

EFFECTS OF SOCIAL SUPPORT ON SEDENTARY STUDENTS' READINESS TO  
BECOME PHYSICALLY ACTIVE

By

ALEJANDRA BARRERA CURIEL

Bachelor of Science in Physical Culture

Benemérita Universidad Autónoma de Puebla

Puebla, Puebla, Mexico

2011

Submitted to the Faculty of the  
Graduate College of the  
Oklahoma State University  
in partial fulfillment of  
the requirements for  
the Degree of  
MASTER OF SCIENCE  
May, 2015

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ACTIVE

Thesis Approved:

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Timmy RJ Passmore Chair, Thesis Advisor

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Donna K. Lindenmeier

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Suzanne Harrington

## ACKNOWLEDGEMENTS

I would like to start by thanking my fellow master classmates and friends who made this journey so much easier and fun Ana, Zaira, Sarah, Rebeca, Curtis, Taylor, Jay, Catalina, Cristina, Veronica, Brandan, Emily and Amy. Also my high school friends “Intensos” that give salt and pepper to my life.

I would like to thank my Mexican family here in U.S., Denise and Conrado. First of all, I would not have lived this dream if they had not welcomed me 9 years ago. Secondly, they have made me feel home, even though I am 1,373 miles away. Additionally, thanks to Stacey who made my dream of coming to OSU possible. Also, I would like to acknowledge the Writing Center and Gary Corey who had the patience to help me put my thoughts into paper.

Thirdly, I want to thank my teacher Pedro Velasco; my thesis advisor, Dr. Passmore who helped me even though time was limited; Dr. Lindenmeier who helped me even in her busiest days; and to Dr. Harrington who by her example has challenged me to become a better person and professional.

I would also like to acknowledge my family who has made me the person I am today. My brother in law who has become one of my best friends. My nephew whose smiles got me through the most difficult days. My two sisters Carmen and Lourdes who are my pillars. My mother Carmen Curiel who has always believed in me and has encouraged me to fight for what I want. To my father who has always supported my dreams and has always made me feel safe.

Finally, I would like to thank the love of my life, Jesús Sarabia. Being apart was one of the most difficult things I had to do and being with you is one of the greatest things in this process. Thank you for encouraging me to study a master.

Name: ALEJANDRA BARRERA CURIEL

Date of Degree: MAY, 2015

Title of Study: EFFECTS OF SOCIAL SUPPORT ON SEDENTARY STUDENTS'  
READINESS TO BECOME PHYSICALLY ACTIVE

Major Field: Leisure Studies

Abstract: The purpose of this study was examine the relationship between social support and sedentary students' readiness to become physically active. Readiness to exercise was measured with the URICA-E2 (University of Rhode Island Continuous Assessment Exercise 2), which groups students in different stages: precontemplation non-believers (PCN), precontemplation believers (PCB) and contemplation (C). For the purpose of this analysis, the higher they scored in the C stage the more ready they were to start exercising; in this stage participants are beginning to consider exercise. 84 completed surveys (n=84) were analyzed, where 69 are female and 15 are male. The different age groups are as follows: 46 were between 18 – 20 years old, 25 were 21 – 23 years old, and 11 were 24 – 29 years old. A pretest/posttest comparison group design was performed. Through the Chi Square analysis it was found that there was no relationship between social support and sedentary students' readiness to become physically active with an  $\chi^2 = 1.71$ ,  $p < 0.10$ . The Wilcoxon Test was performed to determine if there was a difference between the pretest and posttest results. Although there was a difference, it was not statistically significant with a  $w = 480$ ,  $p > 0.10$  for the PCN stage. A z test was performed because the eligible number of participants was higher than 50 in the PCB and C stages. The result was  $z = -1.38$ ,  $p > 0.10$  for the PCB stage and  $z = -0.68$ ,  $p > 0.10$  for the C stage.

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## CHAPTER I

### INTRODUCTION

#### STATEMENT OF THE PROBLEM

Engaging in physical activity has numerous benefits, such as: controlling weight, reducing the risk of having a cardiovascular disease, type 2 diabetes, metabolic syndrome, and some cancers; it improves mental health and mood (Centers for Disease Control and Prevention [CDC], 2011). However, according to the CDC (2014), less than 48% of adults in the United States meet the 2008 *Physical Activity Guidelines*, which state that an adult should perform at least 150 minutes of physical activity per week.

In the United States, there have been numerous interventions that have increased physical activity among adults. The Community Guide Preventive Services reported a total of 90 successful interventions that increased physical activity, ranging from a median net increase of 4.2 %, in studies with less impact, to a median net increase of 44.2%, in more successful interventions (2014). These interventions are divided into: informational approaches, for instance, changing knowledge about physical activity benefits; behavioral and social approaches, like providing support for people who want to exercise; and environmental and policy approaches, such as changing the physical environment.



It appears that in colleges physical activity levels have increased, from 40.3% in the year of 2000 to 50.4% in 2014 (American College Health Association [ACHA], 2000, 2014). However, this means that 49.6% of students remain below the recommended amounts; hence, they are not getting the benefits of being physically active.

Additionally, different studies suggest that exercise patterns practiced during college will affect future physical activity levels. Sparling and Snow (2002) discovered that after 2 to 10 years of graduation, 84.7% of college alumni who were regular exercisers as seniors remained active. In contrast, 81.3% of those who were non-exercisers as college seniors were inactive. In another study, the authors reported similar results, furthermore, they acknowledge that 75% of the participants perceived that their past recreational sports involvement had an impact on their current activity levels. (Forrester, Ross, Hall, & Geary, 2007).

Levels of inactivity in colleges and the fact that college students are the future leaders, whom their physical activity behaviors will have an effect on our society (Keating, Jianmin, Piñero, & Bridges, 2005), makes it imperative to find innovative physical activity programs (King, Vidourek, English, & Merianos, 2014) that will successfully attract and retain sedentary college students.

Moreover, a national survey reported that 56.5% of college students had experienced loneliness (ACHA, 2014). Humans need social support throughout life (Bruhn & Philips, 1984); therefore, “given the importance of social relationships for human functioning and well-being, an important question involves how social relationships affect people’s personal interests and motivated behavior” (Walton, Cohen,

Cwir, & Spencer, 2012). Specifically, in exercise settings social support has been identified as a factor that influences exercise participation and adherence. On one study, the authors stated that in college settings peers and friends influence students' diet and exercise choices, mainly in women (Gruber, 2008). In addition, in a 12-month exercise intervention, the researchers studied the factors that influence exercise adherence. They concluded that "in a structured and supportive environment, maintenance of the peak adherence level is feasible for many individuals" (p.1310). Moreover, they stated that intensive support during the first few months of exercise adoption is crucial (Cadmus-Bertram, Irwin, Alfano, Campbell, Duggan, Foster-Schubert, Wang & McTiernan, 2014). This suggests that social support plays an important role in exercise motivation and adherence. Still, it is difficult to control the social support around each college student; however, it could be possible to create a support system, a group of students working towards similar goals and helping each other stay motivated with the involvement of a fitness specialist, within the exercise.

## PURPOSE

From the previous information a question arises: will a program offering social support, connectedness and integration increase sedentary students' motivation to exercise? Therefore, the purpose of this study is to analyze the effects of social support on sedentary students' readiness to become physically active.

## HYPOTHESIS

There is one question being asked in this study: is there a relationship between social support and students' readiness to become physically active? Using a pretest/posttest convenience sample with a cross sectional survey design, participants will

be surveyed on their readiness to exercise based on the University of Rhode Island Continuous Assessment on Exercise 2 (URICA-E2).

*Null Hypothesis:* There is no relationship between social support and sedentary students' readiness to become physically active.

*Alternative Hypothesis:* There is a relationship between social support and sedentary students' readiness to become physically active.

## SIGNIFICANCE OF STUDY

The information gathered through this study can help colleges and public health agencies to have a better understanding of sedentary people's way of thinking. Additionally, it could increase Americans' physical activity levels and prevent diseases caused by inactivity, hence decreasing the medical expenses and low productivity due to these illnesses; but, most importantly, people could have a better quality of life.

## DEFINITIONS OF TERMS

Social support: the definition for this research, will be the one proposed by King and Frederiksen (1984). It states that social support is: "the presence of interpersonal liking attraction, and group cohesiveness among individuals working together" (p. 5).

Readiness to exercise: it will be based on Prochaska and DiClemente (1984) transtheoretical model of behavior change and its adaptation to exercise settings by Reed (1995). The transtheoretical model suggests that a person goes through different stages when trying to adhere to a program. The stages are precontemplation (PCN-PCB), contemplation (C), preparation (P), action (A) and maintenance (M). The C stage refers

to sedentary people who are thinking of starting a physical fitness program in the following 6 months. For the purpose of this investigation, the higher the person scores in the C stage, the more ready the person is to start exercising. In contrast, the higher the person scores in the precontemplation stage, the less ready that person is to start an exercise program.

## CHAPTER II

### LITERATURE REVIEW

#### LONELINESS, SOCIAL SUPPORT AND LEISURE

Lin and Huang (2012) defined loneliness as “a negative emotion characterized by feeling empty, isolated, and worthless” (p. 232). They stated that there are three factors that may cause loneliness: a lack of belonging in the group, feeling lonely, and self-denial. Berkman, Glass, Brissette, & Seeman (2000) acknowledged that social integration has an impact on health because it affects our physiological stress responses; self-esteem, self-efficacy and security; health damaging or promoting behaviors; and exposure to infectious disease agents.

Students go through a difficult process when they are in college. Most of them move away from their homes, family and friends, yet they are expected to create new relationships (Lin & Huang, 2012). Consequently, during this period it is important to increase the positive exchanges among students. Increasing positive exchanges, such as emotional support and companionship, raises emotional well-being (Fiori & Consedine, 2013) and mental health (Mock, Fraser, Knutson, & Prier, 2010). In addition, through social engagement and connectedness individuals are provided with a sense of value, belonging and attachment (Berkman et al., 2000).

On the other hand, negative exchanges are related to negative perceived well-being (Segrin & Domschke, 2011), higher learning burn out, poorer academic achievement (Lin & Huang, 2012), and a prevalence of health-damaging behaviors such as alcohol consumption and physical inactivity (Berkman et al., 2000). Segrin and Domschk (2011) determined that loneliness is associated with less social support, worse health, lower leisure activity and poor sleep quality. The participants in this study who reported feeling lonely also stated poor global self-reported health. Based on this information, they concluded that there is an indirect association between social support and health. They also found evidence supporting that one mechanism by which loneliness was associated with poorer health, was through less functional recuperative processes, specifically, less leisure-time.

From this information, it could be supposed that sedentary lifestyles are related to loneliness. This study is not trying to establish the direction or intensity of this relationship. Physical fitness programs could provide social support and increase leisure experiences, which is the main framework for this study. King, Vidourek, English, & Merianos (2014) established that having an exercise partner or friend is one of the top cues to exercise in college settings. This research suggests that restructuring programs that emphasize social integration and connectedness would not only attract sedentary students, but also could lower students' loneliness, decrease learning burn out, and increase health.

## SOCIAL SUPPORT AS A MOTIVATOR TO EXERCISE

Motivation is “a complex construct that refers to the psychological drive that gives behavior direction and purpose” (Cotton & American Council on Exercise, 2010, p. 26). This is divided into intrinsic and extrinsic motivation. Whereas being intrinsically motivated is involvement in an activity for the pleasure and experience that comes from practicing it, being extrinsically motivated means having an external factor suggests engagement in the activity.

Researchers have found that there is a connection between motivation and the possibility of social interaction. Walton et al., (2012) developed an experiment where students were randomly assigned to two different conditions: relational-context condition or skill-promotive condition. In this analysis, the students read a report written by a graduate student of the math department. In the relational-context, the report indicated that the math department promoted opportunities for collaboration and social interactions. By contrast, in the skill-promotive context the report indicated that the department promoted opportunities to cultivate personal abilities in math. The result was that students in the relational-context condition had an increased motivation for the field by freely choosing to persist on a given task. The author concluded that the mere sense of social connectedness enhances achievement motivation. From this study, it is inferred that a possibility to socially interact with others could result as an extrinsic factor for a person to join a program. Nonetheless, this is an academic setting, which still leaves a gap inside the physical activity programs.

It has been well documented that leisure activities and exercise increases sense of belonging and psychological sense of community (Mock et al., 2010; Dionigi & Lyons,

2010). Dionigi and Lyons' research provides an example for this. In their qualitative approach they discovered that involvement in an exercise program, resulted in a sense of belonging, a sense of connection, a mutual fulfillment and a broader influence. The participants in this intervention declared that they felt rightful members of the university where they participated and the older adults' society where they shared common interests such as being fit, active and healthy. With only a perceived common background they felt emotionally connected. Nonetheless, these studies are focused on older adults.

There are different studies that have proved that social support increases adherence (Huberty, Ransdell, Sidman, Flohr, Shultz, Grosshans & Durrant, 2008; King & Frederiksen, 1984; Martin, Carron, & Burke, 2009; Spink & Carron, 1992). King and Frederiksen examined the effects of different interventions on exercise adherence in college women. These interventions included social support and/or relapse prevention. In the social support groups, the participants were provided with teambuilding exercises where the main goal was to increase the cohesiveness and likeness within the group. The relapse prevention intervention consisted of relapse strategies. The results were that both interventions doubled the number of exercise episodes, resulting in a higher physical fitness level compared to the control group. This proves that social support is an important motivator to exercise. Nonetheless, the researchers decided to let the participants do the workouts on their own. In the social support intervention, participants decided with whom they would exercise. In a similar way, Huberty et al. (2008) developed a qualitative examination where they studied long-term adherence. The participants involved had already been part of a twelve week structured program proposed by the university. Although the participants exercise on their own, they had



already learned through a specific intervention, techniques, and strategies to keep them active. One important outcome from this study was that the participants who were able to maintain an exercise routine for more than 6 months reported what strategies helped them keep motivated. They agreed that one of the factors that helped them stick to an active lifestyle was the possibility of accessing social support. Hence, if social support is an exercise motivator, why not use it as an end goal in fitness programs at colleges, so students can acquire the habit of exercising? For instance, Spink and Carron studied the effects of social connection on attendance rates. Participants who scored higher on the cohesiveness scale of the Group Environmental Questionnaire, had less absences (1992). Moreover, this was measured in already existing aerobic classes in college settings. People who felt more connected had higher attendance rates, yet the participants that didn't feel a connection to the group had more absences. Thus, social connection, social support and social integration increases exercise adherence in college settings, but a question still remains. Would physical fitness programs that offered a social support system within the program increase sedentary college students' readiness to participate in them?

In a study similar to this one, the authors were interested in measuring the extent to which task framing self-regulation, as predictive of social skills, promoted more positive thoughts about exercise. The participants read a leaflet suggesting that the necessary abilities to self-regulate in exercise would help them create more meaningful connections. The self-efficacy and exercise intentions were assessed before and after the leaflet was read. Through this research, the authors learned that if socially rejected students were offered an opportunity to increase their social skills, their intentions to

exercise would improve (Dowd, Schmader, Sylvester, Jung, Zumbo, Martin, & Beauchamp, 2014). Still, what if students not only increased their social skills, but also looked forward to being part of a team or a group as a result of participating in the physical fitness programs?

In conclusion, it has been well documented that students who feel lonely are less likely to participate in leisure activities, that leisure activities and exercise provide a scenario to build meaningful relationships, and that giving college students the opportunity to increase their social support and interaction skills increases the motivation to do an activity. However, there appears to be a gap in knowing if offering programs with social support systems within them would increase sedentary students' readiness to adopt a physical program.

## STUDENTS' READINESS TO BECOME PHYSICALLY ACTIVE

### **Transtheoretical Model of Behavior Change**

Prochaska and Diclemente (1984) proposed a model which describes the stages an individual moves through when trying to change a behavior; it is called the transtheoretical model. However, for an exercise context, this model has been adapted. The summary presented here is the one presented in the American Council on Exercise [ACE] Personal Trainer Manual (2010) and the one developed by Reed (1995). Therefore, identifying sedentary students, their general thoughts about physical activity, and their level of readiness to become active will be possible.

The model proposed in the ACE manual states that there are 5 stages that a person goes through in the process of adhering to a program: precontemplation, contemplation

(C), preparation (P), action (A) and maintenance (M). However, Reed identify 2 patterns within the precontemplation stage: believers (PCB) and non-believers (PNB).

Precontemplation: in this stage the person is sedentary. Whereas non-believers think that exercise is irrelevant, believers know exercise is important, but they don't have the time or energy to engage in it. Contemplation: the person is still sedentary but is planning to engage in physical activity within the next 6 months. Since this study is interested in analyzing the participants' readiness to engage in physical activity, the preparation, action, and maintenance stages will not be taken into account, because people in these stages have already made some changes in order to start exercising or are already consistent in their physical activity habits.

Specific strategies have been suggested to help the transition from one stage to another. For the first two stages it is recommended to provide the person with information about health benefits from exercise and different types of activities that could be performed. Nonetheless, social integration or support is not considered in these strategies. Additionally, Reed stated that action oriented programs have been offered for the preparation and action stages, but programs for the precontemplation and contemplation stages are still necessary (1995). As a result, would framing exercise in a social context move the participants in these stages to a higher one, increasing their willingness and behaviors towards exercising? Figure 1 can provide a clearer idea and relationship of the different stages (Reed, 1995). The participants in the PCN stage are less likely to become physically active, whereas participants in the C stage are more likely to become physically active.

## **URICA-E2**

URICA-E2 (University of Rhode Island Change Assessment-Exercise 2) “is a third generation continuous measure of stage of change and a second generation continuous measure of stage of change for regular exercise” (Reed, 1995, p. 34). The original URICA was first created by McConaughy, Prochaska, and Velicer (1983) where the main purpose was to measure the stages of change according to the Transtheoretical Model of Behavior Change. It was then adapted for exercise settings, where the word “problem” was replaced by “exercise”. However, when it was tested there was confusion with some of the questions. This led to the creation of URICA-E2 (Reed, 1995). Through this questionnaire, people are grouped into the different 6 stages of the Transtheoretical Model of Behavior Change, according to their attitudes and perceptions towards exercise.

## **Reliability**

To develop URICA-E2 the author Reed (1995) created different focus groups composed of people in the same behavioral stage using an algorithm. These groups define each stage through different items that everyone agreed upon. Through a principal component analysis (PCA), the author, using the minimum average partial procedure, retained 6 components (PCN, PNB, C, P, A & M). This led to a 14-item version. To avoid arbitrary items and validate the study, the researcher used the confirmatory factor analysis (CFA) which supported the results in the PCA. The reliability for each stage is PCN  $\alpha = .8054$ ; PCB,  $\alpha = .9052$ ; C,  $\alpha = .9086$ ; P,  $\alpha = .8752$ ; A,  $\alpha = .9218$  and M,  $\alpha = .9366$ . The major weakness discovered in this study was the inability to discriminate the action and maintenance stages. However, they will not be used in this research.

## Validity

The transtheoretical Model uses constructs such as: decisional balance, self-efficacy, and the processes of change. Each construct is operationalized by a measure composed of a series of items unique to a problem behavior. Reed (1995) looked at relationships between URICA-E2 and each of the measures of stage and decisional balance, self-efficacy, and hours of exercise in order to compare and contrast the continuous measure and the algorithm.

*Decisional balance through pros and cons.* Pros rise from low to high and cons fall from high to low across the stages (PC, C, P, A & M). *Confidence.* The confidence for regular exercise is related because confidence has the lowest scores and it rises progressively to maintenance. *Hours of Regular Exercise.* The more vigorous activity during a week, the higher escalation on the stages.

General Linear Model procedure was conducted on the Profiles of Exercise created by the previously reported cluster analysis with the Pros, Cons, and Confidence T-Scores and the scores of the Hours of vigorous exercise in the last seven days (VIGACT7). The Pros, Cons, Confidence and Hours of vigorous exercise in the last seven days (VIGACT7) were all significant  $< .0001$  (p. 154).

## CHAPTER III

### METHODOLOGY

#### PARTICIPANTS

The target population for this research encompassed college students in the United States. The accessible population was college students from Oklahoma State University. The sample consisted of students aged 18 - 29 who had access to the Sona System which is an online system that allows researcher post studies for recruitment. Individuals were eligible if they are in the PCN (sedentary individuals who think exercise is not relevant) or the PCB (sedentary students who believe exercise is significant) stages of the transtheoretical model of behavior change. The criterion for selecting the sample was convenience-volunteer sampling.

#### INSTRUMENTS

##### **Stages of Change**

The University of Rhode Island Change Assessment-Exercise 2 (URICA-E2) was used. This instrument is based on the original URICA which was developed to measure the stages of change in psychotherapy (McConaughy et al., 1983). The URICA was then adapted and readapted to an exercise setting. However, the first version had some errors, which led to URICA-E2 (Reed, 1995). It is 24-item questionnaire, comprised of a five-

point Likert Scale, ranging from strongly disagree to strongly agree. This analysis groups people with similar patterns in 6 different stages: precontemplation-non believer (PCN), precontemplation-believer (PCB), contemplation (C), preparation (P), action (A), and maintenance (M). Each stage is represented by four questions. This instrument has been found reliable and valid, mainly in the 3 different stages that will be use in this study: PCN, PCB and C.

### **Leaflet**

Teambuilding interventions have been proved to build a sense of belonging and social connectedness. Therefore, information available from these successful interventions was used. The framework presented by Gibbons and Gruno which encompasses four major teambuilding concepts: communication, cooperation, trust and risk (2014), were displayed as an introductory part of the leaflet. For the next part the results found in successful interventions were mentioned as part of the expected outcomes of the programs, such as: increased self-confidence (Rogers, 2004), increased cohesiveness, greater satisfaction, (Martin et al., 2009), an enhanced performance, positive interactions and psychologically safe learning environments (Schmidt & Smith, 2011).

### **DESIGN**

A cross-sectional survey was applied for two main reasons: the study is about current behaviors and uses nominal data.

This study used a pretest/posttest comparison group design, with the social support construct as a condition between the tests.

## PROCEDURE

Before conducting this study, ethical approval was obtained from the Institutional Review Board. The information gathered was anonymous for the researcher, and participants had the opportunity to withdraw their involvement in this study.

The URICA-E2 instrument was uploaded and open for every student with access to Sona, during 10 days. Before the students could start the test an information and consent letter was displayed. The participants answered the first URICA-E2 used a pretest. Then, they read a leaflet and finished by answering the 2<sup>nd</sup> URICA-E2. The leaflet suggested that participating in colleges' physical fitness programs provided a support group within the exercise context.

This study wanted to examine whether a message that physical fitness programs can be a mean to increase social support would move the participants from the precontemplation stage to the contemplation stage in the Transtheoretical Model of Behavior Change.

## Limitations

A limitation for this work is that “the ability of an individual to reciprocate social support is affected by numerous factors such as social status, age, sex, size of community, social roles, self-esteem, and learned coping styles” (Bruhn & Philips, 1984, p. 156). Although this study might be affected by students' social support perceptions, the



information gathered will be useful in guiding physical fitness specialists and health professionals in the implementation of new programs.

Another limitation is that the participants did not experience an intervention with a social support system, they only read about programs with a focus on social support and then their readiness to adopt exercise programs was measured.

A final limitation was that the time between the pre and posttest is too short. Compromising the validity of the study.

### **Assumptions**

This research assumed that the students answered honestly, meaning that they would actually escalate from the precontemplation to contemplation stage.

### **DATA ANALYSIS**

A non-parametric test was chosen due to the convenience sampling technique, the nature of the data where there are not “equal intervals” (Huck, Cormier, & Bounds, 2012) and the small size of the sample.

To increase the power in this study, there was two different tests: Chi Square Test and Wilcoxon Test. The Chi Square Test of Independence was used to determine if there is a relationship between two categorical variables. The expected frequencies was compared in each stage to observe frequencies with and without the social support context. The level of significance used here was be of 0.10 ( $\alpha=0.10$ ).

The Wilcoxon Matched-Pairs was used due to the nature of the data and the pretest/posttest comparison (Huck et al., 2012).

## CHAPTER IV

### FINDINGS

#### INTRODUCTION

The cross sectional survey used was the URICA-E2 (University of Rhode Island Change Assessment Exercise 2) to examine if there was a difference between students' readiness to exercise before reading a leaflet. The leaflet suggested that through fitness programs offered by universities, students could increase their social support. The null hypothesis stated that there is no relationship between social support and students' readiness to exercise. The alternative hypothesis stated that there is a relationship between social support and students' readiness to exercise. This would be supported if the results from the posttest surveys over readiness to exercise would be significantly higher than the pretest surveys. All the data analysis were performed using Excel.

#### DATA SCREENING

Prior to the data analysis, a screening of the data was completed to identify any missing data. Surveys that were not completed or had the same selected answer across the survey were discarded, which led to 84 eligible surveys from the 103 received. In these surveys there were no questions that were missed throughout the completed surveys or that had the same answer in every item. If they had the same answer for every question it

suggested that they were not paying attention, because the items were mutually exclusive, thus these surveys were discarded.

## GROUP DEMOGRAPHICS

This study consisted of 84 completed surveys (n=84), where 69 were female (82%) and 15 were male (18%). The different age groups are as follows: 46 were between 18 – 20 years old (55%), 25 were 21 – 23 years old (30%), and 11 were 24 – 29 years old (13%).

## READINESS TO EXERCISE

The URICA-E2 questionnaire measures the stages of change in exercise; it groups students into six different stages: precontemplation-non believer (PCN), precontemplation-believer (PCB), contemplation (C), preparation (P), action (A), and maintenance (M). For the purpose of this analysis only the items related to the PCN, PCB, and C were used. The results of the means with (standard deviations in parenthesis) in the pretest are: for the PCN stage 16.55 (2.15); for the PCB 12.60 (4.55) and for the C 8.68 (3.17). For the posttest the results were: PCN 16.38 (2.70); PCB 12.75 (5.09); and C 8.87 (3.53), (refer to table 4-1). The items with the highest scores were: 1 (As far as I'm concerned, I don't need to exercise regularly) 4.35 (0.80) and 3 (I don't exercise and right now I don't care) with a 4.11 (0.86); which are the items related to PCN. The items with the lowest scores were: 7 (I have been thinking that I might want to start exercising regularly), 1.88 (0.84) and 16 (I have been thinking that I may want to begin exercising regularly) 2.20 (1.05); which are the items related to the contemplation stage.

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Table 4- 1

*Mean and standard deviation for the PCN, PCB and C pretest and posttest.*

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Stage	Pretest		Posttest	
	M	SD	M	SD
PCN	16.55	2.15	16.38	2.70
PCB	12.60	4.55	12.75	5.09
C	8.68	3.17	8.87	3.53

---

The Chi Square Test of Independence was performed to examine the relationship between social support and readiness to exercise. To measure the students' readiness to exercise, the participants were grouped into three different stages PCN, PCB, and C. This was determined by adding the items related to each particular stage: the PCN consisted of the 1, 3, 6, and 9 items; the PCB was comprised by the 11, 19, 21, and 24 questions; finally the C stage was composed by the items 7, 13, 16, and 22. The participants that are more ready to exercise are the ones with higher scores in the C stage; whereas the participants less ready to exercise are the ones who had a higher score in the PCN stage. The participant who had the same score for two different stages was categorized as ambivalent according to Reed's protocol (1995). These participants were removed from the Chi Square Analysis to avoid confusion, because this research was interested in seeing if the number of participants in the PCN, PCB and C stages would increase or decrease. Having an ambivalent category would fail to show this difference. The PCB and C stages were collapsed due to the low number of observations in the C Stage. The number of participants for the pretest that were in the PCN stage were a total of 55, and for the PCB and Contemplation stages were a total of 6. In the posttest the PCN

participants were 50 and in the PCB and C stages were a total of 11. The amount of participants in the Contemplation stage increased by 5 participants; however, through the Chi Square Test it was found that this increase was not statistically significant. This lead to retain the null hypothesis which states that there is no relationship between social support and sedentary students' readiness to exercise with an  $\chi^2 = 1.71$ ,  $p < 0.10$  (reference table 4-2).

Table 4-2.

*Chi Square Analysis Results*

		Readiness to exercise			
		PCN	PCB & C	Total	
Social Support	No	O	55	6	61
		E	52.5	8.5	
		x2	0.119048	0.735294	
	Yes	O	50	11	61
		E	52.5	8.5	
		x2	0.119048	0.735294	
Total		105	17	122	

The Wilcoxon Signed Rank Test was conducted to see if there was any significant difference between pretest and posttest in each stage. In this analysis, if the difference between the pretest and the posttest equaled zero, the data was eliminated because it means there is no difference and this study is measuring if there is a significant increase or decrease. From this analysis, 48 results were eligible for the precontemplation non-believers, 56 for the precontemplation believers, and 57 for the contemplators. The differences were ranked with a one for the lowest number to a 48, 56 or 57 for each case. If there were equal differences the average of their rank was calculated. In the PCN

analysis the test statistic observed was compared to the Wilcoxon Signed Rank Test Statistic table because the number of participants was less than 50. In the PCB and C analysis, since the sample was higher than 50 a z test was conducted to identify the critical value and the z observed. The expected outcome for the PCN was that the sum of the positive differences was higher than the sum of the negative differences, indicating that relevance of exercise increased among participants. The sum of the positive differences was 490 and the sum of the negative differences was 547. The result was to retain the null hypothesis, which states that there is no relationship between social support and believing in exercise, with a  $w = 490$ ,  $p > 0.10$ . For the PCB and C the expected outcome was that the posttest results would be higher than the pretest results. For the PCB, the sum of the positive differences was 629 and the sum of the negative differences was 967. The result was to retain the null hypothesis with a  $z = -1.38$ ,  $p > 0.10$ . Finally, in the C stage, when the pretest results were compared to the posttest results no significant difference was found, with a  $z = -0.68$ ,  $p > 0.10$ ; the positive sum was 741.5 and the negative sum 951.5. These results lead to retain of the null hypothesis (Table 4 – 3).

---

Table 4-3

*Wilcoxon Signed Rank Test*

Stages	Statistic test	P value
PCN	$w = 490$	$>0.10$
PCB	$z = -1.38$	$>0.10$
C	$z = -0.68$	$>0.10$

---

## CONCLUSIONS

There was not a significance difference found in the pretest/ posttest of URICA-E2. The Chi Square Test revealed that there was not a significant relationship between social support and readiness to exercise. Similarly, the Wilcoxon Signed Ranks revealed there was not a significance difference between the pretest and posttest results for each stage. Based on the results of this research the null hypothesis was retained. The null and alternative hypotheses for this study are stated below:

*Q1 Null Hypothesis:* There is no relationship between social support and readiness to exercise.

*Q1 Alternative Hypothesis:* There is a relationship between social support and readiness to exercise.

## CHAPTER V

### CONCLUSIONS

#### INTRODUCTION

The purpose of this study was to examine social support as a way to increase sedentary students' readiness to exercise. Using the URICA-E2 instrument allowed for the analysis of students' readiness to exercise. The URICA-E2 has been found valid and reliable (Reed, 1995). Although some research has studied social support as a way to increase exercise adherence (Cadmus-Bertram et al., 2014; Dowd et al., 2014; Gruber, 2008), little research has been made to analyze the effects of social support on motivation to start a physical fitness program among sedentary students. Moreover, a mere sense of belonging has been proven to increase students' motivation in academic settings (Mock et al., 2010). Therefore it could be expected that social support in exercise settings could increase motivation.

#### DISCUSSION

The research objective in this study was to examine OSU college students who are sedentary. Pretest and posttest surveys using URICA-E2 allowed data analysis, which measure students' readiness to exercise. An intervention in the middle was performed,



where students read a leaflet suggesting that through exercise they would be part of a social support group and improve their social skills. After completing the data analysis, it was found that there was not a significant difference between the results from the pretest and the posttest.

Increasing sedentary students' motivation to start a physical fitness program was hypothesized in the alternative hypothesis. Through the Chi Square and Wilcoxon Tests, it was suggested that framing exercise as a way of increasing social skills did not motivate students to become physically active. These results are different from findings in previous research, where the literature review suggested that social support and social belonging are determinants in exercise adherence, and that a mere sense of belonging could increase motivation. However, although this research did not support the alternative hypothesis, it might be due to the lack of intervention and the short period of the study. A further and longer examination and intervention should be made specifically for sedentary students to observe if social support would increase their exercise cognitions.

## LIMITATIONS

The time that the students were exposed to the intervention was short due to the time constraints of the study. Additionally, programs offering social support have not been offered, leaving room for confusion because of the vagueness of the social support within exercise concept. Also, each students' ability to reciprocate social support is affected by numerous factors such as age and gender.

Being that the URICA-E2 is in a survey form using a five point Likert scale, the information gathered from this research is quantitative. This doesn't allow the participants to give their opinion in their own way, hence they are restricted. A qualitative research could be conducted to identify perceptions of sedentary students about exercise and social support.

In addition, the results from the URICA-E2 left room for ambiguity because sometimes the PCN, PCB and C were separated by as little as one point. Despite these little differences, students would be placed in only one of the stages, even though they had a high score in another stage. This instrument should be revised to avoid vagueness.

#### ASSUMPTIONS

The first assumption is that students responded honestly to the survey, meaning that if their results in the C stage increased, they would actually have started to contemplate beginning a program. In this stage participants start to think of possible ways or exercising and they might start to be physically active within the next six months.

A second assumption was that the students read the leaflet carefully and paid attention to the different subjects that were treated in the leaflet.

#### ADDITIONAL RECOMMENDATIONS FOR FURTHER RESEARCH

Implicit in the results of this study a need for further investigation related to exercise motivation appears; thus the following recommendations are made:

1. An interesting result from this study was that the two questions which had the highest scores were related to PCN stage, which means that most sedentary

students do not think exercise is important in their lives. Further research should be conducted to identify the strategies to increase these sedentary students' awareness about exercise.

2. Although this research did not support the alternative hypothesis, an intervention with a social support group could be offered to sedentary students to influence their thought patterns related to exercise and social support.
3. A qualitative approach could be taken to analyze sedentary students' exercise perceptions to identify strategies to increase their physical activity levels.

## CONCLUDING COMMENTS

To summarize, this study did not support past research due to the results gathered through the data analysis. However, past research has demonstrated that social belonging and social integration increase exercise adherence, connection and health. It is imperative to find interventions and strategies that would increase exercise motivation and adherence, mainly in the sedentary population, because of the health problems related to inactivity, such as diabetes type II and heart diseases. It appears that sedentary students are not exercising because they do not think exercise is relevant. Therefore, it is important to find the appropriate strategies to target this specific population. There is a gap in knowing what sedentary students are looking forward in physical fitness programs. Answering this question could increase their physical activity levels. In addition, physical activity practices that college students adopt now will most likely be their future practices, meaning that if they are not exercising now they will not exercise in the future. Moreover, if social belonging has been proven to increase exercise adherence and lower

loneliness, colleges should try to develop new programs or adapt old ones emphasizing social wellness.

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## APPENDICES

### APPENDIX A

#### RECRUITMENT PROCESS

##### GET TO KNOW PEOPLE, A STUDY FOR NONEXERCISERS

Be part of an important exercise motivation study

- Are you between 18-29 years old

If your answer is yes, you might be eligible for this study.

The purpose of this research is to analyze the effect of framing exercise as a way to attain desired connections on students' readiness to become physically active.

There are no risks associated with this intervention, and your collaboration might help enhance the physical fitness programs offered by the university.

This study consists of 2 questionnaires and 1 leaflet between them. It will only take you less than 10 minutes to complete it.

To participate in this study just click the next link (SONA LINK)

Contacts: Alejandra Barrera Graduate Leisure Student, Department of Leisure Studies  
Oklahoma State University, Stillwater, OK 74078. Cellphone: 405 332 3167.

If you have questions about your rights as a research volunteer, you may contact Dr.  
Hugh Crethar, IRB Chair at 223 Scott Hall, Stillwater, OK 74078, 405-744-  
3377 or [irb@okstate.edu](mailto:irb@okstate.edu).

## APPENDIX B

### PARTICIPANT INFORMATION

#### OKLAHOMA STATE UNIVERSITY

Title: Effects of social belonging on sedentary students' readiness to become more physically active.

Investigator(s): Alejandra Barrera Curiel

Purpose: frame exercise as a way to attain desired connections in a support system within physical fitness programs and analyze its effect on sedentary students' readiness to become physically active.

#### What to Expect:

It is a 24-item questionnaire where your habits and thoughts toward exercise will be evaluated, such as I am satisfied with being a sedentary person. Through a Likert Scale you will write down how strongly you agree or disagree with each statement. The time expected for you to finish this is less than 5 minutes.

Then you will read a leaflet about new physical fitness program, which is one page length.

The 24-item questionnaire will appear again.

Risks: There are no risks associated with this project greater than those ordinarily encountered in daily life.

Benefits: There are no direct benefits to you. However, you may gain an appreciation and understanding of how research is conducted.

Compensation: There is no compensation in this research.

Your Rights and Confidentiality: Your participation in this research is voluntary. There is no penalty for refusal to participate, and you are free to withdraw your consent and participation in this project at any time.

Confidentiality: The contact will be through Sona and the researcher will not have or ask any identifiable information. All the documentation will be kept confidential and the records of this study will be kept private.

Contacts: Alejandra Barrera Graduate Leisure Student, Department of Leisure Studies  
Oklahoma State University, Stillwater, OK 74078. Cellphone: 405 332 3167.

Dr. Tim Passmore. Graduate Coordinator Leisure Studies, Department of Leisure Studies.  
Oklahoma State University, Stillwater, OK, 74078. Phone: 405-744-1811

If you have questions about your rights as a research volunteer, you may contact Dr.  
Hugh Crethar, IRB Chair at 223 Scott Hall, Stillwater, OK 74078, 405-744-  
3377 or [irb@okstate.edu](mailto:irb@okstate.edu).

If you choose to participate: Please, begin to answer this survey. By answering, you are indicating that you freely and voluntarily and agree to participate in this study and you also acknowledge that you are at least 18 years of age.

It is recommended that you keep this consent page for your records before you begin the study.

## APPENDIX C

### SURVEY

Hello, this is a survey to assess your readiness to participate in regular exercise. It will be really helpful if you could answer the following questions. I will take you less than 5 minutes and your answer will be anonymous.

#### URICA-E2 Assessment

Gender                      \_\_\_F              \_\_\_M  
Age                                \_\_\_\_\_

Please use the following definition of exercise when answering these questions:

Regular Exercise is any planned physical activity (e.g., brisk walking, aerobics, jogging, bicycling, swimming, rowing, etc.) performed to increase physical fitness. Such activity should be performed 3 to 5 times per week for 20-60 minutes per session. Exercise does not have to be painful to be effective but should be done at a level that increases your breathing rate and causes you to break a sweat.

Please enter the number in the box that indicates how strongly you agree or disagree with the following statements.

**1 = Strongly Disagree**

**2 = Disagree**

**3 = Undecided**

**4 = Agree**

**5 = Strongly Agree**

1. As far as I'm concerned, I don't need to exercise regularly. ☐
2. I have been exercising regularly for a long time and I plan to continue. ☐
3. I don't exercise and right now I don't care. ☐
4. I am finally exercising regularly. ☐
5. I have been successful at exercising regularly and I plan to continue. ☐
6. I am satisfied with being a sedentary person. ☐

- 7. I have been thinking that I might want to start exercising regularly. ☐
- 8. I have started exercising regularly within the last 6 months. ☐
- 9. I could exercise regularly, but I don't plan to. ☐
- 10. Recently, I have started to exercise regularly. ☐
- 11. I don't have the time or energy to exercise regularly right now. ☐
- 12. I have started to exercise regularly, and I plan to continue. ☐
- 13. I have been thinking about whether I will be able to exercise regularly. ☐
- 14. I have set up a day and a time to start exercising regularly within the next few weeks. ☐
- 15. I have managed to keep exercising regularly through the last 6 months. ☐
- 16. I have been thinking that I may want to begin exercising regularly. ☐
- 17. I have lined up with a friend to start exercising regularly within the next few weeks. ☐
- 18. I have completed 6 months of regular exercise. ☐
- 19. I know that regular exercise is worthwhile, but I don't have time for it in the near future. ☐
- 20. I have been calling friends to find someone to start exercising within the next few weeks. ☐
- 21. I think regular exercise is good, but I can't figure it into my schedule right now. ☐
- 22. I really think I should work on getting started with a regular exercise program in the next 6 months. ☐
- 23. I am preparing to start a regular exercise group in the next few weeks. ☐
- 24. I am aware of the importance of regular exercise but I can't do it right now. ☐

## APPENDIX D

### LEAFLET



## SOCIAL FITNESS PROGRAMS

These programs are offering a new way of exercising. They have social support systems that consist of team-building physical activities. These activities encompass 3 major concepts communication, cooperation and trust; guided by a team-building and exercise specialist.

You can expect, from your participation, getting to know new people, learning to encourage others, building a sense of belonging, increasing your self-confidence, enhancing your performance and improving your overall physical fitness.

**Make  
friends,**

---

**meet new  
people,**

---

**have fun,**

---

**accomplish  
your goals,**

---

**while  
sticking to  
a physical  
program!**

# APPENDIX E

## IRB APPROVAL

### Oklahoma State University Institutional Review Board

Date: Thursday, March 19, 2015  
IRB Application No: ED1532  
Proposal Title: Effects of social belonging on sedentary students readiness to become physically active  
Reviewed and Processed as: Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 3/18/2018

Principal Investigator(s):  
Alejandra Barrera Curiel Tim Passmore  
120 Brumley Apt 7 186 Colvin Center  
Stillwater, OK 74077 Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

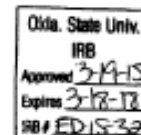
☐ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval. Protocol modifications requiring approval may include changes to the title, PI advisor, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of the research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Dawnett Watkins 219 Cordell North (phone: 405-744-5700, dawnett.watkins@okstate.edu).

Sincerely,  
  
Hugh Crethar, Chair  
Institutional Review Board





## VITA

Alejandra Barrera Curiel

Candidate for the Degree of

Master of Science

Thesis: EFFECTS OF SOCIAL SUPPORT ON SEDENTARY STUDENTS'  
READINESS TO BECOME PHYSICALLY ACTIVE

Major Field: Leisure Studies

Biographical:

Education:

Completed the requirements for the Master of Science in Leisure Studies at Oklahoma State University, Stillwater, Oklahoma in May, 2015.

Completed the requirements for the Bachelor of Science in Physical Culture at Benemérita Universidad Autónoma de Puebla, Puebla, Mexico in 2011.

Experience:

**Graduate Teaching Assistantship – Physical Fitness and Weight Lifting** **Aug. 2014 – Present**  
*Oklahoma State University, Leisure Department* *Stillwater, OK, U.S.A*

- Teach students the basics of weight training and physical fitness and how to develop a successful program
- Help the students understand the value of exercise and good nutrition

**Founder, Coordinator and Instructor of Challenge 885** **May – July 2014**  
*Feel Good Fitness Center* *Pue., Puebla, Mexico*

- Designed and implemented Challenge 885, a physical fitness program consisting of 8 weeks, 8 different disciplines and 5% less of body fat complemented with a nutritional program
- Formulated and monitored the marketing and financial budget of Challenge 885

**Graduate Research Assistantship** **Jan. – May 2014**  
*Oklahoma State University, Leisure Department* *Stillwater, OK, U.S.A*

- Executed professional and administrative services that supported research and outreach missions of the university

**Personal Trainer** **Sept. – Dec. 2013**  
*Fisiocenter Gym* *Pue., Puebla, Mexico*

- Created, executed and modified strength programs for clients in physical therapy
- Set goals and planned physical routines for athletes such as runners and weightlifters

Professional Memberships:

**Rho Phi Lambda in OSU's Alpha Kappa Chapter**

National honorary Recreation, Park, Leisure Services, and Recreation Therapy fraternity for students who show extraordinary potential for future careers in the field and who demonstrate that potential while in school.