Examining the Physical and Mental Health Effects of an Obesity Prevention Program in High Risk Adolescent Females: A Pilot Study

Luann K. Foster

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Recommended Citation
http://digitalcommons.georgefox.edu/psyd/124
Examining the Physical and Mental Health Effects of an Obesity Prevention Program in High Risk Adolescent Females: A Pilot Study

by

Luann K. Foster

Presented to the Faculty of the

Graduate Department of Clinical Psychology

George Fox University

In partial fulfillment

Of the requirements for the degree of

Doctor of Psychology

In Clinical Psychology

Newberg, Oregon

May, 2013
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Abstract

Obesity is a growing concern in the United States as two-thirds of the population is clinically overweight or obese, a condition that carries with it a myriad of physical and mental health concerns. To address these concerns, many programs have been designed to incorporate evidence-based obesity prevention; however, few have addressed the needs of high risk middle school rural children. The current study examined the effectiveness of a specific obesity prevention program designed to decrease risk of obesity by helping female students increase daily physical activity to recommended levels. This program is designed to provide daily and weekly motivational incentives and encouragement, weekly psychoeducational groups, and individual check-in sessions to discuss goal setting, address potential barriers, and work with resistance. Student volunteers were randomly assigned to either the intervention or wait-list control group and all participants were evaluated for mood, self-efficacy, and motivation for
activity at Times 1, 2, and 3. No statistical significance was found; however, a large main effect exists for exercise motivation. These findings suggest that this program shows promising potential for improving motivation for exercise participation, which may help to decrease future risk of obesity and obesity-related conditions.
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Acknowledgements

Marie Christine Goodworth, Mary Peterson, Elizabeth Hamilton
Thank you to my research committee for your personal investment in my training and for making this project possible.

Helen Hansen
Thank you, Helen, for all of the time and energy you spent helping to run the program. I am forever grateful for you!

Mike Foster
Thank you for your unwavering support and encouragement along the way.
Chapter 1

Introduction

Obesity is a growing problem in America. An alarming 66% of the adults in America are considered to be clinically overweight (34%) or obese (32%), which is an increase since the 1960s when only 13% of the population was obese. If the current rate of increase continues, an estimated 75% of adults will be clinically overweight or obese by 2015 (Wang & Beydoun, 2007). While the prevalence rate of obesity is lower for Oregon residents as compared to the national average, an estimated 61.9% of Oregon adults are considered to be at risk for chronic disease as a result of being overweight or obese, having a Body Mass Index of 25 or higher (Behavioral Risk Factor Surveillance System, 2008).

Similar growth trends are seen in children and adolescents. From 1976-1980 to 2007-2008, obesity doubled in preschool-aged children from 5.0% to 10.4%, tripled in children aged 6-11 from 6.5% to 19.6%, and more than tripled in adolescents aged 12-19 from 5.0% to 18.1% (Ogden, Carroll, & Surveys, 2010) with the highest increase in obesity occurring in young adults, aged 18-29 (Goldfield et al., 2010). Research also indicates that a person’s weight trajectory is often set pre-adulthood; children and adolescents who are obese are more likely than normal weight children and adolescents to be obese as adults (Center for Disease Control and Prevention, 2010).
Physical Health Risks

The physical implications of this epidemic are astounding. Obesity-related chronic diseases, such as asthma, diabetes, gallstones, heart disease, high blood pressure, liver problems, menstrual problems, and sleeping difficulties, are becoming more prevalent in children and teenagers (UCSF Benioff Children's Hospital, 2010). Because overweight children have an increased risk for adult obesity (Center for Disease Control and Prevention, 2010), they are also at increased risk for the associated complications. Additionally, due to the increase of incidence of childhood obesity, health concerns that were previously seen only in adult patients, such as type-2 diabetes, metabolic syndrome, non-alcoholic steatohepatitis, and obstructive sleep apnoea syndrome, have become more common among children and adolescents (Malecka-Tendera & Mazur, 2006).

Mental Health Risks

In addition to the physical health risks, increased weight status has mental health implications such as increased rates of mood disorders, anxiety, somatoform, and eating disorders relative to the general population (Britz, et al., 2000). Thirty-four percent of children and adolescents with an obesity-related condition, as compared to 20 percent of children in the general population, are also diagnosed with a psychiatric condition (Wang & Beydoun, 2007).

Much of the literature regarding the association of mental health conditions and obesity focuses on depression. While not all studies have found differences in depression between overweight and normal-weight youth (Atlantis & Baker, 2008), evidence suggests that, specifically within the United States, obesity does correlate with depressive factors, including anhedonia, negative self-esteem, and overall severity of depressive symptoms as measured by the
Children’s Depression Inventory (CDI; Goldfield et al., 2010). Shame, guilt, and intense feelings of body dissatisfaction are believed to result from social stigma, weight-based teasing, and bullying, which are also associated with greater depression and suicidality (Goldfield et al., 2010).

Additionally, cohort studies suggest that obesity is also associated with future development of depressive symptoms (Atlantis & Baker, 2008). After reviewing the literature, Atlantis and Baker (2008) found that the associations between obesity and depression were greater in women than in men and that depression occurring during adolescence positively correlates with an increase in BMI in young adulthood. Therefore, depression could be both a cause and a consequence of obesity (Goldfield et al., 2010). Further, behavioral factors, such as sedentary lifestyle, emotional eating, and eating in the absence of hunger, that are often associated with internalizing disorders (i.e., anxiety and depression) become barriers to establishing and maintaining healthy habits, thus potentially causing further weight gain and poorer health status (Janicke, Harman, Kelleher, & Zhang, 2008). The relationship between obesity and depression is unclear but important to understand because both conditions seem to have their origins in adolescence and have been increasing in recent years (Goldfield et al., 2010).

Physical Activity

Gutin (2011) discussed an important differentiation between fat and lean body tissue. He noted that due to the current guides stating that weight gain is caused by interplay between multiple genetic and environmental factors that influence energy intake or expenditure, many programs have been developed to emphasize restricting caloric intake with physical activity
playing a supportive role. While this theory has been effective for weight loss in obese adults, Gutin instead recommends a theory for obesity prevention to focus on vigorous activity in the development of lean body mass with energy intake being a secondary focus. Metabolic rates increase with lean body tissue, allowing youth to maintain a healthy weight while ingesting a large caloric intake as well as the necessary nutrients for growth. Thus, recommendations to improve effectiveness of obesity prevention programs include focusing on body composition rather than body weight by devoting more attention to physical activity, especially vigorous physical activity (Gutin, 2011).

**Ethnic, Socioeconomic Status, and Gender Differences**

While many studies indicate that choice and self-initiated behavior change are important for increasing motivation for regular participation in physical activity, few have targeted high risk populations (Wilson et al. 2005). Ethnic minority groups, low socioeconomic status groups, and females all are at increased risk for obesity. Evidence is varied regarding the correlation between obesity and either socioeconomic status or ethnic diversity due to variations in indicators that researchers use (i.e., parental education, parental occupation, family income, composite socioeconomic status, and neighborhood socioeconomic status); however, socioeconomic status and ethnic diversity appear to be factors in obesity risk (Shrewsbury & Wardle, 2008). Within a Medicaid sample that likely contained a larger group of persons with lower socioeconomic status relative to the general population, there was a positive association between recorded diagnoses of obesity-related conditions and psychiatric conditions (Janicke et al., 2008). Among African American, Hispanic, and Native American ethnic groups, the risk of obesity-related illness is higher than European White Americans (Stevens, 2010); and Native
Americans and Alaska Natives more likely than other ethnic groups to report obesity and no leisure-time physical activity (Jernigan, Duran, Ahn, & Windleby, 2010). Female adolescents have repeatedly been found to be less active than males (Van der Horst, Paw, Twisk, & Van Mechelen, 2007). Further, within the rural community, significant risk behaviors and health concerns have been found, especially within youth from low-income and minority families (Curtis, Waters, Brindis, 2011). The reasons for these differences among ethnic and socioeconomic status groups are speculative; however, obesity prevention programs for adolescents at risk for obesity would be considered beneficial, particularly when targeting high risk individuals, such as females and lower socioeconomic status and ethnic minority groups (Shrewsbury & Wardle, 2008).

**Psychosocial Factors: Self-Efficacy**

Another important factor in adolescent weight status and the motivation for participation in physical activity is self-efficacy (Beets, Kenneth, & Forlaw, 2007). Self-efficacy, as Bandura (1977) describes, is the belief of a person that he or she is able to achieve certain outcomes by successfully carrying out specific actions. Stronger perceptions of self-efficacy lead to more vigorous attempts at achieving those behaviors (Bandura, 1977). Four specific areas theoretically provide information that influence a person’s level of self-efficacy, including performance accomplishments, vicarious experience, verbal persuasion, and desensitization of physiological states of emotional arousal. In relation to health behaviors, self-efficacy influences a person’s effort directed toward changing risk behavior and persistence in the presence of barriers and setbacks to motivation. Students with more perceived barriers to physical activities were found to have low perceived competence while students who had fewer perceived barriers
reported greater enjoyment in an exercise program (Papacharisi & Goudas, 2003). Social cognitive theory (i.e. self-efficacy and self-evaluated dissatisfaction) is a strong predictor for exercise behavior (Dzewaltowski, 1989). Additionally, Valois, Umstattd, Zullig, and Paxton (2008) found that reduced levels of physical activity are associated with lower emotional self-efficacy.

Other variables affect a person’s willingness or ability to increase physical activity, such as barriers, support seeking, competing activities, and environmental change (Beets et al., 2007). Overall, an external locus of control, or the sense that one has little control over outcomes, is associated with increased weight status (Ternouth, Collier, & Maughan, 2009). Furthermore, the level of a person’s overall sense of personal mastery is related to whether he or she will become physically active (Chen & Miller, 2001).

Eisenberg, Neumark-Sztainer, Story, and Perry (2005) found in their seminal study that social norms within the school setting, specifically from one’s peer group, may influence unhealthy weight-control behaviors, especially among female adolescents of average weight. Their recommendations include school-based interventions to reduce those unhealthy weight-control behaviors. Further, within the female adolescent population, increased peer influence and peer support of physical activity, such as doing physical activity together, is related to activity level and can help mediate some of the barriers that lower self-efficacy imposes (Beets et al., 2007).

The obesity prevention program in this study was designed to improve physical activity in adolescent females by increasing student confidence in exercise through addressing the four core areas that contribute to the development of self-efficacy:
1. Providing psychoeducation regarding the anxiety and vulnerability of becoming involved in new experiences.

2. Provide motivational interviewing to overcome barriers and move through the stages of change.

3. Provide choices around the type of physical activity they will become involved in to help encourage internal locus of control and successful practice.

4. Encourage peer involvement in the program to facilitate vicarious experience and peer motivation.

**Obesity Prevention Programs**

Because lack of physical exercise, sedentary behavior, and poor dietary choices are the leading modifiable risk factors for obesity and obesity-related diseases (Kiessling, McClanahan, & Omar, 2008), behavioral programs are valuable methods in addressing weight concerns. Young adults aged 18-29 are experiencing the highest increase in obesity. Adolescence is therefore a vital time to provide obesity prevention programs (Goldfield et al., 2010).

Evidence strongly supports that physical activity without calorie restriction is effective in decreasing body fat in children and adolescents (Kim & Lee, 2009). The following health areas have all shown significant improvements when physical activity was incorporated on a regular basis for children and youth who were obese: cholesterol and blood lipids, depression, blood pressure, injury recovery, bone density, obesity, and metabolic syndrome (Janssen & LeBlanc, 2010). Janssen and LeBlanc (2010) suggest recommendations for optimum physical activity to gain the related health benefits: (a) Children and adolescents ages 5-17 years of age should accumulate between 60 minutes and several hours of physical activity of at least a moderate
intensity per day; (b) When possible, activities of a vigorous intensity, including those that strengthen muscle and bone, should be incorporated; and (c) The majority of the physical activity should be aerobic, while muscle and bone strengthening activities should be incorporated at least three days per week.

In addition to the health benefits, physical activity has implications for mental health as well. Adults who increase physical activity have been found to also experience increases in emotional well-being while a decrease in physical activity correlates with decreases in emotional well-being. Additionally, physical activity seems to help children feel good and enhance their self-esteem (Saxena, Van Ommeren, Tang, & Armstrong, 2005). While not as effective as medications and psychotherapies, physical activity can be an effective strategy in managing depression (Saxena et al., 2005).

Based on the trends toward obesity and the evidence of the physical and mental benefits of physical activity in counteracting those trends, prevention programs can provide a strong benefit to students who are at high risk for obesity, particularly adolescents of Native American ethnicity and lower socioeconomic status. For this pilot study, an obesity prevention program was developed in an effort to bring prevention services to local community members who do not currently receive services by connecting with the school-based health care center at a middle school in the Pacific Northwest. This study measured the immediate effectiveness of this program with the purpose of implementing the program on a broader scale to youth in the greater community.

Hypotheses

The hypotheses of this study are as follows:
H1. Students in the intervention group will show an improvement in mood compared to students in the control group.

H2. Students in the intervention group will show an increase in self-efficacy compared to students in the control group.

H3. Students in the intervention group will show an increased motivation for exercise compared to students in the control group.

H4. Students in both the intervention group and control group will improve in mood over time.

H5. Students in both the intervention group and control group will increase in self-efficacy over time.

H6. Students in both the intervention group and control group will have increased motivation for exercise over time.
Efficacy of an Obesity Prevention Program

Chapter 2

Methods

Participants

Participants for this study were female student volunteers from the seventh grade class at a rural middle school in the Pacific Northwest that serves a high percentage of low-income and ethnic minority families. Based on data from the 2010-2011 school year, when the study was conducted, this middle school consisted of 194 students (sixth-eighth grade), of which 32% report themselves to be Native American or Alaskan Native, 1% Asian/Pacific Islander, 1% Black, 0.5% Hispanic, and 65.46% White. Forty-eight percent of the middle school students were female and 69% of the students qualified for free or reduced-price lunch as determined by family income (Common Core of Data). To recruit participants, researchers gave a presentation to all females in the seventh grade class with the support of the School-Based Health Care Center highlighting benefits of the program. Fourteen participants volunteered to begin; however, four participants chose to discontinue after the start of the program. In this sample, participant volunteers (n = 10) were all seventh grade female and ranged in age from 12 to 14 (m = 12.29, SD = 0.61). As shown in Table 1, eight of the students were Non-White (80%). Overall, four students (40%) reported American Indian/Alaskan Native or American Indian Multi-Racial. 7 students (70%) were involved in organized sports through the school.
Table 1

Sample Demographics

<table>
<thead>
<tr>
<th></th>
<th>Mean (SD)</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>12.29 (0.61)</td>
<td></td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian or Alaskan Native</td>
<td>3 (30)</td>
<td></td>
</tr>
<tr>
<td>American Indian Multi-Racial</td>
<td>1 (10)</td>
<td></td>
</tr>
<tr>
<td>Non-American Indian Multi-Racial</td>
<td>3 (10)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>1 (10)</td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>2 (20)</td>
<td></td>
</tr>
<tr>
<td>Played Organized Sports</td>
<td>7 (70)</td>
<td></td>
</tr>
</tbody>
</table>

Permission was received from the school principal, the School-Based Health Care Center staff, and teachers to conduct the study. Prior to the implementation of the program, George Fox University Institutional Review Board approval was secured for this research project. All of the seventh grade female students were invited to participate in the study, which consisted of a six-week program designed to increase daily physical activity. The students received informed consent forms to inform their parents/guardians about the program. Informed consent and assent was granted by the parents/guardians and student volunteers before participating in the study. Additionally, any students with known cardiovascular disease, pulmonary disease, diabetes or other medical contraindications for exercise who would be recommended to seek medical attention prior to increasing activity were excluded from this study.
Materials and Instruments

Several instruments were used as outcome measures. The Behavior Assessment System for Children-2 (BASC-2) was used to measure mood and self-efficacy. The Exerciser Checklist was used to evaluate motivational factors. The Self-Efficacy Questionnaire for Children (SEQ-C) was used to evaluate overall self-efficacy of the students.

Behavior Assessment System for Children-2 (BASC-2). The BASC-2 is an integrated assessment system that uses a variety of methods to gather information about a child. The Self-Report of Personality for Adolescents (SRP-A), which is the form that was used for measuring mood in this study, is a personality inventory that assesses emotions and self-perceptions. The SRP-A is a personality inventory for ages 12-21, consisting of 176 items, which are composed of two types of response patterns: those that the student answers as true or false (e.g., I used to be happier, I always do what my parents tell me, I worry a lot of the time, and I give up easily) and those that the students rates the frequency on a 4-point scale ranging from never to almost always (e.g., I feel like my life is getting worse and worse, I am good at things, Teachers are unfair, and I am liked by others). The five composite scores of the BASC-2 are Emotional Symptoms Index, Inattention/Hyperactivity, Internalizing Problems, Personal Adjustment, and School Problems. The 16 primary scales include scales such as Depression, Locus of Control, Self-Esteem, and Sense of Inadequacy. The internal consistency reliability of the composite scores is high, ranging from the middle 0.80s to the middle 0.90s. The internal consistency reliability of the primary scales is also high, with a median value near 0.80, ranging from middle 0.70s to upper 0.80’s. According to the scale intercorrelations and factor structure, scales are moderately
correlated with one another, excluding Sensation Seeking, which has low correlational values with most other scales (Reynolds & Kamphaus, 2004). In this sample, Cronbach’s alpha was 0.68 at Time 1, 0.87 at Time 2, 0.88 at Time 3.

**Self-Efficacy Questionnaire for Children.** The Self-Efficacy Questionnaire for Children (SEQ-C), Appendix A, was used to measure self-efficacy. The SEQ-C is a 24-item scale consisting of statements such as “How well can you get teachers to help you when you get stuck on schoolwork?” “How well can you express your opinions when other classmates disagree with you?” and “How well do you succeed in cheering yourself up when an unpleasant event has happened?” Students rate the statements on a 5-point scale from *not at all* to *very well*. The SEQ-C contains three subscales that specifically address the areas of academic, social, and emotional self-efficacy. SEQ-C has a Cronbach’s alpha of 0.88 for total self-efficacy and ranges from 0.85 to 0.88 for the subscales (Muris, 2001). In this sample, Cronbach’s alpha was 0.64 at Time 1, 0.80 at Time 2, and 0.87 at Time 3.

**Exerciser Checklist.** In addition, the Exerciser Checklist, Appendix B, was developed by Mark Anshel (2006) and adapted by Kameron Dill (2008) and was used to for measuring students’ value of physical activity. There are no psychometric properties currently available for this scale. In this sample, Cronbach’s alpha was 0.85 at Time 1, 0.88 at Time 2, and 0.89 at Time 3.

**Exercise Tracking Form.** On a daily basis, the students emailed or texted the number of minutes they spent in physical activity to the instructor, while also logging them in an Exercise Tracking Form, displayed in Appendix C. These Exercise Tracking Forms were then submitted to the instructor at weekly check-ins.
**Weekly Check-in Form.** During the students’ weekly check-ins, the students submitted the Exercise Tracking Form and had an opportunity to discuss barriers and goal achievement. The students also discussed what areas they are finding to be the hardest to overcome and received help in problem solving how to work around them. Topics of discussion were noted on the Weekly Check-in Form, Appendix D.

**Program.** The evidence-based obesity prevention program used in this study was developed under the supervision of Kameron Dill, PsyD. To start the program, the students in the intervention group attended a group session, providing time for mood, self-efficacy, and motivation for exercise screening, as well as time to problem solve barriers to physical activity and increase momentum and interest. As part of the 6-week program, students choose from a variety of physical activity options, including viewing YouTube videos of aerobic exercises designed by Dr. Dill, walking/jogging, participating in team/individual sports, and tracking number of steps via a pedometer. The students tracked their activity and received participation incentives at each weekly check-in. The students also received daily morning texts or emails with words of encouragement or fun facts as well as daily evening texts or emails with a reminder to track the amount of time they spent in exercise during that day. To log the students’ time in activity, they recorded their minutes of exercise from each day in a weekly tracking form, which they submitted to the program instructor weekly. They also texted or emailed their minutes on a daily basis to the instructor. These minutes were tracked using a spreadsheet to compare the data with the tracking sheets that the students handed in. Participants met weekly with the program instructors for psychoeducational group meetings that addressed the following topics: Introduction to the Program, Defining Exercise, Consequences of Inactivity and Benefits
of Exercise, Motivational Interviewing and Behavior Change, Tricks to Goal Adherence, and Review of the Program. Each participant was also offered a 15-minute weekly individual check-in meeting for data gathering and discussing barriers, goal setting, and achievement. During the final weekly check-in, the discussion was tailored toward continued involvement in physical activity.

**Procedures**

All student volunteers who met criteria for this study and who provided both informed consent, Appendix E, and assent, Appendix F, were randomly assigned to one of two groups using an online random number generator at http://www.randomizer.org/form.htm. Both groups completed the Demographics survey, Appendix G, and were tested at week 0, 6, and 12 with the wait list control beginning the program at week 6, as shown in Figure 1.

Figure 1 illustrates the 2 x 3 study design of two groups and three data points of repeated measures. As shown, both groups were screened for mood, self-efficacy, and motivation for exercise at 0, 6, and 12 week intervals. Upon the start of the program, one group participated in the six-week program while the other group received the standard of care, which was the health and physical education curriculum that is part of the school’s educational system. Immediately following the initial six-week program, the second group participated in the study as the first group returned to the basic standard of care. Threats to internal validity for this study included contamination and maturation, as well as environmental seasonal factors. This program was facilitated in collaboration with the school-based health care center.
To start the program, the students in the intervention group attended a group session, providing time for mood, self-efficacy, and motivation for exercise screening as well as time to problem solve barriers to physical activity and increase momentum and interest. The program contained both weekly and daily components. As part of the six-week program, students attended weekly 30-minute psychoeducation groups in the following topics that were designed to facilitate interaction among the administrators and the participants:

1. **Introduction to the Program**: The purpose of this module was to orient the participants to the structure of the program, outline expectations for participation, and establish relationships with the participants. Students were offered a variety of physical activity options, including viewing YouTube videos of aerobic exercises designed by Dr. Dill, walking/jogging, participating in team/individual sports, and tracking number of steps via a pedometer.

2. **Defining Exercise**: This module provided psycho-education of the normal range of physical sensations that can be experienced through exercise and to develop understanding of varying degrees of exercise intensity.

3. **Consequences of Inactivity and Benefits of Exercise**: This module used research-based evidence to discuss the physical and mental health benefits to engaging in exercise and the risks of an inactive lifestyle. Examples of health benefits included decrease in risk for
heart disease, cancer, obesity, diabetes, back pain, high blood pressure, as well as improved quality of life, improved mood, decreased anxiety, etc.

4. **Motivational Interviewing and Behavior Change:** Group discussion in this module used the Transtheoretical Model for stages of behavioral change to help assess participants’ current stage of change and to help participants understand their own readiness for engaging in an active lifestyle. This module also helped to increase participants’ awareness of how cognitive-behavioral strategies (e.g., “The way we THINK affects the way we FEEL, which affects the way we ACT”) can help participants move through the stages of change into action and maintenance.

5. **Tricks to Goal Adherence:** This module was designed to address barriers and facilitate relapse prevention with cognitive-behavioral strategies, such as planning ahead, setting realistic goals, tracking progress, planning exercise with others, being flexible with expectations, and leaving physical reminders.

6. **Review of the Program:** The last group discussion gave students the opportunity to reflect on the information they learned and on the health behavior changes they made throughout the course of the program.

   Additionally, each participant was offered a 15-minute weekly individual check-in meeting for data gathering and discussing personal barriers, goal setting, and achievement. During the final weekly individual check-ins, the discussion was tailored toward ongoing involvement in physical activity.

   Daily, the students tracked their activity for which they received participation incentives at each weekly check-in. The students also received daily morning texts or emails with words of
encouragement or fun facts as well as daily evening texts or emails with a reminder to track the amount of time they spent in exercise during that day in the exercise tracking form. They then submitted the form to the program instructor at the weekly check-in. Students also texted or emailed their minutes on a daily basis to the instructor. These minutes were tracked using a spreadsheet to confirm the data with the tracking sheets that the students handed in.
Chapter 3

Results

Table 2 shows means and standard deviations of depression, self-efficacy, and motivation for exercise scores. Group differences were examined between intervention and control groups at Time 1 for depression, self-efficacy, and exercise motivation. Exercise motivation was significantly different at Time 1 between intervention and control groups, $F(1,7) = 58.15$, $p < 0.001$.

Table 2

Means and Standard Deviations for Self-Efficacy and Motivation for Intervention Group and Wait-List Control Groups at Times 1, 2, and 3

<table>
<thead>
<tr>
<th></th>
<th>Intervention Group</th>
<th></th>
<th>Wait-List Control Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 1</td>
<td>Time 2</td>
<td>Time 3</td>
<td>Time 1</td>
</tr>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Depression</td>
<td>53.2 (5.0)</td>
<td>54.4 (11.3)</td>
<td>53.0 (8.3)</td>
<td>55.2 (8.8)</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>38.4 (8.6)</td>
<td>41.8 (12.4)</td>
<td>42.2 (12.3)</td>
<td>40.2 (16.6)</td>
</tr>
<tr>
<td>Exercise Motivation</td>
<td>46.4 (6.8)</td>
<td>46.8 (7.9)</td>
<td>44.6 (7.8)</td>
<td>40.8 (12.1)</td>
</tr>
</tbody>
</table>
The Exerciser Checklist was used to assess motivation for exercise, the Total Self-Efficacy scale in the SEQ-C was used to assess self-efficacy and the BASC-2 Depression scale was used to assess mood.

The first hypothesis of this study was that students would show a decrease in depression scores per group. The repeated measures ANOVA for depression indicates a non-significant time main effect, Wilks’ $\Lambda = 0.99$, $F(2,7) = 0.04$, $p = 0.96$, $\eta^2 = 0.01$, and a non-significant time by group main effect, Wilks’$\Lambda = 0.99$, $F(2,7) = 0.03$, $p = 0.97$, $\eta^2 = 0.01$. As shown in Figure 2, this data shows that the two groups did not show a difference in depression scores throughout the 12 week study.

![Figure 2. T-score means for depression at times 1, 2, and 3](image)

The second hypothesis of this study stated that students would see an increase in self-efficacy scores per group with the intervention. The repeated measures ANOVA for self-efficacy also indicates a non-significant time main effect, Wilks’ $\Lambda = 0.58$, $F(2,7) = 2.50$, $p =$
Efficacy of an Obesity Prevention Program

0.15, η² = 0.42, and a non-significant time by group main effect, Wilks’ Λ = 0.95, F(2,7) = 0.19, p = 0.83, η² = 0.05. This data shows that the two groups did not see a difference in self-efficacy throughout the 12-week study.

Third, the hypothesis of this study suggested that students would see an increase in motivation for exercise throughout the study, per group. Due to the significant difference between control and intervention groups in exercise motivation at Time 1, an ANCOVA was run with Time 1 as a covariate. The intervention and wait-list control groups were significantly different at Time 1, Wilks’ Λ = 0.95, F(1,7) = 0.39, p = 0.55, η² = 0.05. The ANCOVA indicates a non-significant time by group main effect between Time 2 and 3, Wilks’ Λ = 0.73, F(1,7) = 2.63, p = 0.15, η² = 0.27. These results indicate that although no significance was found, a large main effect exists.

To examine the relationship between the dependent variables, the Exerciser Checklist total, SEQ-C total, and the BASC-2 Depression scale were compared at Time 1, 2, and 3. Table 3 shows that, at Time 1, self-efficacy was correlated at the 0.05 level with motivation for exercise and depression, and at Times 2 and 3, self-efficacy was highly correlated with motivation for exercise at the 0.01 level. Depression also showed a moderate correlation with self-efficacy at Time 1 and a small correlation at Time 2 and 3.
### Table 3

**Time Correlation**

<table>
<thead>
<tr>
<th>Time</th>
<th>Self-Efficacy</th>
<th>Exercise Motivation</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>1.0</td>
<td>0.627*</td>
<td>-0.536*</td>
</tr>
<tr>
<td>Exercise Motivation</td>
<td>-</td>
<td>1.0</td>
<td>-0.318</td>
</tr>
<tr>
<td>Depression</td>
<td>-</td>
<td>-</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Time 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>1.0</td>
<td>0.791**</td>
<td>-0.116</td>
</tr>
<tr>
<td>Exercise Motivation</td>
<td>-</td>
<td>1.0</td>
<td>-0.252</td>
</tr>
<tr>
<td>Depression</td>
<td>-</td>
<td>-</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Time 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>1.0</td>
<td>0.827**</td>
<td>-0.221</td>
</tr>
<tr>
<td>Exercise Motivation</td>
<td>-</td>
<td>1.0</td>
<td>-0.439</td>
</tr>
<tr>
<td>Depression</td>
<td>-</td>
<td>-</td>
<td>1.0</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).
Chapter 4

Discussion

The United States Census (2011) estimated a population of 5.2 million American Indian and Alaska Native residents, which was calculated to be approximately 1.6% of the US population. In this study our sample had a higher proportion of students from American Indian heritage (40%), which was the target population. Seventy percent reported participating in organized sports. This high percent of sport involvement may suggest that students valuing exercise were potentially more interested in participating in this study than students who did not value exercise.

While literature suggests that increasing self-efficacy for exercise helps adolescent females to increase physical activity, it appears that increasing physical activity does not necessarily cause immediate improvements in overall self-efficacy (Lee, Kuo, Fanaw, Perng, & Juang, 2012). In this study, no significant difference was found in overall self-efficacy as measured by the SEQ-C. However, the SEQ-C targets academic, social, and emotional self-efficacy. Therefore, self-efficacy for exercise remains unknown for this sample.

Though the research literature does suggest that exercise plays a role in managing depression, there were no significant differences found between groups for depression scores over time. Depression scores remained relatively consistent in both groups throughout the semester and were within normal limits for this sample. Research literature has indicated mixed results with regard to the effects that physical activity has on mood in children and adolescents.
Efficacy of an Obesity Prevention Program

(Larun, Nordheim, Ekeland, Hagen, & Heian, 2006). Larun et al. (2006) found that many studies use a highly heterogeneous sample, which they noted as low quality of methodology, and that despite the contradictory findings, the majority of studies do show a significant inverse correlation between exercise and depression in children and adolescents. Within the sample in this study, a majority of students were not clinically depressed and the group means were below the clinically significant range, so there may have been little space for improvement of mood in a currently healthy sample. This program, with a sample of clinically depressed adolescents, may yield significant improvements in mood. Recommendations for future research include evaluating this program when used among individuals struggling with depression with the following group structure: (a) No treatment, (b) exercise only, (c) CBT only, and (d) Combined exercise and CBT.

Although no significant difference for exercise motivation between groups was found, a large main effect exists, which could mean that exercise motivation may still be influenced by the program; however, the sample size was too small to show statistical significance. The intervention group decreased in motivation when not receiving the program from Time 2 to Time 3; however, the wait-list control group increased in motivation while receiving the program.

Papacharisis & Goudas (2003) noted that intrinsic motivation for exercise is influenced by perceived barriers. A study of exercise in adolescents in Baltimore found a significant decrease in physical activity on days with precipitation as compared with days without precipitation and recommended providing adolescents with exercise alternative that are not dependent on weather (O’Neill, Sunmin, Lee, Yan, & Voorhees, 2013). In their rural Pacific Northwest setting, students in this study encountered increasing barriers to outdoor activities as a result of a
deterioration of weather with an increase in rain and a decrease in daylight hours in the fall months. Further, many of the students’ homes were isolated and surrounded by forests with dangerous wildlife, thus, parental permissions disallowed them from going outside after dark for reasons of personal safety. This obesity prevention program included problem-solving strategies focused on helping students find and engage in safe exercise alternatives to outdoor activities. Through reducing barriers to physical activity, students’ motivation for exercise can be enhanced, thus increasing the likelihood for future exercise participation. Further, increased exposure to health behaviors has shown to be helpful. For example, Cooke (2007) found that over half of the variance in food preferences for children was accounted for by familiarity and that new foods were often rejected. Increasing exposure to vegetables resulted in an increase in consumption. Increasing exposure to exercise benefits and gaining familiarity with the physical experience of exercise may increase the likelihood of students’ favorability toward activity and ongoing initiation of and participation in regular exercise. This program shows promising potential for helping increase students’ exercise motivation and potential for exercise participation, thus curbing the risk for obesity and related conditions.

In terms of feasibility, throughout this program, multiple barriers to implementation were encountered. First, with their busy academic schedule, working with school administrators and faculty is imperative to find available time that would both be sufficient for the needs of the program and be respectful of the students’ academic needs and school requirements. Running the program during the lunch hour was the only viable time to run the program; however, this time is also spent as an additional study hall for students who are struggling academically. Thus, the students were faced with the conflict of whether to give up their valuable study time to
participate in the program. Additionally, the lunch hour is also used for valuable social time for these students. Therefore, students were also faced with the dilemma of choosing social time versus program participation. Further, with the randomized assignment of the research groups, student social groups were consequently divided, which ultimately led to some of the attrition seen in the study. For example, during a developmental time when peer groups are highly valued, students were unwilling to participate if they were unable to be in the same group as their close peers.

Location became an additional barrier to the program. The rural context of the area increased isolation throughout the study, thus decreasing implementation and access of the program. First, researchers traveled two hours weekly to implement this study, highlighting the difficulty in providing these students with needed resources. Second, students expressed concern throughout the program that they had difficulty with some of the technology aspects of the program as they had limited access to internet and cell service at their homes. These limitations hindered communication of daily motivational quotes and exercise reminders, as well as the students’ ability to make use of the online YouTube exercise video that was designed as an indoor exercise alternative for the program. Finally, many students also expressed concern for safety when attempting to exercise outside after school due to the presence of wild animals (e.g., cougars) around their home, particularly after the weather changed and students would arrive home from school after dark.

Systemically, low family involvement became a barrier to program implementation. For example, despite a high level of interest in the program as indicated by the amount of assent forms returned, more than half of the students were unable to return their parental consent forms
to allow their participation in the study. Faculty and staff also noted a history of low parental involvement in students’ academic success.

Despite many barriers to implementation, this program showed promising potential as many positive aspects were noted. First, running the program in a school setting in conjunction with the School-Based Health Care Center increased accessibility to students. By working within the school setting, program administrators were able to provide this service to these students whose low parental involvement is likely to pose as a barrier to accessing resources. School-based programs have been found to be successful in helping adolescents increase exercise behaviors regardless of family environment (Bauer, Neumark-Sztainer, Hannan, Fulkerson, & Story, 2011). Also, including the group component of the program helped to increase peer support and motivation. Allowing students to participate in the program with peers may have helped to increase both motivation for program participation and peer involvement in exercise activities. Peer influence has been found to be helpful in peer-related physical activity programs in the following areas: peer support, peer presence, peer norms, peer acceptance and friendship quality, peer crowds, and peer victimization (Fitzgerald, Fitzgerald, & Aherne, 2012). The group component in this program initiated social support and community involvement of teachers and health care center and administrative staff, as well as providing means for psychoeducation around exercise. Further, meeting with each student individually on a weekly basis provided an opportunity to specialize the program for each student by problem-solving around individual barriers and setting personalized goals.
Limitations

During this study, students experienced several temporal factors that may have influenced the results. For example, as noted, during the fall months in the Pacific Northwest, the weather deteriorates as precipitation increases and daylight hours decrease. Further, throughout the semester, students experience varying demands in academics. Both of these factors may have introduced confounding variables to the study, causing a difference in experience with the program between the two groups.

Another limitation encountered in this study is contamination and maturation. Within the small community, many students from both study groups were within the same peer groups, thus influencing the dissemination of information and students’ experiences within the program. Additionally, seventh grade is a time of significant growth and development, which may have an impact on the results of this study.

A third limitation of this study was the small sample size. As Yalom & Leszcz (2005) noted, smaller group size increases the opportunity for individual participation in group therapy settings, with a significant decrease in individual participation when the group reaches nine participants. However, the small group size within the context of this research study decreased the statistical power, adding to the lack of clarity in the results of this study.

Lastly, in this study, 70% of the volunteer participants were already involved in an organized sport. It is likely that this program was attractive to students who already have a high value for exercise. During the psychoeducational groups, students were mostly engaged and asked thoughtful questions, highlighting their interest in learning about exercise and its benefits.
However, it is possible that a sample with a smaller percentage of students who participate in organized sports would yield different results.

**Recommendations for Future Studies**

In terms of recommendations, additional modules that may add benefit to the program include an exercise module for students to do the online exercise video together, as well as a module focused on “Identity.” By allowing students to participate in the online exercise video together, they can gain familiarity and mere exposure, thus increasing the likelihood that they would consider this a viable option for exercise in the future, particularly as a safe alternative that is not dependent on weather. Further, Hamilton & White (2008) noted that self-identity was a predictor in exercise behavior. By including a module focused on Identity, program administrators can help to increase self-awareness and factors to identity development while highlighting the incorporation of a value for an active lifestyle.

Due to the opt-in structure of the research design, many students who originally expressed interest in participating faced the added barrier of returning a completed parental consent form. However, designing the program as part of a class with an opt-out structure may decrease barriers for participation for more students, allowing them to more likely engage in the program. Therefore, running the program during scheduled health class periods may be helpful in increasing motivation and participation in the program, as well as providing access to daily program communications and exercise options within the safety of daylight hours within the school system.

During the third week of program participation, both groups showed a high dropout rate within both groups, thus it is recommended that module order be adjusted to address
motivational factors earlier in the program, potentially helping to inoculate students from potential attrition.

Suggestions for future research include program efficacy with at-risk populations within in a variety of settings, as well as long-term behavior change associated with program participation. This program could also benefit from developing a systemic component, educating families and teachers in health behavior changes that impact the children and adolescents.

Recommendations for further development of the program also include developmental concerns and tailoring lesson plans to various age groups. Continuing to implement this program with at-risk adolescents will help to clarify the results by increasing the sample size and statistical power of the study.

**Conclusion**

Although the results of this study were not statistically significant, this program shows promising potential for helping to decrease future risk for depression and anxiety associated with weight gain in high-risk females.
References


extreme obesity and in obese adolescents ascertained via a population based study.


Appendix A

Self-Efficacy Questionnaire for Children (SEQ-C)
# Participant Number

## Self-Efficacy Questionnaire for Children (SEQ-C)

<table>
<thead>
<tr>
<th></th>
<th>1 Not at all</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5 Very well</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How well can you get teachers to help you when you get stuck on schoolwork?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>2. How well can you express your opinions when other classmates disagree with you?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>3. How well do you succeed in cheering yourself up when an unpleasant event has happened?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>4. How well can you study when there are other interesting things to do?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>5. How well do you succeed in becoming calm again when you are very scared?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>6. How well can you become friends with other children?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>7. How well can you study a chapter for a test?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>8. How well can you have a chat with an unfamiliar person?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>9. How well can you prevent to become nervous?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>10. How well do you succeed in finishing all your homework every day?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>11. How well can you work in harmony with your classmates?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>12. How well can you control your feelings?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>13. How well can you pay attention during every class?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>14. How well can you tell other children that they are doing something that you don’t like?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>15. How well can you give yourself a pep-talk when you feel low?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>16. How well do you succeed in understanding all subjects in school?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>17. How well can you tell a funny event to a group of children?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>18. How well can you tell a friend that you don’t feel well?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>19. How well do you succeed in satisfying your parents with your schoolwork?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>20. How well do you succeed in staying friends with other children?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>21. How well do you succeed in suppressing unpleasant thoughts?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>22. How well do you succeed in passing a test?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>23. How well do you succeed in preventing quarrels with other children?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>
24. How well do you succeed in not worrying about things that might happen?  

   O O O O O O
Efficacy of an Obesity Prevention Program

**Exerciser Checklist**
Adapted by Kameron Dill from: *Applied Exercise Psychology* by Mark Anshel

<table>
<thead>
<tr>
<th>Participant Number: __________________________</th>
<th>Date ______________________________</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Not at all like me</th>
<th>Somewhat like me</th>
<th>Very much like me</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I think about exercising with excitement.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. I look forward to my next exercise session.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. I do not make excuses for avoiding exercise.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. I view exercising as a challenge, not a chore.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. I feel healthier and happier for exercising.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. I am happy to receive feedback from others on my exercise form.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. I am confident in my ability to exercise.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. My family/Friends support my exercise habit.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. I drink plenty of water during the day.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10. I schedule my exercise sessions; I know the days and times of the day I will exercise.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11. I know the health and emotional benefits of regular exercise.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12. I usually enjoy the company of others when I exercise.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

13. Resting Heart Rate: ________________

14. Currently, I exercise ________________ days a week for at least ____ minutes.
Appendix C

Exercise Tracking Form
**Exercise Tracking Form**

Please complete this form each week with the amount and type of exercise you do.

<table>
<thead>
<tr>
<th>Day</th>
<th>Activity</th>
<th>Difficulty level (1-5)</th>
<th>1=easy, 5=hard</th>
<th>Time spent (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thursday</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friday</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturday</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunday</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix D

Weekly Check-in Form
Weekly Check-in Form

Participant Number ____________________________________________

Date ___________________________________ Length of Session ______________________

_____ Weekly Goals Met

Goals:
1. ____________________________________________________________
2. ____________________________________________________________

Barriers:
1. ____________________________________________________________
2. ____________________________________________________________

Motivation:
_________________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
Appendix E

Informed Consent
Parent Form

Dear Parent or Guardian:

Your daughter has the chance to participate in an exciting class project through the Willamina School-Based Health Care Center. As a student at George Fox University, I, Luann Foster, M.A., will be doing this project under the supervision of Marie-Christine Goodworth, Ph.D.

I am asking for your permission for your child to participate in an exercise program. The purpose of this program is to help prevent obesity in middle school children. As part of the 16 week study, your daughter will be asked to choose a type of physical activity and keep track of the amount of exercise she does per day. Students will be asked to fill out questionnaires on mood and motivation for exercise three times throughout the study. Only Dr. Goodworth, the School-Based Health Care Center staff, and I will have access to the information. Your daughter’s information will not be shared with anyone else. The students will receive small incentives for finishing different parts of the project. Students will be sent a text on their cell phone or an email with encouraging messages related to exercise. After the study is finished, all students who participate will receive information about how helpful the program was to share with you, the parent/guardian.

Participating in this study is voluntary. Your decision whether or not to allow your child to participate will not change the quality of help your child receives at school. Even if you agree for your child to participate, your child is free to choose not to participate. Students may also stop the program if they choose. If your daughter has any medical reasons why she should not participate (i.e. cardiovascular or pulmonary disease, joint problems, or diabetes), please let us know by checking the correct box below that your daughter will not participate in this program. Please fill out the attached permission form.

There are only some small risks for your daughter in this program. The risks include some possible discomfort when starting to exercise regularly. Also, to make sure your daughter is safe, if she feels any discomfort during exercise, she is asked to stop exercising and talk to the School-Based Health Center Staff. It will not cost you any money to participate in this program.

If you have any questions or would like more information, please call or email me at 971-832-9753 or luann.foster@gmail.com. You can also call or email Dr. Goodworth at 503-554-2382 or mrutter@georgefox.edu. Or you can contact the George Fox University Internal Review Board at 414 N. Meridian St. #6143, Newberg, OR 97132 or ckoch@georgefox.edu or the Willamina School-Based Health Care Center.

Sincerely,

Luann Foster, M.A.
George Fox University
Please indicate below if you are giving your child permission to participate in this project and include your name and signature, your daughter’s name, and the date. Return this form to the Willamina School-Based Health Care Center. **Please sign and return this form by June 3.**

_____ Please check here if you *agree* to give your daughter permission to participate in this program.

_____ Please check here if you *do not agree* to participate in this program

_____ Please check here if your daughter is *not able* to participate in this program due to a medical condition.

________________________________________
Signature of Parent/Guardian

________________________________________
Printed Parent/Guardian Name

________________________________________
Printed Name of Child

________________________
Date
Appendix F

Informed Assent
Student Form

My name is Luann Foster and I am psychology student at George Fox University. I am asking you to participate in this exciting program because you will be in 7th grade at Willamina Middle School next year.

I am trying to see if exercise helps to prevent obesity in teen. I will ask you to do a few things. I will ask you to fill out some information about yourself three different times during the program, and encourage you to participate in your choice of exercise. You will be assigned to an 8 week program. We will meet every week to talk about how it is going. You will receive small gifts for finishing different parts of the program. Your information will not be shared with anyone.

You are free to choose to participate in the project or to choose not to. You can also choose to stop doing the project whenever you like. If you have any medical reasons why you should not exercise, please check the box at the bottom of this form that you will choose not to participate in this program. Even though you will be asked your name, we will not use or share your name. I will ask you for your phone number and email address so I can reach you by texting or emailing you about the program. If you do not have your own cell phone or email address, you are still able to participate in the study. It will not cost you any money to participate in this program.

There are not many risks to this project, but you may feel uncomfortable when you begin exercising. If you feel uncomfortable while you are exercising, stop your activity and talk to the School-Based Health Care Center. One possible benefits of the program may be to improve your health. Your participation in this program may help us to understand how to help other junior high students. Please feel free to contact the School-Based Health Care Center staff or myself (Luann, 971-832-9753, luann.foster@gmail.com) if you have any questions now or during the project. You can also contact Dr. Goodworth at 503-554-2382 or mrutter@georgefox.edu, or contact the George Fox University Internal Review Board at 414 N. Meridian St. #6143, Newberg, OR 97132 or ckoch@georgefox.edu or the School-Based Health Care Center.

Please sign your name at the bottom of this form to show whether or not you choose to participate. You will be given a copy of this form after you have signed it.

_____ Please check here if you agree to participate in this program.
_____ Please check here if you do not agree to participate in this program.
_____ Please check here if you cannot participate in the program due to a medical condition

________________________________
Printed Name of Subject

________________________________
Signature of Subject

Date
Appendix G

Demographics
Participant Number __________________________

Group:  Intervention  Control

Date ________________________________  Age ______________________

Height ______________________________  Weight ______________________

Ethnicity: (please check)

_____ American Indian/Alaskan Native  _____ Black, non-Hispanic

_____ Asian/Pacific Islander  _____ White, non-Hispanic

_____ Hispanic  _____ Other

How many children are in your family (including you)? _______

How many adults live in your home? ______________________

Do you participate in any sports in school? _________________

    If yes, what sport(s)? _________________________________

How many minutes per week do you currently spend in moderate to vigorous physical activity?

________________________

How many times do you participate in moderate to vigorous physical activity in one week?

________________________

Do you have your own cell phone? Circle  Yes / No

    Phone number: _________________________________

Do you give us permission to text you on your cell phone? Circle YES / NO

Do you have an email address? Circle  Yes / No

    Email address: _________________________________

Is this your own email address or a shared email address? Circle  Own / Shared

Do you give us permission to write you an email? Circle YES / NO
Appendix H

Curriculum Vita
Efficacy of an Obesity Prevention Program

Luann Kristine Foster
425 Wynooski St. • Newberg, OR 97132
CELL: (971) 832-9753
EMAIL: lfoster09@georgefox.edu
CURRICULUM VITAE

EDUCATION

8/2009 to present  Doctoral Student, Clinical Psychology
Projected Graduation Date: 5/2014
George Fox University
Graduate Department of Clinical Psychology: APA Accredited
Newberg, Oregon

8/2009 to 5/2011  Student, Masters of Arts, Clinical Psychology
George Fox University
Graduate Department of Clinical Psychology: APA Accredited
Newberg, Oregon

1/2009 to 6/2009  Graduate Clinical Psychology Classes
Statistics, Social Psychology
George Fox University
Graduate Department of Clinical Psychology: APA Accredited
Newberg, Oregon

7/2008 to 12/2008  Undergraduate Psychology Classes
Social Psychology, Human Development, Introduction to Abnormal Psychology, Introduction to Personality Theory
Portland Community College
Portland, Oregon

8/1998 to 5/2002  Bachelor of Arts, Sport and Exercise Science
Messiah College
Grantham, Pennsylvania

SUPERVISED CLINICAL EXPERIENCE

8/2013 to present  Internship
Integrated Primary Care Behavioral Health Consultation
Portland, OR
Provide behavioral health services to Medical Group patients by using therapeutic interventions, including CBT, DBT, ACT, and interpersonal psychotherapy to support patient health care management; consult with
physicians staff regarding behavioral health support and treatment

Supervisors: Vanessa Casillas, PsyD, Joel Gregor, PsyD

Supervision of Practicum Students

Newberg, OR
Meet weekly for one hour with two practicum students for supervision of their case load, as well as for skill and professional development of students.

Supervisor: Joel Gregor, PsyD

Long-term psychodynamic psychotherapy

Newberg, OR
Meet bi-weekly with client to provide psychodynamic therapy and support using interpersonal therapy

Supervisor: Joel Gregor, PsyD

Interagency Coordinator

1/2012 to present
Working with students from the Behavioral Health Crisis Consultation Team, supervisors, emergency department director and physicians, and Behavioral Health service organizations for system program development, and to track high utilizing emergency department patients and follow-through with recommended outpatient services to both lead to decreased recidivism and to improve connection with patients to appropriate increase in health care needs; provide supervision of team members

Supervisor: Mary Peterson, PhD

Oversight Supervision

9/2012 to 5/2013
Newberg, Oregon
Meet weekly for one hour for supervision, support, and mentorship of a 2nd year graduate student

Supervisors: Joel Gregor, PsyD and Carlos Taloyo, PsyD

George Fox University Health and Counseling Center Practicum

8/2012 to 5/2013
Newberg, Oregon
16 hours per week for one academic year: Provided solution-focused therapy of undergraduate college students with various diagnostic considerations, including, but not limited to obsessive compulsive disorder with psychotic features, depression, anxiety, conversion disorder, adjustment disorder, PTSD, eating disorder, alcohol abuse, identity problems

Supervisors: William Buhrow, PsyD and Kris Kays, PsyD

Providence Newberg Medical Center Consultation Team Coordinator

4/2012 to 5/2013
Managing team coverage calendar; administrative duties; collaborating with ED director, physicians, county mental health services, and
supervisors in integrating services provided by both the Consultation Team and the County Mental Health Services

Supervisors: Mary Peterson, PhD, Joel Gregor, PsyD, and William Buhrow, PsyD

4/2013

**Comprehensive Neuropsychological Assessment**
Newberg, OR
Comprehensive Neuropsychological Assessment for 16-year-old female client with a history of learning disabilities; provided written report

*Supervisor: Wayne Adams, PhD*

4/2012

**Comprehensive Neuropsychological Assessment**
Newberg, Oregon
Comprehensive Neuropsychological Assessment for 21-year-old male client who suffered a traumatic brain injury due to a bull-riding accident; provided written report and feedback with findings and recommendations to client

*Supervisor: Wayne Adams, PhD*

4/2012

**Comprehensive Learning Disability and ADHD Assessment**
Newberg, Oregon
Comprehensive Learning Disability and ADHD Assessment for 20-year-old university student; provided written report and feedback with findings and recommendations to client

*Supervisor: William Buhrow, PsyD*

9/2011 to 4/2012

**Cedar Hills Hospital Professional Consultation**
Graduate School of Clinical Psychology, George Fox University
Newberg, Oregon
Together with a team of four clinical psychology students, provided professional consultation working with the Human Resources Department at Cedar Hills Hospital to improve New Employee Orientations in order to help facilitate employee satisfaction and retention; Designed and implemented employee satisfaction and information retention survey at New Employee Orientations and six weeks post; complied recommendations according to employee survey results; designed a hospital site map for new employee reference

*Supervisor: Marie-Christine Goodworth, PhD*

7/2011 to 4/2012

**Cedar Hills Hospital Practicum**
Cedar Hills, Oregon
16 hours per week for one academic year: Ran psychoeducational and process groups, intakes and written clinical formulations, individual psychotherapy, and individual case management sessions with psychiatric
in-patients with dual diagnoses (i.e. mental health and chemical dependency), as well as in the intensive outpatient program; Professional consultation with psychiatrists, nurses, social workers, and mental health technicians

*Supervisor: Jon Benson, PsyD*

5/2011 to present

**Behavioral Health Crisis Consultation Team**
Newberg, Oregon
Providing on-call consultation services for hospital emergency, intensive care, and medical/surgical departments for one 24-hour period per week; primary reasons for referral include suicide risk assessment, chronic pain, dementia, and other mental health related issues; work with interdisciplinary team, giving feedback and recommendations to nurses and physicians; recommendations include psychiatric hospitalization, medication evaluation, pain management, therapy; Case presentations during weekly 1½ hour group supervision meetings.

*Supervisors: Mary Peterson, PhD, Joel Gregor, PsyD, and William Buhrow, PsyD*

9/2010 to 6/2011

**Archer Glen Elementary School Practicum**
Sherwood, Oregon
16 hours per week for the academic year: Provided therapy and friendship groups for K-5th grade elementary school students using play therapy and child-appropriate psychoeducational techniques to address problems including anxiety, depression, ADHD, Autism Spectrum Disorders, Oppositional Defiant Disorder, selective mutism, and social problems; Consulted with parents and teachers regarding progress in treatment

*Supervisor: Hannah Stere, PsyD*

9/2009 to 5/2010

**George Fox University Therapy Clients**
Newberg, Oregon
Conducted a 10-week course of psychotherapy with two undergraduate student volunteers

*Supervisors: Mary Peterson, Ph.D., and Ryan Keuhlthau, M.A.*

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**TOTAL INTERVENTION, ASSESSMENT AND SUPERVISION HOURS**

<table>
<thead>
<tr>
<th></th>
<th>Hours</th>
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<tbody>
<tr>
<td>Clinical Intervention</td>
<td>1171</td>
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<tr>
<td>Assessment</td>
<td>40</td>
</tr>
<tr>
<td>Supervision</td>
<td>602</td>
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</table>
PUBLICATIONS/PRESENTATIONS


**RESEARCH**

7/2012 to 8/2013 **Predictors of Psychiatric Hospitalization from a Medical Center Emergency Department Setting**  
Newberg, Oregon  
Analyzed data from past three years of risk assessment consultation services to emergency department providers at a local Medical Center.  
_Supervisor: Mary Peterson, PhD, Jeri Turgeson, PsyD_

2012 to 2013 **Obesity Prevention Program for at Risk Young Adult College Population**  
Newberg, Oregon  
Responsibilities: Participate in developing a manual for the obesity prevention program; Co-lead an 8-week intervention program for obesity prevention in college freshman female students; Provide weekly group psychoeducation and individual support as well as daily support via email or texting; Obtain pre-intervention and post-intervention measures in support of the program; Data analysis and interpretation of results  
_Supervisors: Wayne Adams, PhD, Mary Peterson, PhD, Kameron Dill, PsyD_

2010 to 2013 **Gender Research**  
Graduate School of Clinical Psychology, George Fox University  
Newberg, Oregon  
A team seeking further understanding of gender and gender-related issues. Research includes coding curriculum vitas to determine possible differences between male and female doctoral psychology students.  
_Supervisor: Kathleen Gathercoal, PhD_

2010 to 2013 **Research Vertical Team Member**
Graduate School of Clinical Psychology, George Fox University
Newberg, Oregon
A research team of students at various developmental levels within the graduate program investigating topics including obesity, barriers to seeking mental health treatment in primary care settings, caregivers of multiple sclerosis, and trauma in military women. Meet bi-monthly to discuss and evaluate the progress, methodology, design, procedures, and various issues related to a wide range of research projects that are being conducted or proposed by students and faculty.

Supervisor: Marie-Christine Goodworth, PhD

2009 to present

Graduate School of Clinical Psychology, George Fox University
Doctoral Dissertation
Willamina, Oregon
Title: Examining the Physical and Mental Health Effects of an Obesity Prevention Program in High Risk Adolescent Females: A Pilot Study
A program evaluation to determine the effects of an obesity-prevention program for ethnically diverse rural middle school females in the areas of mood, self-efficacy, motivation for exercise, and amount of exercise.

Research Committee Chair: Marie-Christine Goodworth, PhD
Committee: Mary Peterson, PhD; Elizabeth Hamilton, PhD

PROFESSIONAL AND EDUCATIONAL EXPERIENCE

Integrated Primary Care:

8/2013

Primary Care Bootcamp
1-week training course on system and service delivery in Integrated Primary Care Behavioral Health
Instructors: Danielle Jenkins, PsyD; Mary Peterson, PhD; Carlos Taloyo, PsyD; Jeri Turgeson, PsyD; Laura Fisk, PsyD

8/2012 to 12/2012

Certificate Program in Integrated Primary Care
20-week course in Culture and Specific Considerations for Integrated Primary Care Behavioral Health Consultation
Projected Completion: 12/2012
Instructors: Neftali Serrano, PsyD and Hunter Hansen, PsyD
Fairleigh Dickinson University
Teaneck, NJ

9/2011

Decreasing Patient No-shows in an Integrated Behavioral Medicine
Setting
Jeff Sordahl, MA; Mike Vogel, MA; and Kurt Webb, MA

10/2010  Primary Care Behavioral Health: Where Body, Mind & Spirit Meet
        Neftali Serrano, PhD

Assessment:

11/2011  Cross-Cultural Psychological Assessment
        Tedd Judd, PhD, ABPP-CN

5/2011   Risk Assessment Training
        Portland VA

5/2011   Assessment of ADHD in Children and Adults
        Steven J. Hughes, PhD, LP, ABPdN

10/2010  Best Practices in Multi-Cultural Assessment
        Eleanor Gil-Kashiwabara, PhD

Therapy
        Conceptualization
        and Techniques:

3/2012   Mindfulness
        Erica Tan, PsyD

7/2011   Motivational Interviewing: Overcoming Client Resistance to Change
        Michael Wiles, Med, LPC, Psychometrist

Gender Issues:

10/2012  Working with Transgender Issues
        Erica Tan, PsyD

2/2011   Working with the GLBT Community
        Jennifer Bearse, MA

        Clients: The New APA Practice Guidelines
        Carol Carver, PhD.
TEACHING EXPERIENCE

Spring 2013  
**Neuropsychological Assessment Teaching Assistant**  
Graduate School of Clinical Psychology, George Fox University  
Responsibilities include demonstrating neuropsychological assessment competencies  
Supervisor: Wayne Adams, PhD

Spring 2013  
**Statistics Consultant Teaching Assistant**  
Graduate School of Clinical Psychology, George Fox University  
Newberg, OR  
Responsibilities include meeting with PsyD students to discuss statistical procedures for research projects  
Supervisor: Kathleen Gathercoal, PhD

Fall 2011-Summer 2013  
**Statistical Procedures Teaching Assistant**  
Graduate School of Clinical Psychology, George Fox University  
Newberg, Oregon  
Responsibilities include grading homework, tracking attendance and student grades, leading individual and class study help sessions  
Supervisor: Kathleen Gathercoal, PhD

Spring 2012  
**Research Methods Teaching Assistant**  
Graduate School of Clinical Psychology, George Fox University  
Newberg, Oregon  
Responsibilities include grading homework, tracking student progress  
Supervisor: Kathleen Gathercoal, PhD

Fall 2006  
**Lecturer, Memory Extravaganza**  
*Lecture Topic: Memory Benefits of Exercise*  
Ann’s Choice Retirement Community  
Warminster, Pennsylvania

Spring 2004  
**Lecturer, Wellness Forum**  
*Lecture Topic: Arthritis and Wellbeing*  
Ann’s Choice Retirement Community  
Warminster, Pennsylvania

Spring 2002  
**Lecturer, Wellness Forum**  
*Lecture Topic: Humor and Your Health*  
Masonic Homes Retirement Community
Efficacy of an Obesity Prevention Program

Elizabethtown, Pennsylvania

Spring 2002  Lecturer, Wellness Staff In-service
Lecture Topic: Diabetes
Masonic Homes Retirement Community
Elizabethtown, Pennsylvania

PROFESSIONAL AFFILIATIONS, AWARDS, AND HONORS

Spring 2013  Commendation Award: Chosen by George Fox Graduate Department of Clinical Psychology faculty for outstanding performance and service

2012 to present  APA Division 35: Society for the Psychology of Women, Student Member

2012 to present  APA Division 42: Psychologists in Independent Practice, Student Member

2011 to present  APA Division 54: Society of Pediatric Psychology, Student Member

2011 to present  Medical Credentialing, Providence Newberg Medical Center

2009 to present  American Psychological Association, Student Affiliate

2002 to 2009  American College of Sports Medicine, Alliance Member

RELEVANT UNSUPERVISED WORK AND VOLUNTEER EXPERIENCE

9/2003 to 7/2007  Wellness Coordinator
Ann’s Choice Retirement Community
Warminster, Pennsylvania
Managed the Fitness and Aquatics Center staff and operations, collaborated with physicians and physical therapists in resident care and exercise programs, helped to motivate residents to healthy and active living through building relationships, exercise training, and providing educational information and educational forums of various wellness topics

9/2002 to 8/2003  Therapeutic Recreation Leader
Brethren Village Retirement Community
Lancaster, Pennsylvania
Taught various exercise classes on land and in therapy pool, worked with special needs clients in individual water exercise programs
Assistant Field Hockey Coach
Solanco High School
Quarryville, Pennsylvania
Coached and mentored the high school junior varsity team and assisted with coaching the high school varsity team

Co-Head Camp Counselor
Camp Good News
Cape Cod, Massachusetts
Managed daily camp operations for teens ages 13-16, supported counselor staff members, mentored campers, organized and led daily activities, lifeguarded during swim times, taught swim lessons daily

Exercise Specialist Internship
Masonic Homes Retirement Community
Elizabethtown, Pennsylvania
Scheduled and directed one-on-one exercise sessions with residential clients, administered fitness testing, presented a workshop on humor and an in-service on diabetes, created a stability ball reference packet for the Life Center staff

Volunteer, Physical education for children with disabilities
Messiah College
Grantham, Pennsylvania
Provided weekly water exercise sessions for a 12-year-old boy with spina bifida, wrote individualized education programs (IEP’s) for the student

Volunteer, Kid’s Klubhouse
New Hope Ministries
Dillsburg, Pennsylvania
Assisted with elementary school children from low-income families in weekly club meetings in games, Bible lessons, and small group time; mentored a small group of elementary school-aged girls

Certified Nurse Assistant, Dementia Unit
Willow Valley Retirement Community
Willow Street, Pennsylvania
Assisted with activities of daily living for residents with end-stage dementia
REFERENCES

Mary Peterson, PhD
George Fox University
Graduate Department of Clinical Psychology
Research Committee Member, Consultation Team Supervisor
414 N. Meridian St. V104
Newberg, Oregon 97132
503-554-2377
mpeterson@georgefox.edu

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George Fox University
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Consultation Team Supervisor, Practicum Site Supervisor
414 N. Meridian St. V104
Newberg, Oregon 97132
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Clinical Team Leader
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