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Be active! An examination of social support's role in individual vs. team competition in worksite health promotion

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Be Active!: An Examination Of Social Support's Role In Individual Vs. Team

Competition In Worksite Health Promotion

by

Lauren Kriz

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Arts
Department of Exercise Science
College of Education
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Be Active! An Examination of Social Supports Role in Individual vs. Team Competition in Worksite Health Promotion

Lauren Kriz

ABSTRACT

Millions of dollars are being spent on health care claims. To try and reduce these claims, corporations are implementing worksite health promotion programs. Some success has been associated with these programs. Many programs implement different types of incentives and competitions. Some incentives and competitions are based on individual participation while others are based on team participation.

The purpose of the study was to determine the role social support plays in individual and team health promotion programs and discover if social support was the key factor for the differences in such programs. All participants of the study were responsible for keeping a four week activity log that tracked the number of minutes spent exercising each day. In addition, each participant was responsible for completing three social support surveys, which were due at the beginning, middle, and end of the program. Half of the participants competed as individuals while the other half competed as two-person teams. Each participant completed their forms electronically and attached them to an email that was sent to the principle investigator by specified due dates.

There were no differences discovered between the two conditions. There were no differences in the number of minutes spent exercising, but there were also no differences
in the social support scores. However, this might be due to a number of reasons. First, the majority of the participants were already exercising an average of about 38 minutes per day, which is the recommended amount. Second, there may have been more distinct differences if novel exercisers were paired with regular participants in the team condition. Finally, the provided incentive was small and there may have been greater participation and lower attrition if a bigger incentive was provided.

Although there were no significant differences between the conditions, valuable information was still gathered. Worksite wellness centers may provide an element of built-in support, which is part of a healthy corporate culture and ultimately affects health behavior change. Also, there are many opportunities for future research. A follow-up study may show that the team participants maintained their level of exercise because of the relationships created during the program. However, regardless of the type of program, individual or team, incentive programs are an important component of worksite health promotion and both types should be offered throughout the year to encourage participants to keep up or implement a healthy lifestyle.
Chapter One

Introduction

Rationale

Worksites have incorporated health promotion programs into their culture for many years. This may be because health promotion can save a company millions of dollars in health care costs, productivity, and external image costs (O'Donnell, 2002). Because of the powerful impact that health promotion programs can make, Healthy People 2010 has called for more programs to be included in worksites.

Physical activity is just one part of health promotion programs. Physical activity is an important link to cutting disease risk. People who regularly participate in some form of exercise may decrease risk for disease. Physical activity has both physiological and psychological benefits (O’Donnell, 2002, “Physical activity and health”, 1999). Although there are many benefits associated with exercise, a large number of Americans still are not getting the recommended amount (“Physical activity and health”, 1999). Therefore staffed worksite fitness centers consistently invent ways to encourage employees to make physical activity a habit.

By observing multiple worksite fitness centers it can be concluded that many fitness centers encourage employees to participate in fitness center activities through incentives. Many of the incentives have a competitive component to it. The incentives, which are also called reinforcers, may be in the form of money, gifts, or recognition. Often times these programs are run based on past statistics, which allows for trending of
participation and membership numbers, recommendations from past programs, and interest surveys. Although much time, care, and preparation is put into creating and running such programs, some are unsuccessful while others are very successful. Hours of work are put into the preparation of these incentive programs. If the programs cannot be better tailored to meet the needs of the members this is time that may be better spent one-on-one with the fitness center members.

The literature suggests that although competitive incentive programs are successful at increasing participation rates, decreasing attrition rates, and showing a positive health outcome, programs that have an element of support such as team competition have better results than programs that do not provide this support (Blake, Caspersen, Crox, Mittlemark, & Ringhofer, 1996; Cohen, Stunkard, & Felix, 1987; Stunkard, Cohen, & Felix, 1989). However, it is unclear why the team competitions provide better results. If it is the element of support that makes the team competitions better, it may be possible to use this support in other worksite health promotion programs.

**Purpose**

The purpose of this study is to assess the differences between worksite health promotion programs that encourage individual participation and those that encourage the support of a co-worker. Specifically, the study will assess the role of social support within health promotion programs and its impact on exercise. Individual and team differences will be assessed by comparing the numbers of minutes spent exercising and the results of three social support surveys.
Objectives

The following objectives were addressed during the course of this study.

1. Describe the differences in social support when comparing worksite health promotion programs that encourage individual participation and those that encourage the support of a co-worker.

2. Determine the strength of the relationship between social support and exercise.

3. Determine if attrition rates are lower in team competitions as compared to individual competitions because of social support.

Hypotheses

The following hypotheses were considered during this study.

1. The team condition will have a higher co-worker social support score.

2. The team condition will have a greater change in the co-worker social support score compared to the individual condition.

3. There will be no difference in the loved one social support score when comparing the team to individual condition.

4. The team condition participants will have a greater average number of minutes spent exercising than the individual condition participants.

5. The team condition participants will have a greater improvement in the average number of minutes spent exercising than the individual condition participants.

6. The team condition will have a lower attrition rate than the individual condition.

Delimitations

Much of the worksite health promotion literature has been designed to incorporate the entire population at one worksite. This study, however, will only be open to
employees, retirees, and spouses who are members at their worksite fitness center.
Therefore, the recommendations from this study will apply to worksite fitness center members.

Limitations

In order to generate a broader sample, the study will be conducted electronically. Therefore, all surveys and logs will be expected to be completed in an electronic format. Some participants may not be familiar with using electronic forms. In addition, some potential participants may have an interest in participating, but may not have access to email. These individuals will not be able to participate.

Another limitation is that each worksite will not have a blend of individuals and teams. Instead, half of the worksites will consist of participants in the individual condition and the other half will consist of participants in the team condition. The study will be conducted in this manner to provide a “real world” aspect. However, to compensate for this, all team and individual condition worksites will be paired based on similar worksite and fitness center characteristics.

The short time frame of the study is also a limitation. It is suggested that health promotion programs be a minimum of 12 weeks for health behaviors to occur (O’Donnell, 2002). However, many of the worksites, which are managed by Corporate Fitness Works, provide fitness center incentive programs of a similar time frame.

The final limitation is self-reporting in the exercise logs and the social support for exercise surveys. This is also common in fitness center incentive programs and will provide a “real world” aspect. Written in the guidelines of the participation packet are instructions to stay honest and refrain from either over or underestimating on the exercise
logs. There may be some inaccuracy in the logs, but there is no reason to assume that the participants in the individual condition or in the team condition will be more or less accurate than the other.

**Significance**

Worksite health promotion programs provide a money savings to the companies that utilize them. In fact, *Healthy People 2010* calls for an increase in worksite health promotion programs. However, in order for these programs to impact the population, the employees need to participate in the program, complete the program, and maintain the learned health behaviors. The literature suggests that competition and other incentives may help to address the above. In fact, the literature also suggests that team competitions are very beneficial in effecting behavior change and attrition and recruitment rates (Blake et al., 1996; Cohen et al., 1987; Stunkard et al., 1989).

There is no research that explores why team competition produces better results than individual competition. This study will help to provide that foundation. Future research could explore the effectiveness of social support in other aspects of health promotion and exercise outside of competition programs. In addition, because social support is an aspect of a healthy corporate culture more health promotion programs that encourage social support may effect long-term health behavior change.

**Definitions**

**Exercise** is the activity of exerting your muscles in various ways to keep fit (websters-online-dictionary.org)
Social Support is a network of family, friends, colleagues, and other acquaintances you can turn to, whether in times of crisis or simply for fun and entertainment (“Developing social support”, 2005).

Competition is an occasion on which a winner is chosen among two or more competitors (websters-online-dictionary.org).

Team condition is the experimental group in which competition will be held between two-person teams.

Individual condition is the experimental group in which competition will be held between one-person teams.

Health promotion is the science and art of helping people change their lifestyle to move toward a state of optimal health (O’Donnell, 1989).
Chapter Two

Review of Literature

**Introduction**

“Health Promotion is the science and art of helping people change their lifestyle to move toward a state of optimal health” (O’Donnell, 1989, p. 3). Optimal health is made up of five key components, which include emotional, social, physical, spiritual, and intellectual. For the purpose of this study, the focus will be on two of these components, social and physical. The social component includes interaction between communities, families, and friends. The physical component includes fitness, nutrition, medical self-care, and control of substance abuse (O’Donnell, 1989).

Health Promotion programs are commonly found in the worksite; in fact, 90% of employers offered some type of health promotion program in 1999. However, this was not always the case. In 1984, fewer than 10% of health promotion programs were offered by employers. Just 10 years later, this percentage grew by 70%. The popularity of health promotion programs is in part because of the positive financial impact it places on the company. In order to make these health promotion programs successful at the worksite, employers may need to adjust their entire culture to reflect optimal health.

**The Worksite**

Health Promotion programs do have a positive impact on an employers’ finances. Unfortunately, this impact is not always measurable. The impact areas that are
measurable are health-related, and productivity-related, and the impact area that is not easily measurable, but equally as important is external image-related. Health-related areas include life insurance costs, medical care costs, other insurance costs, types of medical claims, and worker’s compensation claims. Productivity-related areas include absenteeism, desire to work, morale, output per unit of time, physical and emotional disabilities, recruiting success, and turnover. Finally, the image-related areas include the community’s perceptions and product sales (O’Donnell, 2002).

In order for health promotion programs to make the biggest impact on the above areas, the worksite should address its entire culture. Employees will often seek to change their unhealthy practices, but often are not successful at sustaining healthy behaviors. By producing a positive, healthy culture, worksite health promotion programs can be more successful at helping employees sustain behavior change (O’Donnell, 2002). There are five factors that must work together in order to change long-term individual behavior. These factors are: 1) norms, 2) climate, 3) organizational support, 4) peer support, and 5) values. Norms are the way things are commonly done. Climate is created from a sense of community, a shared vision, and a positive impact. Organizational support is a system of structures, policies, and procedures that maintains the culture and must be adjusted to provide ongoing support for desired behaviors. Peer support is assistance from family, friends, coworkers, and immediate supervisors. Finally, values are beliefs about the appropriate way to approach living (Allen & Leutzinger, 1999).

Health promotion programs positively impact an employer’s finances by affecting health care costs, productivity, and image (O’Donnell, 2002). To create the most powerful impact, the worksite should create a healthy culture. This seems to be a simple
concept; however, health promotion programs come in different shapes and sizes. There are three levels of health promotion programs.

**Worksite Health Promotion**

The three levels of worksite health promotion programs have different degrees of impact (O’Donnell, 2002). The first level is awareness, the second is lifestyle change programs, and the third is supportive environment, which has the greatest amount of impact. A supportive environment is most closely related to a healthy culture and this is what will help produce long-term healthy lifestyle changes.

Awareness programs are designed to increase an employee’s level of interest or knowledge on a certain topic. These programs come in the form of newsletters, health fairs, educational classes, and health screenings that do not provide feedback. Awareness programs by themselves have limited use, but if they are offered in conjunction with other health promotion programs, they can be useful as an introduction to lifestyle change programs.

Lifestyle change programs have the goal of changing lifestyle-related behaviors. These behaviors include quitting smoking, exercising on a regular basis, and weight loss programs. These types of programs use a combination of health education, behavior modification, experiential practice, and feedback opportunities. In addition, these programs should be a minimum of 12 weeks, which allows sufficient time for the behavior change to take place. The problem with these programs is that they do not sustain long-term changes (O’Donnell, 2002).

The best way to reduce lapses in health behaviors is through supportive environments. Once a person has completed a lifestyle change program, they should
ideally be placed in an environment that supports these changes. For example, if a person completes a weight loss program, it will be easier to keep the weight off if healthy food choices are readily available, and a fitness center is easily accessible. In addition, the corporation should instruct managers to encourage these behaviors. Environments can be created to encourage healthy lifestyles by changing the physical setting (fitness centers onsite), changing corporate cultures, implementing ongoing programs, and enhancing employee ownership of programs (O’Donnell, 2002).

Although a supportive environment will create the greatest acute and chronic impact on an employee’s health, low intensity programs do show some impact. In addition, many health promotion programs may have elements of each level and vary in intensity. For example, Ostwald (1989) compared different intensities of health promotion programs that were primarily awareness programs to discover if these differences would make an impact on changes in health behavior. During the three-month research study each intervention program participant attended an all day health education seminar, were given examples of healthy foods available at work, and were provided with a monthly newsletter. Some participants, who were placed in a medium intensity group, were also provided access to a fitness facility while others in the high intensity group were given the opportunity to work with an exercise physiologist. While the highest intensity intervention program resulted in the greatest changes in health behaviors, all intervention programs provided improvements.

Heirich, Foote, and Konopka (1993) also examined three health promotion programs that contained a combination of the three levels. The first program was low in intensity and included a staffed physical fitness facility only, which is an element of
supportive environment. The second was medium in intensity and included a staffed physical fitness facility plus one-to-one counseling with employees who were at risk for cardiovascular disease, which added an element of level two. Finally, the third group was high in intensity and included the physical fitness facility, counseling, and organizational support, which delves deeper into a supportive environment. It was found that the high intensity program produced the greatest reduction in cardiovascular disease risk. The medium intensity program produced similar results; however, the low intensity program produced results similar to the control group. In contrast with Ostwald (1989), improvements were not found in all intervention groups. This may be because all the interventions in the Ostwald study included an element of awareness, and simply changing the physical setting is not enough to elicit behavior change.

Health promotion programs have a different degree of impact depending on the levels that are incorporated. For long-lasting change, the health promotion program should not only provide awareness and lifestyle change programs but also have a supportive environment and a healthy culture. However, regardless how wonderful the culture of the workplace, lifestyle changes ultimately begins with the individual and this must also be considered when creating health promotion programs.

**Individual Strategies**

Before a lifestyle change can take place, an individual must be ready to do so. Most health promotion programs are directed at these individuals. However, it is important to add variety to the programs so it is possible to reach many employees each at a different place in regards to how ready they are to change (Dejoy, Wilson, & Huddy, 1995). The stages of change construct, the Transtheoretical Model, describes the different
phases that individuals pass through when deciding to make a behavior change (Prochaska, 1983). This readiness concept also suggests that the participants who have already made a lifestyle change can serve as a role model for those who are just beginning to make the change. In addition, they can provide an element of peer support, which ultimately affects the corporate culture (Dejoy et al., 1995). In fact, after a Lifegain Health Culture Audit survey showed a need for increased support from co-workers and supervisors, Union Pacific Railroad decided to implement a Wellness mentor program. This one-day training program teaches skills for establishing trust, goal setting, identifying role models, eliminating barriers to change, working through relapse, and celebrating success. This program gives the employees a chance to become partners in lifestyle change (Allen & Leutzinger, 1999).

Once a person has decided to change, self-efficacy may be an important individual factor to maintaining that change. Self-efficacy is the belief that the skills necessary to maintain that change have been mastered. If an individual feels that they will be physically unable to master the movements in an exercise routine, that person will be unsuccessful even if they are capable of properly performing the movements. A worksite health promotion program should contain elements to maximize the participants’ sense of mastery. For example, programs that allow participants to develop and practice specific behavioral skills may help. Plus, the more input individuals have on their development, the greater the chance they will feel that sense of self-efficacy.

Finally, reinforcers are the last elements that should be considered when creating a health promotion program that affects the individual. Reinforcers can be material such as money and gifts, or they can be social in nature such as praise or other forms of
recognition. When using reinforcers in a health promotion program, the desired outcome of the program should be clearly stated, the program should use clear and simple incentive rules, the reinforcer should quickly follow after the end of the program and should reflect the level of difficulty in reaching the desired outcome, and a variety of reinforcers should be used in the program. Reinforcers can also be self-administered. A program that teaches individuals to reward themselves after meeting certain goals or take away aversive stimuli, such as the fat picture on the refrigerator, is useful in creating long-term compliance.

Individual strategies are a necessary part of health promotion programs. Health promotion programs should address individuals at various stages of readiness and use the experienced participants as mentors. The programs should also have an element to address self-efficacy, so the participants have a sense that they can complete the task at hand, which is important in continuing long-term success. Finally, reinforcers should be used to provide some sort of reward and to teach the individuals how to reward themselves after meeting their goals (Dejoy, Wilson, & Huddy, 1995). Reinforcers are also used to encourage employees to participate in health promotion programs and manifest themselves in the form of incentive programs.

**Health Promotion Incentive Programs**

Employers often times have difficulty encouraging their workforce to participate in health promotion programs and because of this, incentives are used (Stein, Shakour, & Zuidema, 2000). Health promotion programs are unable to reach approximately half the population in any particular workforce. When an incentive is appropriately designed, it can improve participation significantly, which adds an increased level of participation to
various programming efforts. Once the participation is achieved, desired health outcomes can be found (Chapman, 1998).

For example, in a study by Poole, Kumpfer, and Pett (2001) financial incentives were used to encourage employees to participate in a health promotion program. Participants in the program were responsible for keeping a log of healthy behaviors and health-related factors, such as seat belt use, being a non-smoker, reducing blood pressure and exercising. At the annual follow-up financial rewards were given based on these logs. The results were encouraging for this program, which lasted 4 years. Obesity prevalence, hyperlipidemia, hypertension, physical activity, smoking cessation, and seat belt use all showed improvements.

In the previous study, monetary reinforcers were used to promote participation in the incentive program. Although financial rewards may be a common reinforcer for making healthy lifestyle changes, social reinforcers are also powerful tools as is demonstrated in a study by Gomel, Oldenburg, Simpson, and Owen (1993). This study provided both financial incentives and education. The study looked at 28 worksite health promotion programs. Each site was randomly assigned to an intervention program. There were four types of programs. The first program included a health risk assessment, the second provided risk factor education, the third had behavioral counseling, and the fourth had behavioral counseling plus incentives. The incentives were financial in nature and based on healthy behavior changes. Four hundred thirty-one individuals were asked to participate. Baseline statistics were taken for each participant. The measures were BMI, serum cholesterol, cigarette smoking, blood pressure, and aerobic capacity. By the end of the 12-month follow up, 84% of the participants completed the program. There were no
significant differences between groups at baseline. However, when comparing the average of the behavioral counseling groups, there were significantly higher validations of continuous smoking cessation, and smaller increases in BMI than in the first two groups. Interestingly, there was not a significant difference between the behavioral counseling groups even though only one of the groups provided a financial incentive, which demonstrates that social reinforcers are also powerful in making healthy lifestyle changes.

To further demonstrate this point, a three-year study on the impact of an annual cardiovascular health assessment was conducted. The health assessments were administered free of charge to a group of employees. In this program, there was no incentive to participate in a comprehensive health promotion program, but instead to simply participate in the health assessment. After the assessment, the employees were encouraged to participate in formal health education and behavioral support on their own. The employees who participated in the assessment exhibited improvements in cardiovascular health regardless if they participated in a structured follow-up program (Pescatello, Murphy, Vollono, Lynch, Berene, & Costanzo, 2001). Therefore, even though a financial reinforcer was provided to participate in the assessment, social and self-administered reinforcers may have been the incentive to improve one’s health.

Incentives programs serve to be a successful tool in initiating participation in health promotion programs. Incentive programs use various reinforcers such as monetary reinforcers, social, and self-administered reinforcers. Incentive programs are used to initiate behavior change by changing lifestyle habits such as quitting smoking, reducing stress, and starting an exercise program. Exercise is an integral part of health promotion.
programs. In fact, in an attempt to change the corporate culture, many worksites have a fitness facility available on site for employee’s to use free of cost or for a minimal fee.

**Importance of Exercise**

Exercise has been a part of health promotion programs for three decades. However, it started as a perk for company executives and was not readily accessible to the rest of the employees, but this paved the way for current physical activity programs (O’Donnell, 2002). As the need for health related benefits of physical activity grows, so does the need for well developed physical activity programs.

Exercise has many health related benefits. Controlled studies have shown it to increase cardiac output, blood flow, oxygen uptake, energy levels, metabolic rate, and hormone levels. In addition, exercise decreases blood pressure, cholesterol, and blood glucose levels (O’Donnel, 2002). More specifically, the Physical Activity and Health Report of the Surgeon General (1996) reported that physical activity reduces the risk of dying prematurely, developing diabetes, developing colon cancer, reduces feelings of depression and anxiety, helps to control weight, helps to build and maintain healthy bones, muscles, and joints, and promotes psychological well being. Millions of Americans suffer each year from diseases that can be prevented. And although participating in some sort of exercise has many benefits, many Americans do not participate in it at all. Twenty-five percent of Americans are completely inactive and 60% do not engage in the recommended amount (“Physical activity and health”, 1999).

The benefits of exercise have a great impact on a worksite. If an employer can reduce these risks in their worksite, millions of dollars can be saved in health care costs and absenteeism. In fact, it is so important that employers incorporate fitness facilities
into the corporate culture that *Healthy People 2010* has made it a goal that 75% of worksites with 50 or more employees offer exercise or fitness programs (Healthy People 2010, 2000).

Exercise has many benefits, both physiological and psychological. The government has taken note of this and listed the benefits in the Report of the Surgeon General, and *Healthy People 2010* has created many goals centered on exercise. One of these goals is to offer fitness programs in most worksites. Americans and employers both know physical activity is an important part of daily life; however, there seems to be a lack of participation with only 15% of Americans participating in the recommended amount of exercise.

**Exercise Adherence**

Physical activity programs are often a part of health promotion programs. They are used in conjunction with other interventions such as education. However, it seems to be difficult for participants to maintain long-term physical activity (Gomel et al., 1993). Bungum, Orsak, and Chung (1997) explored the factors affecting adherence to and participation in worksite fitness programs. Surveys were randomly sent to 300 members of an on-site worksite wellness program. In addition, 600 surveys were sent to non-members. This particular worksite wellness program has in place a variety of activities, sports, hobbies, and incentives and prizes which are awarded to those who show improvement or demonstrate consistent healthy behaviors. However, monthly fees are charged to employees and family members that utilize the facility.

Demographic variables were measured including gender, marital status, age, and smoking preference. Also, self-motivation, predisposing, enabling and reinforcing
factors, barriers, and program membership status were measured by multiple questions in the survey. Four hundred thirty-one complete surveys were returned. Of those completed, there was a higher ratio of males and a higher ratio of non-members. More than one-fifth of the total participants were sedentary, and 16% chose to exercise at a facility other than at the worksite. Those who did utilize the worksite facility were less likely to smoke than the others. When considering the motivational factors to exercise, those that exercised the most had the highest self-motivation rating. They also perceived fewer barriers to exercise. Coinciding with this is the finding that the non-exercising group perceived that significantly more effort is needed to be physically active and that their environment is not conducive to exercise.

Even when it is possible to gain participation in a health promotion program that includes physical activity through incentive programs or other means, it is difficult to maintain a low attrition rate. A study by Jeffery and French (1999) demonstrates this point. This study investigated the prevention of weight gain with age. Participants, mostly women, were randomized into one of three groups. The first group was a no-contact control group, the second group received education through monthly newsletters, and the third received education plus incentives in the form of a $100 lottery drawing. The education provided focused on five themes including weighing regularly, eating more fruit, eating more vegetables, reducing the consumption of high fat foods, and increasing physical activity. The study lasted three years and at the end of the study the findings were modest at best. There were some positive behavior changes associated with weight; however, only 37% of the participants maintained or lost weight. Although there was not
a significant difference in weight change between the control and intervention groups, weight gain was slightly lower in both intervention groups than in the control group.

Employees have many reasons for avoiding physical activity programs including lack of motivation and having many perceived barriers to exercise. When it is possible to encourage employees to participate in a health promotion program that includes exercise, there is a high attrition rate and not very good long-term success. One aspect of health promotion programs that is proving to have successful effects on attrition rates is competition.

**Competition**

Competition is found in health promotion programs designed for smoking cessation, weight loss, and fitness. Furthermore, both team and individual competitions are held. Regardless of the purpose and type of competition programs, they are having good success and impressively low attrition rates.

In a study by Maheu, Gevirtz, Sallis, and Schneider (1989), a 15-week multi-component behavioral treatment and maintenance program plus nicotine gum were provided to competition and no-competition conditions at two large worksites. The competition site consisted of three teams, which competed for prize money. The money was awarded to the team that had the highest percentage of ex-smokers at the three-month follow-up. At the other site, money was evenly divided among all ex-smokers at the three-month follow-up. At the end of the program, 94% of participants quit smoking at the competition site and 100% quit at the no competition site. At the one-year follow-up, there was a significant difference between groups in terms of number of weeks abstinent. The competition site had an average number of 35 weeks abstinent while the
non-competition site had only 22 weeks. In addition, the competition site also had higher recruitment rates.

Matson, Lee, and Hopp (1993) further investigated smoking cessation competitions in the workplace. Fifteen studies were reviewed. Of the 15 studies, eight separated the effects of competition and incentives from the effects of other interventions, and only one study separated the effects of competition from incentives, which was the above study, Maheu et al. (1989). Three of the studies showed that incentives/competition enhanced participation rates and five showed that it enhanced smoking reduction.

Competition has also been investigated in weight loss programs. In a study by Brownell, Cohen, Stunkard, Felix, and Cooley (1984) weight loss competitions were held in both business and industrial settings. The first competition was held between three banks, the second competition randomly assigned the participants to one of three teams within the same industry, and the participants in the third competition, which was held at a manufacturing firm, were assigned to one of three teams based on their company division. Each of the competitions had weekly weigh-ins, all participants received information regarding behavioral change, each gave $5 towards prize money for the winning team, and all received weekly updates on participant progress. After combining the information from all three competitions the average weight lost was 5.5 kg. In addition, the attrition rate was 0.5%, 71% of the participants reported improvement in work-related morale, and 86% rated team support as an important factor in the success of this program. Considering many of the participants rated team support as an important
factor of this competition, perhaps the results would not have been as impressive if individual competitions would have been held.

Competition is common in the worksite as a means to help reduce disease risk, and is often used in smoking cessation and weight loss programs. Although competition, in general, has shown success in attrition rates, and recruitment rates, there are also differences between team and individual competition.

**Individual vs. Team Competition**

Individual competition, serves as a means to initiate interest in a program. However, there are no evident aspects of individual competition to illicit a healthy corporate culture. On the other hand, team competition, has the potential to add an element of peer support, which is one of the five elements of a healthy corporate culture.

A study by Cohen, Stunkard, and Felix (1987) illustrates the impact a team competition can have on the success of the program as compared to an individual competition. The study compared three weight loss competitions at the worksite. Two of the competitions were between teams and one was among individuals. Three separate competitions were held at different times, but at the same workplace. The first competition was composed of participants who were dispersed into one of three teams. The participants in the second competition competed individually for prizes. And, in the third competition men and women competed against each other. Both the team competitions proved to be more successful than the individual competition. Most participants lost some weight in the team competitions. However, about 50% of the participants did not lose any weight in the individual competition. Furthermore, the individual competition had a 17% attrition rate as compared to 0% and 3% for the first
and third competitions. This study is just one example of the favorable outcomes of team competition as compared to individual competition. In addition, it did not make a significant difference as to the type of team, but simply that a team atmosphere was utilized.

Stunkard, Cohen, and Felix (1989) conducted additional studies to evaluate the effectiveness of competition and its role in weight loss. Individual competition, pure cooperation, and team competitions were compared. In addition, maintenance of weight loss was evaluated. Each treatment group contributed money to a pool that served as the incentive. Also, each group participated in weekly weigh-ins and received weight loss suggestions at this time. The team competition consisted of three teams at the first worksite and two teams at the second worksite. The team that achieved the greatest percentage of its weight loss goal received the entire pool of money. The participants in the individual competition received money based on the percentage of the weight loss goal that was achieved. Finally, in pure cooperation condition the entire worksite was working toward a common goal and the incentive was based on the percentage of the goal that was achieved. For example, if the worksite lost at least 50% of their goal participants received their original contribution plus an amount from management depending on the percent of the goal that was achieved. However, no incentive was given to worksites that had a loss of less than 50%. After the 12-week competition, the team competition produced better results than did the individual or pure cooperation condition. The team competition had a 0% attrition rate, it fostered high morale, improved relations with co-workers, and for men it fostered the greatest percentage of weight loss.
Finally, in The Shape Up challenge, conducted by Blake et al. (1996), team competition was investigated. The Shape Up challenge was a community based exercise challenge. The intervention was comprised of companies competing against each other for a trophy based on the greatest minutes of exercise completed. In addition to competing against other companies, each company was encouraged to create their own sub group competitions. The companies that did create internal team competitions had lower attrition rates and a greater number of minutes spent exercising.

Both team and individual competitions help to provide interest in health promotion programs. Perhaps this is because of the reinforcers that are provided. However, team competition has had more impressive attrition rates and a more positive effect on the health behavior that it is aimed at changing. This is most likely due to the peer or social support that is inevitably included in a team competition. Social support is part of a healthy worksite culture as well as being a part of optimal health.

Social Support

According to Caplan, Robinson, French, Caldwell, and Shinn (as cited in Oka, King, & Young, 1995) social support can be defined as “those activities performed by one individual that assist another individual in moving toward a desired goal.” Social support can also be defined as a “network of family, friends, colleagues, and other acquaintances you can turn to, whether in times of crisis or simply for fun and entertainment” (“Developing social support”, 2005). There are multiple dimensions of support, which include the existence or quantity of social relationships, the structure of relationships, and the functional content of relationships.
Social support has been shown to affect adherence as it relates to health habits (Sallis, Grossman, Pinski, Patterson, & Nader, 1987). In particular, social support has been linked to success in smoking cessation, weight loss, and disease management (Gabriele, Walker, Gill, Harber, & Fisher, 2005). The relationship between social support and exercise adherence may be dependent on personal or psychological variables. Social support from a spouse or friends may enhance exercise related sense of control, commitment, and confidence. This would enhance perceptions of success (Oman & Duncan, 1995). In addition, the dynamics of social support and physical activity may change over time and through the phases of adoption and maintenance (Oka, King, & Young, 1995).

Although social support is generally thought of in a positive light, individuals should be wary of negative support. Participants should want to participate in an exercise regimen and not feel pressured or feel like they have to. Positive social support has been found to have a direct influence on exercise motivation, whereas negative support creates a sense that exercise has to be done (Gabriele et al., 2005, Courneya & MacAuley, 1995). To help keep this from being a deterrent for exercise continuation, it is important to monitor the type of support that is needed, the type of support being provided, and the perception of the support that is given. In addition, it is important to remember that support is a changing and dynamic process. Since social support is dynamic, an open communication may be important to adjust the type of support that is being given to the type of support that is needed. For example, verbal reminders of appropriate exercise may be viewed as supportive by the person providing the reminders, but be perceived as nagging by the person who is receiving these reminders (Duncan & MacAuley, 1993).
Oka et al. (1995) investigated social support specific to exercise and found that specific social support was a better predictor of exercise adherence than general social support. In their study exercise programs were created for completion in both the community and at the home. General social support was measured at baseline and at one year. Exercise social support was measured at baseline and at six months. The items used to measure exercise social support were created to measure support that the participant was currently receiving. At the six-month interval, greater support being received was a significant predictor of exercise adherence.

Kravitz and Furst (1991) further investigated social support in an exercise environment. Participants in the study were enrolled in a 16-week aerobic dance class at a large university. The class was broken into three groups: 1) those who worked independently for a reward, 2) those who worked as a team and competed against other teams, and 3) those who did not work as a team or receive a reward. There was a significant difference between both reward groups and the control group. However, there was not a significant difference between the individual and team competition. Although there was no significant difference in the competitive groups there was greater attendance in the team group indicating a trend that social support in team competitions produces better outcomes.

One aspect of social support, peer support is also showing promise in health promotion programs. In general peer support programs, which is a part of a healthy corporate culture, pair an individual who has been successful in completing a health behavior change with an individual who is beginning a similar process. One analysis found that peer support is a successful tool to help individuals with diabetes cope with
their disease. However, the analysis cautioned that a structured follow-up program should also be in place (MacPherson, 2004).

Social support that is specific to a health behavior, such as exercise, regardless of the manner in which that support is provided is an important part of worksite health promotion programs. Social support may affect adherence to the program and success within the program. Finally, one aspect of social support, peer support, also helps people to create unity in the work environment as is demonstrated at Union Specific Railroad, and serve as a coping mechanism as was discovered in individuals with diabetes. There are many aspects to a successful health promotion program and social support could be a key to long-term participation and behavior change.

Health promotion programs play an important role in affecting a company’s health benefits bottom line. However, as it has been demonstrated, it is difficult to encourage participation in such programs and keep attrition rates low. Competition is a popular and successful element of worksite health promotion programs. Many studies have shown that it produces significant results, by keeping attrition rates low and changing disease risk status in the participants. Some studies have also explored the differences between individual and team competition. These studies have shown that team competition has more favorable results and lower attrition rates than individual competition. Furthermore, Stunkard et al. (1989) also found that team competition fosters higher morale and improved co-worker relations as compared to individual competition. Social support may be fostered in a team environment and be linked to the improved employee relations that Stunkard et al. (1989) found. Although there have been a few studies that have examined the differences between individual and team competition,
there has yet to be a study that has explored why team competition fairs better than individual competition. Social support may be the missing element in the make-up of individual competition.
Chapter Three

Methods

Introduction

The principal investigator for this study graduated from Florida Atlantic University in 2001 with a bachelor of science in exercise science/wellness education. Since that time, she has worked in worksite fitness centers and is currently the director of a worksite fitness center. She has created and assisted with numerous fitness incentive programs, and implemented many other worksite health promotion programs. Worksite fitness centers have many different goals and personalities depending on the culture of the actual corporation. However, through Corporate Fitness Works, the principal investigator has had the opportunity to be associated with many different fitness centers and observe their differences. Many of the concepts concerning the methods of this study were determined by common occurrences that transcend through different worksite fitness centers.

This chapter outlines the participants and the instruments used to collect the data as it pertains to exercise and social support. All of the fitness centers recruited for this study are managed by Corporate Fitness Works (CFW), and this chapter also explains the procedures CFW has set in place to join a worksite fitness center. In addition, the procedures performed and the statistical analyses are also discussed.
Participants

This study was approved by the Institutional Review Board at the University of South Florida. Following approval, participants were recruited from 10 different worksite fitness centers, which were located in Clearwater, FL, Tampa, FL, St. Petersburg, FL, Des Moines, IA, Topeka, KS, Andover, MA, Silver Springs, MD, and Lancaster, PA. Participation was not limited by gender, socio-economic status, education, race, or marital status. To participate in this study individuals needed to: 1) be a fitness center member and an employee, spouse of an employee, or retiree of the company, 2) have access to email, and 3) be at least 18 years of age.

This study began with 235 participants; 36.6% of the participants were males and 63.4% were females. There was no statistically significant gender difference between the two treatment conditions ($p > .05$). For the individual condition, 32.3% of the participants were male and 67.7% were female. For the team condition, 39.6% were male and 60.4% were female. The participants also had a similar age distribution between conditions. The mean age for the individual condition was 38.6 years ($SD = 11.35$) and the mean age for the team condition was 38.83 years ($SD = 10.20$). In addition, almost half of the participants listed professional as their job classification with 24.26% choosing other and 14.89% listing manager.

Because social support was considered at work and in the home, marital status and the number of current children in the household were also considered. Of all the participants, 57% were married and 42.9% were currently single. There was not a similar distribution of marital status between conditions. For the individual condition, 49% were
married and 51% were single, whereas in the team condition, 62.6% were married and 37.5% were single. However, there was a similar distribution for the mean number of children in the household. The mean number of children reported in the individual condition was 0.77 ($SD = 1.06$). The mean number of children reported in the team condition was 0.94 ($SD = 1.06$). Table 1 illustrates the demographics for the study.

Table 1. Description of participant demographics

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Total %</th>
<th>Team %</th>
<th>Individual %</th>
<th>Test Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>36.6</td>
<td>39.6</td>
<td>32.3</td>
<td>0.26 ns</td>
</tr>
<tr>
<td>Female</td>
<td>63.4</td>
<td>60.4</td>
<td>67.7</td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>34</td>
<td>28.1</td>
<td>42.7</td>
<td>0.06 ns</td>
</tr>
<tr>
<td>Married</td>
<td>57</td>
<td>62.6</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>8.9</td>
<td>9.4</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td>Children</td>
<td>NA</td>
<td>.94 (SD = 1.06)</td>
<td>.77 (SD = 1.06)</td>
<td>0.22 ns</td>
</tr>
<tr>
<td>Age</td>
<td>NA</td>
<td>38.83 (SD = 10.20)</td>
<td>38.60 (SD = 11.35)</td>
<td>0.88 ns</td>
</tr>
<tr>
<td>Job Classification</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clerical</td>
<td>8.93</td>
<td>8.96</td>
<td>8.91</td>
<td></td>
</tr>
<tr>
<td>Manager</td>
<td>14.89</td>
<td>15.67</td>
<td>13.86</td>
<td>0.65 ns</td>
</tr>
<tr>
<td>Professional</td>
<td>43.83</td>
<td>47.76</td>
<td>38.61</td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td>0.43</td>
<td>0</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Skilled</td>
<td>1.28</td>
<td>1.49</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td>6.38</td>
<td>4.48</td>
<td>8.91</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>24.26</td>
<td>21.64</td>
<td>27.72</td>
<td></td>
</tr>
</tbody>
</table>

ns = not statistically significant, $p > .05$

Current Corporate Fitness Works Program Components. CFW provides customized services for corporations that include fitness facility planning, design, and implementation; fitness center management and evaluation; and fitness and wellness consulting. CFW has created and recommends standards for fitness center enrollment at
each of their managed sites. Each potential fitness center member should complete a health history, which may require that individual to obtain a medical clearance signed by his or her physician, attend a health history interview, and sign a waiver and release of liability. Each member also has the option to receive assessments, which include circumference measurements, body composition, and/or a step test. Finally, members may request a personalized exercise program (a program designed to meet that individuals needs) at any point during their membership.

According to Corporate Fitness Works, each of their facilities sets the standards for creating well cultures that encourage individual and corporate well-being. This is done by customizing services for each facility. Each of the fitness centers may offer a variety of programs, including fitness challenges, comprehensive weight loss programs and challenges, health fairs, health screening days, and educational presentations. Fitness center members are familiar with participating in competitive programs similar to the one being conducted for the purpose of this study.

**Measurement**

The dependent variable measured in this study was total number of minutes spent exercising, measured at baseline and weeks 1, 2, 3, and 4. The independent variables were the treatment condition (team or individual), and level of social support. Participants were able to record time spent exercising both at the fitness center and outside of the fitness center. Two instruments were used to collect data for this study. The first is the Social Support for Exercise Survey, which was created by Sallis, Grossman, Pinski,
Patterson, and Nader (1987) (See Appendix A). The second scale was created specifically for this program for the purpose of tracking number of minutes spent exercising (See Appendix B).

Each participant, regardless if they were in the individual or team condition received an enrollment packet (See Appendix C) and weekly exercise tips (See Appendix D) individually through email. The enrollment packet included the guidelines for participation, attitude tips, information on how to choose proper exercise intensity, information on how to create goals, and a weekly goal sheet. The exercise tips included common ideas on how to incorporate exercise into daily life.

Social Support for Exercise Survey. Social support was assessed using the Social Support for Exercise Survey (Sallis et al., 1987). This survey contains 10 items asking questions about how often an element of support for exercise has been given by family and friends. A 5-point Likert scale ranging from 0 (none) to 4 (≥ 4 times) was used. The scores for the social support surveys were formed by determining the mean for the 10 questions. In the initial survey, a mean score was determined for the 10 co-worker and loved one questions. This was done for both conditions and all three surveys. However, the participants in the team condition had an extra portion to their intermediate and final survey, a teammate section. A mean score was also found for this. The test retest reliability for this scale ranges up to .86 and has an internal consistency of .61 to .91 (Sallis et al., 1987).

This survey was modified from its original form. Three questions pertaining to discouragement of exercise behaviors were removed because it does not pertain to this
study. In addition, the original survey contained two columns. One was for rating family support and the other for rating friend support. These columns were modified to reflect the support that may be received in this study. One column is now co-worker support and the other is loved-one support, which is intended to reflect people outside of the worksite. Finally, an extra column was added on the survey that was given to the teams to reflect team member support. The principal investigator contacted Dr. James Sallis, San Diego State University, through email in order to get permission to use the instrument and gain his support on these changes that were made to the social support survey. Dr. Sallis, felt the survey was easily adaptable and the changes were acceptable.

The survey was formatted in a Microsoft Word document. In order for participants to complete the survey, they were asked to open the document, which was sent to them through email and simply input the information. Once the participants completed the document in its entirety, they were instructed to email it back to the PI as an attachment. Although the document is electronic, the participants were not able to change it because it was password protected, which is a function made available by Microsoft Word.

**Exercise Minutes Tracking Sheet.** The exercise minutes tracking sheet is a Microsoft Excel document. This tracking sheet was originally created to track steps walked per day in a worksite incentive program, developed in conjunction with the PI. Participants of this program commented on the ease of using the tracking sheet and informed the PI of continued use after the program end. The sheet was modified to allow participants to input the number of minutes spent exercising instead of the number of steps walked.
This tracking sheet was received by the participants and returned to the PI in a similar manner as the social support surveys. The document was sent through email as an attachment. The participants opened and entered the information. The participants emailed the tracking sheet as an attachment to the PI on a weekly basis. The tracking sheet was also password protected, a function on Microsoft Excel, to inhibit participants from modifying it.

**Procedures**

The principal investigator contacted 12 Corporate Fitness Works’ facilities and informed them about the study. Out of the 12 sites contacted, 10 of the facilities agreed to participate. The director at each facility was the first point of contact. Each director was given an outline of the study, a letter for the liaison (point of contact between CFW and the worksite) with a letter of support for data collection, and a copy of the proposed instruments being used for data collection. In addition, the letter to the liaison informed them that the University of South Florida Institutional Review Board would grant full approval of the study prior to the study beginning.

After participation was agreed upon, each of the directors was oriented with the study. They were provided with marketing materials for recruitment purposes (See Appendix E), and sign-up sheets to gather information of interested participants (See Appendix F). Participants were informed that their Social Support for Exercise Survey results would remain confidential; however, their names would be used for competition purposes. For example, the names of the participants and/or team names were posted in emails to give updates on minutes spent exercising.
After the initial enrollment of the participants, the role of the fitness center staff became minimal. Each participant was instructed to contact the primary investigator (PI) through email or phone with any questions concerning the study. In fact, all contact after the initial contact with fitness center staff was through email and phone. Each participant was sent an email with the following attachments: an enrollment package (See Appendix C), tracking sheet (See Appendix D), informed consent (See Appendix G), and an initial Social Support for Exercise Survey. The enrollment package contained guidelines and education to help the participants complete the research study. The education provided in the enrollment package is similar to education that is provided in other fitness center incentive programs. It contained information on determining an appropriate exercise intensity, attitude tips, tips on goal setting, and a goal chart. The informed consent contained a spot for the participants to check that they agreed to the terms of this study. The check box took the place of a hand-written signature. The participants emailed the informed consent as an attachment back to the PI.

The study lasted for four weeks, beginning on June 18, 2006 and ending on July 15, 2006. However, the directors at each of the fitness centers enrolled interested participants from May 26, 2006 through June 9, 2006. The PI then sent the interested participants the enrollment packets June 9, 2006 through June 13, 2006. The first social support for exercise survey and informed consent was due on June 16, 2006 and the participants began tracking their exercise minutes on June 18, 2006. Each Monday, the participants turned in their exercise tracking sheet beginning on June 26. On the second and fourth Mondays (July 3, and July 17) a social support for exercise survey was also due. Each Wednesday, the lead investigator made contact with all the participants to
make sure all questions were answered, to provide an updated progress chart, and to provide a tip sheet with ideas to incorporate exercise into daily living. Participants were eliminated from the study if completed logs were not sent to the investigator. However, there was leniency for logs not sent due to personal reasons such as a sick day.

Half of the fitness centers, which were five sites that agreed to participate, were team condition sites. The other half, which were five sites of the fitness centers were individual condition sites. The facilities were paired based on company size, number of fitness center members, and blue-collar / white-collar distribution (determined by the fitness center director) within the company. Once the companies were paired, random assignment was used to determine the team and individual condition site. The team condition sites consisted of two-person teams. The participants at the team condition sites created their own teams. This is common practice in worksite fitness centers, which is the reason this naturalistic pairing occurred for this study. In addition, the directors at the team condition sites were instructed not to help a participant create a team. The team condition sites competed against other teams at the same site. The individual condition sites consisted of one person competing against other individuals at the same site.

Recognition was given at each worksite for first, second, and third place winners based on the highest average number of minutes spent exercising, and one winner was determined for the most improved. However, to help encourage honesty, participants were not informed that they were competing for this incentive. To determine the most improved, an average of week one’s minutes was compared against an average of week four’s minutes. At team condition sites, the team’s minutes were averaged together. In addition all participants who completed the program were put into a lottery for a $15
pedometer. Participants were informed of this prize, which was given to help encourage completion of the program. In the team condition, both members of the team received a pedometer.

**Statistical Analysis**

Data analysis was conducted in three sections. The first two parts of the analysis were done using SPSS and for all analyses, all individuals in the individual condition were averaged together, and the same was done for all individuals in the team condition. The individuals in the team condition were considered as single data points instead of being grouped together to make the team a single data point.

In the first portion of analysis, descriptive statistics were calculated to determine demographic characteristics and describe the sample. Next, analyses were conducted to examine the relationship between the minutes spent exercising and the social support surveys. Finally, multi-level modeling with hierarchical linear modeling (HLM) was used to analyze the changes in minutes spent exercising. Individual linear regression models were fit to each person’s data across the five time points (week 0, 1, 2, 3, and 4). The regression lines consisted of an intercept (predicted number of minutes at the beginning of the study) and a slope representing the change in the number of minutes of exercise per week.
Chapter Four

Results

**Comparison of Exercise Minutes Between Conditions**

Each participant estimated the number of minutes spent exercising for the previous week upon entry into the study. These minutes are represented as week 0. Thereafter, each participant was asked to keep track of their exercise minutes on a daily basis for four weeks. These minutes were turned in as a log on four separate occasions. These minutes are represented as week 1, week 2, week 3, and week 4.

At week 0, there was a 100% completion rate for both conditions. The individual condition spent an average of 40.37 ($SD = 22.74$) minutes exercising and the team condition spent an average of 37.56 ($SD = 24.70$) minutes exercising. There was not a significant difference between conditions ($p > .05$).

At week 1, there was a 96.9% completion rate for the individual condition and a 97.1% completion rate for the team condition. The individual condition spent an average of 39.58 ($SD = 22.16$) minutes exercising and the team condition spent an average of 39.1 ($SD = 23.63$) minutes exercising. There was not a significant difference between conditions ($p > .05$).

At week 2, there was a 96.9% completion rate for the individual condition and a 96.4% completion rate for the team condition. The individual condition spent an average of 40.36 ($SD = 20.97$) minutes exercising and the team condition spent an average of
40.63 (22.90) minutes exercising. There was not a significant difference between conditions (p > .05).

At week 3, there was a 96.9% completion rate for the individual condition and a 92.8% completion rate for the team condition. The individual condition spent an average of 35.29 (SD = 22.31) minutes exercising and the team condition spent an average of 37.87 (SD = 25.96) minutes exercising. There was not a significant difference between conditions (p > .05).

At week 4, there was a 79.2% completion rate for the individual condition and a 82% completion rate for the team condition. The individual condition spent an average of 42.97 (SD = 24.59) minutes exercising and the team condition spent an average of 43.00 (SD = 24.70) minutes exercising. There was not a significant difference between conditions (p > .05).

There was a change of 2.6 average minutes for the individual condition between week 0 and week 4. There was a change of 5.44 average minutes for the team condition between week 0 and week 4. There was a change of 3.38 average minutes for the individual condition between week 1 and week 4. There was a change of 3.9 average minutes for the team condition between week 1 and week 4. Tables 2, 3, and 4 represent the descriptives, significance, and attrition for exercise minutes for both conditions.
### Table 2. Descriptives of exercise minutes by week

<table>
<thead>
<tr>
<th>Week</th>
<th>Condition</th>
<th>Mean</th>
<th>SD</th>
<th>Min.</th>
<th>Max.</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>Team</td>
<td>37.56</td>
<td>24.70</td>
<td>0</td>
<td>162.86</td>
<td>1.82</td>
<td>6.39</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>40.37</td>
<td>22.74</td>
<td>0</td>
<td>111.43</td>
<td>0.70</td>
<td>0.34</td>
</tr>
<tr>
<td>Week 1</td>
<td>Overall</td>
<td>33.22</td>
<td>6.57</td>
<td>28.57</td>
<td>37.86</td>
<td>0.70</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td>Team</td>
<td>39.10</td>
<td>23.63</td>
<td>0</td>
<td>127.86</td>
<td>0.81</td>
<td>1.20</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>39.58</td>
<td>22.16</td>
<td>0</td>
<td>102.86</td>
<td>1.83</td>
<td>6.39</td>
</tr>
<tr>
<td>Week 2</td>
<td>Overall</td>
<td>28.10</td>
<td>6.74</td>
<td>23.3</td>
<td>32.86</td>
<td>0.70</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td>Team</td>
<td>40.63</td>
<td>22.90</td>
<td>0</td>
<td>147.14</td>
<td>1.26</td>
<td>3.32</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>40.36</td>
<td>20.97</td>
<td>0</td>
<td>105.71</td>
<td>0.67</td>
<td>0.33</td>
</tr>
<tr>
<td>Week 3</td>
<td>Overall</td>
<td>32.86</td>
<td>16.16</td>
<td>21.43</td>
<td>44.29</td>
<td>0.70</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td>Team</td>
<td>37.87</td>
<td>25.96</td>
<td>0</td>
<td>140.0</td>
<td>1.25</td>
<td>2.33</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>35.29</td>
<td>22.31</td>
<td>0</td>
<td>102.0</td>
<td>1.03</td>
<td>1.01</td>
</tr>
<tr>
<td>Week 4</td>
<td>Overall</td>
<td>34.29</td>
<td>16.16</td>
<td>21.43</td>
<td>44.29</td>
<td>0.70</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td>Team</td>
<td>43.00</td>
<td>24.70</td>
<td>0</td>
<td>134.29</td>
<td>0.98</td>
<td>1.66</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>42.97</td>
<td>24.59</td>
<td>0</td>
<td>118.43</td>
<td>0.88</td>
<td>1.27</td>
</tr>
</tbody>
</table>

### Table 3. Significance of exercise minutes by condition

<table>
<thead>
<tr>
<th>Week</th>
<th>Condition</th>
<th>Mean</th>
<th>SD</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>Team</td>
<td>37.56</td>
<td>24.70</td>
<td>0.38</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>40.37</td>
<td>22.74</td>
<td></td>
</tr>
<tr>
<td>Week 1</td>
<td>Team</td>
<td>39.10</td>
<td>23.63</td>
<td>0.88</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>39.58</td>
<td>22.16</td>
<td></td>
</tr>
<tr>
<td>Week 2</td>
<td>Team</td>
<td>40.63</td>
<td>22.90</td>
<td>0.93</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>40.36</td>
<td>20.97</td>
<td></td>
</tr>
<tr>
<td>Week 3</td>
<td>Team</td>
<td>37.87</td>
<td>25.96</td>
<td>0.47</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>35.30</td>
<td>22.31</td>
<td></td>
</tr>
<tr>
<td>Week 4</td>
<td>Team</td>
<td>43.00</td>
<td>24.70</td>
<td>0.99</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>42.97</td>
<td>24.59</td>
<td></td>
</tr>
</tbody>
</table>

### Table 4. Attrition percentage rates by condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Total complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team</td>
<td>2.9%</td>
<td>0.7%</td>
<td>3.6%</td>
<td>10.8%</td>
<td>82%</td>
</tr>
<tr>
<td>Individual</td>
<td>3.1%</td>
<td>0%</td>
<td>0%</td>
<td>17.7%</td>
<td>79.2%</td>
</tr>
<tr>
<td>Overall</td>
<td>3.0%</td>
<td>0.4%</td>
<td>2.1%</td>
<td>13.6%</td>
<td>80.9%</td>
</tr>
</tbody>
</table>
HLM was used to determine the rate of change by week. HLM plots each participant’s exercise minutes across the five time points and then a linear regression is fit to the data. This study produced a great amount of variability in how the participants were changing. Figures one through four are representative of this variability. The overall average number of minutes at baseline was 38.83 and the slope was 0.53, which did not represent a statistically significant change.

Although there was a great amount of variability between participants, it was determined that condition was not related to changes in minutes exercised. Also, the level of change between groups was not significantly different (p > .05).

Figure 1. Linear regression of a positive time slope for the individual condition for one participant
Figure 2. Linear regression of a negative time slope for the individual condition for one participant

Figure 3. Linear regression of a positive time slope for the team condition for one participant
Comparison of Social Support Scores Between Conditions

The initial survey had a 100% completion rate for both conditions. The co-worker scale at baseline had good internal consistency reliability with a Cronbach alpha of 0.87. There was not a significant difference (p > .05) in the mean social support score for the co-worker scale between the two treatment conditions. The mean for the individual condition was 0.90 ($SD = 0.91$), on scale ranging from 0-4, with 0 meaning the action was performed 0 times. The team condition was 0.98 ($SD = 0.90$). At baseline the loved one scale had good internal consistency reliability with a Cronbach alpha of 0.90. There was a significant difference in the mean social support score for the loved one scale (p < .05). The mean for the individual condition was 0.95 ($SD = 0.91$) and for the team condition was 0.71 ($SD = 0.79$).

The intermediate survey, which was administered at week 2, had a 81% completion rate for the individual condition and a 75% completion rate for the team condition. The intermediate survey, co-worker scale had good internal consistency
reliability with a Cronbach alpha of 0.90. There was not a significant difference in the mean social support score for the co-worker scale ($p > .05$). The mean for the individual condition was 0.79 ($SD = .83$) and for the team condition was 0.85 ($SD = 1.01$). The intermediate survey, loved one scale had good internal consistency reliability with a Cronbach alpha of 0.91. There was a significant difference in the mean social support score for the loved one scale ($p < .05$). The mean for the individual condition was 1.01 ($SD = 0.96$) and for the team condition was 0.72 ($SD = 0.92$). In addition, the mean score for the teammate scale was 1.0 ($SD = 1.03$), and had good internal consistency reliability with a Cronbach alpha of 0.90.

The final survey, which was administered at week 4, had a 75% completion rate for the individual condition and a 74% completion rate for the team condition. The final survey, co-worker scale had good internal consistency reliability with a Cronbach alpha of 0.91. There was not a significant difference in the mean social support score for the co-worker scale ($p > .05$). The mean for the individual condition was 0.66 ($SD = 0.81$) and for the team condition was 0.78 ($SD = 0.93$). The final survey, loved one scale had good internal consistency reliability with a Cronbach alpha of 0.89. There was not a significant difference in the mean social support score for the loved one scale ($p > .05$). The mean for the individual condition was 0.70 ($SD = .84$) and for the team condition was 0.70 ($SD = 0.86$). In addition, the mean score for the teammate scale was 0.74 ($SD = 0.91$), and had good internal consistency reliability with a Cronbach alpha of 0.90. Tables 5 and 6 represent the social support scores for all three surveys.
Table 5: Descriptives for social support surveys

<table>
<thead>
<tr>
<th>Survey</th>
<th>Condition</th>
<th>Mean</th>
<th>SD</th>
<th>Min.</th>
<th>Max.</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey 1 - Coworker</td>
<td>Team</td>
<td>0.98</td>
<td>0.90</td>
<td>0</td>
<td>4.0</td>
<td>1.02</td>
<td>0.66</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>0.90</td>
<td>0.91</td>
<td>0</td>
<td>4.0</td>
<td>1.34</td>
<td>1.92</td>
</tr>
<tr>
<td></td>
<td>Team</td>
<td>0.71</td>
<td>0.79</td>
<td>0</td>
<td>3.5</td>
<td>1.28</td>
<td>1.20</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>0.95</td>
<td>0.91</td>
<td>0</td>
<td>4.0</td>
<td>1.10</td>
<td>1.09</td>
</tr>
<tr>
<td>Survey 2 - Coworker</td>
<td>Team</td>
<td>0.85</td>
<td>1.01</td>
<td>0</td>
<td>3.9</td>
<td>1.31</td>
<td>0.63</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>0.79</td>
<td>0.83</td>
<td>0</td>
<td>3.7</td>
<td>1.38</td>
<td>1.77</td>
</tr>
<tr>
<td></td>
<td>Team</td>
<td>0.72</td>
<td>0.92</td>
<td>0</td>
<td>3.4</td>
<td>1.41</td>
<td>1.07</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>1.01</td>
<td>0.96</td>
<td>0</td>
<td>3.6</td>
<td>0.94</td>
<td>0.28</td>
</tr>
<tr>
<td>Survey 3 - Coworker</td>
<td>Team</td>
<td>0.78</td>
<td>0.93</td>
<td>0</td>
<td>4.0</td>
<td>1.39</td>
<td>1.28</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>0.66</td>
<td>0.81</td>
<td>0</td>
<td>4.0</td>
<td>1.88</td>
<td>4.29</td>
</tr>
<tr>
<td></td>
<td>Team</td>
<td>0.70</td>
<td>0.86</td>
<td>0</td>
<td>3.6</td>
<td>1.31</td>
<td>1.06</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>0.70</td>
<td>0.84</td>
<td>0</td>
<td>4.0</td>
<td>1.66</td>
<td>2.97</td>
</tr>
<tr>
<td>Survey 2 - Teammate</td>
<td>Team</td>
<td>0.99</td>
<td>1.03</td>
<td>0</td>
<td>4.0</td>
<td>0.82</td>
<td>-0.30</td>
</tr>
<tr>
<td>Survey 3 - Teammate</td>
<td>Team</td>
<td>0.74</td>
<td>0.91</td>
<td>0</td>
<td>4.0</td>
<td>1.28</td>
<td>1.14</td>
</tr>
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</table>

Table 6: Significance of social support by condition

<table>
<thead>
<tr>
<th>Survey</th>
<th>Condition</th>
<th>Mean</th>
<th>SD</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey 1 - Coworker</td>
<td>Team</td>
<td>0.98</td>
<td>0.90</td>
<td>0.53</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>0.90</td>
<td>0.91</td>
<td></td>
</tr>
<tr>
<td>Survey 1 – Loved one</td>
<td>Team</td>
<td>0.71</td>
<td>0.79</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>0.95</td>
<td>0.91</td>
<td></td>
</tr>
<tr>
<td>Survey 2 - Coworker</td>
<td>Team</td>
<td>0.85</td>
<td>1.01</td>
<td>0.70</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>0.79</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>Survey 2 – Loved one</td>
<td>Team</td>
<td>0.72</td>
<td>0.92</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>1.01</td>
<td>0.96</td>
<td></td>
</tr>
<tr>
<td>Survey 3 - Coworker</td>
<td>Team</td>
<td>0.78</td>
<td>0.93</td>
<td>0.39</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>0.66</td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>Survey 3 – Loved one</td>
<td>Team</td>
<td>0.70</td>
<td>0.86</td>
<td>0.99</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>0.70</td>
<td>0.84</td>
<td></td>
</tr>
<tr>
<td>Survey 2 – Teammate</td>
<td>Team</td>
<td>0.99</td>
<td>1.03</td>
<td>NA</td>
</tr>
<tr>
<td>Survey 3 – Teammate</td>
<td>Team</td>
<td>0.74</td>
<td>0.91</td>
<td>NA</td>
</tr>
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</table>
HLM was used to determine the rate of change across all three surveys. Concerning co-worker social support, overall the participants started at 0.95. The slope was 0.04, which reflects a significant decrease (p < .05). However, there was not much variability between subjects. In addition, there was not a significant difference between conditions (p > .05).

Concerning the loved one social support score, overall the participants started at 0.83. Although there was a decrease overtime this decrease was not significant (p > .05). Like the co-worker score, there also was not much variability between participants. There were also no significant differences between conditions (p > .05).
Chapter Five
Discussion

Introduction

Many research studies have been done to determine effective methods that encourage people to take an active role in their health. Much of the research has indicated that incentive challenges, which includes teamwork helps worksite health promotion programs meet their health goals. Although some studies have indicated that social support was an important factor to the success of the team condition, the role of social support was not actually measured.

Discussion

Therefore, this study was conducted to determine if there was a statistical difference between the social support scores when comparing participants competing as two person teams or as individuals. Each of the participants was a member of a corporate wellness center. The participant’s social support scores were broken into co-worker scores, loved one scores, and the participants in the team condition also had a teammate score.

There was no significant difference between exercise minutes at any of the time points for the two conditions. This may be explained because of the high number of minutes the participants were already spending exercising before the start of the program. The mean number of minutes per day for the team condition was 37.56 ($SD = 24.70$) and 40.37 ($SD = 22.74$) for the individual condition. The Physical Activity and Health Report
of the Surgeon General (1996), reports that adults should exercise at least 30 minutes, most days of the week. The average participant in this study was already doing that.

There was also no significant difference between any of the co-worker social support scores at any of the time points. However, at the initial and intermediate survey, there was a significant difference (p < .03 and .04) between the loved one social support scores. The individual condition had a higher mean score. This support may have been the encouragement the individuals needed to sign-up for this study. Whereas the team condition participants may have signed up because of encouragement from their teammates. During the second survey, there may not have been a significant difference in exercise minutes because although the individuals were getting support from their loved ones, the teams may have been getting social support from their teammates. The mean team social support score (0.99, $SD = 1.03$) was similar to the individual’s mean loved one score (1.01, $SD = 0.96$).

In addition, the social support scores did show a downward trend. Perhaps the participants in the team condition were not aware of how to provide social support. It may have been beneficial to not only have a team condition, but to provide them with education on how to support their teammate. Support is dynamic and communication is needed for individuals to adjust to the support that is being given compared to the support that is needed. Individuals may have different perceptions on support and should be prepared to modify it (Duncan & MacAuley, 1993).

Finally, there was no significant difference in attrition rates. Although there was no significant difference between attrition rates, the team condition did have a smaller attrition rate as compared to the individuals. In the team condition, 82% of the
participants who completed the baseline measures finished the study as compared to 79.2% of the individuals. As shown in previous research studies, a smaller attrition rate is another benefit of allowing participants to complete an incentive program as a team.

Although there was no significant difference between conditions, the lead investigator did find evidence that the study was successful in helping the participants reach their health goals. Some participants indicated that they now plan their exercise more appropriately, while others found that they were not spending nearly as much time being active, as they had once thought.

The results of this study may have been different if only non-active or less-active participants were recruited. It was observed that the participants that had a baseline average of 10 minutes or less had an average improvement of approximately 16 minutes for the team condition and 13 minutes for the individual condition. This was determined by comparing the baseline minutes to the minutes at week 4. The average slope, representing weekly change in minutes, for these same participants was also better, 2.35 compared to 0.53.

This study and similar programs may help to improve the amount of time a person spends exercising. However, there were still no observable significant differences between conditions even if just the novice participants were considered. However, there may have been a significant difference between groups if a novice participant was asked to exercise on his or her own compared with a novice participant paired with a regular member. It is not a new concept to suggest that a novice fitness center member find a buddy with whom to attend the fitness center. At Union Pacific Railroad a novice was
paired with a regular member, which is an example of peer support and part of a healthy
corporate culture (Allen & Leutzinger, 1999).

In addition, being that the majority of the participants were regular fitness center
members, there may have been an element of built-in social support from the other
regular members. This may account for the non-significance in co-worker social support
scores. The regular members may have already learned to count on each other daily
regardless if they were participating in some sort of health promotion program.

Finally, there may have been greater participation and study completion from
participants of all kinds, novice and regular, if there would have been a more enticing
incentive. A pedometer with a $15 value was raffled at each study site. However,
according to Chapman (1998) the larger the reward, the stronger the effect. Therefore, the
potential of a $15 reward may not have created a very large effect.

**Limitations**

The time spent on this study was limited. The study was four weeks long, which,
as observed by the lead investigator, is a common period of time for similar programs.
However, it may not have allowed enough time to show differences between groups.

Another limitation of this study was that it was conducted electronically. Each of
the participants was responsible for emailing their logs and surveys to the lead
investigator. Although, each of the documents was prepared in Microsoft Word and
Excel, the version that was installed on each participant’s computer effected the
formatting of the document. In addition, some of the participants did not understand how
to attach documents to an email. Some of these frustrations may have attributed to a
portion of the attrition.
Finally, self-report was a limitation of the study. Participants were relied upon to complete their exercise minute log sheet on a daily basis. Although self-report was a limitation there is no reason to believe that this process differed between conditions and affected the outcome of the results.

Conclusions

The following conclusions were made on the basis of the study findings:

1. There was no significant difference between exercise minutes at any time point for either of the conditions. Although there was no significant difference between minutes, there was an overall increase in minutes for both groups with the greatest change observed in the team condition (2.84 minute difference).

2. There was no significant difference between co-worker social support scores and a very minimal significance between loved-one social support scores for the initial and intermediate survey. The lack of significance in the co-worker social support score may be due to a potential “built-in” support from other co-workers.

3. There was no significant difference in attrition rates. Although there was no significant difference, there was a smaller team condition attrition rate, as well as a larger amount of over all participants that registered for the study.

4. Although there was no significant difference in exercise minutes, this may be easily explained because the participants were already averaging more than 30 minutes of exercise most days of the week. There may have been very different findings had the participants been all novice or novice participants in the individual group and novice/regular participant pairs in the team condition.
**Recommendations for Future Research**

There are many factors that may have affected the results that could be addressed in future studies. First, a similar study could be conducted that primarily recruits novice exercisers. This may impact the change in exercise minutes.

Second, although the fitness centers were paired based on similar demographics, it may have been more beneficial to have a group of individuals and a group of teams competing in the same fitness center. Although this is not common practice for incentive programs in a corporate setting, it may have produced different results. It may have showed significance between the two conditions.

Third, all of the fitness centers were of a corporate nature. The same study could be done in different settings (corporate, community, and commercial). The support, which may naturally be provided in a corporate setting, may have impacted the results.

Finally, a follow-up could be done to see whether both groups were able to maintain the number of minutes they spent exercising. There is the potential that relationships created in the teams will help those individuals to maintain a higher level of activity. And if so, social support should also be measured to see if it is the contributing factor.

**Implications for Practitioners**

Corporations are in a never-ending battle to reduce their bottom line. In addition, people are in a never-ending battle to achieve proper weights. As health professionals, we strive to help both the individuals and the corporations meet these health goals. It is part of our responsibility to create fun and interesting ways to make these goals a reality.
According to the results of this study, since there was no significant difference in the team or individual condition, people may enjoy participating in incentive programs regardless if they are participating as a team or an individual. Or, some people may prefer individual incentive programs while others may prefer team incentive programs. It may be important to provide both types of programs, so everyone’s needs are met. The point may not be in which type to provide but that they should be provided.

However, if team programs are offered, it may be beneficial to offer either a training seminar or educational information on the importance of support, proper ways to provide, and proper ways to modify the support. A teammate may feel that proper support is being given, but this may not be the perception of the others in the team. This could have a negative effect on the outcome of the program (Gabriele et al., 2005, Cournaya & MacAuley, 1995). Social support is dynamic and changing and participants should be aware of this and be prepared to handle this dynamic (Duncan & MacAuley, 1993).

In addition, what is being done to help individuals continue reaching their health goals after the completion of these programs? Is there some sort of program in place to help them continue to reach their goals? Do program coordinators make contact after the program is finished? Are there mentors in place who are ready to take over after the program end? Were mentors a key component in the program creation? These are questions that should be answered, which may help to contribute to long-term success of health goals.
Summary

There was no significant difference in minutes spent exercising, co-worker social support, or attrition rates. However, there may not have been differences in exercise minutes because all participants received relatively the same amount of support. In addition, the decline of support may be addressed by providing education to the participants in the team condition.

The success of incentive programs may not depend on whether people are participating as individuals or as teams, but that they have the option to participate. The success may also depend on the support that is given to novice participants as they start their journey towards a healthier life. In addition, a follow-up plan should be put in place to help the participants of the program continue to reach their health goals. The program is only the first step and may be the easiest step. The hard part might be the continuation of meeting health goals, but this will only be discovered with further research.
References


Appendix A: Social Support for Exercise Survey

Social Support and Exercise: *Initial Survey*

Below is a list of things people might do or say to someone who is trying to exercise regularly. If you are not trying to exercise, then some of the questions may not apply to you, but please read and give an answer to every question.

Please rate each question twice. Under *co-workers*, rate how often your co-workers have said or done what is described during the *past 7 days*. Under *loved ones*, rate how often individuals living in your household, and friends outside of work have said or done what is described during the *past 7 days*.

Please write one number from the following rating scale in each space:

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>1 time</td>
<td>2 times</td>
<td>3 times</td>
<td>≥ 4 times</td>
<td>Doesn’t apply</td>
<td></td>
</tr>
</tbody>
</table>

During the *past week*, my co-workers or loved ones:

1. Exercised with me.  
2. Offered to exercise with me.  
3. Gave me helpful reminders to exercise
   (“Are you going to exercise tonight?”)  
4. Gave me encouragement to stick with my exercise program.  
5. Changed their schedule so we could exercise together.  
6. Discussed exercise with me.  
7. Planned for exercise on recreational outings.  
8. Helped plan activities around my exercise.  
9. Asked me for ideas on how they can get more exercise.  
10. Talked about how much they like to exercise.

**Demographic Information**

1. Age:  
2. Gender: Male ☐ Female ☐  
3. Marital Status: Married ☐ Single ☐ Divorced ☐  
4. Number of children in household:  
5. Job classification: Click on box
6. Membership Status: Employee □  Family Member □  Retiree □  Contractor □

7. Think back to the past seven days. Approximately how many minutes have you spent exercising on the following days?

   Sunday _____ minutes  Monday _____ minutes  Tuesday _____ minutes
   Wednesday _____ minutes  Thursday _____ minutes  Friday _____ minutes
   Saturday _____ minutes
Appendix A (Continued)

Social Support and Exercise: Intermediate or Final Survey

Below is a list of things people might do or say to someone who is trying to exercise regularly. If you are not trying to exercise, then some of the questions may not apply to you, but please read and give an answer to every question.

Please rate each question twice. Under co-workers, rate how often your co-workers have said or done what is described during the past 7 days. Under loved ones, rate how often individuals living in your household, and friends outside of work have said or done what is described during the past 7 days. Under teammate, rate how often your teammate has said or done what is described during the past 7 days.

Please write one number from the following rating scale in each space:

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<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>8</th>
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<tbody>
<tr>
<td></td>
<td>None</td>
<td>1 time</td>
<td>2 times</td>
<td>3 times</td>
<td>≥ 4 times</td>
<td>Doesn’t apply</td>
</tr>
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</table>

During the past 7 days, my co-workers, loved ones, or teammate:

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<tr>
<th></th>
<th>Co-Worker</th>
<th>Loved One</th>
<th>Teammate</th>
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<tbody>
<tr>
<td>1.</td>
<td>Exercised with me.</td>
<td>1. _____</td>
<td>1. _____</td>
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<tr>
<td>2.</td>
<td>Offered to exercise with me.</td>
<td>2. _____</td>
<td>2. _____</td>
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<tr>
<td>4.</td>
<td>Gave me encouragement to stick with my exercise program.</td>
<td>4. _____</td>
<td>4. _____</td>
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<tr>
<td>5.</td>
<td>Changed their schedule so we could exercise together.</td>
<td>5. _____</td>
<td>5. _____</td>
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<tr>
<td>7.</td>
<td>Planned for exercise on recreational outings.</td>
<td>7. _____</td>
<td>7. _____</td>
</tr>
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</table>
Appendix A (Continued)

Social Support and Exercise: Intermediate or Final Survey

Below is a list of things people might do or say to someone who is trying to exercise regularly. If you are not trying to exercise, then some of the questions may not apply to you, but please read and give an answer to every question.

Please rate each questions twice. Under co-workers, rate how often your co-workers have said or done what is described during the past 7 days. Under loved ones, rate how often individuals living in your household, and friends outside of work have said or done what is described during the past 7 days.

Please write one number from the following rating scale in each space:

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<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>≥ 4 times</th>
<th>Doesn’t apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>1 time</td>
<td>2 times</td>
<td>3 times</td>
<td>≥ 4 times</td>
<td>Doesn’t apply</td>
<td></td>
</tr>
</tbody>
</table>

During the past 7 days, my co-workers or loved ones:

1. Exercised with me. **Co-Worker** 1. _____ **Loved One** 1.
2. Offered to exercise with me. **Co-Worker** 2. _____ **Loved One** 2.
3. Gave me helpful reminders to exercise (“Are you going to exercise tonight?”) **Co-Worker** 3. _____ **Loved One** 3.
4. Gave me encouragement to stick with my exercise program. **Co-Worker** 4. _____ **Loved One** 4.
5. Changed their schedule so we could exercise together. **Co-Worker** 5. _____ **Loved One** 5.
6. Discussed exercise with me. **Co-Worker** 6. _____ **Loved One** 6.
7. Planned for exercise on recreational outings. **Co-Worker** 7. _____ **Loved One** 7.
8. Helped plan activities around my exercise. **Co-Worker** 8. _____ **Loved One** 8.
9. Asked me for ideas on how they can get more exercise. **Co-Worker** 9. _____ **Loved One** 9.
10. Talked about how much they like to exercise. **Co-Worker** 10. _____ **Loved One** 10.
## Appendix B: Exercise Log

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<tr>
<th></th>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
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<tr>
<td>Week 3</td>
<td>7/2</td>
<td>7/3</td>
<td>7/4</td>
<td>7/5</td>
<td>7/6</td>
<td>7/7</td>
<td>7/8</td>
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<tr>
<td>Week 4</td>
<td>7/9</td>
<td>7/10</td>
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</tr>
</tbody>
</table>
Appendix C (Continued)

Guidelines
1. All participants must be an active employee, family member, or retiree enrolled in the fitness center.
   a. Participants must be a minimum age of 18 years.

2. Each participant must have access to a computer and email. All program components will be sent and received through this form of communication.

3. Log minutes spent exercising each day on the provided log sheet.
   a. The same log will be used for the entire program.
   b. Exercise can be done both in the corporate fitness center and on your own.

4. Exercise can be defined as “The activity of exerting your muscles in various ways to keep fit” (www.webster-dictionary.com), i.e. playing a sport, any activity in a fitness facility, or walking/running for the purpose of “keeping fit”.

5. Please do not overestimate or underestimate the number of minutes spent exercising. Honesty is the key.


7. Submit all surveys and exercise logs to the primary investigator at Laurenakriz@hotmail.com.

8. Follow the timeline below for all materials (If materials are not submitted by the due date, the primary investigator will assume you have dropped out of the program):
   b. Email week one’s exercise log by June 26, 2006.
   c. Email week two’s exercise log and Intermediate survey by July 3, 2006.
   d. Email week three’s exercise log by July 10, 2006.
   e. Email week four’s exercise log and Final survey by July 17, 2006.

9. Each participant that completes this program will be entered in a drawing for a $15 pedometer (site specific raffle).
   a. You will be considered complete if you turn in all materials by the specified due dates.

10. The pedometer will be awarded by July 31, 2006.

11. The results of each Social Support for Exercise: Survey will remain confidential; however, by agreeing to participate in this program you are agreeing to have your name posted with weekly exercise minutes in emails.
Appendix C (Continued)

Determining your Exercise Intensity

Maximum Heart Rate (MHR)
Maximum Heart Rate is the theoretical maximum number at which your heart rate can beat at your age based on the maximum heart rate of a baby at birth.

Target Heart Rate (THR)
Target Heart Rate is an identifiable gauge of an individual’s level of aerobic work and whether or not the intensity should be increased or decreased. American College of Sports Medicine recommends 60-80% of maximal heart rate. Individuals with special needs (i.e., pregnant women or anyone with a history of cardio-respiratory problems) should consult a physician.

What should my desired Intensity be?
Your desired intensity should be based on your fitness level and your workout time. If you are a beginner, your intensity should be around 60%. If you are more advanced, your intensity may be closer to 80%. The same goes for length of time; the shorter the workout time the higher the intensity, and the longer the workout time the lower the intensity.

• Step 1: MHR (max heart rate) = 220 - AGE

• Step 2: THR (target heart rate) = MHR x (desired % intensity)

• Step 3: 10-second Count = THR/6 seconds
Count your Pulse for 10 seconds during the first stages of your workout (after your warm-up is completed). Increase or decrease your workout intensity according to your actual or desired heart rate.

What if I can’t find my Heart Rate?
• Re-check or seek proper instruction.
• Wear a Heart Rate Monitor during your workouts.
• Use an RPE Scale- see below

<table>
<thead>
<tr>
<th>RPE Scale Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>No exertion at all</td>
</tr>
<tr>
<td>7</td>
<td>Extremely light</td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Very light</td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Light</td>
</tr>
<tr>
<td>12</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Somewhat hard</td>
</tr>
<tr>
<td>14</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Hard (heavy)</td>
</tr>
<tr>
<td>16</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Extremely hard</td>
</tr>
<tr>
<td>20</td>
<td>Maximal Exertion</td>
</tr>
</tbody>
</table>

© Gunnar Borg 1985
BE PATIENT!!

Set realistic goals.

Realize who you are, who you can be, and what changes you need to make to get there.

Set small weekly goals. Each week you achieve your goal, reward yourself.

Focus on the small goals but keep the main goal in sight.

Post your goals in plain sight.

Don't give up. If you have one bad day, start over the next day.

Do NOT think, speak, or be negative about your choices.

Look at today as a clean slate.
Appendix C (Continued)

SMART Goal Setting

When setting your weight loss goal there are many things that you need to remember. The following information will help make setting and achieving your goal easier.

S = Specific
M = Measurable
A = Attainable
R = Realistic
T = Timely

Specific

Goals should be straightforward and emphasize what you want to happen. Specifics help us to focus our efforts and clearly define what we are going to do.

Specific is the What, Why, and How of the SMART model.
WHAT are you going to do? Use action words such as direct, organize, coordinate, lead, develop, plan, build etc.
WHY is this important to do at this time? What do you want to ultimately accomplish?
HOW are you going to do it?

Ensure the goals you set are very specific, clear and easy. Instead of setting a goal to lose weight or be healthier, set a specific goal to lose 2cm off your waistline or to walk 5 miles at an aerobically challenging pace.

Measurable

If you can't measure it, you can't manage it. In the broadest sense, the whole goal statement is a measure for the project; if the goal is accomplished, it is a success. However, there are usually several short-term or small measurements that can be built into the goal.

Choose a goal with measurable progress, so you can see the change occur. How will you see when you reach your goal? Be specific! "I want to walk 3 miles 6 days per week." shows the specific target to be measured. "I want to walk more" is not as measurable.

Establish concrete criteria for measuring progress toward the attainment of each goal you set. When you measure your progress, you stay on track, reach your target dates, and experience the exhilaration of achievement that spurs you on to continued effort required to reach your goals.

Attainable

When you identify goals that are most important to you, you begin to figure out ways you can make them come true. You develop the attitudes, abilities, skills, and financial
Appendix C (Continued)

capacity to reach them. You begin seeing previously overlooked opportunities to bring yourself closer to the achievement of your goals.

You probably won’t commit to doing goals, which are too far out of reach. Although, you may start with the best of intentions, the knowledge that it's too much for you means your subconscious will keep reminding you of this fact and will stop you from even giving it your best.

A goal needs to stretch you slightly so you feel you can do it and it will need a real commitment from you. For instance, we all know that losing 20 lbs. in one week is not achievable. However, setting a goal to lose 1lb in one week and when you've achieved that, aiming to lose another 1lb the following week, will keep it achievable for you.

The feeling of success which this brings helps you to remain motivated.

Realistic

This is not a synonym for "easy". Realistic, in this case, means "do-able". It means that the learning curve is not a vertical slope; that the skills needed to do the work are available; that the project fits with the overall strategy and goals of the organization. A realistic project may push the skills and knowledge of the people working on it but it shouldn't break them.

Devise a plan or a way of getting there which makes the goal realistic. The goal needs to be realistic for you and where you are at the moment. A goal of never eating sweets, cakes, and chocolate may not be realistic for someone who really enjoys these foods. For instance, it may be more realistic to set a goal of eating a piece of fruit each day instead of one sweet item. You can then choose to work towards reducing the amount of sweet products gradually as and when this feels realistic for you.

Be sure to set goals that you can attain with some effort! If they are too difficult you set the stage for failure, but if they are too low it sends the message that you aren't very capable. Set the bar high enough for a satisfying achievement!

Timely

Set a timeframe for the goal: for next week, in three months, by fifth grade. Putting an end point on your goal gives you a clear target to work towards. If you don't set a time, the commitment is too vague. It tends not to happen because you feel you can start at any time. Without a time limit, there's no urgency to start taking action now.

Time must be measurable, attainable and realistic.
Appendix C (Continued)

GOAL CHART

NAME: __________________

<table>
<thead>
<tr>
<th>DATE:</th>
<th>Weekly Goals</th>
<th>Goal MET?</th>
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<tbody>
<tr>
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<td>Goals:</td>
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<td>Obstacles:</td>
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<td>Goals:</td>
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<td>Obstacles:</td>
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<td>Goals:</td>
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<td>Goals:</td>
<td></td>
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<tr>
<td></td>
<td>Obstacles:</td>
<td></td>
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</tbody>
</table>
Appendix D: Exercise Tips

Exercise Tips
(1 of 3)

- Choose activities that are fun, not exhausting. Add variety. Develop a repertoire of several activities that you can enjoy. That way, exercise will never seem boring or routine.
- Wear comfortable, properly fitted footwear and comfortable, loose-fitting clothing appropriate for the weather and the activity.
- Find a convenient time and place to do activities. Try to make it a habit, but be flexible. If you miss an exercise opportunity, work activity into your day another way.
- Don't overdo it. Do low- to moderate-level activities, especially at first. You can slowly increase the duration and intensity of your activities as you become more fit. Over time, work up to exercising on most days of the week for 30-60 minutes.
- Keep a record of your activities. Reward yourself at special milestones. Nothing motivates like success!
Appendix D (Continued)

Exercise Tips
(2 of 3)

- Walk down the hall to speak with someone rather than using the telephone.
- Take the stairs instead of the elevator, or get off a few floors early and take the stairs the rest of the way.
- Walk while waiting for the plane at the airport.
- Stay at hotels with fitness centers or swimming pools and use them while on business trips.
- Take along a jump rope in your suitcase when you travel. Jump and do calisthenics in your hotel room.
- Participate in or start a recreation league at your company.
- Work out before or after work to avoid rush-hour traffic, or drop by for a noon workout.
- Schedule exercise time on your business calendar and treat it as any other important appointment.
- Get off the bus a few blocks early and walk the rest of the way to work or home.
- Walk around your building for a break during the work day or during lunch.
Appendix D (Continued)

Exercise Tips
(3 of 3)

• Go out for a short walk before breakfast, after dinner or both! Start with 5-10 minutes and work up to 30 minutes.
• Walk or bike to the corner store instead of driving.
• Spend a few minutes pedaling on your stationary bicycle while watching TV.
• Keep exercise equipment repaired and use it!
• Play your favorite music while exercising, something that motivates you.
• At the beach, get up and walk, run or fly a kite.
• When golfing, walk instead of using a cart.
• At the lake, rent a rowboat instead of a canoe.
Appendix E: Marketing Materials

Do you want to:
• lose weight
• lower your blood pressure
• lower your resting hear rate
• know how much time you spend exercising

Join Be Active!

A research study being conducted across the country at Corporate Fitness Works’ managed facilities.

All you have to do is track the number of minutes you spend exercising and fill out three Social Support for Exercise: Surveys.

For more information or to sign up, Contact: [insert facility contact information]
Appendix F: Sign-up Sheets

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<thead>
<tr>
<th>Name</th>
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Appendix G: Informed Consent

Informed Consent for an Adult

Social and Behavioral Sciences
University of South Florida

Information for People Who Take Part in Research Studies

Researchers at the University of South Florida (USF) study many topics. For example, social support’s role in exercise. To do this, we need the help of people who agree to take part in a research study.

Title of research study: Be Active!: An Examination of Social Support’s Role in Individual vs. Team Competition in Worksite Health Promotion

Person in charge of study: Lauren Kriz

Study staff who can act on behalf of the person in charge: Marcus Kilpatrick

Where the study will be done: At your worksite fitness center and online via your computer

Should you take part in this study?

This form tells you about this research study. You can decide if you want to take part in it. You do not have to take part. Reading this form can help you decide.

Before you decide:

• Read this form.
• Talk about this study with the person in charge of the study or the person explaining the study. You can have someone with you when you talk about the study.
• Find out what the study is about.

You can ask questions:

• You may have questions this form does not answer. If you do, ask the person in charge of the study or study staff as you go along.
• You don’t have to guess at things you don’t understand. Ask the people doing the study to explain things in a way you can understand.
After you read this form, you can:

- Take your time to think about it.
- Have a friend or family member read it.
- Talk it over with someone you trust.

Why is this research being done?

The purpose of this study is to find out how social support affects adherence to worksite health and fitness programs. Many sites that are managed by Corporate Fitness Works will be participating. Half of the sites will be participating as individuals and half the sites will be participating as two-person teams. Each person, regardless of the condition will complete two social support surveys. Each person will also be required to submit an exercise-minutes log once a week for four weeks. Participants of the study will compete against other participants at the same worksite.

Why are you being asked to take part?

We are asking you to take part in this study because you are a member of a worksite fitness center, and we want to learn more about better ways to improve these programs.

How long will you be asked to stay in the study?

You will be asked to spend four weeks in this study. This is a typical length of time for an incentive program.

How many other people will take part?

People will also take part at other study sites. A total of about 200 people will take part.

What other choices do you have if you decide not to take part?

If you decide not to take part in this study, that is okay. There are no other choices that would allow you to participate in this study.

How do you get started?

If you decide to take part in this study, you will need to sign this informed consent form, participate in the incentive program, complete exercise logs, and complete the social support survey. Your first log will be due on June 19, 2006.
Appendix G (Continued)

What will happen during this study?

During the study, updates will be given on the number of minutes you spend exercising compared to the rest of the participants at your location. If you are working as part of a team, the principle investigator will combine your exercise minutes and the updates will be given as a team score and compared with the rest of the teams at your location. At the close of the study, exercise logs and social support surveys will be compared. The surveys in the individual condition will be compared to the surveys in the team condition. All surveys will be kept confidential.

Here is what you will need to do during this study

You will be asked to track the number of minutes you spend exercising for four weeks. Each week you will submit your Exercise-minutes Log through email to Lauren Kriz. In addition, you will complete three Social Support for Exercise: Surveys, one at the beginning, one in the middle, and one at the end.

Will you be paid for taking part in this study?

We will not pay you for the time you volunteer in this study. However, each participant that completes the study will be entered into a raffle drawing. Each location will have its own drawing and each winner will receive a pedometer valued at $15.

What will it cost you to take part in this study?

It will not cost you anything to take part in the study.

What are the potential benefits if you take part in this study?

This study may encourage you to spend more time exercising. With an increase in exercise, the potential benefits to you are:

- Decrease disease risk
- Lower Blood Pressure
- Lower cholesterol
- Decrease weight

As individuals improve in the above areas, society and worksites benefit as well. A healthy worksite equals cost savings in the areas of health care and productivity.
Appendix G (Continued)

What are the risks if you take part in this study?

The risks associated with the study are no greater than what is encountered during normal participation in fitness center activities to which you are a member. When you became a member of the fitness center, you completed a waiver, which highlighted the risks associated with physical activity. Common minor risks include minor muscle strains, muscle sprains, muscular fatigue, contusions, and post-exercise soreness. More serious, but less frequent, risks include joint injuries, torn muscles, heat-related illnesses, and back injuries. There is also the remote risk of a catastrophic incident (e.g., stroke, heart attack, paralysis, or death). If you experience a medical emergency, call your physician. If you have any questions regarding the potential risks of physical activity, call the person in charge of this study at 727-687-1562.

What will we do to keep your study records private?

Federal law requires us to keep your study records private. Each Social Support survey will be kept confidential. The survey will be emailed directly to the principal investigator and will not be shared with your worksite or other participants in the study. However, certain people may need to see your study records. By law, anyone who looks at your records must keep them confidential. The only people who will be allowed to see these records are:

- The research study staff.
- People who make sure that we are doing the study in the right way. They also make sure that we protect your rights and safety:
  - The USF Institutional Review Board (IRB), and its staff and any other individuals acting on behalf of USF.
  - The United States Department of Health and Human Services (DHHS)

We may publish what we find out from this study. If we do, we will not use your name or anything else that would let people know who you are.

What happens if you decide not to take part in this study?

You should only take part in this study if you want to take part.

If you decide not to take part:

- You won’t be in trouble or lose any rights you normally have.
- You will still get the same services you would normally have.
- You can still participate at the fitness center as you normally would.
Appendix G (Continued)

What if you join the study and then later decide you want to stop?
If you decide you want to stop taking part in the study, tell the principle investigator as soon as you can.

- We will tell you how to stop safely. We will tell you if there are any dangers if you stop suddenly.
- If you decide to stop, you can continue to participate in the fitness center as you normally would.

Are there reasons we might take you out of the study later on?

Even if you want to stay in the study, there may be reasons we will need to take you out of it. You may be taken out of this study:

- If we find it is not safe for you to stay in the study. For example, you have a change in health status.
- If you are not turning in your logs on time each week.

You can get the answers to your questions.

If you have any questions about this study, call Lauren Kriz at 727-687-1562.
If you have questions about your rights as a person who is taking part in a study, call USF Research Integrity and Compliance at (813) 974-5638.

Consent to Take Part in this Research Study

It’s up to you. You can decide if you want to take part in this study.

I freely give my consent to take part in this study. I understand that this is research. I have received a copy of this consent form.

☐ Yes, I freely give my consent to take part in this study.

Print Name

Date