIT group were given two open-ended prompts per journal. All participants in the PACIT group except for one completed their four journal entries and quizzes. One participant completed the four module quizzes, but did not

complete any of the journals. A total of 88 journal entries were composed by PACIT participants on CourseSites. Each of those 88 journal entries were commented on in CourseSites by the researcher/instructor of the PACIT course. Participants had the opportunity to continue the conversation by replying to the instructor comment and eight replied. In addition to five close-ended evaluation items, open-ended feedback was included in the post-intervention questionnaires as part of the Intervention Evaluation Questionnaire (IEQ). All close-ended questions on the IEP were responded to on a five-point likert scale ranging from *1 = strongly disagree* to *5 = strongly agree*. Overall, participants enjoyed participating ( $M = 4.4$ ,  $SD = 1.16$ ), rated the instructors of the course as enthusiastic about the topic ( $M = 4.2$ ,  $SD = 1.14$ ), and found that the module content was relevant to their clinical work ( $M = 4.16$ ,  $SD = 1.14$ ).

Based on a review of their qualitative process and evaluation data, themes were developed. Themes found in the PACIT Participants' Journal Reflections include: Gap in Training, Ethics and Scope of Competence, Clinical Work, Supervision, Personal Life, Research and Resources. The qualitative theme from the PACIT Module Summary Quizzes was Desire for more Interaction. Themes from the PACCT Module Summary Quizzes include: Desire for more Interaction and Presentation of Content. Themes from the IEQ open-ended questions on what participants found most helpful include: Interactive Approaches to Learning, Resources and Research Provided, and Self-Directed and Accessible. Themes for what participants found least helpful include Technical Problems and Length of the Training. Qualitative themes for what participants would improve include: Adding Vignettes and Depth of Training. Themes in changes in participants' personal levels of physical activity are: No Real Change and Awareness and Intentionality of their Physical Activity Behavior. Themes associated with participant changes in their PA counseling include: Increased Confidence and Increased Motivation related

to their practice of PA counseling. See Appendix W (Tables W1-W8, respectively) for details and sample quotes for each theme discussed.

## **Discussion**

The present study sought to examine the effectiveness of providing PA counseling training to doctoral students in Clinical and Counseling Psychology programs. As behavioral health experts, psychologists are in a unique position to practice PA counseling (Daley, 2002; Dubbert, 2002), yet few psychologists consistently address PA concerns with their clients (Barrow et al., 1987). Although previous research has recommended that psychologists be trained in PA counseling, there are few doctoral programs that currently include it in an organized course or measurable manner (Seime & Vickers, 2006). The thrust of this study, consequently, addresses the dearth of PA counseling training for future psychologists. Participants in two online training courses, one interactive and one content-based, were compared to participants in a control group who received no additional training in PA counseling. The main purpose was to determine whether an online, interactive training program in PA counseling would enhance participant self-efficacy of practicing PA counseling, increase participant knowledge of the health benefits of PA and PA counseling, and increase participant practice of PA counseling compared to an online content-based training program and a control group (no additional training). Participants were randomly assigned to the online-interactive intervention (PACIT), the online-content intervention (PACCT), or the control group (TAU). Both online interventions were self-paced, four-module training courses in PA counseling. The control group did not receive any intervention during the course of this study; control group participants only completed pre-and-post-intervention measures.

It was hypothesized that participants in both the PACIT and PACCT interventions but not the TAU group would show significant improvements in their self-efficacy regarding their practice of PA counseling, and knowledge of the health benefits of PA and PA counseling, and they would increase their practice of PA counseling. It was also hypothesized that participants in the PACIT intervention would show increased levels of personal PA and demonstrate advancement regarding their Stage of Change of practicing PA counseling. These hypotheses were based primarily on two theories: 1) Social Cognitive Theory (Bandura, 1986) and 2) Constructivist Theory (Black & McClintock, 1996).

Social Cognitive Theory (Bandura, 1986) is a learning theory that incorporates observation of others, behavior, cognition, and the environment. Central to SCT is self-efficacy, which can be defined as the degree to which an individual believes s/he is capable of performing a specific task (Bandura, 1986). Increased counseling self-efficacy has been effective in the training and development of counselors (Larson, 1998). Through the four processes of self-efficacy (e.g., mastery experience, vicarious, learning, verbal persuasion, and the physical and affective state of the individual), psychologists-in-training may feel more efficacious in practicing PA counseling. In this study, the online-interventions were designed to enhance the participant's self-efficacy regarding their practice of PA counseling by employing the main components of self-efficacy.

Constructivist Theory is a predominant educational theory rooted in incorporating previous knowledge, skills, and experience through learning and assimilating new knowledge by making meaning and developing cognitive structures based on new experiences (Gold, 2001; Duffy & Jonassen, 1992). In this study, a Constructivist-based online learning environment was designed to facilitate, guide, and train participants to increase their knowledge of the health

benefits of PA and PA counseling by connecting their basic counseling skills and knowledge to the new content presented in the modules. In line with Constructivist pedagogy, intervention curriculum was designed to both engage the participant's unique experience while encouraging the student to be motivated to learn, by enhancing self-discipline and ownership over their learning experience.

The results of this study supported the hypotheses related to self-efficacy regarding the practice of PA counseling and partially supported the hypotheses related to knowledge of the health benefits of PA and PA counseling, but the results did not support hypotheses related to the practice of PA counseling. Consistent with the first hypothesis, individuals in the online-interactive intervention endorsed significantly higher levels of self-efficacy regarding their practice of PA counseling, and reported more targeted PA counseling knowledge than individuals in the control group. Contrary to the first hypothesis, individuals in the online-interactive intervention group did not report significantly higher levels of self-efficacy or demonstrate higher levels of knowledge than individuals in the online-content intervention group. Contrary to hypotheses, there were no increases in practice of PA counseling among individuals in all three groups.

### **Self-Efficacy**

This study followed guidelines set by Larson and Daniels (1998) who advocated the development of pre-post training interventions in order to enhance counselors' self-efficacy in their counseling. This study followed those guidelines by using a pre-post research design and by measuring changes in self-efficacy. As hypothesized, both online interventions significantly improved self-efficacy of practicing PA counseling when compared to a control group. Participants in the PACIT and PACCT interventions reported significantly higher levels of self-

efficacy to practice PA counseling in comparison to the TAU control group participants.

Consistent with Bandura (1986) and Larson (1998), the PACIT online training program used predictors of self-efficacy such as 1) use of counselor performance (e.g., building on basic counseling skills), 2) counselor anxiety (e.g., addressed ethical fears and what-ifs), 3) vicarious learning (e.g., provided video examples of PA counseling and encouraged participants to talk about it in supervision), and 4) social persuasion (e.g., videos; journal reflection comments). Similarly, the PACCT online training program also used predictors of self-efficacy, but to a lesser degree than the PACIT training program.

These findings are consistent with the results of previous studies (Larson & Daniels, 1998; Larson, 1998), which suggest that counseling self-efficacy is a critical factor in clinician development about their beliefs of their capabilities to effectively work with clients. This study sought to further the development of psychologists-in-training, and given these significant increases in self-efficacy by participants in the intervention training groups, it is hoped the participants have been provided with a foundation to build their PA counseling practice. Further, these findings are in line with previous research on the importance of self-efficacy in the training of nurses in practicing PA counseling (Happell et al., 2011). Because nurses and psychologists face similar barriers to PA counseling (Seime & Vickers, 2006; Callaghan, 2004), self-efficacy may be the mediator to overcoming many of the barriers through trainings like PACIT and PACCT.

There were no significant differences between self-efficacy levels for participants in the PACIT intervention and participants in the PACCT intervention. The findings of this study suggest that the Constructivist-based (Black & McClintock, 1996) interactive component of PACIT was not as critical as the content of the modules: exposure to the content material,

regardless of mode of delivery, appeared to be equally effective in improving self-efficacy.

Thus, it appears that exposure to PA counseling content is better for improving self-efficacy of practicing PA counseling in this doctoral psychology student population. These results may point to what most impacts self-efficacy is mastery experience and knowledge. While interactive components of self-efficacy theory (e.g., social persuasion and vicarious learning) may help support self-efficacy, content knowledge appears to be the most helpful in this population.

Given these results, it is important to consider the role of training future psychologists in PA counseling through a self-efficacy lens. While most programs do not currently offer formal training and experience in PA counseling, it appears that exposure to an introductory training course on PA counseling is effective in significantly increasing self-efficacy in the practice of PA counseling among doctoral psychology students. This finding is important because while it would be ideal to engage students in an interactive manner to learn PA counseling, exposure to the content alone may increase their self-efficacy in providing clients with PA counseling. In sum, these results suggest that some training, whether content-based, or interactive-based, is superior to the current Clinical and Counseling Psychology training programs across the country in increasing self-efficacy in the practice of PA counseling.

## **Knowledge**

Previous studies call for the training of psychologists in basic exercise prescription as a precursor for incorporating PA into their clinical work (Daley, 2002; Faulkner & Biddle, 2001). This study was designed to enhance the participant's knowledge of the health benefits of PA and PA counseling. Findings from this study suggest that participants from the two intervention groups (PACIT and PACCT) attended to the content of the modules based on the learning objectives of the intervention courses. While participants in the PACIT intervention scored

significantly higher on targeted PA counseling knowledge than participants in the TAU control group, there were no significant differences between KPAC scores for participants in the PACIT intervention and participants in the PACCT intervention. Thus, no significant differences between the knowledge of PA in PACIT participants in comparison to PACCT participants was found. As mentioned above, it was surprising that there was no significant difference between the PACIT and PACIT groups. This finding suggests that exposure to the content of the modules was more important than the delivery of the content. This is contrary to Zhang's findings (2005) that students prefer more engaging learning modalities and gain more knowledge when they are more engaged. Thus, future research is recommended to continue to assess which learning modalities are ideal to train healthcare professionals and in particular psychologists the content of PA counseling.

The findings of this study demonstrated differences between the two measures of PA counseling knowledge. According to the second knowledge measure used in this study, the majority of participants in the intervention groups lowered their exercise benefits and barriers knowledge scores at post-intervention. This finding suggests that participants in the PACIT and PACCT intervention groups may have learned more about what they do not know about the health benefits and barriers of PA and PA counseling. Also, it is possible that the measure itself did not capture specific knowledge relevant to the content of the modules. Further research is needed to explore the critical components of PA counseling in psychology as a precursor to establishing guidelines and ultimately best practices and evidenced based practice in PA counseling (Fortier et al., 2011).



## **Physical Activity Counseling Practice**

One of the aims of this project was to increase the practice of PA counseling among graduate students in psychology. The findings of this study did not support the hypothesis that participants in the PACIT and PACCT intervention groups would significantly improve their practice of PA counseling. Instead, results indicate that participants in all three groups (PACIT, PACCT, TAU) decreased their practice of PA counseling from pre-to-post-intervention. It is difficult to determine the root of this decrease. It seems most relevant to note the time or length of engagement of each participant to complete the four-module interventions, as most participants completed the intervention in two days, which is not ample time to try something new or to improve or increase practice of PA counseling. Another possible explanation is after introductory training in PA counseling, the participants in PACIT and PACCT became more interested in PA counseling and may have become more cautious in providing PA counseling. Further, objective measures of PA counseling were not included in the scope of this project but could have added to the validity of the PA data. In a Scientific Statement by the AHA, Strath et al. (2013), suggests that the first place to begin in addressing PA is during the initial assessment using both objective and subjective measures. Further exploration of objective measures for both clinician and client alike is recommended for future studies.

## **Physical Activity**

Another aim of this study was to increase personal levels of PA among the participants. This aim stems from previous studies in the literature with psychologists and other healthcare professionals that highlight the positive relationship between personal level of PA and practicing PA counseling (e.g., Barrow et al., 1987; Lobelo et al., 2009). However, results from this study showed that the personal activity levels of participants did not significantly increase from pre-to-

post-intervention for any groups. These results suggest that participants in the PACIT group slightly increased their PA along with participants in the TAU control group while PA levels for participants in the PACCT group remained consistent throughout the study. This lack of increase may be explained best by the participants' initial levels of PA and by the compacted time frame for the research design and by the participants' duration of engagement in the interventions. Participants in the study reported moderate to high levels of PA. Even though there are no significant differences among groups or from pre-to-post-intervention, participants in the PACIT group reported an increase of PA from moderate levels of PA to high levels of PA from pre-to-post-intervention. This finding is consistent with previous studies where PA levels of mental health practitioners were moderate to high (McEntee & Halgin, 1996; Olofsgard, 2009). Therefore, it may be that any increases in PA level would be difficult to achieve because participants already are at a high level. A second explanation for the lack of increase in personal levels of PA may be related to the intervention timeframe. That is, the majority of participants in the online intervention groups (PACIT and PACCT) completed the online intervention in two days, while the IPAQ scale used to measure PA uses a seven-day scale. Due to the research design of this study and the timing of post-intervention questionnaires, it is possible that some of the participants answered the IPAQ twice within the same week, which may not have demonstrated a valid representation of their change in PA behavior over time. Future studies are encouraged to tailor the timing of the intervention and research design to the targeted population. More research is needed to determine the level of PA of doctoral psychology graduate students and how to help graduate students to consistently maintain their level of PA especially in times of high academic and personal stress.

## **Stages of Change**

Previous studies highlight the important relationship of the TTM Stages of Change Model to health behavior change (O’Hea et al., 2004; Prochaska, 1994). It was hypothesized in this study that participants in the two intervention groups (PACIT and PACCT) would demonstrate advancement along the Stages of Change Model regarding their practice of PA counseling as compared to participants in the TAU control group. Findings from this study support the hypothesis. Participants in all three groups demonstrated movement across the Stages of Change. The most significant transition across stages was from the Contemplation Stage to the Action Stage by participants in the PACIT intervention. Participants in the PACCT intervention group advanced from the Preparation Stage to the Action Stage. Participants in the TAU control group regressed from the Preparation Stage back to the Contemplation Stage. These progressions of advancement through the Stages of Change by participants in the two interventions (PACIT & PACCT) are consistent with the literature on the role of self-efficacy and Stage of Change movement across exercise behaviors (O’Hea et al., 2004). Further research is needed to determine the nature of the relationship between self-efficacy, PA, and Stage of Change movement.

## **Physical Activity and Knowledge**

The literature supports the claim that healthcare professionals who are more knowledgeable about the health benefits of exercise are more willing to discuss exercise with their patients/clients (Callaghan, 2004; Fortier et al., 2010). Further, previous studies suggest that health professionals, who exercise more, are more likely to discuss PA with their clients (e.g., Barrow et al., 1987; Lobelo et al., 2009). This study sought to address whether psychologists in training who exercise more frequently would also have more knowledge about the health

benefits of PA and whether participants who exercise more frequently practice PA counseling with their clients. There were no significant differences between participants with higher levels of PA on their knowledge of the health benefits of PA and PA counseling, nor on their practice of PA counseling. These findings are inconsistent with consistent with previous research that suggests that medical students who are more physically active are more likely to address PA with their patients (Lobelo et al., 2009). As mentioned previously, time or length of engagement in the intervention may have contributed to this finding. Future studies should continue to assess the role of personal levels of PA in the clinical work of psychologists.

### **Theoretical Orientation**

One of the most intriguing findings of this study was the relationship between theoretical orientation of the participants and their self-reported practice of PA counseling. In line with the literature, participants in this study who approach their clinical work from CBT, Humanistic, or Existential theoretical orientations reported significantly higher levels of practicing PA counseling (Barrow et al., 1987). Results indicate higher levels of practice of PA counseling by participants from CBT, Humanistic, or Existential theoretical orientations at pre-and-post-intervention. This finding is consistent with the results of previous studies, which found that psychologists from CBT, Humanistic, or Existential theoretical orientations are more likely to use exercise therapy with clients (Barrow et al., 1987). This study sought to focus on CBT, Humanistic, and Existential theoretical orientations, thus other specific theoretical orientations were not examined. It is recommended that the relationship between other theoretical orientations and the practice of PA counseling be further explored in future studies.

## **Stages of Change and Practice of Physical Activity Counseling**

Findings from this study supported the relationship between the participant's current supervisor's theoretical flexibility and the participant's sense of autonomy in treatment planning with their clients and the participant's Stages of Change regarding their practice of PA counseling. Additionally, both self-efficacy and knowledge had significant relationships with the Stage of Change of the participant regarding practicing PA counseling. While all of these variables were individually entered into separate Repeated Measures ANCOVAs, similar results prevailed. For example, across the three variables, knowledge, self-efficacy, and supervisor theoretical flexibility/autonomy in treatment planning, participants' mean on the Stages of Change scale remained in the Preparation Stage from pre-to-post-intervention. While participants in all three groups increased their stages of change score from pre-to-post-intervention, meaningful interpretation of the results is unclear. Under the TTM Stages of Change Model, transitions within a stage, with or without statistical significance, warrant further investigation (O'Hea et al., 2004). Previous research on Stages of Change Theory is primarily based on cross-sectional studies; only a few longitudinal studies highlight the difficulties with research and interventions based on the Stages of Change (O'Hea et al., 2004). Similar to this study, researchers in previous studies have noted unclear understandings of significant movement within a stage and some researchers have called for the creation of markers of "pseudo-stages" within each stage (Sutton, 2000). Consistent with the literature, results from this study stimulate important considerations for future longitudinal research to better understand significant movement within each Stage of Change.

Findings from this study did not support the relationship between the practice of PA counseling and the participants' current supervisors theoretical flexibility and the participant's

sense of autonomy in the treatment planning of their clients. Further, findings from this study did not support the relationship between practice of PA counseling and self-efficacy, and practice of PA counseling and knowledge of PA counseling. As mentioned previously, the time factor could be the driving reason why hypotheses related to practice of PA counseling were almost all not supported. Future research should allow more time or specify length of engagement to provide adequate time and opportunity for the participants to increase their practice of PA counseling.

### **Qualitative Feedback and Evaluation**

Another intriguing aspect of this study was the qualitative feedback and evaluation data. A number of raw themes emerged from the data collected through PACIT participant journal reflections, PACIT and PACCT module summary quizzes, and the post-intervention questionnaires. Two themes emerged from the data. First, a noticeable Gap in Training between established research on physical and mental health benefits of PA and the training of PA counseling for psychologists-in-training emerged from the comments. Second, Ethical Considerations was a major concern of many participants (e.g., asking the questions, ‘what is my scope of competence in PA counseling?, especially if I have never received training in it before?’, ‘how can I get additional training?’, ‘when is it appropriate to refer?’). These two themes are supported by the literature that has established the gap in training for psychologists on physical activity health behavior (Seime & Vickers, 2006) and noted ethical concerns of mental health clinicians about practicing PA counseling (Olofsgard, 2009).

The Gap in Training theme was relevant for most participants in this intervention study. Participants described their clinical training experiences, including their minimal training in PA counseling. A few students in clinical health psychology programs or other programs with a

focus in behavior medicine noted they had received some training in PA counseling. Further research is needed to determine the nature of current curricula in Clinical Health Psychology programs and other programs with a Behavioral Medicine focus in order to determine best practices in the training of PA counseling. Many of these students commented on the depth of the training and recommended that, in the future, different trainings on PA counseling may be helpful for students who have little to no training and experience in PA counseling versus students with moderate experience versus students with moderate to high levels of PA counseling training and experience. Further research should examine variations in PA counseling training curricula that distinguish between those who have been exposed to PA counseling and those with little to no training. There is also an opportunity for Clinical Health Psychology and Clinical Psychology Behavioral Medicine tracks that address PA, health, and PA counseling in their training and curricula to collaborate across tracks and departments of psychology in order for more doctoral students to have access to training in PA and PA counseling.

Other themes also emerged from the qualitative comments. One was a sense of relief in learning that PA counseling is an extension of other basic helping skills. Participants commented on their experience in CBT, MI, and basic helping skills and how it was encouraging to know that many of those skills were transferable to PA counseling. This theme connects to the self-efficacy literature on mastery experience (e.g., ‘If I have used these skills in another domain, there is a high likelihood that I can transfer them to a new domain’). Consistent with Faulkner and Biddle’s recommendations (2001), this study sought to connect the participants pre-learned counseling skills to PA counseling.

Another similar theme that emerged across the journals, quizzes, and post-intervention questionnaires was a sense of relief regarding the resources provided in the trainings. Many participants noted feeling relieved that they did not need to become an expert in PA, but could have referral options and build collaborative relationships within their clinical settings to promote PA among their clients. This intent for collaboration and multidisciplinary approaches to clinical work is reflected in the literature (Faulkner & Biddle 2001; Daley 2002).

In the post-intervention evaluations, a number of participants in the PACIT group highlighted the interactive components of the intervention. An important theme that emerged was the helpful process of writing the journal reflections. In line with Boud (2001) and the P.I.E. Model (Nastanski & Colaric, 2008), the journal reflections provided the PACIT participants with an opportunity to self-reflect on the material. Participants did not have to self-identify as former athletes or being greatly interested in exercise, yet many wrote emails and/or journal reflections about the important role of PA in their athletic lives. The journals provided an opportunity for the participants to reflect on the module content and their own experiences in PA and PA counseling.

A number of students in this study noted the experience of being the “only one” in their cohort, program, or department to be interested in physical activity and mental health. The researcher of this study had a similar experience in her graduate program; she routinely found herself asking for more training in the practice of PA counseling with clients in both academic courses and clinical settings. This theme suggests that more research is needed to assess the number of students interested in this topic and to provide students with interests in physical activity and mental health with adequate training and resources to enhance their physical activity counseling practice.



## **Strengths**

The main strength of this study is that doctoral students in Clinical and Counseling psychology need and want training in PA counseling. While the participants in this study undoubtedly had multiple personal and professional demands on their time, they appeared eager and willing to complete this study with no real tangible gain except the knowledge they could take forth to their personal and professional lives and a chance to win one of 10 \$20 gift cards. In this study, this population demonstrated conscientiousness as they sent multiple emails to the researcher about inclusion criteria (e.g., three participants emailed the researcher to clarify inclusion criteria and self-selected to opt-out once they did not meet the criteria) and time constraints on their ability to participate (e.g., illness, family responsibilities, their own research projects). While doctoral students in psychology have limited free time, they had the interest, desire, and perseverance to learn more about PA and PA counseling.

This study compared the online interactive intervention to an online content intervention group, which provided valuable information about how these two delivery formats compare, thus contributing to the research base on the training of health behaviors in psychology. While there were no significant differences quantitatively between reported self-efficacy levels of PACIT and PACCT participants, the qualitative data suggests meaningful differences of the discrepancies in interaction between the two intervention groups. Through the qualitative data, it appears that participants were more motivated, engaged, and committed in the interactive arm and were willing to continue the training and stay committed and engaged throughout. Through this engagement, participants may have reflected using a higher order of thinking that can best be described by their commitment to learning, but also the interactive pedagogical design of the study. Thus, it is recommended in the future that qualitative data be used to inform future

renditions of this training program to continue to assess the role of Constructivist-based learning in the training of psychologists.

Moreover, this study answered the call of a number of professionals from different backgrounds related to PA counseling, health professionals, and self-efficacy. These calls included using a pre-test post-test design to enhance counselor self-efficacy (Larson & Daniels, 1998), in addition to examining self-efficacy as a factor in training of health clinicians (Madson et al., 2009). Further, this study sought to use a Constructivist-based online training program (Thorpe, 2002) to provide adequate education for healthcare professionals on PA (Mountjoy et al., 2001). Additionally, this study was designed to train future psychologists from a science to practice intervention approach (Addis, 2002) while connecting the mental health benefits of PA research to therapy practice (Seime & Vickers, 2006), in order to train psychology graduate students in PA counseling (e.g., Daley, 2002; Dubbert, 2002).

Another strength of this study is that it provides valuable information to guide future training efforts for psychology doctoral students in PA counseling. Given that few students have the opportunity to learn about the health benefits of PA and PA counseling, or take a course/lecture/be supervised on the practice of PA counseling, this study employed a novel approach to train doctoral psychology students through an online intervention that addressed a current public health concern. Scientist-practitioner by design, this study intended to dispense resources and research on the mental health benefits of PA and PA counseling. With online delivery, it was accessible to graduate students from across the United States. Further, the interactive component of the PACIT intervention provided the researcher/course instructor with the opportunity to engage with the participants in a more intentional way through responding to journal reflections following participant completion of each module. This interaction allowed

for more depth in the instructor-student exchanges, relative to the traditional one-way learning dynamics, providing an opportunity for the participants to immerse themselves in the content of this training. Both face-to-face and online trainings should be considered in the future as viable platforms to enhance self-efficacy of physical activity counseling among doctoral students in psychology.

### **Limitations**

Despite its strengths, this study has multiple limitations that must be considered. Perhaps the most significant limitation is the methodological limitation of time. While the research design anticipated/intended that participants would complete one module per week for four weeks, the self-paced design of the intervention allowed the participant to complete the training at their own pace. Due to this self-paced design, most participants' length of engagement with the intervention was two days instead of the intended four weeks. Dose of the intervention was designed to remain consistent through the one module per week for four weeks in addition to the directed sequential viewing of the content within each module. This is important because time taken to complete the two interventions (PACIT and PACCT) may be indicative of how much information is learned and retained. However, given the population in this study, the self-paced intervention seemed most appropriate. Due to the short length of engagement by participants, further studies are recommended with a more refined research design that include more structure and timed pacing.

A second limitation is the small sample size ( $n = 58$ ) utilized in this study. This small number of data points in each of the three groups (PACIT  $n = 20$ ; PACCT  $n = 18$ ; TAU  $n = 20$ ), may have limited the ability to find significance that may have emerged from a larger sample. Many variables included in the primary analyses were found to be skewed and kurtotic and were

subsequently transformed in order to meet assumptions required by parametric tests. While steps were taken to minimize normality, in a larger sample normality would pose less of a concern, thus leading to more confidence in the robustness of the findings.

A third limitation is the method of sampling. The sampling procedure allowed for little control over the type or number of responders. There may have been a response bias in those who self-selected to participate in this study as the study design required potential participants to go through a number of steps (e.g., read email, be interested in PA counseling, follow link to informed consent, provide email contact information, and respond to email prompt to complete baseline questionnaire) to become participants in the study. Due to this selection bias, this may not be a representative sample of doctoral students in psychology. Further, asking for personal information such as email and name (for training communication purposes) may have hindered some from active or full engagement in the intervention.

A fourth limitation of the current study is the use of Constructivism in the theoretical design of the study. While it has become more common to engage students in online Constructivist-based learning, many of the courses described in the literature are semester-long in length, markedly longer than the length of the education modules in the current study. Consequently, many synchronous strategies for Constructivist learning noted in the literature review were not included in the design of PACIT (e.g., peer discussion, peer support).

A fifth limitation is the technology. Technological limitations of the online interventions may have affected attrition rates through variations in ease of use, varying operating systems, different internet browsers, and CourseSites/online course experience, etc. It is possible that with technological improvements made to the online program, greater adherence to the training

may be observed. Complications with technology are one of the costs of online learning and future online trainings should consider this.

A sixth limitation of the study is the measures used in this study. Measures were adapted for use in this study, due to the fact that no specific instruments in PA counseling exist in the literature to date. Research is needed to construct such instruments to assess effectiveness of PA counseling and the training of PA counseling. Further, all measures used in this study were self-report. Future research should consider adding objective measures (e.g., weight, PA, PA counseling practice).

A seventh limitation is the underlying bias of the research team in terms of interest and enthusiasm for the mental health benefits of PA and the importance of training and practice in PA counseling. This bias may impact participants in their approval-seeking responses that are consistent with the apparent research agenda and may have contributed to demand characteristics where the participant may have responded to questions or behaved in accordance with how they deemed the research team would like. Further, the underlying bias toward the need for more training of PA counseling in doctoral psychology programs in the design, hypotheses, and title of this study may also have impacted the participant. Also, this underlying bias may have played a role in determining the themes for the qualitative process and evaluation data.

### **Implications for Practice**

The outcomes of this study have several practical implications. The most important practical implication is that a brief training intervention in PA counseling can be effective in promoting self-efficacy of practicing PA counseling among doctoral students in psychology. This finding implies that if more doctoral students were exposed to such a training, there may be

a spike in PA counseling among emerging professionals that addresses the physical inactivity epidemic by encouraging clients to engage in regular PA.

A second practical implication is that ethical and scope of competence concerns need to be continually acknowledged and discussed in both training and professional realms surrounding PA counseling in clinical work. Because the research highlights the barriers to PA counseling, including ethical concerns, it is imperative that ethics continue to be on the forefront of additional trainings, consultations, and practice in PA counseling.

Another implication for practice includes extending this training to other populations of future mental health professionals, such as psychiatric nursing and social work students. Further, findings from this study suggest that a brief training for licensed professionals in PA counseling may be effective. By broadening the scope of this training, more behavioral health experts will have the knowledge and training to more regularly use PA counseling. Through this process, it is the hope of the researcher that PA counseling becomes, no longer the exception, but more the norm in clinical practice.

Additionally, the results of this study highlight the need to develop relationships between mental health and PA professionals. Partnerships need to be established and maintained across college campuses in a collaborative effort to bridge the behavioral health and physical health departments. Faulkner & Biddle (2001) call for exercise and mental health professionals to come together and Daley (2002) notes the importance of multidisciplinary collaboration. By connecting students and faculty across university departments (e.g., Kinesiology and Exercise Science, Nursing, Occupation and Physical Therapy, Psychology, other health sciences), it may be easier to work together to effectively train future healthcare professionals across disciplines in PA counseling.

Further formal partnerships are warranted among psychology and PA professional communities. This model has been set by the collaboration between APA Division 47 and the ACSM with their exchange lectures at each of their respective annual conventions. While the ACSM Exchange lecture is a positive step, more ongoing collaboration is needed. Additionally, it is recommended that psychologists and behavioral medicine be included in the ACSM *Exercise is Medicine* initiative, and that together, exercise and psychology professionals seek to define best practices in PA counseling. Moreover, collaboration among health professionals and the fitness industry is warranted (Sallis, 2009). Building on momentum from the APA Mind and Body Health Campaign (2011) and APA Division 38 Health Psychology, it is recommended that collaboration across entities becomes more of a priority for health professionals.

Finally, this study suggests that counseling self-efficacy is an important theoretical construct for the training and practicing of PA counseling. More research is needed to determine if one particular framework (e.g., Motivational Interviewing, Transtheoretical Stages of Change Model, Social Cognitive Theory, Self Determination Theory) may be more effective than another in providing the best approach to the training and practice of PA counseling.

### **Implications for Research**

There are a number of implications for research from the current study. Future research should include an additional follow-up in order to gauge effectiveness of the intervention over time. As mentioned previously, one of the limitations of this study was participant duration of engagement with the interventions. Further data collection at a three-month follow-up is pending to continue to determine the effectiveness of this intervention study. More studies are recommended to address issues of sustainability in practicing PA counseling, followed by

randomized controlled trials to determine best practices in both training and practicing PA counseling.

Additionally, researchers looking to develop an online training program in PA counseling should consider using more advanced technology to enhance ease of use. It is recommended that additional modules be added to the training to include case studies, vignettes and role plays. Further, synchronous lectures, chats, and group projects are recommended. Moreover, allowing the intervention to more closely resemble a face-to-face classroom by individualizing the online experience may enhance participant engagement and thus self-efficacy in the knowledge and practice of PA counseling.

Future research is also recommended to assess the client's perspective on PA counseling. Based on Daley (2002), additional research is needed to study client preconceived notions about PA counseling, the experience of PA counseling, and client desire, need, and interest in PA counseling. More research is also needed to assess client perception of psychologists' health behaviors (e.g., does it matter to the client whether their psychologist meets minimum physical activity guidelines, especially when discussing client's level of physical activity?). Additionally, based on the latest scientific statement by the American Heart Association, more research is needed in the mental health domain to determine which subjective and objective measures are best to use in the assessment of PA levels of clients in clinical settings. Together, these recommendations for research will continue to provide opportunities for psychologists to practice physical activity counseling with their clients.

### **Implications for Training**

Findings from this study suggest that, on average, doctoral psychology students have moderate amounts of training in CBT, modest training in MI, and limited to no training in PA



counseling. Thus, it appears there is a need for the development of standard curricula for doctoral psychology programs that can be infused into health psychology classes and/or in a stand-alone class on PA counseling. In particular, core curricula are needed for basic knowledge of PA, minimum PA guidelines, behavior and methodology associated with the practice of PA counseling, and theoretical frameworks of PA behavior change. This study poses the question: How do we best train future psychologists to understand the rationale for the use of PA counseling and then to actually practice PA counseling, while providing them with tools in assessment and treatment planning, case management, and discharge planning all related to PA counseling? These curricula must be based on current and ongoing research on the relationship between mental health and PA. Finally, basic guidelines of PA counseling must be defined and endorsed.

Findings from this study also suggest that it is important to continue to design and assess various types of PA counseling training for doctoral psychology students that do not have the opportunity to be trained in their respective doctoral program academic coursework or clinical practica experiences. The majority of participants in this study were in their 4<sup>th</sup> year of doctoral training or higher, thus clearly identifying the need for training in doctoral programs across the country in PA counseling. It is recommended that training include both a review of the literature on the mental and physical health benefits of PA, in addition to a practical training component, with supervision and practical clinical work in practicing PA counseling with clients. While this study suggests that an online intervention shows some promise, it may be helpful to compare it to a face-to-face training in the future.

One of the most important implications of this study is the discussion about the ethical responsibility of psychologists to practice PA counseling. Many psychologists and psychology

doctoral students alike are hesitant to use PA counseling due to concerns about scope of practice, lack of training, and other barriers (Daley, 2002; Dubbert, 2002; Olofsgard, 2009; Seime & Vickers, 2006). It is important to consider the role of psychologists in addressing the physical inactivity epidemic, and whether or not psychologists have a responsibility to do so, considering the burgeoning research on the mental health benefits of PA. Previous researchers have gone so far as to say that we do have an ethical obligation, and we are negligent if we do not address PA counseling concerns (Sallis, 2011; Callaghan, 2004). Psychologists have an opportunity to play an even greater role in addressing the physical inactivity epidemic, yet need more training in how to connect the research to their clinical practice.

## **Conclusions**

In sum, this Constructivist-based intervention training program for doctoral students in Clinical and Counseling Psychology demonstrated that, in spite of minimal time for engagement, a brief introductory training can be effective in increasing the self-efficacy of PA practice and targeted PA counseling knowledge. It was found that individuals in both the online-intervention groups endorsed significantly higher levels of self-efficacy regarding their practice of PA counseling in comparison to their control group peers. Contrary to hypotheses, results indicate that the content presented in these training programs may have been more important than the interactive component of the training. This finding suggests that introductory content-based training in PA counseling may be sufficient for psychologists-in-training to increase their self-efficacy in their practice of PA counseling along with increasing their targeted knowledge of PA counseling. Contrary to hypotheses, individuals in all three groups decreased their practice of PA counseling. This may be due to participants' minimal length of engagement with the training programs that occurred by study design and by participant choice. Qualitative data analysis

suggests that many of the students in the intervention arms of this study are more willing to engage clients in a conversation about exercise and are more motivated to be consistently active themselves. This qualitative data provides a clearer understanding of context of the quantitative results that were not able to capture increased motivation and awareness of physical activity by participants.

Although this study has several limitations, as noted previously, it also makes potential contributions. The most notable strength of this study was that individuals want to be trained in PA counseling. As a result, the present study provides greater understanding of self-efficacy of practicing PA counseling in the development of psychologists-in-training. Findings can inform the improvement of future training programs for PA counseling, while also providing direction for Clinical and Counseling Psychology program curriculum development.

Given the mental health benefits of exercise, the current global obesity epidemic and the level of physical inactivity in the United States, even modest interventions, such as this study, may have significant public health impact. Future studies are needed to continue to ascertain the effectiveness of interventions designed to train psychologists in PA counseling and the effectiveness of using PA counseling in clinical work.

## **List of References**

## References

- Adelstein, D., Gelso, C., Haws, J., Reed, K., & Spiegel, S. (1983). The change process following time-limited therapy. *Explorations in Time-Limited Counseling and Psychotherapy*, 63-81.
- Ainsworth, B. E., & Youmans, C. P. (2002). Tools for physical activity counseling in medical practice. *Obesity Research*, 10(S11), 69S-75S.
- Allen, B. S. (1992). Constructive criticisms. *Constructivism and the Technology of Instruction: A Conversation*, Lawrence Erlbaum, Hillsdale, NJ, 183-204.
- American Chemical Society. (2010, October 20). *Lifestyle and recreation: How a little green exercise can go a long way in boosting mental health* [Audio podcast]. Retrieved from [http://web.1.c2.audiovideoweb.com/1c2web3536/GC2010\\_GreenExercise.mp3](http://web.1.c2.audiovideoweb.com/1c2web3536/GC2010_GreenExercise.mp3)
- 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. (2011). *Mind/Body Health Campaign*. Retrieved May, 10, 2011, from <http://www.apa.org/practice/programs/campaign/pec-report.pdf>
- American Psychological Association Committee on Accreditation (APACoA). (2007). *Guidelines and principles for accreditation of programs in professional psychology*. Retrieved from <http://www.apa.org/ed/accreditation/about/policies/doctoral.aspx>
- Arkowitz, H., & Miller, W. R. (2008). Learning, applying, and extending motivational interviewing. In H. Arkowitz, H.A. Westra, W.R. Miller, & S. Rollnick, (Eds.), *Motivational interviewing in the treatment of psychological problems* (pp. 1-25). New York: Guilford Press.
- Azrin, N. H., Ehle, C. T., & Beaumont, A. L. (2006). Physical exercise as a reinforcer to promote calmness of an ADHD child. *Behavior Modification*, 30(5), 564-570.
- Babyak, M., Blumenthal, J. A., Herman, S., Khatri, P., Doraiswamy, M., Moore, K., . . . Krishnan, K. R. (2000). Exercise treatment for major depression: Maintenance of therapeutic benefit at 10 months. *Psychosomatic Medicine*, 62(5), 633-638.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37(2), 122.

- Bandura, A. (1984). Recycling misconceptions of perceived self-efficacy. *Cognitive Therapy and Research*, 8(3), 231-255.
- Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice Hall.
- Barrow, J. C., English, T., & Pinkerton, R. S. (1987). Physical fitness training: Beneficial for professional psychologists? *Professional Psychology: Research and Practice*, 18(1), 66.
- Bauman, A., Bull, F., Chey, T., Craig, C. L., Ainsworth, B. E., Sallis, J. F.,...Hagstromer, M. (2009). 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
- Beck, A. T. (1964). Thinking and depression: II. theory and therapy. *Archives of General Psychiatry*, 10(6), 561.
- Beck, J. S. (2011). *Cognitive behavior therapy: Basics and beyond*. New York: Guilford Press.
- Biddle, S. J., & Asare, M. (2011). Physical activity and mental health in children and adolescents: A review of reviews. *British Journal of Sports Medicine*, 45(11), 886-895.
- Black, J. B., & McClintock, R. O. (1996). An interpretation construction approach to constructivist design. *Constructivist Learning Environments, New Jersey, Educational Technology Publications*, 25-32.
- Blair, S. N. (2009). Physical inactivity: The biggest public health problem of the 21<sup>st</sup> century. *British Journal of Sports Medicine*, 43, 1-2.
- Blake, H., Mo, P., Malik, S., & Thomas, S. (2009). How effective are physical activity interventions for alleviating depressive symptoms in older people? A systematic review. *Clinical Rehabilitation*, 23(10), 873-887.
- Blue, L. (2010). Is exercise the best drug for depression? *Time Magazine*, June 19.
- Blumenthal, J. A., Babyak, M. A., Doraiswamy, P. M., Watkins, L., Hoffman, B. M., Barbour, K. A., . . . Waugh, R. (2007). Exercise and pharmacotherapy in the treatment of major depressive disorder. *Psychosomatic Medicine*, 69(7), 587-596.
- Borkovec, T. (1978). Self-efficacy: Cause or reflection of behavioral change? *Advances in Behaviour Research and Therapy*, 1(4), 163-170.
- Boud, D. (2001). Using journal writing to enhance reflective practice. *New Directions for Adult and Continuing Education*, 2001(90), 9-18.

- Buchholz, S. W., & Purath, J. (2007). Physical activity and physical fitness counseling patterns of adult nurse practitioners. *Journal of the American Academy of Nurse Practitioners*, 19(2), 86-92.
- Buchholz, S. W., Purath, J., & Rittenmeyer, L. (2009). How outpatient nurse practitioners define the barriers and facilitators to physical activity counseling. *The Journal for Nurse Practitioners*, 5(9), 678-683.
- Budman, S. H., Portnoy, D., & Villapiano, A. J. (2003). How to get technological innovation used in behavioral health care: Build it and they still might not come. *Psychotherapy: Theory, Research, Practice, Training*, 40(1-2), 45.
- Callaghan, P. (2004). Exercise: A neglected intervention in mental health care? *Journal of Psychiatric and Mental Health Nursing*, 11(4), 476-483.
- Camacho, T. C., Roberts, R. E., Lazarus, N. B., Kaplan, G. A., & Cohen, R. D. (1991). Physical activity and depression: Evidence from the Alameda County study. *American Journal of Epidemiology*, 134(2), 220-231.
- Carbonaro, M., King, S., Taylor, E., Satzinger, F., Snart, F., & Drummond, J. (2008). Integration of e-learning technologies in an interprofessional health science course. *Medical Teacher*, 30(1), 25-33.
- Castelnuovo, G. (2010). No medicine without psychology: the key role of psychological contribution in clinical settings. *Frontiers in Psychology*, 1. Retrieved from <http://www.frontiersin.org/psychology%20for%20clinical%20settings/10.3389/fpsyg.2010.00004/full> doi:10.3389/fpsyg.2010.00004
- Cavana, M. P. (2009). Closing the circle: From Dewey to web 2.0. In Payne, C. R. (Ed.), *Information technology and constructivism in higher education: Progressive learning frameworks* (pp. 1-13). Hershey, NY: Information Science Reference.
- Centers for Disease Control and Prevention. (2001). Physical activity trends: United States, 1990-1998. *Morbidity and Mortality Weekly Report*, 50, 166-169.
- Crone, D., & Guy, H. (2008). 'I know it is only exercise, but to me it is something that keeps me going': A qualitative approach to understanding mental health service users' experiences of sports therapy. *International Journal of Mental Health Nursing*, 17(3), 197-207.
- Cunningham, D. (1992). In defense of extremism. *Constructivism and the Technology of Instruction*, 157-160.
- Daley, A. (2008). Exercise and depression: A review of reviews. *Journal of Clinical Psychology in Medical Settings*, 15(2), 140-147.
- Daley, A. J. (2002). Exercise therapy and mental health in clinical populations: Is exercise therapy a worthwhile intervention? *Advances in Psychiatric Treatment*, 8(4), 262-270.

- Daley, A. J., Psychol, C., MacArthur, C., & Winter, H. (2007). The role of exercise in treating postpartum depression: A review of the literature. *Journal of Midwifery & Women's Health*, 52(1), 56-62.
- DeLeon, P. H., Crimmins, D. B., & Wolf, A. W. (2003). Afterword--the 21st century has arrived. *Psychotherapy: Theory, Research, Practice, Training*, 40(1-2), 164.
- Dixon, W. A., Mauzey, E. D., & Hall, C. R. (2003). Physical activity and exercise: Implications for counselors. *Journal of Counseling & Development*, 81(4), 502-505.
- Doolittle, P. (1999). Constructivism and online education. Paper presented at the *Online Conference on Teaching Online in Higher Education*, 1, 13.
- Doolittle, P. E. (2002). Multimedia learning: Empirical results and practical applications. *Extrait Le*, 18.
- Doolittle, P. E., & Camp, W. G. (1999). Constructivism: The career and technical education perspective. *Journal of Vocational and Technical Education*, 16(1), 23-46.
- Dubbert, P. M. (2002). Physical activity and exercise: Recent advances and current challenges. *Journal of Consulting and Clinical Psychology*, 70(3), 526.
- Duffy, T. M., & Jonassen, D. H. (1992). *Constructivism and the technology of instruction: A conversation*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Dunn, A. L., Trivedi, M. H., Kampert, J. B., Clark, C. G., & Chambliss, H. O. (2005). Exercise treatment for depression: Efficacy and dose response. *American Journal of Preventive Medicine*, 28(1), 1-8.
- Ellis, N., Crone, D., Davey, R., & Grogan, S. (2007). Exercise interventions as an adjunct therapy for psychosis: A critical review. *British Journal of Clinical Psychology*, 46(1), 95-111.
- Erickson, K., & Kramer, A. F. (2009). Aerobic exercise effects on cognitive and neural plasticity in older adults. *British Journal of Sports Medicine*, 43(1), 22-24.
- Ertmer, P. A., & Newby, T. J. (1993). Behaviorism, cognitive, constructivism: Comparing critical features from an instructional design perspective. *Performance Improvement Quarterly*, 6(4), 50-72.
- Faul, F., Erdfelder, E., Lang, A., & Buchner, A. (2007). G\* power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175-191.
- Faulkner, G., & Biddle, S. (2001). Exercise and mental health: It's just not psychology! *Journal of Sports Sciences*, 19(6), 433-444.



- Field, A. P. (2013). *Discovering statistics using IBM Statistics* (4<sup>th</sup> ed.). London: Sage.
- Field, A. P. (2009). *Discovering statistics using SPSS* (3<sup>rd</sup> ed.). London: Sage.
- Garrison, D. R. (2003). Cognitive presence for effective asynchronous online learning: The role of reflective inquiry, self-direction and met cognition. *Elements of Quality Online Education: Practice and Direction*, 4, 47-58.
- Garry, J. P., Diamond, J. J., & Whitley, T. W. (2002). Physical activity curricula in medical schools. *Academic Medicine*, 77(8), 818-820.
- Gawrilow, C., Stadler, G., Langguth, N., Naumann, A., & Boeck, A. (2013). Physical activity, affect, and cognition in children with symptoms of ADHD. *Journal of Attention Disorders*, 17(1), 1-11.
- Gold, S. (2001). A constructivist approach to online training for online teachers. *Journal of Asynchronous Learning Networks*, 5(1), 35-57.
- Goodwin, R. D. (2003). Association between physical activity and mental disorders among adults in the united states. *Preventive Medicine*, 36(6), 698-703.
- Gorlitz, A. S. (2006). Incentives in web studies: Methodological issues and a review. *International Journal of Internet Science*, 1(1), 58-70.
- Grimstvedt, M. E., Der Ananian, C., Keller, C., Woolf, K., Sebren, A., & Ainsworth, B. (2012). Nurse practitioner and physician assistant physical activity counseling knowledge, confidence and practices. *Preventive Medicine*, 54(5), 306-308.
- Happell, B., Platania -Phung, C., & Scott, D. (2011). Placing physical activity in mental health care: A leadership role for mental health nurses. *International Journal of Mental Health Nursing*, 20(5), 310-318.
- Harris, P. A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde, J. G. (2009). Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics*, 42(2), 377-381.
- Harris, S. S., Caspersen, C. J., DeFries, G. H., & Estes Jr, E. H. (1989). Physical activity counseling for healthy adults as a primary preventive intervention in the clinical setting. *JAMA: The Journal of the American Medical Association*, 261(24), 3588-3598.
- 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. *Medicine and Science in Sports and Exercise*, 39(8), 1423.

- Hays, K. F. (1999). *Working it out: Using exercise in psychotherapy*. American Psychological Association.
- Hays, K. F. (2010). Exercise and psychotherapy. Unpublished instrument. Retrieved October 15, 2010 from <http://www.surveymonkey.com/s/YN53HNG>
- Hays, K. F. & Sime, W. E. (2013). Clinical applications of exercise therapy for mental health. In J. L. Van Raalte & B. W. Brewer (Eds.), *Exploring sport and exercise psychology*, Washington D.C.: American Psychological Association.
- Hébert, E. T., Caughey, M. O., & Shuval, K. (2012). Primary care providers' perceptions of physical activity counselling in a clinical setting: A systematic review. *British Journal of Sports Medicine*, 46(9), 625-631.
- Hepner, K. A., Azocar, F., Greenwood, G. L., Miranda, J., & Burnam, M. A. (2010). Development of a clinician report measure to assess psychotherapy for depression in usual care settings. *Administration and Policy in Mental Health and Mental Health Services Research*, 37(3), 221-229.
- Hillman, C. H., Belopolsky, A. V., Snook, E. M., Kramer, A. F., & McAuley, E. (2004). Physical activity and executive control: Implications for increased cognitive health during older adulthood. *Research Quarterly for Exercise and Sport*, 75(2), 176-185.
- Hoffman, B. M., Babyak, M. A., Craighead, W. E., Sherwood, A., Doraiswamy, P. M., Coons, M. J., & Blumenthal, J. A. (2011). Exercise and pharmacotherapy in patients with major depression: One-year follow-up of the SMILE study. *Psychosomatic Medicine*, 73(2), 127-133.
- Holley, J., Crone, D., Tyson, P., & Lovell, G. (2011). The effects of physical activity on psychological well-being for those with schizophrenia: A systematic review. *British Journal of Clinical Psychology*, 50(1), 84-105.
- Huck, S. W., & McLean, R. A. (1975). Using a repeated measures ANOVA to analyze the data from a pretest-posttest design: A potentially confusing task. *Psychological Bulletin*, 82(4), 511.
- IBM Corp. (2012). IBM SPSS Statistics for Macintosh, Version 21.0. Armonk, NY: IBM Corp.
- IPAQ Research Committee. (2005). Guidelines for data processing and analysis of the international physical activity questionnaire (IPAQ)—Short and long forms. Retrieved September, 17, 2008.
- Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education & Behavior*, 11(1), 1-47.

- Kaye, C. & Volkers, E. (2007). Constructivism online: Vygotskian applications for 21<sup>st</sup> century learning in higher education. In Inoue, Y. (Ed.), *Online education for lifelong learning* (pp. 99-121). Hershey, PA: Information Science.
- 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.htm](http://www.appic.org/match/5_2_2_4_12a_match_about_statistics_surveys_2010a.htm)
- Kendall-Tackett, K. (2009). Psychological trauma and physical health: A psychoneuroimmunology approach to etiology of negative health effects and possible interventions. *Psychological Trauma: Theory, Research, Practice, and Policy*, 1(1), 35.
- Kiluk, B. D., Weden, S., & Culotta, V. P. (2009). Sport participation and anxiety in children with ADHD. *Journal of Attention Disorders*, 12(6), 499-506.
- Landolfi, E. (2013). Exercise addiction. *Sports Medicine*, 43(2), 111-119.
- Larson, L. M., & Daniels, J. A. (1998). Review of the counseling self-efficacy literature. *The Counseling Psychologist*, 26(2), 179-218.
- Larson, L. M., & Daniels, J. A. (1998). Review of the counseling self-efficacy literature. *The Counseling Psychologist*, 26(2), 179-218.
- Larson, L. M., Suzuki, L. A., Gillespie, K. N., Potenza, M. T., Bechtel, M. A., & Toulouse, A. L. (1992). Development and validation of the counseling self-estimate inventory. *Journal of Counseling Psychology*, 39(1), 105.
- Laurillard, D. (1993). Balancing the media. *Journal of Educational Television*, 19(2), 81-93.
- Lawal, I., & Abdullahi, A. (2008). Exercise: A poorly recognised treatment adjunct in mental health. *Nigerian Medical Practitioner*, 53(4), 52-56.
- Leith, L. (2010). *Foundations of Exercise and Mental Health (2nd Edit)*, Pub: West Virginia University, Morgantown, WV.
- Lobelo, F., Duperly, J., & Frank, E. (2009). Physical activity habits of doctors and medical students influence their counseling practices. *British Journal of Sports Medicine*, 43(2), 89-92.
- Madson, M. B., Loignon, A. C., & Lane, C. (2009). Training in motivational interviewing: A systematic review. *Journal of Substance Abuse Treatment*, 36(1), 101-109.
- Marzillier, J., & Eastman, C. (1984). Continuing problems with self-efficacy theory: A reply to Bandura. *Cognitive Therapy and Research*, 8(3), 257-262.
- McCrea, C. (2010). Dissemination and implementation of alternative treatment methods into Idaho's unipolar mood disorder treatment. *McNair Scholars Research Journal*, 6(1), 9.

- McEntee, D. J., & Halgin, R. P. (1996). Therapists' attitudes about addressing the role of exercise in psychotherapy. *Journal of Clinical Psychology*, 52(1), 48-60.
- McLoughlin, C., & Luca, J. (2002). Experiential learning on-line: The role of asynchronous communication tools. Paper presented at the *World Conference on Educational Multimedia, Hypermedia and Telecommunications*, 2002(1) 1273-1278.
- Mehta, R., & Sivadas, E. (1995). Comparing response rates and response content in mail versus electronic mail surveys. *Journal of the Market Research Society*,
- Melchert, T. P., Hays, V. L., Wiljanen, L. M., & Kolocek, A. K. (1996). Testing models of counselor development with a measure of counseling Self-Efficacy. *Journal of Counseling & Development*, 74(6), 640-644.
- Meltzer, L. J., Phillips, C., & Mindell, J. A. (2009). Clinical psychology training in sleep and sleep disorders. *Journal of Clinical Psychology*, 65(3), 305-318.
- Meriwether, R. A., Lee, J. A., Lafleur, A. S., & Wiseman, P. (2008). Physical activity counseling. *American Family Physician*, 77(8), 1129-1136.
- Miller, W. R., & Rollnick, S. (2002). *Motivational interviewing: Preparing people for change*. New York: Guilford Press.
- Mokdad, A. H., Marks, J. S., Stroup, D. F., & Gerberding, J. L. (2004). Actual causes of death in the united states, 2000. *JAMA: The Journal of the American Medical Association*, 291(10), 1238-1245.
- Morgan, W. P. (1977). Involvement in vigorous physical activity with special reference to adherence. Paper presented at the *Proceedings of the National College Physical Education Association for Men & National Association for Physical Education of College Women National Conference*. Chicago, IL.
- Morgan, W., & O'connor, P. (1988). Exercise and mental health. *Exercise Adherence: Its Impact on Public Health*, 91-121.
- Mountjoy, M., Andersen, L. B., Armstrong, N., Biddle, S., Boreham, C., Bedenbeck, H. B., . . . Hills, A. (2011). International Olympic committee consensus statement on the health and fitness of young people through physical activity and sport. *British Journal of Sports Medicine*, 45(11), 839-848.
- Murphy, M. J., Levant, R. F., Hall, J. E., & Glueckauf, R. L. (2007). Distance education in professional training in psychology. *Professional Psychology: Research and Practice*, 38(1), 97.

- Nastanski, M., & Colaric, S. (2008). Design for the online classroom: A piece of PIE. Paper presented at the *World Conference on Educational Multimedia, Hypermedia and Telecommunications*, 2008(1) 6023-6030.
- Nelson, M. E., Rejeski, W. J., Blair, S. N., Duncan, P. W., Judge, J. O., King, A. C., . . . Castaneda-Sceppa, C. (2007). Physical activity and public health in older adults: Recommendation from the American college of sports medicine and the American heart association. *Medicine and Science in Sports and Exercise*, 39(8), 1435.
- No time no money (n.d.). Retrieved from:  
<http://pub.etr.org/productdetails.aspx?id=100000108&itemno=R042>
- Nunes, M. B., McPherson, M., & Rico, M. (2001). Constructivist instructional design and development of a networked learning skills (NICLS) module for continuing professional education distance learning. Paper presented at the *World Conference on Educational Multimedia, Hypermedia and Telecommunications*, , 2001(1) 86-91.
- Olofsgård, M. J. (2009). *Physical Activity Counseling and Prescription in Psychiatry: Swedish Mental Health Professionals' Clinical Practices, Attitudes, and Knowledge*,
- Ornish, D. (2009, May 28). Dean Ornish: Your genes are not your fate [Video file]. Retrieved from [http://www.ted.com/talks/dean\\_ornish\\_says\\_your\\_genes\\_are\\_not\\_your\\_fate.html](http://www.ted.com/talks/dean_ornish_says_your_genes_are_not_your_fate.html)
- Otto, M. W., Church, T. S., Craft, L. L., Greer, T. L., Smits, J. A., & Trivedi, M. H. (2007). Exercise for mood and anxiety disorders. *Primary Care Companion to the Journal of Clinical Psychiatry*, 9(4), 287.
- Otto, M. W., & Smits, J. A. (2009). *Exercise for mood and anxiety disorders: Workbook* Oxford University Press.
- Otto, M. (2011, November 7). *Exercise for mood and anxiety* [Audio podcast]. Retrieved from <http://exercise4mood.com/?p=223>
- Otto, M. W., & Smits, J. (2011). *Exercise for mood and anxiety: Proven strategies for overcoming depression and enhancing well-being*. Oxford University Press.
- Paffenbarger, R. S., Lee, I., & Leung, R. (1994). Physical activity and personal characteristics associated with depression and suicide in American college men. *Acta Psychiatrica Scandinavica*, 89(s377), 16-22.
- Pasquariello, C. (2011). Let's get physical: The role of physical activity in the training of graduate mental health students.
- Paul, J., Seib, R., & Prescott, T. (2005). The internet and clinical trials: Background, online resources, examples and issues. *Journal of Medical Internet Research*, 7(1)

- Pedersen, B. K., & Saltin, B. (2006). Evidence for prescribing exercise as therapy in chronic disease. *Scandinavian Journal of Medicine & Science in Sports*, 16(S1), 3-63.
- Penedo, F. J., & Dahn, J. R. (2005). Exercise and well-being: A review of mental and physical health benefits associated with physical activity. *Current Opinion in Psychiatry*, 18(2), 189-193.
- Phillips, E. M., & Kennedy, M. A. (2012). The exercise prescription: A tool to improve physical activity. *Pm&r*, 4(11), 818-825.
- Pirrie, A. (2001). Evidence-based practice in education: The best medicine? *British Journal of Educational Studies*, 49(2), 124-136.
- Powell, K. E., Paluch, A. E., & Blair, S. N. (2011). Physical activity for health: What kind? how much? how intense? on top of what? *Public Health*, 32(1), 349.
- Prochaska, J. O., & DiClemente, C. C. (1982). Transtheoretical therapy: Toward a more integrative model of change. *Psychotherapy: Theory, Research & Practice*, 19(3), 276.
- Prochaska, J. O., Velicer, W. F., Rossi, J. S., Goldstein, M. G., Marcus, B. H., Rakowski, W., . . . Rosenbloom, D. (1994). Stages of change and decisional balance for 12 problem behaviors. *Health Psychology*, 13(1), 39.
- Queensland Health. (2003). Health priorities: The role of physical activity. Public health physical activity background paper. Queensland Health: Queensland Government. Retrieved from [http://www.health.qld.gov.au/health\\_professionals/physical/default.asp](http://www.health.qld.gov.au/health_professionals/physical/default.asp)
- Ratey, J. J. (2012, November 19). Jon Ratey: Run, jump, learn! How exercise can transform our schools [Video file]. Retrieved from <http://www.youtube.com/watch?v=hBSVZdTQmDs>
- Reynolds, F. (2001). Strategies for facilitating physical activity and wellbeing: A health promotion perspective. *The British Journal of Occupational Therapy*, 64(7), 330-336.
- Reynolds, G. (2013). How exercise can calm anxiety. *The New York Times*, July 3.
- Ribeiro, M. A., Martins, M. d. A., & Carvalho, C. R. F. (2007). The role of physician counseling in improving adherence to physical activity among the general population. *Sao Paulo Medical Journal*, 125(2), 115-121.
- 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(3), 324-331.
- Rimal, R. N. (2001). Longitudinal influences of knowledge and self-efficacy on exercise behavior: Tests of a mutual reinforcement model. *Journal of Health Psychology*, 6(1), 31-46.

- Royak-Schaler, R., & Feldman, R. H. (1984). Health behaviors of psychotherapists. *Journal of Clinical Psychology, 40*(3), 705-710.
- Rubak, S., Sandbæk, A., Lauritzen, T., & Christensen, B. (2005). Motivational interviewing: A systematic review and meta-analysis. *The British Journal of General Practice, 55*(513), 305.
- Sallis, R. (2009). Exercise is medicine and physicians need to prescribe it! *British Journal of Sports Medicine, 43*(1), 3-4.
- Sallis, R. (2011). Developing healthcare systems to support exercise: Exercise as the fifth vital sign. *British Journal of Sports Medicine, 45*(6), 473-474.
- Saxena, S., Van Ommeren, M., Tang, K., & Armstrong, T. (2005). Mental health benefits of physical activity. *Journal of Mental Health, 14*(5), 445-451.
- Scheewe, T., Backx, F., Takken, T., Jörg, F., Strater, A., Kroes, A., . . . Cahn, W. (2012). Exercise therapy improves mental and physical health in schizophrenia: A randomised controlled trial. *Acta Psychiatrica Scandinavica*,
- Sechrist, K. R., Walker, S. N., & Pender, N. J. (1987). Development and psychometric evaluation of the exercise benefits/barriers scale. *Research in Nursing & Health, 10*(6), 357-365.
- Seime, R. J., & Vickers, K. S. (2006). The challenges of treating depression with exercise: From evidence to practice. *Clinical Psychology: Science and Practice, 13*(2), 194-197.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*.
- Smith, M. A., & Leigh, B. (1997). Virtual subjects: Using the internet as an alternative source of subjects and research environment. *Behavior Research Methods, Instruments, & Computers, 29*(4), 496-505.
- Smith, P. S. Learning to adapt: Online social science instruction in higher education. *Learning, 1*, 1-2013.
- Smits, J. A., & Otto, M. W. (2009). *Exercise for mood and anxiety disorders: Therapist guide* Oxford University Press.
- Stathopoulou, G., Powers, M. B., Berry, A. C., Smits, J. A., & Otto, M. W. (2006). Exercise interventions for mental health: A quantitative and qualitative review. *Clinical Psychology: Science and Practice, 13*(2), 179-193.

- Strath, S. J., Kaminsky, L. A., Ainsworth, B. E., Ekelund, U., Freedson, P. S., Gary, R. A., . . . Swartz, A. M. (2013). Guide to the assessment of physical activity: Clinical and research applications A scientific statement from the American heart association. *Circulation*, 127(24), 2031-2046. doi: 10.1161/CIRCULATIONAHA.113.000043
- Strecher, V. J., DeVellis, B. M., Becker, M. H., & Rosenstock, I. M. (1986). The role of self-efficacy in achieving health behavior change. *Health Education & Behavior*, 13(1), 73-92.
- Streeter, C. C., Whitfield, T. H., Owen, L., Rein, T., Karri, S. K., Yakhkind, A., . . . Ciraulo, D. A. (2010). Effects of yoga versus walking on mood, anxiety, and brain GABA levels: A randomized controlled MRS study. *The Journal of Alternative and Complementary Medicine*, 16(11), 1145-1152.
- Suzuki, W. (2011, December 1). Wendy Suzuki: Exercise and the brain [Video file]. Retrieved from <http://www.youtube.com/watch?v=LdDnPYr6R0o>
- Tabachnick, B. & Fidell, L. (2007). *Using multivariate statistics*. Boston, MA: Pearson Education.
- Tan, S. C. & Hung, D. (2002). Beyond information pumping: Creating a constructivist e-learning environment. *Educational Technology*, 42(5), 48-54.
- Teasdale, J. D. (1978). Self-efficacy: Toward a unifying theory of behavioural change? *Advances in Behaviour Research and Therapy*, 1(4), 211-215.
- Teychenne, M., Ball, K., & Salmon, J. (2008). Physical activity and likelihood of depression in adults: A review. *Preventive Medicine*, 46(5), 397-411.
- The Agency for Healthcare Research and Quality. 2009. Mental health: Research findings program brief. AHRQ Pub. No. 09-P011. Rockville, MD. Retrieved from <http://www.ahrq.gov/research/findings/factsheets/mental/mentalhth/mentalhth.pdf>
- Thomas, S., Reading, J., & Shephard, R. J. (1992). Revision of the physical activity readiness questionnaire (PAR-Q). *Canadian Journal of Sport Sciences*, 17(4), 338-345.
- Thorpe, M. (2002). Rethinking learner support: The challenge of collaborative online learning. *Open Learning*, 17(2), 105-119.
- Trivedi, M. H., Greer, T. L., Church, T. S., Carmody, T. J., Grannemann, B. D., Galper, D. I., . . . Henley, S. S. (2011). Exercise as an augmentation treatment for nonremitted major depressive disorder: A randomized, parallel dose comparison. *Journal of Clinical Psychiatry*, 72(5), 677.



- U.S. Department of Education. (2009). Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies. U.S. Department of Education, Office of Planning, Evaluation and Policy Development. Retrieved from <http://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf>
- 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, 2013, from <http://www.health.gov/paguidelines/pdf/paguide.pdf>
- U. S. Preventive Services Task Force (1996). Counseling to promote physical activity. Guide to Clinical Preventive Services. 2nd ed. Washington, DC: Office of Disease Prevention and Health Promotion, 611-624.
- Veneri, D. (2011). The role and effectiveness of computer-assisted learning in physical therapy education: A systematic review. *Physiotherapy Theory and Practice*, 27(4), 287-298.
- Vickers, H. (Producer). (2013). *Exercise in pregnancy* [Audio podcast]. Retrieved from <https://soundcloud.com/bmjpodcasts/exercise-in-pregnancy>
- Vroman, K., & Kovacich, J. (2002). Computer-mediated interdisciplinary teams: Theory and reality. *Journal of Interprofessional Care*, 16(2), 159-170.
- Walsh, R. (2011). Lifestyle and mental health. *American Psychologist*, 66(7), 579.
- Watson, H., & Bulik, C. (2012). Update on the treatment of anorexia nervosa: Review of clinical trials, practice guidelines and emerging interventions. *Psychological Medicine*, 1(1), 1-24.
- Wee, C. C., McCarthy, E. P., Davis, R. B., & Phillips, R. S. (1999). Physician counseling about exercise. *JAMA: The Journal of the American Medical Association*, 282(16), 1583-1588.
- Weidinger, K. A., Lovegreen, S. L., Elliott, M. B., Hagood, L., Haire-Joshu, D., McGill, J. B., & Brownson, R. C. (2008). How to make exercise counseling more effective: Lessons from rural America. *Age*, 18(24), 6.4.
- Wilson, B. G. (1993). Constructivism and instructional design: Some personal reflections.
- Wiswall, L. (2010). The impact of the internet on education and training in professional psychology. *Interface on the Internet*, 8.

- World Federation for Mental Health. (2004). The relationship between physical and mental health: Co-occurring disorders. Retrieved from <http://www.abebe.org.br/wp-content/uploads/wfmh.pdf>
- Worrall, J. M., & Fruzzetti, A. E. (2009). Improving peer supervisor ratings of therapist performance in dialectical behavior therapy: An internet-based training system. *Psychotherapy: Theory, Research, Practice, Training*, 46(4), 476.
- Zhang, D. (2005). Interactive multimedia-based e-learning: A study of effectiveness. *The American Journal of Distance Education*, 19(3), 149-162.

## Appendix A

### RESEARCH SUBJECT INFORMATION AND CONSENT FORM

**TITLE:** Enhancing Self-Efficacy in the Utilization of Physical Activity Counseling: An Online Constructivist Approach with Psychologists in Training

**VCU IRB NO.** HM14579

My name is Cassandra Pasquariello, and I am a student completing my doctoral dissertation under the supervision of Dr. Edmund Acevedo in the Department of Health and Human Performance at Virginia Commonwealth University. I am requesting that you volunteer to participate in a research study. You were selected as a possible participant because you are a psychologist-in-training with direct client contact and are enrolled in an accredited clinical or counseling psychology doctoral program. Please read this information sheet and contact me, if necessary, to ask any questions that you may have before agreeing to take part in this study.

**PURPOSE OF THE STUDY:** The primary purpose of this study is to address a gap in the literature examining the self-efficacy in physical activity counseling in doctoral psychology students.

**DESCRIPTION OF THE STUDY AND YOUR INVOLVEMENT:** If you agree to be in this study, you will be randomly assigned to one of three groups, an online physical activity counseling interactive training group, an online physical activity counseling content training group, or a training as usual group. You will be asked to complete a demographic form, and at three time points you will be asked to complete four brief questionnaires. These questionnaires will take a total of about 20-30 minutes to complete. They will contain questions about your training, use of physical activity with clients and your current personal level of physical activity. Additionally, you may be in a group that is asked to complete an online education program consisting of four separate modules. Each module is designed to take 10-30 minutes to complete. Approximately 200-400 students will participate in this study.

**RISKS AND DISCOMFORTS:** There are no known risks to you if you choose to participate in this study.

**BENEFITS TO YOU AND OTHERS:** One possible benefit to participating in this study is the knowledge of physical activity counseling presented in the modules. In addition, we learn from people in this study may help us understand more about the physical activity counseling in the training of clinical and counseling psychology doctoral students.

**COSTS:** There is no cost to you for participating in this study other than the time it takes for you to complete the surveys and the training modules.

**PAYMENT FOR PARTICIPATION:** You will have the option to join the drawing to win one of ten \$20 Visa gift cards (the odds of winning are about 1 in 30). 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. A data and safety monitoring plan is established. We will not tell anyone the answers you give us; however, information from the study and the consent form signed by you may be looked at or copied for research or legal purposes by Virginia Commonwealth University. What we find from this study may be presented at meetings or published in papers, but your name will not ever be used in these presentations or papers.

**VOLUNTARY PARTICIPATION AND WITHDRAWAL:** You do not have to participate in this study. If you choose to participate, you may stop at any time without any penalty. You may also choose not to answer particular questions that are asked in the study.

**QUESTIONS:** If you have any questions, complaints, or concerns about your participation in this research, contact:

**Dr. Edmund Acevedo**  
Virginia Commonwealth University  
P.O Box 842020  
Richmond, VA 23284  
(804) 828-1948  
[eoacevedo@vcu.edu](mailto:eoacevedo@vcu.edu)

and/or

**Cassandra Pasquariello**  
Virginia Commonwealth University  
P.O Box 842018  
Richmond, VA 23284  
(804) 828-1948  
[pasquarielcd@vcu.edu](mailto:pasquarielcd@vcu.edu)

The researchers named above are the best persons to call for questions about your participation in this study.

If you have any general questions about your rights as a participant in this or any other research, you may contact:

Office of Research  
Virginia Commonwealth University  
800 East Leigh Street, Suite 113  
P.O. Box 980568  
Richmond, VA 23298  
Telephone: (804) 827-2157

Contact this number for general questions, concerns or complaints about research. You may also call this number if you cannot reach the research team or if you wish to talk with someone else. General information about participation in research studies can also be found at <http://www.research.vcu.edu/irb/volunteers.htm>.

## **CONSENT**

I have been given the chance to read this consent form. I understand the information about this study. Questions that I wanted to ask about the study have been answered. By completing this form, I am willing 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 B**

### **Knowledge of Physical Activity Counseling (KPAC) Questionnaire**

Instructions: Please reflect on your current knowledge of physical activity and Physical Activity Counseling and choose the best answer.

1. Research suggests that treatment of depression with physical activity
  - a. is often equal to other treatment options such as pharmacotherapy and Cognitive Behavior Therapy.
  - b. is less effective than other treatment options such as pharmacotherapy.
  - c. is not a recommended treatment option.
2. What is the most widely recognized and used screening tool for individuals interested in starting an exercise program?
  - a. Pre-Exercise Screening Form – PESF
  - b. Exercise Physiology Screening Form – EPSF
  - c. Physical Activity Readiness Questionnaire - PAR-Q
  - d. None of the Above
3. Physical activity during pregnancy is only recommended on occasion by a physician.
  - a. not recommended for the sake of the health and wellbeing of pregnant mother.
  - b. recommended and should be prescribed by a physician.
4. Generally, the simple physical activity recommendation for healthy adults age 18-64 is
  - a. 30 minutes of moderate activity; 5 days per week.
  - b. 30 minutes of vigorous activity; 5 days per week.
  - c. 10 minutes of moderate activity; 3 days per week.
  - d. None of the above.
5. Counseling skills that are transferable to Physical Activity Counseling include
  - a. Basic Helping Skills
  - b. Motivational Interviewing
  - c. Behavior Modification
  - d. Cognitive Behavior Therapy
  - e. All of the Above
6. Which of the following are common methods of Physical Activity Counseling?
  - a. Motivational Interviewing for Physical Activity Behavior Change
  - b. Exercise Referral to a Certified Exercise Specialist or Physician
  - c. Dialogue between Clinician and Client about Physical Activity Behavior
  - d. Behavior Change Techniques/Modification/Monitoring/Goal-Setting/Follow-up
  - e. All of the Above
7. Physical activity can play an important role in the
  - a. prevention and treatment of mental health disorders.

- b. prevention of mental health disorders.
  - c. treatment of mental health disorders.
8. \_\_\_\_\_ is the global initiative by the American College of Sports Medicine (ACSM) that calls on health professionals to include Physical Activity Counseling during every patient visit
- a. Let's Move
  - b. Presidential Fitness Challenge
  - c. Designed to Move
  - d. Exercise is Medicine
9. Among children and adolescents, physical activity can
- a. improve bone health
  - b. improve cardiorespiratory and muscular fitness
  - c. decrease levels of body fat
  - d. reduce symptoms of depression
  - e. All of the above
10. The \_\_\_\_\_ Model can play an important role in assessing and monitoring physical activity behavior.
- a. Self Psychology
  - b. Stages of Change
  - c. Adult Learning
  - d. Exercise and Health
11. Common exercise BARRIERS that you and/or your clients may experience include
- a. Lack of Time
  - b. Lack of Money
  - c. Lack of Motivation
  - d. All of the Above
12. Self-efficacy in physical activity, or the belief in oneself that s/he can be successful in their physical activity behavior, is
- a. an important determinant of exercise adherence.
  - b. not an important determinant of adhering to an exercise plan.
13. The U.S. Preventive Services Task Force included which of the following Guidelines for Physical Activity Counseling
- a. Encourage the social support of significant others.
  - b. Incorporate questions regarding the physical activity level of clients into history taking during routine healthcare visits.
  - c. Monitor compliance with physical activity and provide positive reinforcement during future health visits.
  - d. Identify barriers that arise to optimal adherence of physical activity program and discuss strategies to overcome them.
  - e. All of the above.

14. \_\_\_\_\_ is one of the main objectives of the Healthy People 2020 Initiative by the U.S. Department of Health and Human Services.
- a. Decreasing the number of Americans that meet the minimum guidelines for Physical Activity
  - b. Enhancing the use of Physical Activity Counseling among health care providers
  - c. Increasing the number of Americans that meet the minimum guidelines for Physical Activity
15. A review of the literature suggests that psychologists need additional training in Physical Activity Counseling.
- a. True
  - b. False

## Appendix C

### Demographic Questionnaire

Instructions: Please answer the following questions.

1. Do you currently have direct client/patient contact? Yes/No
2. How long have been working directly with clients/patients?
  - a. .5 year
  - b. 1 year
  - c. 1.5 years
  - d. 2 years
  - e. 2.5 years
  - f. 3 years
  - g. 3.5 years
  - h. 4 years
  - i. 4.5 years
  - j. 5 years
  - k. 5.5 years
  - l. 6 or more years
3. I am a current doctoral student (intern, or recent graduate) in
  - a. Clinical Psychology
  - b. Counseling Psychology
  - c. Other
4. Are you finished with your doctoral degree and currently under supervision to complete your postdoctoral hours for licensure? Yes/No \*\*If you recently completed your degree and are still being supervised, you are still eligible to complete this study.
5. What degree are you seeking?
  - a. Ph.D.
  - b. Psy.D.
  - c. Ed.D.
  - d. Other
6. Year in your graduate program
  - a. 1<sup>st</sup>
  - b. 2<sup>nd</sup>
  - c. 3<sup>rd</sup>
  - d. 4<sup>th</sup>
  - e. 5<sup>th</sup>
  - f. 6th or higher
7. Please indicate your level of training in Cognitive Behavior Therapy (CBT) (choose all that apply):
  - a. Familiar/Exposed to CBT in academic course(s)
  - b. Completed a semester/quarter course specifically in CBT
  - c. Obtained supervision in CBT when working with clients/patients
  - d. Provided supervision to peers in CBT when supervising
8. Please indicate your level of training in Motivational Interviewing (MI):



- a. Familiar/Exposed to MI in academic course(s)
  - b. Completed a day-long (or the equivalent of) workshop in MI
  - c. Completed a semester/quarter course specifically in MI
  - d. Obtained supervision in MI when working with clients/patients
  - e. Provided supervision to peers in MI when supervising
9. Please indicate your level of training in Physical Activity Counseling (PAC):
- a. Familiar/Exposed to PAC in academic course(s)
  - b. Completed a semester/quarter course specifically in PAC
  - c. Obtained supervision in PAC when working with clients/patients
  - d. Provided supervision to peers in PAC when supervising
10. Please indicate Please indicate your primary theoretical orientation (choose one):
- a. Behavioral
  - b. Cognitive-Behavioral
  - c. Eclectic/Integrative
  - d. Existential
  - e. Feminist
  - f. Gestalt
  - g. Humanistic/Rogerian
  - h. Interpersonal
  - i. Psychoanalytic
  - j. Psychodynamic
  - k. Relational-Cultural
  - l. Other
11. Please indicate your level of flexibility towards your theoretical approach to clients/patients:  
Very Flexible, Flexible, Neither Flexible nor Inflexible, Inflexible, Very Inflexible
12. Please indicate your current supervisor's primary theoretical orientation (choose one):
- a. Behavioral
  - b. Cognitive-Behavioral
  - c. Eclectic/Integrative
  - d. Existential
  - e. Feminist
  - f. Gestalt
  - g. Humanistic/Rogerian
  - h. Interpersonal
  - i. Psychoanalytic
  - j. Psychodynamic
  - k. Relational-Cultural
  - l. Other (please specify)
13. Please indicate your current supervisor's level of flexibility towards your approach to clients/patients in supervision: Very Flexible, Flexible, Neither Flexible nor Inflexible, Inflexible, Very Inflexible
14. Please indicate your autonomy in selecting the individualized treatment approach for each of your clients/patients: Full Autonomy, A little Autonomy, Neutral, Almost completely outside of my control, Completely outside of my control
15. Which setting(s) best describe(s) your current work setting?
- a. Department Graduate Training Clinic

- b. Inpatient Hospital
  - c. Community Agency/Mental Health Center
  - d. Private Practice
  - e. University Counseling Center
  - f. Elementary or Secondary School Setting
  - g. Forensic Setting
  - h. Other
16. What barriers inhibit you from using Physical Activity Counseling with your clients/patients?
- a. Lack of time
  - b. Lack of knowledge
  - c. Lack of training in PAC
  - d. Other concerns are more important
  - e. Client not receptive
  - f. Useless: client won't follow through
  - g. Neighborhoods unsafe for physical activity
  - h. Not a high priority
  - i. Most clients are already physically active
  - j. Lack of success with changing patient behavior
  - k. PA counseling not a priority/not relevant
  - l. Lack of financial incentive/reimbursement for counseling
  - m. Lack of counseling protocols
  - n. Incongruent with your theoretical orientation
  - o. Incongruent with your supervisor's theoretical orientation
  - p. Lack of resources
  - q. Not enough evidence of benefits of physical activity
  - r. Insufficient educational materials for client/patient
  - s. Client expectations of therapy
  - t. Lifestyle is personal choice to counseling not appropriate
17. What strategies to you engage when using Physical Activity Counseling with your clients/patients?
- a. Educate client about health benefits of physical activity
  - b. Inform clients about current recommended minimum guidelines for physical activity
  - c. Explore perceived barriers to physical activity
  - d. Promote self-efficacy for exercise
  - e. Maximize rewards
  - f. Encourage goal setting and monitoring outcomes
  - g. Include strategies for helping clients to resist relapse
  - h. Build social support
  - i. Provide cues to action or prompts
18. How do you identify?
- a. Female, Male, Other
  - b. African-American, American Indian/Native American, Asian American, Biracial or Multiracial, Caucasian, Hispanic/Latina, International Student, Other
  - c. Lesbian, Gay, Bisexual, Heterosexual, Other
19. State in which you live:
20. Age Range: 19-23, 24-28, 29-33, 34-38, 39-43, 44-48, 49-53, 54-58, 59 and over

## **Appendix D**

### **Intervention Evaluation Questionnaire**

1. How would you rate the quality of the training modules?  
Excellent, Above Average, Average, Below Average, Poor
2. How would you rate your experience using the training modules?  
Very Good, Good, Acceptable, Poor, Very Poor
3. The information presented in the training modules is applicable to my work with clients/patients.  
Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree
4. The instructors in the training modules showed enthusiasm about physical activity counseling.  
Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree
5. The instructors stimulated interest in physical activity counseling.  
Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree
6. Four was an ideal number of training modules for me to become familiar with physical activity counseling.  
Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree
7. The various modes of instruction in the training modules helped me to stay motivated to complete the entire training.  
Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree

#### **Open-Ended Questions:**

8. What was most helpful about this training course?
9. What was least helpful about this training course?
10. How could this training course be improved?
11. In what ways was the training helpful to you?
12. How was your physical activity affected by the training?
13. How was your physical activity counseling affected by the training?
14. Would you recommend this training course to your peers, colleagues, professors, supervisors, etc.? Why or why not?
15. Please use this comment area to give any additional feedback that you have.

## Appendix E

### *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 doctoral student in the Counseling Psychology Department at Virginia Commonwealth University. **In an effort to obtain research participants for my dissertation, 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](mailto:pasquarielcd@vcu.edu) or my dissertation advisor, Dr. Edmund Acevedo [eoacevedo@vcu.edu](mailto:eoacevedo@vcu.edu) if you have any questions or concerns. One reminder email will be sent to you in approximately one week. If you would like to have your name removed from this mailing list, please respond to this email at [pasquarielcd@vcu.edu](mailto:pasquarielcd@vcu.edu) and indicate that you opt-out from future contact via email.

Sincerely,  
Cassie

Cassandra Pasquariello, M.S., Ed.M.

---

### **SEEKING DOCTORAL STUDENTS IN CLINICAL & COUNSELING PSYCHOLOGY**

#### **DO YOU CURRENTLY HAVE DIRECT CLIENT/PATIENT CONTACT?**

#### **PLEASE HELP US TO BETTER UNDERSTAND PHYSICAL ACTIVITY COUNSELING**

#### **PARTICIPATE IN A *NATIONAL* ONLINE TRAINING FOR GRADUATE STUDENTS LIKE YOU!**

With the permission of the Virginia Commonwealth University Institutional Review Board, I am conducting a study addressing physical activity in counseling. Specifically, my dissertation project seeks to explore the training of graduate students in physical activity counseling.

I know your time is valuable, so this study was designed to be as brief as possible. The online training programs have four modules that take approximately 15-40 minutes each. You will be asked to complete measures prior to the online-education, following the online-education, and at 3-month follow-up. If you would like to participate, please click on the following link to learn more.

*Link to Information Sheet for Consent on REDCap*

As a token of my appreciation for your time, you will have the option of entering a drawing for one of ten \$20 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 training, 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 dissertation 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, M.S., Ed.M.  
Doctoral Student, Counseling Psychology  
Virginia Commonwealth University  
Email: [pasquariellocd@vcu.edu](mailto:pasquariellocd@vcu.edu)  
Phone: (804) 828-1948

Edmund O. Acevedo, Ph.D.  
Professor & Chair, Dept. of Health & Human Performance  
Virginia Commonwealth University  
Email: [eoacevedo@vcu.edu](mailto:eoacevedo@vcu.edu)  
Phone: (804) 828-1948

## Appendix F

### *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 below to your graduate students.**

I am a doctoral student under the supervision of Dr. Edmund Acevedo 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 training of health behavior counseling in doctoral psychology students. 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,  
Cassie

Cassandra Pasquariello, M.S., Ed.M.

---

### **SEEKING DOCTORAL STUDENTS IN CLINICAL & COUNSELING PSYCHOLOGY**

#### **DO YOU CURRENTLY HAVE DIRECT CLIENT/PATIENT CONTACT?**

#### **PLEASE HELP US TO BETTER UNDERSTAND PHYSICAL ACTIVITY COUNSELING**

#### **PARTICIPATE IN A *NATIONAL* ONLINE TRAINING FOR GRADUATE STUDENTS LIKE YOU!**

With the permission of the Virginia Commonwealth University Institutional Review Board, I am conducting a study addressing physical activity health behaviors in counseling. Specifically, my dissertation project seeks to explore physical activity counseling.

I know your time is valuable, so this study was designed to be as brief as possible. The online training programs have four Modules that take approximately 15-40 minutes each. You will be asked to complete measures prior to the online-education, following the online-education, and at 3-month follow-up. If you would like to participate, please click on the following link to learn more.

*Link to Information Sheet for Consent on REDCap*

As a token of my appreciation for your time, you will have the option of entering a drawing for one of ten \$20 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 training, 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 dissertation 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, M.S., Ed.M.  
Doctoral Student, Counseling Psychology  
Virginia Commonwealth University  
Email: [pasquariellocd@vcu.edu](mailto:pasquariellocd@vcu.edu)  
Phone: (804) 828-1948

Edmund O. Acevedo, Ph.D.  
Professor & Chair, Dept. of Health & Human Performance  
Virginia Commonwealth University  
Email: [eoacevedo@vcu.edu](mailto:eoacevedo@vcu.edu)  
Phone: (804) 828-1948

## Appendix G

### *Email to Listserv*

My name is Cassandra Pasquariello, and I am a doctoral student at Virginia Commonwealth University. In an effort to obtain research participants for my dissertation, I am seeking **doctoral students in counseling and clinical psychology** who would be willing to participate in my research study. If you are a faculty member, I would appreciate if you would forward the information **below** to your graduate students. If you are a student, I would also appreciate if you would forward the information **below** to your fellow graduate students. Thank you for your assistance in this effort. Feel free to contact me at [pasquarielcd@vcu.edu](mailto:pasquarielcd@vcu.edu) or my dissertation advisor, Dr. Edmund Acevedo [eoacevedo@vcu.edu](mailto:eoacevedo@vcu.edu) if you have any questions or concerns.

Sincerely,  
Cassie

Cassandra Pasquariello, M.S., Ed.M.

---

### **SEEKING DOCTORAL STUDENTS IN CLINICAL & COUNSELING PSYCHOLOGY**

### **DO YOU CURRENTLY HAVE DIRECT CLIENT/PATIENT CONTACT?**

### **PLEASE HELP US TO BETTER UNDERSTAND PHYSICAL ACTIVITY COUNSELING**

### **PARTICIPATE IN A *NATIONAL* ONLINE TRAINING FOR GRADUATE STUDENTS LIKE YOU!**

With the permission of the Virginia Commonwealth University Institutional Review Board, I am conducting a study addressing physical activity health behaviors in counseling. Specifically, my dissertation project seeks to explore the training of graduate students in physical activity counseling.

I know your time is valuable, so this study was designed to be as brief as possible. The online training programs have four Modules that take approximately 15-40 minutes each. You will be asked to complete measures prior to the online-education, following the online-education, and at 3-month follow-up. If you would like to participate, please click on the following link to learn more.

*Link to Information Sheet for Consent on REDCap.*

As a token of my appreciation for your time, you will have the option of entering a drawing for one of ten \$20 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 training, 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 dissertation 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, M.S., Ed.M.  
Doctoral Student, Counseling Psychology  
Virginia Commonwealth University  
Email: [pasquarielcd@vcu.edu](mailto:pasquarielcd@vcu.edu)  
Phone: (804) 828-1948

Edmund O. Acevedo, Ph.D.  
Professor & Chair, Dept. of Health & Human Performance  
Virginia Commonwealth University  
Email: [eoacevedo@vcu.edu](mailto:eoacevedo@vcu.edu)  
Phone: (804) 828-1948

## Appendix H

### IRB APPROVAL

# VCU Memo

V i r g i n i a C o m m o n w e a l t h U n i v e r s i t y

Office of Research Subjects Protection  
Virginia Commonwealth University  
Bio-Tech Research Park, Building 1  
800 E. Leigh Street, Suite 114  
PO Box 980568  
Richmond, VA 23298-0568  
(804) 827-2302 Phone  
(804) 827-1448 Fax

DATE: August 22, 2012

TO: Edmund Acevedo, PhD  
Health And Human Performance  
Box 842020

FROM: Sherman Baker, MD  
Chairperson, VCU IRB Panel A  
Box 980568



RE: VCU IRB #: HM14579  
**Title: Enhancing Self-Efficacy in the Utilization of Physical Activity Counseling: An Online Constructivist Approach with Psychologists in Training**

On August 22, 2012, the following research study *qualified for exemption* according to 45 CFR 46.101(b) Category 1. This determination includes the following items reviewed by this Panel:

**PROTOCOL: Enhancing Self-Efficacy in the Utilization of Physical Activity Counseling: An Online Constructivist Approach with Psychologists in Training (Version #2, Version Date 8/7/12)**

**CONSENT/ASSENT:**

- Research Subject Information And Consent Form (Appendix M, Version #1, Version Date 7/16/12, 3 pages)

The Primary Reviewer assigned to your research study is Diane Dodd-McCue, DBA. If you have any questions, please contact Ms. Dodd-McCue at [ddoddmcue@vcu.edu](mailto:ddoddmcue@vcu.edu) or 828-3953; or you may contact Jason Elswick, IRB Coordinator, VCU Office of Research Subjects Protection, at [irbpanela@vcu.edu](mailto:irbpanela@vcu.edu) or 827-2302.

**Attachment – Conditions of Approval (PLEASE NOTE RECENT CHANGES TO #3)**

### **Conditions of Approval:**

In order to comply with federal regulations, industry standards, and the terms of this approval, the investigator must (*as applicable*):

1. Conduct the research as described in and required by the Protocol.
2. Provide non-English speaking patients with a translation of the approved Consent Form in the research participant's first language. The Panel must approve the translation.
3. The following changes to the protocol **must** be submitted to the IRB panel for review and approval before the changes are instituted. Changes that do not meet these criteria do not have to be submitted to the IRB. If there is a question about whether a change must be sent to the IRB please call the ORSP for clarification.

#### **THESE CHANGES MUST BE SUBMITTED:**

- a) Change in principal investigator
  - b) Any change that increases the risk to the participant
  - c) Addition of children, wards of the state, or prisoner participants
  - d) Changes in survey or interview questions (addition or deletion of questions or wording) that change the level of risk or adds questions related to sexual activity, abuse, past or present illicit drug use, illegal activities, questions reasonably expected to provoke psychological anxiety, or would make participants vulnerable, or subject them to financial, psychological or medical risk
  - e) Changes that change the category of exemption or add additional exemption categories
  - f) Changes that add procedures or activities not covered by the exempt category(ies) under which the study was originally determined to be exempt
  - g) Changes in documents that are not just for clarification of information already contained in the document, correction of grammatical mistakes, or to correct/change phone numbers, addresses, or email addresses
  - h) Changes requiring additional participant identifiers that could impact the exempt category or determination
  - i) Change in inclusion dates for retrospective record reviews if the new date is after the original approval date for the exempt study. (ex: The approval date for the study is 9/24/10 and the original inclusion dates were 01/01/08-06/30/10. This could be changed to 01/01/06 to 09/24/10 but not to end on 09/25/10 or later. )
  - j) Addition of a new recruitment strategy
4. Monitor all problems (anticipated and unanticipated) associated with risk to research participants or others.
  5. Report Unanticipated Problems (UPs), following the VCU IRB requirements and timelines detailed in VCU IRB WPP VIII-7.
  6. Promptly report and/or respond to all inquiries by the VCU IRB concerning the conduct of the approved research when so requested.
  7. The VCU IRBs operate under the regulatory authorities as described within:
    - a) U.S. Department of Health and Human Services Title 45 CFR 46, Subparts A, B, C, and D (for all research, regardless of source of funding) and related guidance documents.
    - b) U.S. Food and Drug Administration Chapter I of Title 21 CFR 50 and 56 (for FDA regulated research only) and related guidance documents.
    - c) Commonwealth of Virginia Code of Virginia 32.1 Chapter 5.1 Human Research (for all research).

## Appendix I

Table II

### *Physical Activity Counseling Interactive Training (PACIT) Protocol*

Timing	Who	Task
After Pilot Study	Researcher	Sends email to listserv/training director with link to REDCap informed consent
After receiving email	Training Director	Forwards email to students
After receiving email	Participant	Clicks on link to informed consent/info sheet on REDCap and completes informed consent
After completing informed consent	REDCap	Informs researcher that participant has accessed the page and informed consent has been signed
After signs informed consent	REDCap	Sends email with PARTICIPANT SPECIFIC link to pre-intervention survey
After baseline data is complete	Researcher	Assign to one of three groups: PACIT here
After baseline data is complete	Researcher	Invite participant to Bb CourseSites PACIT via CourseSites and send accompanying email with next steps
After REDCap Participant ID# is obtained	Researcher	Add REDCap Participant ID to separate excel spreadsheets of participant info including name/email/login/password/group assignment
After participant receives email	Participant	Participant creates username/password for Blackboard, begins PACIT Module I/completes short Bb quiz
(If participant does not sign-up for Bb)	Researcher	Sends friendly reminder email through Bb specific to participant progress
After participant completes Module I	Researcher	Sends friendly reminder email through Bb about timing to continue/write in journal on Bb create some content-personal plan for themselves
After Module I completion	Participant	Writes in Journal
After Participant writes in journal	Researcher	Responds to journal reflection/friendly email reminder through Bb for Module 2
After writing in journal	Participant	Accesses Bb Module 2/completes Module 2/short Bb quiz/journal
If no participant progress on BB	Researcher	Sends friendly reminder email through Bb specific to participant progress
After participant completes Module 2	Researcher	Sends friendly reminder email through Bb about timing to continue/write in journal on Bb-how's the plan
After Module 2 completion	Participant	Writes in Journal
After Participant writes in journal	Researcher	Responds to journal reflection/friendly email through Bb reminder for Module 3
After writing in journal	Participant	Accesses Bb Module 3/completes Module 3/short Bb quiz/journal
If no participant progress on BB	Researcher	Sends friendly reminder email through Bb specific to participant progress
After participant completes Module 3	Researcher	Sends friendly reminder email reminder through Bb about timing to continue/write in journal on Bb-how's the plan
After Module 3 completion	Participant	Writes in Journal
After Participant writes in journal	Researcher	Responds to journal reflection/friendly email reminder through Bb for Module 4
After writing in journal	Participant	Accesses Bb Module 4/completes Module 4/short Bb quiz/journal
If no participant progress on BB	Researcher	Sends friendly reminder email through Bb specific to participant progress
After participant completes Module 4	Researcher	Sends friendly reminder email through Bb about timing to continue/write in journal on Bb-how's the plan
After Module 4 completion	Participant	Writes in Journal
After Participant writes in journal	Researcher	Responds to journal reflection/thank you for completing the training email
(If participant accesses/doesn't complete)	Researcher	Sends friendly reminder email through REDCap specific to participant progress about completing post-data survey
After participant completes Module 4	Researcher	email survey invitation through REDCap with PARTICIPANT SPECIFIC link to post-intervention questionnaire
After participant receives link to post-data survey	Participant	Completes Post-data survey on REDCap
After participant completes Module 4	Researcher	Add date of completion to participant id & participant identifying info spreadsheets

Table I2

*Physical Activity Counseling Content Training (PACCT) Protocol*

Timing	Who	Task
After Pilot Study	Researcher	Sends email to listserv/training director with link to REDCap informed consent
After receiving email	Training Director	Forwards email to students
After receiving email	Participant	Clicks on link to informed consent/info sheet on REDCap and completes informed consent
After completing informed consent	REDCap	Informs researcher that participant has accessed the page and informed consent has been signed
After signs informed consent	REDCap	Sends email with PARTICIPANT SPECIFIC link to pre-intervention survey
After baseline data is complete	Researcher	Assign to one of three groups: PACCT here
After baseline data is complete	Researcher	Invite participant to Bb CourseSites PACCT via CourseSites and send accompanying email with next steps
After REDCap Participant ID# is obtained	Researcher	Add REDCap Participant ID to separate excel spreadsheets of participant info including name/email/login/password/group assignment
After participant receives email	Participant	Participant creates username/password for Blackboard, begins PACCT Module 1/completes short Bb quiz
(If participant does not sign-up for Bb)	Researcher	Sends friendly reminder email through Bb specific to participant progress
After participant completes Module 1	Researcher	Sends friendly reminder email through Bb about timing to continue/write in journal on Bb create some content-personal plan for themselves
After Module 1 completion	Participant	Writes in Journal
After Participant writes in journal	Researcher	Responds to journal reflection/friendly email reminder through Bb for Module 2
After writing in journal	Participant	Accesses Bb Module 2/completes Module 2/short Bb quiz/journal
If no participant progress on BB	Researcher	Sends friendly reminder email through Bb specific to participant progress
After participant completes Module 2	Researcher	Sends friendly reminder email through Bb about timing to continue/write in journal on Bb-how's the plan
After Module 2 completion	Participant	Writes in Journal
After Participant writes in journal	Researcher	Responds to journal reflection/friendly email through Bb reminder for Module 3
After writing in journal	Participant	Accesses Bb Module 3/completes Module 3/short Bb quiz/journal
If no participant progress on BB	Researcher	Sends friendly reminder email through Bb specific to participant progress
After participant completes Module 3	Researcher	Sends friendly reminder email reminder through Bb about timing to continue/write in journal on Bb-how's the plan
After Module 3 completion	Participant	Writes in Journal
After Participant writes in journal	Researcher	Responds to journal reflection/friendly email reminder through Bb for Module 4
After writing in journal	Participant	Accesses Bb Module 4/completes Module 4/short Bb quiz/journal
If no participant progress on BB	Researcher	Sends friendly reminder email through Bb specific to participant progress
After participant completes Module 4	Researcher	Sends friendly reminder email through Bb about timing to continue/write in journal on Bb-how's the plan
After Module 4 completion	Participant	Writes in Journal
After Participant writes in journal	Researcher	Responds to journal reflection/thank you for completing the training email
(If participant accesses/doesn't complete)	Researcher	Sends friendly reminder email through REDCap specific to participant progress about completing post-data survey
After participant completes Module 4	Researcher	email survey invitation through REDCap with PARTICIPANT SPECIFIC link to post-intervention questionnaire
After participant receives link to post-data survey	Participant	Completes Post-data survey on REDCap
After participant completes Module 4	Researcher	Add date of completion to participant id & participant identifying info spreadsheets

Table I3

*Training as Usual Control Group (TAU) Protocol*

Timing	Who	Task
After Pilot Study	Researcher	Sends email to listserv/training director with link to REDCap informed consent
After receiving email	Training Director	Forwards email to students
After receiving email	Participant	Clicks on link to informed consent/info sheet on REDCap and completes informed consent
After completing informed consent	REDCap	Informs researcher that participant has accessed the page and informed consent has been signed
After signs informed consent	REDCap	Sends email through REDCap with PARTICIPANT SPECIFIC link to pre-data survey
After baseline data is complete	Researcher	Assign to one of three groups: TAU here
After baseline data is complete	Researcher	Invite participant to Bb CourseSites TAU via CourseSites and send accompanying email with next steps
After REDCap Participant ID# is obtained	Researcher	Add REDCap Participant ID to separate spreadsheets of participant info including name/email/login/password/group assignment
Four weeks after assigned to TAU	Researcher	Sends email prompt through REDCap with PARTICIPANT SPECIFIC link to post-data survey
(If participant accesses/doesn't complete)	Researcher	Sends friendly reminder email through REDCap specific to participant progress about completing post-data survey
After participant receives link to post-data survey	Participant	Completes Post-data survey on REDCap
After participant completes post-data survey	Researcher	Add date of completion to participant id & participant identifying info spreadsheets

## Appendix J

### *Baseline Survey Email Invitation from REDCap*

Time sent: **Time**

From: Sent automatically via Automated Invitations from **pasquariecd@vcu.edu**

To: **Email of participant**

Subject: **IMPORTANT: Survey Link to Physical Activity Counseling Training**

Hello,

Welcome to Physical Activity Counseling Training! Please click on the Physical Activity Counseling Survey link below to complete the first survey. Thank you again for your time.

Sincerely,  
Cassie and Dr. Acevedo

You may open the survey in your web browser by clicking the link below:

[Physical Activity Counseling Survey](#)

If the link above does not work, try copying the link below into your web browser:

<https://redcap.vcu.edu/rc/surveys/>

This link is unique to you and should not be forwarded to others.

## Appendix K

### *CourseSites by Blackboard PACIT Email Invitation*

**From:** [no-reply@coursesites.com](mailto:no-reply@coursesites.com)  
**To:** Email of participant  
**Subject:** Important-Physical Activity Counseling Course  
Sign-Up Information

#### **Email Invitation**

Hello,

I would like to invite you to participate as a Student in my course **Physical Activity Counseling Interactive Training** which I'll be teaching using [CourseSites by Blackboard](#). I've provided a brief description below for more information.

#### **Course Description :**

Welcome to the Physical Activity Counseling training course! As a participant in this INTRODUCTORY course, you will learn about the principles and practices of Physical Activity Counseling, including the health benefits of physical activity, basic exercise prescription, and ethical considerations of using Physical Activity Counseling with clients. Specifically, you will be exposed to:

- The latest data on the impact of physical inactivity on physical and mental health, including mood, anxiety, resiliency, and cognitive performance
- Guidance for exercise prescription: Frequency, intensity, time, type
- New guidelines for increasing clients/patients physical activity
- Personalization of Physical Activity Counseling by age and physical and mental health needs
- Answers to the most frequently asked questions on liability and obligation for prescribing exercise
- The opportunity to learn how leading clinicians incorporate Physical Activity Counseling into their practices
- Take-home tools for exercise risk assessment, screening, instruction, and prescription

Following the completion of this training you will receive a Certificate of Completion, which may be helpful in documenting your participation in this training, and an opportunity to enter a drawing to win 1 of 10 \$20 Visa gift cards. Let's get started!

To confirm your participation, please register using the following link. Once you create an account, you will be enrolled automatically and can begin.

- [Click to confirm and register](#)

If you have any questions about the course, please contact me via email at [pasquarielcd@vcu.edu](mailto:pasquarielcd@vcu.edu). Please visit the [CourseSites Help](#) page to contact support with any technical questions.

For all future visits to the course, after registration, please use the link below.

- [Click to visit course home page and login](#)

I look forward to seeing you online soon!

Sincerely,  
Cassie  
Cassandra Pasquariello



## Appendix L

### *CourseSites by Blackboard PACCT Email Invitation*

**From:** [no-reply@coursesites.com](mailto:no-reply@coursesites.com)

**To:** Email of participant

**Subject:** Important-Physical Activity Counseling Course  
Sign-Up Information

#### **Email Invitation**

Hello,

Thank you so much for consenting to participate in this training and for completing the first survey. Please follow the directions below to register for **Physical Activity Counseling Training** which I'll be teaching using [CourseSites by Blackboard](#). I've provided a brief description below for more information.

#### **Course Description:**

Welcome to the Physical Activity Counseling training course! As a participant in this INTRODUCTORY course, you will learn about the principles and practices of Physical Activity Counseling, including the health benefits of physical activity, basic exercise prescription, and ethical considerations of using Physical Activity Counseling with clients. Specifically, you will be exposed to:

- The latest data on the impact of physical inactivity on physical health and mental health, including mood, anxiety, resiliency, and cognitive performance
- Guidance for exercise prescription: Frequency, intensity, time, type
- New guidelines for increasing clients/patients physical activity
- Personalization of Physical Activity Counseling by age and physical and mental health needs
- Answers to the most frequently asked questions on liability and obligation for prescribing exercise
- The opportunity to learn how leading clinicians incorporate Physical Activity Counseling into their practices
- Take-home tools for exercise risk assessment, screening, instruction, and prescription

Following the completion of this training you will receive an opportunity to enter a drawing to win 1 of 10 \$20 Visa gift cards. Let's get started!

To confirm your participation, **please register using the following link to create an account/username/password.**

Once you create an account, you will be enrolled automatically and can begin.

- [Click to confirm and register](#)

If you have any questions about the course, please contact me via email at [pasquarielcd@vcu.edu](mailto:pasquarielcd@vcu.edu). Please visit the [CourseSites Help](#) page to contact support with any technical questions.

For all future visits to the course, after registration, please use the link below.

- [Click to visit course home page and login](#)

I look forward to seeing you online soon!

Sincerely,

Cassie

Cassandra Pasquariello

## Appendix M

### *CourseSites by Blackboard TAU Email Invitation*

**From:** [no-reply@coursesites.com](mailto:no-reply@coursesites.com)  
**To:** Email of participant  
**Subject:** Important-Physical Activity Counseling Course Sign-Up Information

#### Email Invitation

Hello,

Thank you so much for consenting to participate in this training and for completing the first survey.

We are happy to inform you that you were randomly assigned to the "**Training as Usual**" control group, which means, please carry on with your traditional graduate training (as determined by your graduate/internship/postdoctoral program) and we will be contacting you in a few weeks with a link via email to complete additional surveys. As a fellow graduate student, I know your time is valuable and I want to express my enormous gratitude for your willingness to complete the next two sets of surveys. In line with all control group protocol, you will have access to the real Physical Activity Counseling training course following the completion of this study.

In order to keep you up to date on upcoming surveys and to be able to grant you access to the real Physical Activity Counseling training course in a few months, please follow the directions below to register for the **Physical Activity Counseling** using [CourseSites by Blackboard](#).

To confirm your participation, please register using the following link. Once you create an account/USERNAME/PASSWORD, you will be enrolled automatically.

- [Click to confirm and register](#)

If you have any questions about the course/training/research, please contact me via email at [pasquarielcd@vcu.edu](mailto:pasquarielcd@vcu.edu). Please visit the [CourseSites Help](#) page to contact support with any technical questions.

For all future visits to the course, after registration, please use the link below.

- [Click to visit course home page and login](#)

Following the completion of this study, you will receive an opportunity to enter a drawing to win 1 of 10 \$20 Visa gift cards. **Your time is extremely valuable and I appreciate your willingness to be a *critical* part of evaluating this training program.**

Sincerely,  
Cassie  
Cassandra Pasquariello

## **Appendix N**

*Email from Researchers with CourseSites by Blackboard PACIT Information*

**Subject: IMPORTANT: Physical Activity Counseling Training Course Sign-Up & Thank You**

**Hello ADD NAME HERE,**

**Thank you for completing the first survey! We want to sincerely thank you for your time and participation in the study thus far.**

This email serves as a friendly reminder that you have just received an email from no-reply@coursesites.com that provided a link to the training portion of this study. The link will take you to CourseSites by Blackboard to create a login/password for this course. (If you did not receive the email with the link to CourseSites, please reply to this email and the Course Invitation will be resent to you.)

Next Steps:

1. Create USERNAME/PASSWORD for the Physical Activity Counseling Training Course by following the link at the bottom of the no-reply@coursesites.com email you just received
2. Completion of Physical Activity Counseling Training Program on CourseSites
3. Two Follow-up Surveys (one survey immediately following completion of training program and one additional survey)

If you have any questions regarding this research project or the training, please contact Edmund Acevedo, Ph.D. (eoacevedo@vcu.edu) or Cassie Pasquariello ([pasquarielcd@vcu.edu](mailto:pasquarielcd@vcu.edu)).

Thank you again!

Cassie and Dr. Acevedo

## Appendix O

*Email from Researchers with CourseSites by Blackboard PACCT Information*

**Subject: IMPORTANT: Physical Activity Counseling Training Course Information & Thank You**

**Hello ADD NAME HERE,**

**Thank you for completing the first survey! We want to sincerely thank you for your time and participation in the study thus far.**

This email serves as a friendly reminder that you have just received an email from no-reply@coursesites.com that provided a link to the training portion of this study. The link will take you to CourseSites by Blackboard to create a login/password for this course. (If you did not receive the email with the link to CourseSites, please reply to this email and the Course Invitation will be resent to you.)

Next Steps include:

1. Create USERNAME/PASSWORD for the Physical Activity Counseling Training Course by following the link at the bottom of the no-reply@coursesites.com email you just received
2. Completion of Physical Activity Counseling Training Program on CourseSites
3. Two Follow-up Surveys (one survey immediately following completion of training program and one additional survey)

If you have any questions regarding this research project or the training, please contact Edmund Acevedo, Ph.D. (eoacevedo@vcu.edu) or Cassie Pasquariello ([pasquarielcd@vcu.edu](mailto:pasquarielcd@vcu.edu)).

Thank you again!

Cassie and Dr. Acevedo

## **Appendix P**

*Email from Researchers with CourseSites by Blackboard TAU Information*

**Subject: IMPORTANT: Physical Activity Counseling & Thank You**

**Hello ADD NAME HERE,**

**Thank you for completing the first survey! We want to sincerely thank you for your time and participation in the study thus far.**

This email serves as a friendly reminder that you have just received an email from no-reply@coursesites.com that provided a link to the training portion of this study. The link will take you to CourseSites by Blackboard to create a new account/USERNAME/PASSWORD for this course. (If you did not receive the email with the link to CourseSites, please reply to this email and the Course Invitation will be resent to you.)

Next Steps include:

1. Create USERNAME/PASSWORD for the Physical Activity Counseling Course by following the link at the bottom of the no-reply@coursesites.com email you just received
2. Two Follow-up Surveys (one survey in a few weeks and one additional survey)

If you have any questions regarding this research project or the training, please contact Edmund Acevedo, Ph.D. (eoacevedo@vcu.edu) or Cassie Pasquariello ([pasquarielcd@vcu.edu](mailto:pasquarielcd@vcu.edu)).

Thank you again!

Cassie and Dr. Acevedo

## Appendix Q

### *PACIT Post-Intervention Survey Email Invitation from REDCap*

Time sent: **Time**

From: Sent manually via Participant List by **pasquarielcd** ([Cassandra Pasquariello](#))

To: **Email of Participant**

Subject: **IMPORTANT: Please follow link to complete Physical Activity Counseling follow-up survey**

Hello!

Thank you for completing the Physical Activity Counseling Training! Please follow the link below to the follow-up survey. Your participation and time are greatly appreciated as we continue to improve our Physical Activity Counseling Training.

I commented on your final three journal reflections (just in case you feel like logging back into CourseSites) and really appreciate your thoughtful reflection and feedback.

If you have any questions about this study or the training, please contact Dr. Edmund Acevedo at (804) 828-1948, or email Cassie Pasquariello ([pasquarielcd@vcu.edu](mailto:pasquarielcd@vcu.edu))

Thank you again!

Sincerely,

Cassie & Dr. Acevedo

You may open the survey in your web browser by clicking the link below:

[Physical Activity Counseling Training Follow-Up Survey](#)

If the link above does not work, try copying the link below into your web browser:

<https://redcap.vcu.edu/rc/surveys/>

This link is unique to you and should not be forwarded to others.

## Appendix R

### *PACCT Post-Intervention Survey Email Invitation from REDCap*

Time sent: **Time**

From: Sent manually via Participant List by **pasquarielcd** ([Cassandra Pasquariello](#))

To: **Email of Participant**

Subject: **IMPORTANT: Please follow link to complete Physical Activity Counseling follow-up survey**

Hello!

Thank you for completing the Physical Activity Counseling Training! Please follow the link below to the follow-up survey. Your participation and time are greatly appreciated as we continue to improve our Physical Activity Counseling Training.

If you have any questions about this study or the training, please contact Dr. Edmund Acevedo at (804) 828-1948, or email Cassie Pasquariello ([pasquarielcd@vcu.edu](mailto:pasquarielcd@vcu.edu))

Thank you again!

Sincerely,

Cassie & Dr. Acevedo

You may open the survey in your web browser by clicking the link below:

[Physical Activity Counseling Training Follow-Up Survey](#)

If the link above does not work, try copying the link below into your web browser:

<https://redcap.vcu.edu/rc/surveys/?>

This link is unique to you and should not be forwarded to others.

## Appendix S

### *TAU Follow-up/Post-Intervention Survey Email Invitation from REDCap*

Time sent: **Time**

From: Sent manually via Participant List by **pasquarielcd** ([Cassandra Pasquariello](#))

To: **Email of Participant**

Subject: **IMPORTANT: Please follow link to complete Physical Activity Counseling follow-up survey**

Hello!

Thank you for your patience and willingness to be in the Physical Activity Counseling control group! PLEASE FOLLOW THE LINK BELOW to the follow-up survey. Your participation and time are greatly appreciated as we continue to improve our Physical Activity Counseling Training.

If you have any questions about this study or the training, please contact Dr. Edmund Acevedo at (804) 828-1948, or email Cassie Pasquariello ([pasquarielcd@vcu.edu](mailto:pasquarielcd@vcu.edu))

Thank you again!

Sincerely,

Cassie & Dr. Acevedo

You may open the survey in your web browser by clicking the link below:  
[Physical Activity Counseling Follow-Up Survey](#)

If the link above does not work, try copying the link below into your web browser:  
<https://redcap.vcu.edu/rc/surveys/>

This link is unique to you and should not be forwarded to others.



## **Appendix T**

### **PACIT and PACCT Course Description and Objectives**

#### ***Description***

Welcome to the Physical Activity Counseling training course! As a participants in this INTRODUCTORY training course, you will learn about the principles and practices of Physical Activity Counseling, including the health benefits of physical activity, basic exercise prescription, and ethical considerations of using Physical Activity Counseling with clients. Specifically, you will be exposed to:

- The latest data on the impact of physical inactivity on physical and mental health, including mood, anxiety, resiliency, and cognitive performance
- Guidance for exercise prescription: Frequency, intensity, time, type
- New guidelines for increasing clients/patients physical activity
- Personalization of Physical Activity Counseling by age and physical and mental health needs
- Answers to the most frequently asked questions on liability and obligation for prescribing exercise
- The opportunity to hear how leading clinicians incorporate Physical Activity Counseling into their practices
- Take-home tools for exercise risk assessment, screening, instruction, and prescription

#### ***Objectives***

After completing this training, you should be able to:

- Appreciate the importance of physical activity in the prevention and treatment of mental and physical illness.
- Demonstrate knowledge of the current minimum physical activity guidelines.
- Explain the basic fundamentals of exercise prescriptions and ethical considerations when prescribing exercise.
- List resources available that can assist both you and your clients in the enhancement of physical activity.
- Connect pre-learned counseling skills and knowledge to Physical Activity Counseling.
- Describe the basic steps of incorporating Physical Activity Counseling into your treatment plan with clients.

## Appendix U

### *Glossary of Key Terms-PACIT and PACCT Blackboard by CourseSites*

<b>American College of Sports Medicine (ACSM)</b>	The American College of Sports Medicine (ACSM) is the largest sports medicine and exercise science organization in the world. The ACSM promotes and integrates scientific research, education, and practical applications of sports medicine and exercise science to maintain and enhance physical performance, fitness, health, and quality of life. Along with the American Heart Association, in 2007, it launched the Exercise is Medicine initiative (see Exercise is Medicine below) and published update Physical Activity Guidelines.
<b>client</b>	The terms client and patient are used interchangeably throughout this training
<b>exercise</b>	Exercise can be defined as organized, focused physical activity, which involves a certain level of exertion (Hays, 1999). However, as mentioned in the physical activity definition below, exercise can be interpreted as obligatory and seen as a chore or something one "should" do
<b>Exercise is Medicine</b>	Exercise is Medicine is a nonprofit initiative launched by the American College of Sports Medicine (ACSM) and the American Medical Association. Exercise is Medicine calls for physical activity and exercise to be standard parts of disease prevention and treatment, urging health care providers to assess and review patients' physical activity programs at every visit.
<b>patient</b>	The terms patient and client are used interchangeably throughout this training
<b>physical activity</b>	Physical activity is the preferred term versus "exercise" due to the pejorative tone of obligation that exercise carries in most Western cultures. Because of this, leading organizations in physical activity promotion such as the American College of Sports Medicine (ACSM) use the term physical activity in their current recommendations. Physical activity will be the preferred term throughout this training, however at times physical activity and exercise will be used interchangeably.
<b>Physical Activity Counseling</b>	Physical Activity Counseling can be defined as a method used by health care providers to promote physical activity. Common methods include, physical activity prescription, exercise referral, dialogue between clinician and client about exercise, assessment of exercise history and current physical activity level, motivational interviewing to change physical activity behavior, behavior modification, and goal setting.
<b>Physical Activity Readiness Questionnaire (PAR-Q)</b>	Physical Activity Readiness Questionnaire (PAR-Q) is a 7-item screening tool designed to identify individuals who may need to seek professional medical clearance before beginning a moderate-intensity exercise program or increasing their current physical activity program

## **Appendix V**

### **Module Summary Quizzes**

#### **Module 1 Summary Quiz**

Instructions: Please complete this brief "quiz" on Introductory Module 1. This quiz is an informal guide for you to gauge your knowledge of Physical Activity Counseling and for us to assess both your understanding of the material and your progress in the training.

1. Physical Activity can play an important role in the prevention and treatment of mental health disorders. True/False
2. \_\_\_\_\_ is the global initiative by the American College of Sports Medicine (ACSM) that calls on health professionals to include physical activity counseling on every patient visit.
3. Increasing the number of Americans that meet the minimum guidelines for Physical Activity is one of the main objectives of the Healthy People 2020 Initiative by the U.S. Department of Health and Human Services. True/False
4. Among children and adolescents, physical activity can:
  - a. Improve bone health
  - b. Improve cardiorespiratory and muscular fitness
  - c. Decrease levels of body fat
  - d. Reduce symptoms of depression
  - e. All of the above
5. Both of the seminal longitudinal studies presented in this module (Alameda County Study and Harvard Alumni) strongly suggest
  - a. that individuals who reported lower levels of physical activity had lower risk of depression later in life in comparison to their peers.
  - b. that individuals who reported higher levels of physical activity had lower risk of depression later in life in comparison to those who reported lower levels of physical activity.
  - c. that individuals regardless of their reported physical activity level were at high risk for developing depression.
  - d. None of the above.
6. How would you rate the quality of the Introductory Training Module? Excellent, Above Average, Average, Below Average, Poor
7. How would you rate your experience of using this Introductory Training Module? Excellent, Above Average, Average, Below Average, Poor
8. The information presented in this Introductory Module 1 is applicable to my work with clients/patients. Excellent, Above Average, Average, Below Average, Poor
9. The instructors in this Introductory Module 1 showed enthusiasm about the health benefits of physical activity and the role of psychologists in addressing the current physical inactivity epidemic. Excellent, Above Average, Average, Below Average, Poor
10. Please use this comment area to give any additional feedback that you have about this Introductory Training Module. Your input is extremely valuable to us as we continue to develop our Training Program.

## Module 2 Summary Quiz

Instructions: Please complete this brief "quiz" on Module 2. This quiz is an informal guide for you to gauge your knowledge of Physical Activity Counseling and for us to assess both your understanding of the material and your progress in the training.

1. Research suggests that treatment of depression with exercise is often equal to other treatment options such as pharmacotherapy and CBT. True/False
2. There are many counseling skills that are transferable to Physical Activity Counseling, including, \_\_\_\_\_.
  - a. Basic helping skills
  - b. Motivational Interviewing
  - c. Behavior Modification
  - d. Cognitive Behavior Therapy
  - e. A and B
  - f. All of the Above
3. Recent research has consistently demonstrated \_\_ (cognitive) \_\_ benefits of exercise for individuals of all ages from young children to older adults.
4. From a review of the literature, it appears that psychologists need additional training in Physical Activity Counseling. True/False
5. What are common methods of physical activity counseling?
  - a. motivational interviewing for physical activity behavior change
  - b. exercise referral to a certified specialist or to a physician
  - c. dialogue between clinician and client about physical activity behavior
  - d. behavior change techniques/modification/monitoring/goal setting/follow-up
  - e. All of the above
6. How would you rate the quality of the Introductory Training Module? Excellent, Above Average, Average, Below Average, Poor
7. How would you rate your experience of using this Introductory Training Module? Excellent, Above Average, Average, Below Average, Poor
8. The information presented in this Introductory Module 1 is applicable to my work with clients/patients. Excellent, Above Average, Average, Below Average, Poor
9. The instructors in this Introductory Module 1 showed enthusiasm about the health benefits of physical activity and the role of psychologists in addressing the current physical inactivity epidemic. Excellent, Above Average, Average, Below Average, Poor
10. Please use this comment area to give any additional feedback that you have about this Introductory Training Module. Your input is extremely valuable to us as we continue to develop our Training Program.

### Module 3 Summary Quiz

Instructions: Please complete this brief "quiz" on Module 3. This quiz is an informal guide for you to gauge your knowledge of Physical Activity Counseling and for us to assess both your understanding of the material and your progress in the training.

1. What is the most widely recognized and used screening tool for individuals interested in starting an exercise program?
  - a. Physical Activity Readiness Questionnaire - Par-Q
  - b. Pre-Exercise Screening Form – PESF
  - c. Exercise Physiology Screening Form – EPSF
  - d. None of the above
2. Research suggests among physically active older adults, improvements in cognitive performance include:
  - a. Memory
  - b. Attentional processes
  - c. Speed of cognitive processing
  - d. All of the above
3. Physical activity during pregnancy is not recommended. True/False
4. Generally, the simple physical activity recommendation for healthy adults age 18-4 is 30 minutes of moderate activity; 5 days per week. True/False
5. In order to improve clients' exercise adherence, it is important to discuss which of the following with your client:
  - a. Past and current barriers to consistent physical activity
  - b. Potential future barriers and possible solutions
  - c. Enlist social support and/or group exercise
  - d. Lifestyle shift inclusive of exercise versus something "extra"
  - e. All of the above
6. How would you rate the quality of the Introductory Training Module? Excellent, Above Average, Average, Below Average, Poor
7. How would you rate your experience of using this Introductory Training Module? Excellent, Above Average, Average, Below Average, Poor
8. The information presented in this Introductory Module 1 is applicable to my work with clients/patients. Excellent, Above Average, Average, Below Average, Poor
9. The instructors in this Introductory Module 1 showed enthusiasm about the health benefits of physical activity and the role of psychologists in addressing the current physical inactivity epidemic. Excellent, Above Average, Average, Below Average, Poor
10. Please use this comment area to give any additional feedback that you have about this Introductory Training Module. Your input is extremely valuable to us as we continue to develop our Training Program.

## Module 4 Summary Quiz

Instructions: Please complete this brief "quiz" on Module 4. This quiz is an informal guide for you to gauge your knowledge of Physical Activity Counseling and for us to assess both your understanding of the material and your progress in the training.

1. The Stages of Change Model can play an important role in assessing and monitoring physical activity behavior. True/False
2. Exercise BARRIERS that you and/or your clients may experience, include
  - a. Lack of Time
  - b. Lack of Money
  - c. Lack of Motivation
  - d. None of the above
3. (Assess), the first A of the Five A's, is during intake when you ask about physical activity behavior, history, social support, self-efficacy, and readiness-to-change.
4. Self-efficacy in physical activity, or the belief in oneself that s/he can be successful in their physical activity behavior, is a determinant of consistent exercise. True/False
5. The U.S. Preventive Services Task Force Guidelines for Physical Activity
  - a. Encourage the social support of significant others.
  - b. Incorporate questions regarding the physical activity level of clients into history taking during routine healthcare visits.
  - c. Monitor compliance with physical activity and provide positive reinforcement during future health visits.
  - d. Identify barriers that arise to optimal adherence of physical activity program and discuss strategies to overcome them.
  - e. All of the above
6. How would you rate the quality of the Introductory Training Module? Excellent, Above Average, Average, Below Average, Poor
7. How would you rate your experience of using this Introductory Training Module? Excellent, Above Average, Average, Below Average, Poor
8. The information presented in this Introductory Module 1 is applicable to my work with clients/patients. Excellent, Above Average, Average, Below Average, Poor
9. The instructors in this Introductory Module 1 showed enthusiasm about the health benefits of physical activity and the role of psychologists in addressing the current physical inactivity epidemic. Excellent, Above Average, Average, Below Average, Poor
10. Please use this comment area to give any additional feedback that you have about this Introductory Training Module. Your input is extremely valuable to us as we continue to develop our Training Program.

## Appendix W

Table W1.

*Qualitative Themes: PACIT Journal Reflections*

PACIT Participants Journal Reflections	
Themes	Sample Participant Quotes
<b>Gap in Training</b>	<p>I wholeheartedly agree that Clinical and Counseling Psychology programs do not do enough to teach students about the benefits of exercise related to one's mental health as well as how to assess for it and why it is important.</p> <p>Prior to seeing your call for research participation, I hadn't even heard of physical activity counseling.</p> <p>This training came at a good time. I just started at a new clinic and most patients have been interested in weight management and I feel a little lost in how to approach physical activity.</p> <p>It was discouraging to realize that so few schools offer training in this modality though. I know my school does not and I do not believe any of the faculty have any training in this.</p> <p>I feel sort of silly because it just makes so much sense and it's such a nice compliment to counseling as a process and I can't believe it hasn't come up at all in my doctoral level classes.</p> <p>I'm really excited about this training. I study physical activity for my research, but have never been formally trained on how to counsel patients to increase physical activity in practice.</p>
<b>Ethics &amp; Scope of Competence</b>	<p>I completely agree that our profession can be of service to increasing physical activity in our clients, but I am hesitant to do so. I even have my masters in sport and exercise psychology and completely understand and feel comfortable sharing information about the many benefits of exercise. However as a training professional, I am hesitant prescribing exercise because I feel it is out of my domain since it is physical.</p> <p>is it not equally irresponsible to not recommend physical activity (exercise) for those that are under the recommended amount of exercising per week as it is to not mention the necessity of adequate nutrition and sleep? I realize this could be paraphrased, but I feel like there is a deep emotional and ethical obligation in that sentence that counselors as a profession need to consider. If we want to continue to say we are scientists and or professionals we will have to adapt our</p>

	practices and adopt what science tells us faster.
<b>Clinical Work</b>	<p>This past week I had an intake with a client suffering from severe depression. As I was talking with her, your study popped into my head....I discussed with the client the idea of adding exercise to her daily routine. She said she's willing to try to walk a few times a week with her husband (until I hear back from her doctor because he is underweight). Yesterday, her husband called to thank me and said they've been going for walks and they really enjoyed it!</p> <p>I was really pleased to see the portion on the counseling skills I already have. When I consider learning an entire new set of skills to practice a new therapy, it seems quite overwhelming, so seeing that I already have many of the skills need to implement physical activity counseling in practice was nice and actually quite comforting.</p> <p>I exercise regularly and would say that it is a HUGE part of my life but I don't know if I've ever assessed any of my client's exercise habits, ever. I am surprised at how overlooked exercise is in counseling, especially when the research whole-heartedly supports the efficacy and positive effects of exercise on a variety of mental health concerns.</p> <p>I had a client today who presented with depressive symptoms and I immediately asked about her exercise and encouraged her to try to do more of it this week---all because of the training. Good work!</p> <p>I like that it was mentioned that we as clinicians are being negligent when we are not evaluating or implementing exercise into our treatment plans. That is very true, and I can admit that myself and most of my colleagues do not talk about exercise. I am the only person in my entire department interested in physical activity.</p> <p>Reflecting on the information made me think of framing exercise as a n activity for the whole family. This is especially helpful for parents who do not have anyone to watch their children while they exercise. Moreover, it gives the parents a chance to model positive exercise attitudes for their children.</p>
<b>Supervision</b>	I spoke with my supervisor yesterday during supervision and we discussed introducing more exercise into treatment plans and talking more with clients (including ones we feel may not be receptive at first ☺) about adding physical activity into their goals and how it will help them with symptoms.
<b>Personal Life</b>	On a more personal note, I discussed your research with my good friend and neighbor. She has been worried about feeling more depressed lately and she also is worried about how her 2 year old seems to want to play video games more than play outside in the last month or two. We talked about how playing outside with her son and going for walks, etc. should help both her and her son.



	<p>We even made plans to go a few evenings a week for a “group walk” that includes, her son, myself, and my dog (her son adores the dog so hopefully that’ll encourage him to want to come outside for awhile and it’ll help her and myself.</p> <p>My own personal experience with exercise is one of ambivalence. I clearly see the health benefits, and want to exercise more, but I have to admit there are plenty of times when I think that I just don’t have time, that I deserve a break, or that I just don’t want to do it.</p> <p>I feel a tad bit guilty as I know how important exercise is yet I make very little time for it in my own life. It’s so easy to put it on the back burner in grad school!</p> <p>This module resonated with me personally because running is one of my favorite ways to cope with stress from being a graduate student. I know that I can tell changes in my mood when I don not run regularly.</p> <p>This training has gotten myself and my wife excited about more exercise and activity. This is not only the case for us but encouraging our three kids to be active as well, encouraging a lifetime of physical activity.</p> <p>I just sent some of these articles/clips to my partner and family members. We are a somewhat active family but could always use more.</p>
<b>Research &amp; Resources</b>	<p>I also really likes the “no money no time” website—I ordered a few sample of the pamphlet. That is one or two of the most common barriers for patients to exercise. I’m looking forward to getting it in the mail ☺</p> <p>I liked the Betty-Lou video. I’m a health psychologist for a VA and nearly all of my patients are around age 55, and many with similar presentations, on countless meds and falling victim to complicating medical conditions that can be improved through lifestyle change.</p> <p>I LOVED the Betty Lou-clip-what a role model! I also like the idea that I don’t have to know everything about PA Counseling, as far as exercise requirements go, because there are people out there who are training and specialize in that area for me. I looked up who is certified through ACSM in my state and I even found someone at my college—further emphasizing that it can be a “team effort” as long as the client is open to than!</p> <p>I wrote down some of the studies mentioned and plan to look back and read them individually to see if they can be helpful for my own physical activity counseling dissertation...Your research design is making me think about how I want to carry out my own research. I want to have both clients participate in counseling and physical activity but I am not sure how feasible it is.</p>

Table W2.

*Qualitative themes: PACIT Module Summary Quizzes*

PACIT Participants Module Summary Quizzes	
Themes	Sample Participant Quotes
<b>Desire for More Interaction</b>	<p>This is a great training module (1), but more interaction in the form of an audio or video lecture along with the PowerPoint would be great.</p> <p>This was better-the narrated slides were more along the lines of what I would prefer (Module 3).</p>

Table W3.

*Qualitative themes: PACCT Module Summary Quizzes*

PACCT Participants Module Summary Quizzes	
Themes	Sample Participant Quotes
<b>Desire for More Interaction</b>	<p>I wish there was a video or audio-would make the module a bit more engaging than just reading slides (Module 1).</p> <p>Was there supposed to be audio? I didn't hear anything, only reviewed the ppt (Module 1).</p> <p>Needs to be more interactive to maintain engagement (Module 2).</p> <p>Wish there was audio or video (Module 3).</p> <p>Audio/video components, even if it is lecture based on the slides (Module 4).</p>
<b>Presentation of Content</b>	<p>Maybe add a short paragraph of "narrative" to go along with each slide to highlight and summarize the content. I think that would help it flow better, to have more continuity and a "story line" like a lecture (Module 1).</p> <p>Some of the slides appeared too busy (Module 1).</p> <p>These slides were a lot more word than previous slides (Module 4).</p> <p>Some of the slides were more difficult to read due to small print (Module 4).</p>

Table W4.

*Qualitative themes: What participants found most helpful*

Post-Intervention Evaluation and Feedback: What Participants Found Most Helpful	
Themes	Sample Participant Quotes
<b>Interactive Approaches (PACIT)</b>	<p>Multi-media presentation (PowerPoint's, podcasts, videos, articles) of simplified data (rather than full articles)</p> <p>Lots of examples, interactive pieces, different modes of learning (video, podcast, TED videos, etc.).</p> <p>I liked the variety of approaches during the training (video, audio, pp, etc.)</p> <p>Journal entries and resource materials. Enjoyed TED talks/digital info.</p> <p>Interactive PowerPoint presentations</p> <p>The different types of learning modules (PowerPoint, videos, podcasts, supplemental articles).</p> <p>Different training modalities (e.g., videos, links to articles, PowerPoint slides, etc.)</p> <p>the quizzes</p>
<b>Resources &amp; Research Provided</b>	<p>Citing the various studies that support the study's claims for physical activity counseling.</p> <p>Links to websites with downloadable tools like worksheets, assessments, etc.</p> <p>The basic research and statistics, as well as written out techniques. The links to other websites was a benefit in developing my repertoire of resources for physical activity counseling.</p> <p>Specific guidelines to share with clients</p>
<b>Self-Directed &amp; Accessible</b>	<p>Self-guided and convenient to access.</p> <p>Self-directed</p> <p>Easy to access online. Interesting material.</p>

Table W5.

*Qualitative themes: What participants found least helpful*

Post-Intervention Evaluation and Feedback: What Participants Found Least Helpful	
Themes	Sample Participant Quotes
<b>Technical Problems</b>	<p>If you clicked on a link, and then clicked back to the slides, it will have lost your place.</p> <p>It was difficult to skip from section to section within each module. It would be helpful to be able to skip around between the journal entry, the PowerPoint, the different videos, etc. without having to start back at section 1.</p> <p>Some of the files had problems loading over Wi-Fi--they were pretty large.</p> <p>Navigating back to the modules after taking the quiz or completing the journal could be more fluid.</p>
<b>Length of Training</b>	<p>Very time consuming - will be better served in an academic curriculum or for CE</p> <p>It took a while to complete.</p> <p>Just in terms of a research participant, it felt unexpectedly long. I found myself speeding through things because I had not wanted to commit that much time to the project.</p> <p>It was very time consuming</p> <p>Time commitment.</p>

Table W6.

*Qualitative themes: What participants would improve*

Post-Intervention Evaluation and Feedback: What Participants Would Improve	
Themes	Sample Participant Quotes
Vignettes	<p>One-on-one videos with a mock client engaging in some of these skills!</p> <p>Vignettes</p> <p>Examples of therapist-client conversations at each stage of physical activity implementation</p> <p>Include a case study as Module 5 or something like that.</p> <p>Adding case conceptualizations - especially in regards to ethics.</p> <p>Would have like a bit more about how a session might actually look with a depressed or anxious client for whom you would use PA Counseling</p> <p>Maybe case studies with example dialogues between clinicians and clients to help put the information in context. Examples of what you might say to clients with various issues (obesity, chronic health issues, eating disorders, economic barriers, etc.), and how to respond to client concerns and barriers.</p>
Depth of Training	<p>Have levels of training for people with no background, some background, and advanced?</p> <p>Pick one model of physical activity counseling and go in depth on how to do each step.</p>

Table W7.

*Qualitative themes: Changes in physical activity*

Post-Intervention Evaluation and Feedback: Physical Activity	
Themes	Sample Participant Quotes
<b>No Real Change</b>	<p>I'm already fairly active so it didn't impact me much in that way</p> <p>It was not changed.</p> <p>No change.</p> <p>It was not changed.</p>
<b>Awareness &amp; Intentionality</b>	<p>I have already incorporated it for clients and in my personal life. It has helped me explain to several clients as well as my neighbor why physical activity is important.</p> <p>Trying to be more cognizant of how exercise can affect my own mental health, whether I truly feel energized after exercise...</p> <p>Perhaps a slight increase? I just finished it today and read about importance of green environments, so am already thinking about spending more time running outside rather than at the gym. So I would expect the training to affect my bx in the future if it hasn't already!</p> <p>It encouraged me to continue exercising on a regular basis.</p> <p>I am already physically active so it motivates me to continue to 'walk the walk'</p> <p>Not really yet, since it's only been a day, but I will definitely be monitoring the amount of moderate exercise I get more closely.</p> <p>I think about and am encouraged to do physical activity more frequently, nice to have a standard for myself as well.</p> <p>I just had a baby recently, and reading these materials helped me get even more motivated to get back in shape and exercise daily.</p> <p>In post-contemplation mode; moving into action but not quite there yet!</p> <p>It is similar but I feel more motivated to continue.</p> <p>I already added more moderate activity in my weekend routine.</p>

Table W8.

*Qualitative themes: Changes in physical activity counseling*

Post-Intervention Evaluation and Feedback: Physical Activity Counseling	
Themes	Sample Participant Quotes
<b>Confidence</b>	<p>It boosted my confidence that I can impart my knowledge about the many benefits of PA to my clients and that it can be considered our obligation to do so.</p> <p>Increased my knowledge and confidence in utilizing physical activity counseling.</p> <p>Gave me confidence by explaining who it can be used with and some ideas about how to incorporate it into sessions.</p> <p>It helped me realize it was a doable thing and that such an intervention existed.</p> <p>I feel more confident using the information with clients.</p>
<b>Motivation</b>	<p>I'm feeling more motivated to include physical activity counseling in future work with clients</p> <p>It gave me more information and resources. Also made me really think about how to use physical activity in combination to psychotherapy.</p> <p>I made me think about PA as a part of my clinical work in a way that I haven't thought of before.</p> <p>Continue to use physical activity as part of treatment and homework with clients.</p>

## **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 Master's of Education in Counseling Psychology with a specialization in Sport Psychology from Boston University in 2007. She began the doctoral program in Counseling Psychology in at Virginia Commonwealth University (VCU) in 2008 and earned her Master's of Science in Counseling Psychology from VCU in 2011. Her concentration is in exercise and sport psychology and she greatly enjoys working with student-athletes, coaches, and athletic administrators, along with traditional and non-traditional college students. She recently completed her APA accredited pre-doctoral psychology internship at the University of California, Santa Barbara Counseling and Psychological Services.