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THE RELATIONSHIP BETWEEN FITNESS-BASED INCENTIVE PROGRAMS AND EXERCISE ADHERENCE IN A CORPORATE FITNESS FACILITY

By

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B.S. University of Maine, 1998

A THESIS

Submitted in Partial Fulfillment of the

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(in Kinesiology and Physical Education)

The Graduate School

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May, 2003

Advisory Committee:

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By Elwood D. Moore III

Thesis Advisor: Dr. Robert Lehnhard

An Abstract of the Thesis Presented
in Partial Fulfillment of the Requirements for the
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Experts agree that habitual exercise is beneficial to health and essential in the primary prevention of coronary heart disease and its associated risk factors. Despite this knowledge, adherence to an regular exercise regimen remains the major problem in the health and fitness industry. Reports estimate greater than 70% of the adult population in the United States do not participate regularly in physical activity. In contrast to the commercial fitness world where membership and profit continue to be the primary directives of the industry, corporate fitness programs are concerned with recruitment and adherence and consistently and exponentially increasing participation to justify cost. Previous research supports the idea of incentive programs to boost recruitment and participation, however the relationship between fitness-based incentive programs and adherence in the corporate setting, must be solidified as statistically significant if owners and corporate shareholders are going to fund such programs. The purpose of this study was to determine the impact of specific incentive programs by monitoring the exercise

adherence of employees and their spouses prior to an incentive program, during the incentive and following the incentive.

A total of one hundred and ninety-two men and women, 21-67 years of age, participated in this investigation. Each subject was a self-selected patron of the fitness facility, and also self-selected to participate in one or more of the four fitness-based incentive programs that were conducted over the course of two years. All participants were given a specific exercise regimen and asked to track their daily progress.

The three mean values (pre, during, post) for each incentive program were analyzed using an analysis of variance for repeated measures. Significant differences were found in the number of visits (adherence) to the fitness center in three out of the four cases studied. The significance ranged from .000 to .006. A post hoc analysis of the data was performed using the calculation of Partial ETA Squared for the effect of time on the results. These results indicate that although the passage of time was statistically significant from the pre-incentive period to the during incentive period, as illustrated by the analysis of variance for repeated measures, the partial ETA squared comparison determined just how important the significance was. In three out of the four comparisons we had a significant main effect for time in the repeated measures test, however not much of the total variance can be explained by the main effect (ETA Squared) due to the fact that the significant increase in visits from the pre period to the during period was negated by the fact that there was a significant decrease in visits from the during period to the post period.

Further post hoc analysis was performed using paired t-tests to compare the means within each incentive group. Cardio Minutes 2000 was the only group out of the four

incentives which did not show a significant ($p \leq .05$) increase in adherence from the pre-incentive period to the during incentive period. All of the groups showed a decrease in adherence when comparing the pre-incentive period to the post incentive period. In two of the groups this decrease was significant ($p \leq .05$). All of the groups showed a significant ($p \leq .05$) decrease in adherence once the incentive period was completed (during incentive to post incentive).

Not all of the changes in adherence from pre to during to post incentive in each of the four groups studied were statistically significant. However, they all followed the same trend. The trend in each group was an increase in adherence from pre incentive to during incentive, followed by a post incentive decrease in adherence which, interestingly enough, fell below pre incentive levels.

The results of this study indicate that incentives play a statistical significant role in exercise adherence and if implemented correctly could benefit, first and foremost, employee's and their families, as well as, the company and its shareholders.

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CHAPTER 1
INTRODUCTION

When investigating the relationship between physical activity and quality of life, it is well documented that "habitual exercise" is beneficial to health (10). Although questions in regards to quantifying the term habitual still remain, the benefits of participating in a regular physical activity program show favorable effects towards the prevention of coronary heart disease(CHD) and its associated risk factors. Recent studies report that greater than 70% of the adult population are not participating in regular programs of physical activity, and less than 10% are participating regularly at levels suggested by the 1990 Physical Fitness Exercise Objectives (29). In addition to the decline in physical activity over the years, advances in technology and increased mechanization have resulted in the progressive decline in occupational activity levels in the United States since World War II (29).

The history and evolution of man's existence, clearly illustrate these technological advancements, dating as far back as 10,000 years ago. The people of the United States have experienced rapid changes in living conditions and working conditions, which has seemingly taken a devastating toll on the health status of many Americans. During the Agricultural period dating back 10,000 years ago, until the 1800's, when hunters and gatherers moved from place to place in search of food, levels of physical activity were high and diets consisted primarily of complex carbohydrates, protein, and low fat. At this period in time the major causes of mortality were starvation, accidents, disasters, and wild animals. However, areas slowly began developing and people grew out of the nomadic lifestyle and began settling to raise families, grow crops, and raise animals. This lifestyle

led to the industrialized society of the early 1900's when these settled families began moving to the cities to work in the factories. This resulted in excessive overcrowding which led to inadequate diets and disease. Malnutrition and infectious disease were the major causes of mortality during this period, and although improvements in public health were made during this time, physical inactivity began to affect many Americans (29).

In 1945, the combination of other labor saving devices, electricity, and the combustion engine would lead to the Nuclear / Technological period that we are currently living in today (29). The early stages of this period were characterized by abundant food supplies, and the mass production of cheap cigarettes. The latter part of this has grown to also include computers, television, the internet, video games, super-sized fast food restaurants, and a drastic decline in not only regular exercise, but physical activity in general.

If history has shown Americans anything it would be that our bodies have not been prepared over time for such a sedentary lifestyle, and the over exposure to a surplus of cheap and readily available food supplies (11). This new lifestyle has led to a high incidence of coronary heart disease (CHD), diabetes, cancer, obesity, high blood pressure, and high cholesterol. However, to date we continue to focus the majority of our research on the cures for such diseases and not their causes; one of which is physical inactivity.

The 1990 Physical Fitness Health Objectives established by the Public Health Service reported that greater than 70% of the adult population do not participate in regular programs of physical activity, and less than 10% participate regularly at the levels suggested by the same objectives (29). There is extensive evidence which supports the fact that regular exercise is beneficial to preventing the risk factors associated with heart

disease and similar illnesses, in fact, the American College of Sports Medicine, the American Heart Association, and the Centers for Disease Control have all issued statements regarding the importance of exercise in the prevention of CHD, cancer, diabetes, hypertension, and hyperlipidemia (35). There is no question physical activity is the primary deterrent to many chronic diseases and illnesses, however, exercise adherence has become the primary barrier for most Americans.

The exploration of the effects of regular physical activity was pioneered by three men Balke, Karpovich and Cureton. They explored this relationship between physical activity and CHD and concluded that increases in physical activity resulted in a decrease in the risk factors for cardiovascular disease. The question that remained was; what constitutes *regular* physical activity? A position statement published by the American College of Sports Medicine in 1978 reported that the amount of physical activity required to improve fitness equaled 3-5 days of vigorous activity at approximately 60-70% of maximal oxygen consumption (1). This initial statement posed two problems; one being that individuals getting small amounts of exercise below these published guidelines were reported as having effects no different than those who were sedentary. Secondly, the statement focused more on guidelines necessary to improve cardiorespiratory fitness and less on decreasing the risks associated with CHD. Although this statement served as the "Gold Standard" for prescribing exercise for many years, in 2001 recommendations for physical activity once again changed to incorporate any and all physical activity in their recommendations.

Despite the positive influence exercise has on decreasing your chances for developing CHD, only a reported 10-20% of the population between the ages of 18-65

participate regularly in activity adequate enough to improve physical fitness (25, 29). In addition, it has recently been said that the worksite is the optimal arena for making healthy lifestyle and behavior modifications because it has been suggested to be a favorable setting for the promotion of exercise within a sedentary population. A worksite health promotion program can build on the established channels of communication, previously existing social support networks, as well as specific behavioral patterns. Exercise adherence is the most critical issue facing corporate health and fitness directors. In contrast to the commercial fitness world where membership and profit maintain to be the primary directives of the industry, the corporate programs are concerned with recruitment and adherence, to consistently and exponentially increase participation to justify cost. Despite the differences between the two settings, adherence to regular exercise regimes remains the major problem throughout the health and fitness industry. Drop-out rates continue to soar during the first six months of an initial exercise program averaging approximately 60%. Previous research on exercise adherence in the corporate setting has revealed, when the exercise activity is coupled with an incentive-based program, adherence rates drastically increase. Some studies have reported adherence rates as high as 95% when an incentive to exercise is also utilized, and conversely adherence rates as low as 19% when an incentive isn't offered (29). Other studies on weight loss report adherence rates of 99.5% when incentives and rewards are offered, which is almost double the adherence commonly seen in clinical trials (5). Additional studies using multiple competing worksites reveal adherence rates of approximately 80% when the company is small and incentives are used, and approximately 16% when no incentive is offered (15).

There remains a substantial need for research investigating the relationship between fitness-based incentive programs and exercise adherence. The well established fitness benefits that accompany physical activity can be initially obtained and subsequently retained only if individuals maintain a regular regime of exercise and physical activity on a daily basis (27). Furthermore, it remains clear that new approaches for maintaining exercise adherence are needed to improve the overall health status of the American public. The purpose of this study was to examine the relationship between fitness-based incentive programs and exercise adherence in a corporate fitness setting.

CHAPTER 2

REVIEW OF LITERATURE

Numerous independent contributors have identified and published literature, illustrating conclusively, that habitual physical activity has a favorable influence, in the preventive sense, on conditions of large public health importance, such as coronary heart disease. Habitual exercise may be defined as the regular and planned performance of physical activity with the final or intermediate objective of improving or maintaining specific levels of physical fitness (10). Reports estimate that greater than 70% of the adult population in the United States does not participate regularly in physical activity, and less than 10% of Americans are participating regularly at levels suggested by the 1990 Physical Fitness Exercise Objectives. Guidelines and recommendations for regular physical activity have been well established (1,2,8,9,19,24). These guidelines recommended by most include the following: frequency of training, 3 to 5 days per week; intensity of training, 60 to 90% of maximum heart rate reserve (HR max reserve) or 50 to 80% of maximal oxygen uptake (VO_2max); duration of training, 20 to 50 minutes; and mode of activity, aerobic activities such as running, walking, bicycling, swimming, cross-country skiing, vigorous dancing, and various endurance sport activities (10). The basis for these recommendation were to provide the average participant with enough stimulation to increase or maintain an optimal level of cardiorespiratory endurance and body composition. In addition, these recommendations are designed to expend a certain amount of energy per exercise session, to equal around 250 to 300 kilocalories, based on a 70kg person.

This notion of regular physical activity has resulted in variable definitions over the years. A single definition or set of guidelines simply isn't sufficient for all research because physical activity is such a complex behavior. However, regardless of what definition is used and what frequency, intensity, duration, and mode is prescribed, one fact still remains; the majority of Americans simply do not adhere to exercise programs. Previous research on this dilemma has produced several factors or variables that negatively influence exercise adherence. Study's indicate and predict that 60% of individuals that begin an exercise program will dropout within the first six months. The variables commonly used to predict such exercise dropout include programming factors such as inconvenient time or location, excessive cost, lack of variety, lack of positive feedback and poor exercise leadership. Other factors include, but are not limited to, lack of spousal support, inclement weather, excessive job travel, injury, medical problems, and a recent job change or move.

Conversely, there are positive variables that promote adherence such as instruction and encouragement from professionals, making the routine a regular part of your day, freedom from injury, enjoyment, fun, variety, group camaraderie, progress testing and recording, spousal and peer approval, not to mention decreasing your risk for developing heart disease and it's associated risk factors. Although numerous variables are related to and predictive of exercise dropout, the exercise leader appears to be the single most important variable affecting adherence (10). Franklin and Oldridge in 1977 considered the exercise leader as "the pivot on which the success or failure of a program will depend" (10). Although he acknowledges that motivation for participation is health-related in most instances, "the stimulus for continuing or adhering to the program grows

from the participants' response to the environment set up by the exercise leader" (10). The exercise leader plays a critical role in the development of an individual's program and is responsible for educating the individual about the why's and how's of physical activity. Their motivation, guidance and leadership will ultimately determine the extent to which a person adheres to an exercise regime.

The workplace has become the optimal arena for making healthy lifestyle and behavior modifications due to the fact that it has been suggested to be a favorable setting for the promotion of exercise within a sedentary population. A worksite health promotion program can build on the established channels of communication, previously existing social support networks, as well as specific behavioral patterns. There has been tremendous growth in the number of fitness programs offered where individuals can make healthy lifestyle changes in the workplace. However, as in other settings, adherence to exercise at the worksite has been a major problem, with dropout rates averaging 60% during the first six months (28). With that said, this much is clear, innovative and alternative approaches to the adherence problem are needed.

An exercise leader is responsible for motivating his and her clients and ensuring they maintain consistency with their program. One way to motivate people is to utilize behavior management techniques to enhance adherence (29). Robison et. al. studied the effects of a 6-month incentive based exercise program on adherence and work capacity to evaluate such behavior management techniques. They recruited one hundred and thirty-seven participants in six different worksites on a university campus (5 experimental and one comparison group) with each group completing 6 months of incentive-based endurance exercise. All participants agreed to participate in four bouts of aerobic

exercise for thirty minutes per session at specified target heart rates, each week, for the duration of the program. Each participant deposited forty dollars at the beginning of the program with the understanding that the money would be lost and forfeited to the other worksites as a result of failing to adhere to his or her weekly exercise agreement. At the conclusion of the 6-month period adherence for the experimental groups was 97% based on the specified agreement, and adherence for the comparison group was 19% ($p<0.01$) (29). Typically, 50-60% of adults beginning an exercise regimen become non-adherent within the first six months. Some have reported adherence rates as high as 80-85% during the first 3-months under a directly supervised exercise program, however, in this study exercise adherence rates were in excess of 95% for a 6-month endurance training program. This study supports the idea that behavioral management techniques, and the use of incentives, can be a valuable means for enhancing adherence and limiting potential dropout.

A similar study was developed by Stachnik et. al, on goal setting, social support, and financial incentives in stress management programs as a pilot study of their impact on adherence. This 6-month program included stress management projects attracting a total of 21 participants at two different worksites. The participants agreed to meet for thirteen one hour sessions during the six month period and spend two hours a week working on personal projects, as well as, agreeing to place a $40 deposit to support their 6-month pledge, with the understanding that failure to meet their pledge would result in forfeiture of one half their deposit every time a failure occurred (34). The individuals participating in the study met their weekly personal project goals more than 80% of the time. There are several questions raised in this study due to the fact that it was a demonstrative project

without a control group and didn't include exercise as it's regime. However, the point in this article is that incentives create competition and competition helps to promote adherence regardless of the situation or goal.

Incentives are commonly referred to as positive or negative, with positive incentives reinforcing, motivating and strengthening a behavior, and negative incentives resulting in penalties and punishment. An incentive can provide the impetus to move an individual into action or keep the person motivated until a new habit is established. For these individuals, successful performance and the anticipated reward are the stimuli for change and adherence (31). For many Americans the reward for participating regularly in physical activity programs is unclear, due to the fact that many of the associated risk factors for CHD are not prevalent until later in life.

Honeywell, Inc. is an international controls company with 57,000 employees worldwide. Their Life$avers incentive program is offered to approximately 7,000 employees in Minneapolis, and was designed to focus on risk reduction with the corporations 10 leading physical conditions which generate the highest health care costs. The program recognizes and rewards employees who practice healthy lifestyles, and provides it's employees with a $300 cash incentive completing the four-part program (31). The company, (which hasn't released adherence rates for their program), states that an incentive based heath promotion program is an effective means of "reaching the unreachable" and increasing participation (31).

Baker Hughes is a Houston based, oil field equipment manufacturer with over 9,000 employees eligible for their Flexplan incentive program. After their healthcare claims analysis showed that the majority of their cost came as a result of diseases causes

by tobacco products and poor diets, they implemented a program to reward healthy employees and penalize those who choose less than healthy lifestyles. Employees who remain smoke free for six months, and agree to remain smoke free for the next six months, while meeting the requirements for bodyweight, blood pressure, and blood lipids, receive a $100 pre-tax contribution to their healthcare reimbursement account. Those who do not meet the requirements pay a $10 surcharge. Baker Hughes reports that with 1,400 participants in the program, healthcare costs have been reduced over the past five years (31). Again, this study illustrates that incentives, positive and negative, create an environment within the workplace where employees are driven to reach specific goals, and the same employees adhere to program requirements because of the incentives provided.

Quaker Oats, a food and beverage manufacturing company with approximately 9,000 employees offers a $500 annual financial incentive per family to employees and spouses in their flexible incentive plan. Both the employee and the spouse are eligible for up to $250 each under the plan. To receive the incentive the employee and the spouse must meet any of the eight healthy lifestyle criteria such as performing 20 minutes of aerobic exercise at least three times per week. All incentives received are applied to the employee's flexible benefit plan and can be used to purchase additional vacation day's, contribute to a 401k plan or can be paid in cash. This incentive based health promotion program saves Quaker Oats $1.6 million annually. This is an extremely beneficial plan that clearly benefits the employee's by promoting healthy behaviors and rewarding those who adhere to the program with meaningful incentives such as additional vacation days, cash and other monetary rewards. When the requirements of these particular programs

are specific, meaningful, attainable and realistic, and when the rewards or goals are just as meaningful, adherence and increased participation are close to inevitable(31). This plan also clearly benefits the corporation by decreasing healthcare costs, reducing absenteeism, and by increasing productivity and moral throughout the workplace. The successful program exemplified at Honeywell, Baker Hughes, and Quaker Oats demonstrate that incentive programs present a win-win opportunity for corporations and employees. A well designed health incentive program can reduce health care costs, while improving the health of the employees--the company's most valuable asset (31).

The idea of designing and implementing fitness-based incentive programs is a sound reinforcement method for increasing exercise adherence. Noland, from the University of Kentucky, studied the effects of self-monitoring and reinforcement on exercise adherence using two behavioral techniques to assess and determine the effects on subject's adherence to unsupervised exercise. Subjects included 35 fit persons who just completed an adult fitness program and 42 sedentary individuals who were recruited by means of a campus newspaper. Participants were randomly assigned to one of three groups, a)self-monitoring, b) reinforcement supplied by another person, and c) a control group (21). All subjects were asked to exercise for 18 weeks. The self monitoring group kept detailed logs of their exercise behavior, while individuals in the reinforcement group reported their progress to another individual who rewarded them periodically (21). The control group was on their own for the entire 18 weeks with no written records and no rewards. Individuals in the reward group were given tokens whenever they reported exercise sessions greater than 15 minutes and workouts within the required target heart rate zone. The reinforcement group showed 11% improvement in predicted max VO_2 and

a 9 beat per minute improvement in exercise heart rate. The self-monitoring(SM) group showed significant improvement compared to the control group, and both the SM group and the reinforcement group reported a significantly higher frequency of exercise sessions per week when compared to the control group (21). This study illustrates that people who record their weekly fitness progress, and people who are incented for consistency within a fitness regimen, demonstrate greater adherence rates than people who have no accountability for their time and no specific rewards to gain.

Health promotion programs in the workplace which offer incentives for employees who reach their goals, or for groups making the greatest increase in exercise, often times set-up competitions between departments or groups to facilitate such programs. The corporate setting places extreme emphasis on high rates of recruitment, retention, and positive lifestyle changes for its employees. However, the adherence problem which most likely stems from lack of interest, lack of time, attrition, and lack of significant results over short periods of time, makes it difficult to consistently increase participation and adherence from year to year. Competitions are effective methods used to optimize adherence regardless of any barriers that may exist when trying to maintain a high level of consistency with prescribed exercise sessions. The first published evaluation of a health promotion competition appeared in 1984 (5). In 1987 Brownell and Felix studied these competitions and their effects on recruitment, attrition, behavior change, work related factors such as morale, as well as cost effectiveness, which are particular to corporate settings. This first published evaluation of a health promotion competition looked at one between three banks where the president of one bank challenged two other banks and their people to a weight loss competition. Each person

involved was given a weight loss goal which was determined by subtracting their ideal weight from their actual weight. The program was set for a 12-week period and the maximum weight loss for any individual could not exceed 20 pounds. Goals for all individuals were summed for each bank and the total equaled the number of pounds the bank had to lose in the 12-week period. The bank that lost the greatest percentage of their goal would win the competition. Each of the participants were asked to pay $5 to join the competition. All funds were combined and would be given to the participants of the winning bank to be used in any way they saw fit. There were 176 employees participating across the three banks which represented 31% of the total working population. When the 12-week period had finished weight loses were determined for men and women. The mean weight loss for men equaled 18.7 pounds and 11.1 pounds for women. The overall mean for the group was 13.1 pounds. Drop-out rates were defined as those who attended fewer than eight of the 12 weekly weigh-ins (5). The attrition rate for this particular competition was .5%, and that individual dropped out due to pregnancy. One hundred percent of the Presidents, Vice-Presidents, Personnel and managers said they would recommend this competition to other managers at other sites and also said they would continue to host other competitions at their site. In this study when groups of people are motivated by competitions and incentives, adherence rates remain extremely high, not to mention that in this particular study the average person was able to maintain 80% of the weight lost during the initial 12-week period. This illustrates competitions and incentives not only promote adherence but health as well. A final point made in this study stressed the value of using the team approach in order to maximize recruitment and retention.

Health promotion programs are put in place to help promote the behaviors that decrease a person's chances of developing cardiovascular disease, cancer, and pulmonary disease. Nearly 30% of company health care costs can be attributed to unhealthy behaviors (31). Company sponsored health promotion activities not only influence the health behaviors and health practices of the employee, but also have the potential for reaching covered dependents and retirees (31). The challenge faced by the company wide programs is recruitment, retention and implementing programs that will result in the greatest impact. The key is finding the right program and determining the right audience to promote it to. This is where incentives began to develop an important role in health promotion. These incentives are designed to motivate employees to adopt healthy behaviors such as quitting smoking, exercising, losing weight or lowering their cholesterol and or blood pressure.

The difficult question senior management typically asks when health promotion programs involving incentives are proposed is "why do we have to pay someone to live a healthier lifestyle and why wouldn't a person want to be healthy and free from illness and disease (31)? Well the answer to this question is quite simple. Most people when asked if they would like to quit smoking or lose 25 pounds would answer yes. However, part of the problem lies in the fact that the consequences of a current lifestyle practice may not present themselves as a chronic disease until several years later in their life (31). Many people today feel invincible to heart disease, diabetes and cancer. In addition, each person's perception of what it is to be healthy and happy differs exponentially. Incentives allow people to redirect their focus from this feeling of invincibility to a feeling of accomplishment when they reach their goals and receive their incentives. Companies are

constantly looking for new ways to increase participation in their corporate fitness programs to help create a positive environment for behavior change. Incentives have been used for years in the workplace to reward people for milestones in regards to length of service, meeting and exceeding goals, and to reduce accidents and injury in the workplace. Incentives for health promotion programs are intended to reward people for adopting healthy behaviors and making healthy fitness and wellness resolutions. These incentives should be used to initiate and recruit individuals into the program. Once in the program, it becomes the responsibility of the fitness specialist to ensure the participants are effectively using their time to get the most out of whatever activity they are participating in. Making the incentive valuable and enticing enough at the beginning of the program and then convincing people that the behavior modification can be achieved in the specified amount of time are critical components if increasing participation, maximizing adherence and achieving the goals are the intent of the program. This is another example of how we see incentives helping companies and people "reach the unreachable."

In a recent study on goal setting, social support, and financial incentives, in a stress management program at two worksites, facilitators determined that goal setting is the easy part--helping people adhere to new behavioral regimens they have set for themselves is the challenge. Kirschenbaum and Flannery have published detailed reviews and discussions about incentive contracts in behavior change programs and concluded that such contracting enhances adherence (29). The program design of this study required participants to take part in thirteen one-hour sessions to be scheduled over five to six months. These sessions included education, relaxation methods and the opportunity to

come up with a personal project dealing with a particular aspect of the employee's life that is causing stress. Participants were required to spend a minimum of two hours per week working on their project and had to have someone verify, in writing, that they had done so. Failure to meet these requirements resulted in the loss of incentive deposit money. The 12 participants at Worksite A were randomly divided into three teams of four and the people at Worksite B were divided into two teams of five and four. All participants were asked to place a $40 deposit which was intended to support their commitment to specified program requirements. Failure to meet such requirements resulted in forfeiture of one half of the deposit money. Therefore, participants would lose $20 for the first failure, $10 for the second and so on. The money forfeited by participants was equally divided among the teams whose participants consistently met the requirements initially agreed upon at the start of the program. At the end of the program the team which retained the most forfeiture money would receive the $150 bonus money. Additional financial incentives of $50 were presented during a lottery at week three for those who had attended all three program sessions. In addition, three $50 lotteries were held during the program graduation ceremony which included participants of similar physical fitness and weight control programs. Participants earned one ticket for every session they completed. Participation records were checked at the end of each session and adherence statistics were gathered for the entire program. At the end of the program the results were compiled and it was concluded that Worksite A had no drop-outs for the program with a 90% adherence rate, whereas Worksite B had three drop-outs and a 73% adherence rate. The mean sessions attended for Worksite A was 11 and the mean for Worksite B was 9.5. Participation rates for the physical fitness programs which were

offered at the same two worksites reported even higher adherence rates of 99% and 97% respectively. Participants in the weight control program reported rates of 79% and 75% (34). An interesting finding of this study was generated by a survey the participants were asked to fill out rating the importance of ten key program components. Results of the survey revealed that the financial pledges placed at the beginning of the program motivated people to participate, and the personal project goals coupled with the fact that the program was held at the worksites, as well as the fact that participants were able to see and meet others who shared the same goals and concerns, and were able to talk about those same concerns during group discussions, proved to be the four most important components of the program.

As health care costs continue to rise exponentially across the country one might assume this rise is universal. We'll unfortunately it is not! In Glendale, Arizona incentives and targeted health promotion activities are helping the city employees stay healthy without unreasonable increases in health care costs. Over a ten year period the city experienced only three rate spikes with the highest being only 5%. Moreover, the city received one rate reduction, as well as three refunds totaling more than a million dollars, something virtually unheard of in today's health care industry. The city attributes these accomplishments to a wellness program that combines incentives with targeted health promotion programming. Their program has also resulted in lowering absenteeism, and reducing on the job accidents during a time when the total workforce had tripled (5).

Since 1982, two major developments in worksite wellness are that: a) Wellness has surpassed the point of being a fad and is being woven into the fabric of the

workplace; and b) Worksite health promotion programs have surpassed the point of being quiescent benefits for employers and employees, to having documented quantifiable and qualitative benefits (4). Wellness in the workplace has established a firm ground to stand on in the workplace for human resource management. It has been reported that more than two thirds of the nation's worksites with fifty employees or more have adopted health promotion and wellness programming into their workplace. The foundation for a healthier world has been established and most likely will not go away in the near future because of the impact it is having on decreasing health care costs. However, regardless of the foundation that's been established and regardless of the number of companies that participate, several key challenges still exist: How do we recruit more people to participate in these programs, how do we make the results specific and attainable, and most importantly, how do we get those people already participating, as well as new recruits, to adhere to a consistent exercise, health or wellness regimen?

In an article published by John Harris in 1989 titled "Getting the Most out of Employee Wellness Programs", he wrote about fostering healthier lifestyles and answering these questions about recruitment, results and adherence using a three step process. First, employees must be made aware of the need to change their lifestyle. Second, they must be motivated to change, and third, they must be provided with the vehicle through which they can make the change (16). Incentive programs with "Fun Appeal" seem to be a relatively easy sell to the corporate customer. The use of incentives could be the vehicle that educates and motivates people to adhere to such health promotion programs. A major step towards maximizing the effectiveness of company wellness programs may be to enhance the use of wellness incentives. Harris states that if

the incentives have fun appeal employees are likely to be responsive even if the monetary rewards are minimal (16).

If anxiety continues to grow with respect to corporate fitness programs because of difficulty in justifying the investment for a program and it's facilities to corporate stockholders then it would seem reasonable to conclude that any specific, measurable and attainable idea for increasing participation within these programs should be investigated. It has been well documented that fitness and wellness programs result in increased levels of fitness and a reduction in the risk factors associated with coronary heart disease (15). However the life-style of the American public has become more sedentary which has been identified as a major contributor to the 10 leading causes of death (15). The issues relating to employee participation in worksite health promotion programs seem to be of the same type in corporate programs across the country. However, documented results of fitness-based incentive programs reveal that programs that offering a reward or incentive seem to not only motivate people to participate but keeps them consistently participating over time.

Despite the rapidly growing popularity of worksite fitness programs across the country, participation within such programs rarely exceeds 20% of eligible employees. A certain percentage of the population will work out and do so consistently regardless of whether or not their company offers a fitness program. Adherence is not an issue for this group of people. Adherence becomes a problem for those individuals who are not likely to exercise on their own. These non-participants are typically the people who are at risk for coronary heart disease. Therefore, programs that incorporate strategies to increase exercise adherence will likely be more successful in terms of worker benefit and

employer benefit than those without strategies (3). Adherence means that a person has adopted a "habitual" exercise behavior (11). Exercise adherence can be defined in many ways but one definition that seems reasonable for everyone is that exercise adherence is the fulfillment of predetermined goals (24).

A recent study in 1995 by Blue et. al. examined the measurement of adherence along with programs strategies and studied results of 10 worksite exercise programs that were published between 1982 and 1992. A search was conducted on-line for any articles dealing with exercise behavior, exercise compliance, exercise adherence, worksite physical fitness programs, worksite health promotion, motivation and exercise and exercise adherence interventions (3). The 10 articles chosen for the study met criteria in regards to measuring adherence, and programming strategies. The first four studies incorporated programming strategies such has annual health screenings, exercise seminars, supervised exercise sessions, recommendations for life-style changes, self directed behavioral strategies, monitoring logs and lower intensity exercises. The highest adherence rate for any group in all these four studies was 70% with the lowest being 7%. A second group of four studies employed programming strategies such as supervised aerobic classes, weekly exercise classes, competitions, personalized exercise programs, and health education programs. The highest adherence rate for any group in these studies was 50%. The most impressive results came from the remaining two studies by Robison in 1992 and Stoffelmayr in 1992, who implemented competitive strategies and incentives in the form of financial lotteries, and monetary incentives (3). These strategies resulted in adherence rates of 97% and 98% respectively. This is yet another example of the

importance of fitness-based incentive programs in the workplace and the impact these strategies have on adherence.

A recent study by Wallace et.al examined twelve month adherence of adults who joined a fitness program with a spouse vs without a spouse. The purpose was to determine and compare adherence rates of married pairs with that of married singles. Subjects in this study did not volunteer, they were spontaneous participants in a university fitness program. Participants consisted of 16 married pairs, 16 married male singles and 14 married female singles. This study observed the spontaneous participation in a fitness program at a university campus for 12 months. Adherence was defined as monthly attendance, compliance to the exercise prescription, dropout, and reason(s) for dropout (35). The results for this study presented the following interesting findings: for married pairs the attendance rate was significantly higher at 54.2% compared to 40.3% for married singles. Dropout for married pairs was 6.3% compared to 43% for married singles. Compliance in regards to the exercise prescription resulted in no statistical significance across the groups. However, it was noted that compliance for all groups was good with the exception of the single males. Fifty percent stated that family responsibilities and lack of spousal support were the main causes for dropout, and 25% dropped out to exercise on their own. In conclusion, married pairs had significantly higher attendance and lower dropout rates than married singles which appeared to be primarily influenced by spousal support rather than self-motivation (35). This study interestingly enough illustrates the effects of spousal support on exercise adherence. Although financial incentives were not offered in this study we begin to see that other factors can contribute to increased adherence as well. The significance of this study is

that it becomes of critical importance that health and fitness directors at any health and wellness facility begin to incorporate a multifaceted approach to their health promotion programs, incorporating the behavioral management techniques which demonstrate the greatest level of effectiveness.

Robison and Rogers published an article in 1994 with recommendations for adherence to exercise programs, and although they supported the idea of the multifaceted approach, they stressed the importance of consequent control. Providing consequent control in the form of enforcement and punishment for exercise adherence or non-adherence has been accomplished by researchers through the use of contracts, incentives, competitions, and social support (28). Written behavioral contracts that describe the behavior being addressed, requirements for adherence and the contingencies (rewards or punishments) designed to promote the behavior change are critical components of consequent control. Over the years a variety of incentive programs have been created and implemented to help increase exercise adherence. One example of this was seen in 1969 when Libb and Clements handed out tokens to geriatric patients for increased cycling times. These tokens could be redeemed for candy, cigarettes and other rewards (28). Epstein and Wing in 1980 effectively improved adherence to a university aerobic dance program by having females deposit money at the beginning of the program and receive part of it back for each session that they attended. Wysocki et al. in 1979 improved adherence among college students by allowing them to accumulate points for completed exercise sessions which could then be exchanged for deposited personal items. Kravitz and Furst in 1991 improved attendance at aerobic dance classes by giving rewards of exercise clothing. Recently, incentives ranging from large cash awards, and T-shirts have

been employed successfully by worksites to facilitate participation in their corporate wellness programs (28). The important theme that has developed over the years with respect to adherence always seems to include some type of behavioral contract, monetary incentive, verified self-monitoring, social and or spousal support and team competitions.

Health professionals have long been aware that may individuals do not follow advice concerning self administered exercise regimen (17). Professionals are also well aware that noncompliance problems with respect to adherence are quite obvious. It is also well known that personal attributes are predisposition's that can be used to identify people resistive to interventions for increasing physical activity or to target specific groups for tailored interventions (11). Such attributes include blue collar workers, low socioeconomic status, low education, middle age groups, individuals with high risk for coronary heart disease, and smokers. These groups are relatively inactive and unlikely to participate in worksite health promotion programs. A better understanding of the attitudes, behavioral and social skills associated with adopting and maintaining a regular exercise program was a research need identified by Healthy People 2000. Dishman examined the measurement conundrum in exercise adherence research in 1994 (13). He examined several conceptual models for explaining exercise adherence. One theory refers to Azjen's Theory of Planned Behavior. According to Azjen, attitudes towards exercising and social norms about exercise, influence the intention to exercise. It is also influenced by personality factors such as will power or self-motivation (13). Baundra's Social Cognitive Theory relates to what the individual expects the potential outcomes and benefits to be, as well as the individuals confidence in their own personal ability or self efficacy. According to Baundra self-change operates through self-initiated reactions that

are stimulated by a discrepancy between personal goals and standards and knowledge of personal achievement (13).

In conclusion, many years of research have illustrated time and time again that recruitment methods and sound multifaceted adherence strategies are critical concepts that must be incorporated into the design of all corporate fitness programs, if participation is to be optimized and adherence is to be maintained. Although knowledgeable, enthusiastic, and prudent leadership is critical to customer satisfaction and program credibility, we now begin to realize the importance of team competitions, contractual behavioral agreements, verified tracking and reporting systems, educational programs, social and spousal support, and the ever growing importance of incentive based strategies which, entice, motivate, and reward participants. Therefore, a sound fitness-based incentive program which incorporates meaningful incentives, professional leadership, specific program requirements, and a sound tracking and reporting system should increase program participation, while enhancing adherence throughout the specified length of the program. Based on the current literature, the purpose of this study was to examine the relationship between fitness-based incentive programs and exercise adherence in a corporate fitness setting.

CHAPTER 3

METHODOLOGY

This investigation was undertaken to determine both the immediate and residual effects of fitness-based incentive programs on employee exercise adherence. The study was conducted at a well established, state-of-the-art corporate fitness facility located in New England. This facility is available to over 3300 employees and their families, free of charge. The facility is one of the only off-site corporate fitness facilities in the nation which offers the most comprehensive list of fitness services including; $VO_{2\ max}$ testing, blood pressure screenings, complete blood lipid profiling, body composition testing, flexibility, muscular strength and endurance testing, written exercise prescriptions, personal training, aerobics, tai chi, karate, yoga, spinning classes and cardio-kickboxing. In addition, this facility also includes indoor virtual golf, racquetball, squash, tennis, soccer, softball, and basketball to all eligible patrons. This facility also offers family programming to include parent and child movement classes, childcare, teambuilding as well as additional family events in the evening. The most unique characteristic of this facility and it's programming isn't necessarily the fact that it encompasses all areas of health and wellness for all, but for the fact that everything is offered free of charge without anything added to the employees health care package.

Subjects

A total of one hundred and ninety-two men and women, 21-67 years of age, participated in this investigation. Each subject was a self-selected patron of the fitness facility, and also self-selected to participate in one or more of the four fitness-based incentive programs that were conducted over the course of two years. The four incentive

programs were named: Cardio Minutes 2000, Cardio Minutes 2001, Fitness League 2000, and Fitness League 2001. The Cardio Minute incentives programs were run from January through April for both respective years, and the Fitness League incentives ran from September through December for both respective years. The number of participants in each program, for each year was very different. Cardio Minutes 2000 and 2001 had a total participation of (n=67) and (n=55) respectively. Fitness League 2000 and 2001 had a total participation of (n=42) and (n=55) respectively. The total participation for all four incentive programs was (n=192). It is important to note that of the 192 people participating in these programs, nine people participated in more than one, and of the nine people, only three participated in more than two programs.

The use of the corporate fitness center, as well as participation in the incentive programs was strictly voluntary on the part of employees and their spouses. Prior to using the fitness facility, each employee and spouse is required to complete a written health history questionnaire. A written informed consent, addressing the risks and benefits associated with exercise, is signed by each patron prior to using the facility. Employees not participating in these incentive programs were not penalized in any way, shape or form by the company.

Only the principle investigator had access to the names of the participants in this study. Only group data was used in this study. No specific individual records were reported.

Description of Fitness-Based Incentive Programs

Cardio Minutes 2000

Cardio Minutes 2000 was a fitness-based incentive program targeted people who had New Year's resolutions to lose weight and needed the motivation people to do more cardiovascular training while visiting the fitness center more frequently. The program was sixteen weeks in length beginning on January 2, 2000 and ending on April 31, 2000. The object of the incentive was to perform 2000 minutes of cardiovascular training faster than anyone else that signed-up for the incentive in the year 2000. The only eligible equipment the participants could use in this incentive consisted of a treadmill, upright and recumbent bike, stairstepper, cross trainer, eliptical trainer, and rowing machine. The motivation of this program was provided by incentives that were awarded to people who consistently adhered to the original program guidelines and for the individual who reached 2000 minutes the fastest. Finally, any person finishing the incentive was entered into a drawing for the grand prize. This fitness-based incentive program encouraged people to condition their heart and body but also challenged people to workout while following specific guideline for exercise.

Program Guidelines:

- All participants were encouraged to sign his or her name and telephone number on the sign-up sheet at the fitness center
- Participants were asked to workout a minimum of four times a week for 35 minutes per day if they were to reach their goal of 2000 minutes in 16 weeks

- Each participant was given a tracking sheet and was asked to track and calculate their minute totals each day. Participants were instructed that having a fitness specialist verify his or her time by initialing the tracking sheet each day was required
- All tracking sheets had to be turned in at the end of every week so the principle investigator could enter the times into a Microsoft excel database
- All results were reported and published so participants could see how he or she was doing compared to the rest of the field

. **Overall Incentives Awarded:**

1. All participants who successfully complete the 2000 Cardio Minutes during the 16 week program received an embroidered fitness center workout towel and was entered into a raffle for dinner for two at a local restaurant valued at $75.

2. A $50 gift certificate towards a new pair of sneakers was awarded to the individual who reached the 2000 Cardio Minutes goal first.

Cardio Minutes 2001

Program Guidelines:

The guidelines and theme of this incentive program mirrored the Cardio Minutes 2000 program with two exceptions. First , for this incentive individuals were asked to complete 2001 minutes of cardiovascular training faster than anyone else that signed-up in the year 2001. The other exception was a change in the incentives offered.

Overall Incentives Awarded:

1. All participants who successfully complete the 2001 Cardio Minutes during the 16 week program received a fitness center water bottle and was entered into a raffle for dinner for two at a local restaurant valued at $75.

2. A new pair of sneakers (maximum $75) was awarded to the individual who reached the 2001 Cardio Minutes goal first.

Fitness League 2000

Fitness League 2000 was a fitness-based incentive program geared to coincide with the National Football League (NFL) and Monday Night Football games. The program was sixteen weeks in length beginning on September 4, 2000 and ending on December 31, 2000. The object of the incentive was to score more points than anyone else that signed-up for the incentive. The motivation of this program was provided by incentives that were awarded to people finishing first, second or third for specified criteria. Finally, overall incentives were awarded to individuals with the highest totals at the end of the incentive. This fitness-based incentive program encouraged people to visit the fitness center more frequently and for a greater period of time, while adhering to specific participation and program guidelines if they were to be eligible for incentives.

Program Guidelines:

- All participants were encouraged to sign his or her name and telephone number on the sign-up sheet at the fitness center.
- Participants were asked to try and consistently workout more than anyone else that signs-up
- Participants will receive a touchdown (6 points) for every 30 minutes, of cardiovascular or strength training, aerobics class, racquetball or squash and for 60 minutes or recreational activities which included golf and basketball
- There were no time limits put on the duration of the stay but there was participation criteria that the participants had to adhere to or they would lose points. For example,

the rules state that each participant must visit the fitness center a minimum of three times per week. If you met this criteria you were awarded a field goal (3 extra points) at the end of each week

- If you visited less than three times in a week this resulted in a blocked field goal (-3 points)
- If you had less than three days of cardiovascular activity in a week (minimum 30 minutes a day) this resulted in a blocked field goal (-1 point)
- If you did not have any visits to the fitness center in any given week this resulted in an interception (-6 points)
- Participants earned points for every activity they participated in while at the fitness center, including fitness programs, recreation and programs family programs.
- Each participant was given a tracking sheet and was asked to track and calculate their minute totals each day. Participants were instructed that having a fitness specialist verify his or her time by initialing the tracking sheet each day was required
- All tracking sheets had to be turned in at the end of every week so the principle investigator could enter the times into a Microsoft excel database
- Points were calculated at the end of each week and points standings were published and posted for all participants to see.

Monthly Incentives Awarded:

1. The first, second, and third place scoring leaders for each of the four months would receive a fruit smoothie from the local catering service.

2. The individual each month who participated in the most recreational activities would be awarded a recreation champion T-shirt.

*Note it was specified in the rules that you could only win a monthly incentive once. This allowed a number of people to win something and kept all participants motivated to continue adhering to the specified criteria.

Overall Incentives Awarded:

1. League Champion - Awarded to the person with the most points for the entire incentive. This individual would receive a Replica NFL football jersey of their choice valued at over $70. He or she was able to pick the team, number and the name that they wanted on the jersey.

2. League MVP - Awarded to the person with the most recreational activities for the entire incentive. This individual would also receive a Replica NFL football jersey of their choice valued at over $70. He or she was also able to pick the team, number and the name that they wanted on the jersey.

3. Kicking Champ - Awarded to the person with the most visits to the fitness center for the entire incentive. This individual would receive and official NFL football valued at over $60.

4. Rushing Champ - Awarded to the person with the most cardiovascular minutes for the entire incentive. This individual would receive a $50 gift certificate

5. Overall Winners would have their names engraved on the Monday Night Football plaque displayed on the fitness center floor. The engravement will include the person's name, and their total for their respective category.

Fitness League 2001

Program Guidelines:

The program guidelines, scoring, tracking and adherence criteria for this incentive were exactly the same as the Fitness League 2000 incentive program. The only difference between these two incentives were the incentives offered.

Monthly Incentives Awarded:

1. Leading Scorer - Awarded to the person with the most points for each of the four months. This person would receive a fruit smoothie from the local catering service.

2. Leading Kicker- Awarded to the person with the most visits for the month. This person would be awarded a Fitness Center T-shirt.

3. Player of the Month- Awarded to the person with the most recreational activities for the month. This person would be awarded a recreation champions T-shirt. *Note it was specified in the rules that you could only win a monthly incentive once. This allowed a number of people to win something and kept all participants motivated to continue adhering to the specified criteria.

Overall Incentives Awarded:

1. League Champion - Awarded to the person with the most points for the entire incentive. This individual would receive a Sony DVD player valued at over $120.

2. League MVP - Awarded to the person with the most recreational activities for the entire incentive. This individual would also receive a Replica NFL football jersey of their choice valued at over $70. He or she was also able to pick the team, number and the name that they wanted on the jersey.

3. Kicking Champ - Awarded to the person with the most visits to the fitness center for the entire incentive. This individual would also receive a Replica NFL football jersey of their choice valued at over $70. He or she was also able to pick the team, number and the name that they wanted on the jersey.

4. Rushing Champ - Awarded to the person with the most cardiovascular minutes for the entire incentive. This individual would receive a $50 gift certificate to a local sporting goods store.

5. Overall Winners had their names engraved on the Monday Night Football plaque displayed on the fitness center floor.

Data Collection

Upon signing up for the incentive programs all participants were given tracking packets. All program participants were asked to complete daily and weekly tracking sheets. To ensure completion of all specified program requirements, participants were also asked to obtain a staff signature for each day that he or she exercised. Tracking sheets were collected on a weekly basis, and weekly participation rates were entered into a Microsoft excel database. Adherence rates for all participants were also calculated for the pre-incentive period and the post-incentive period by utilizing the reporting and tracking software used by the corporate fitness facility. A simple participation query was completed for each participant, in each program, for each year. The length of the pre and post-incentive periods mirrored the length of the during-incentive period which was 16 weeks for all four programs. The specific database information for each program included the age of each participant, gender, incentive program length, average weekly visits for the 16-week period prior to the incentive, average weekly visits during the incentive, and

the average weekly visits for the 16-week period following the conclusion of the incentive.

Within Subjects Design and Analysis

The mean number of weekly visits pre, during and post incentive was calculated for each group. These results, along with the respective variance (standard deviation) were calculated for each of the four incentives. Comparisons were then made between the following periods; pre-incentive to during-incentive, pre-incentive to post-incentive and during incentive to post-incentive. The three mean values (pre, during, post) for each incentive program were analyzed using an analysis of variance for repeated measures. post hoc analysis of the data was performed. In addition, in order to illustrate the adherence to exercise trends prior to, during and following each incentive period, the group means for each 16 week period were graphically plotted. Further post hoc analysis was performed using paired t-tests to compare the means within each incentive group. These paired t-tests were employed as post hoc tests to find the specific differences generally identified by the repeated measures test. It is important to note that this design and analysis did not compare the four incentive programs because of the 192 people employees participating in these programs, nine people participated in more than one, and of the nine people, three employees participated in more than two programs.

CHAPTER 4

RESULTS

Previous research has indicated that health promotion programs are an effective means of promoting behaviors that decrease a person's chances of developing cardiovascular disease, cancer, and pulmonary disease. Nearly 30% of employer health care costs can be attributed to unhealthy behaviors (31). The challenge faced by employer based health promotion programs is the implementation of programs that will have the greatest impact on recruitment and retention. The key is finding the right program and determining the right audience to promote it to. This is where incentives began to develop an important role in health promotion programming.

Previous research supports the idea of incentive programs to boost recruitment and participation, however the relationship between fitness-based incentive programs and adherence in the corporate setting, must be solidified as statistically significant if owners and corporate stockholders are going to fund such programs. The purpose of this study was to determine the impact of specific incentive programs by monitoring the exercise adherence of employees and their spouses prior to an incentive program, during the incentive and following the incentive.

The subjects in this study were members of a fitness facility owned and operated by their employer. As a part of their regular employee benefits, they enjoy free, year round, unlimited access to this facility. The training opportunities available in this setting included exercising with state-of-the-art aerobic and strength training equipment. At different 16-week periods, over the course of two years, fitness professionals at this facility offered employees and their spouses additional incentives to promote personal

fitness and the use of the facility. This study was undertaken to determine the effects of these incentive programs on adherence to personal exercise regimens and the use of the facility. In order to gain a more comprehensive understanding of this practice, (incentives), this study not only gathered adherence data during the 16 week incentive period, but 16 weeks prior to and 16 weeks following the incentive as well.

The cardiovascular training incentive ("Cardio Minutes") was conducted once in the year 2000 and once in 2001. At separate time periods, a general fitness training incentive ("Fitness League") was also conducted once in 2000 and once in 2001. The number of participants in each incentive program varied from a low of 28 to the largest group of 67. The mean number of visits pre, during and post incentive was calculated for each group. These results, along with the respective variance (standard deviation) are presented in Table 1.

Table 1: Comparison of Means and Standard Deviations by Incentive Program

	CARDIO MINUTES 2000 (n = 67)		CARDIO MINUTES 2001 (n = 55)		FITNESS LEAGUE 2000 (n = 42)		FITNESS LEAGUE 2001 (n = 28)	
PARTICIPATION PERIOD	MEAN (VISITS)	SD	MEAN (VISITS)	SD	MEAN (VISITS)	SD	MEAN (VISITS)	SD
PRE-INCENTIVE	1.83	1.44	1.45	1.26	1.85	1.12	1.78	1.16
DURING-INCENTIVE	2.06	1.28	1.95	1.33	2.41	1.43	2.27	1.63
POST-INCENTIVE	1.46	1.22	1.01	1.07	1.59	1.19	1.63	1.21

The three mean values (pre, during, post) for each incentive program were statistically analyzed using an analysis of variance for repeated measures. Significant differences by time (pre, during, post) were found in the number of visits (adherence) to the fitness center in three out of the four cases studied ($p \leq .01$). The significance ranged from .000 to .006. The case in which no significance was found (Fitness League 2001) also had the lowest number of participants (n=28). The analysis of variance answered the question as to whether or not there was an effect of time across the four incentive programs. This analysis demonstrates there was a statistically significant main effect for time across three of the four incentive programs as indicated by the F (values) and additional results for the repeated measures, which are presented in Table 2.

Table 2: Analysis of Variance for Repeated Measures

PROGRAM NAME	F (value)	P (value)
CARDIO MINUTES 2000	7.00	.002*
CARDIO MINUTES 2001	24.62	.000*
FITNESS LEAGUE 2000	5.86	.006*
FITNESS LEAGUE 2001	2.88	.074

* Statistical significance at $p \leq .01$

In light of the significance found in the test for repeated measures, post hoc analysis of the data was performed. Part of the analysis included the calculation of Partial ETA Squared for the effect of time on the results. The highest value obtained for this measure was 0.276 occurring in the Cardio Minutes 2001 group. The lowest value (0.098) was found in the Cardio Minutes 2000 group. All of the results of this analysis

can be found in Table 3. This post hoc analysis of the data was performed using the calculation of Partial ETA Squared to determine the main effect of time on the results (mean weekly visits for each period). These results indicate that although the passage of time was statistically significant from the pre-incentive period to the during incentive period, as illustrated by the analysis of variance for repeated measures, the partial ETA squared comparison determined just how important the significance was. In three out of the four comparisons we had a significant main effect for time in the repeated measures test, however not much of the total variance can be explained by the main effect (ETA Squared) due to the fact that the significant increase in visits from the pre period to the during period was negated by the fact that there was a significant decrease in visits from the during period to the post period.

Table 3: Partial ETA Squared Comparison

PROGRAM NAME	Partial ETA Squared
CARDIO MINUTES 2000	.098
CARDIO MINUTES 2001	.276
FITNESS LEAGUE 2000	.151
FITNESS LEAGUE 2001	.102

In order to illustrate the adherence to exercise trends prior to, during and following each incentive period, the group means for each 16 week period were plotted. Figures 1-4 illustrate the results for Cardio Minutes 2000, Cardio Minutes 2001, Fitness League 2000 and Fitness League 2001 respectively. The trend in each group was an

increase in adherence from pre incentive to during incentive, followed by a post incentive decrease in adherence which, interestingly enough fell below pre incentive levels.

Figure 1: CARDIO MINUTES 2000 MEANS

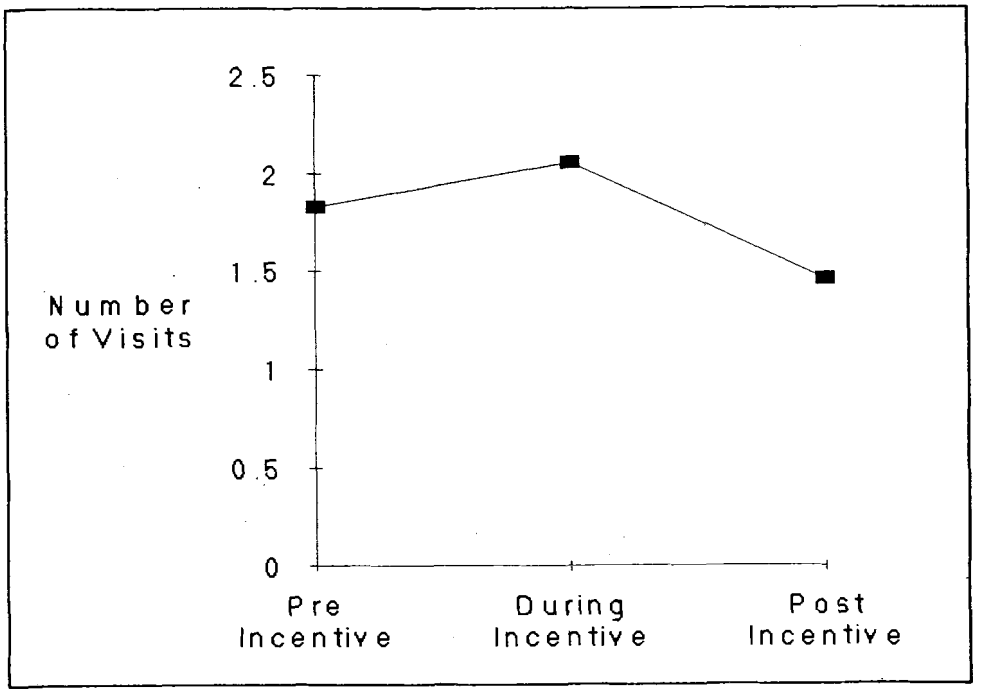


Figure 2: CARDIO MINUTES 2001 MEANS

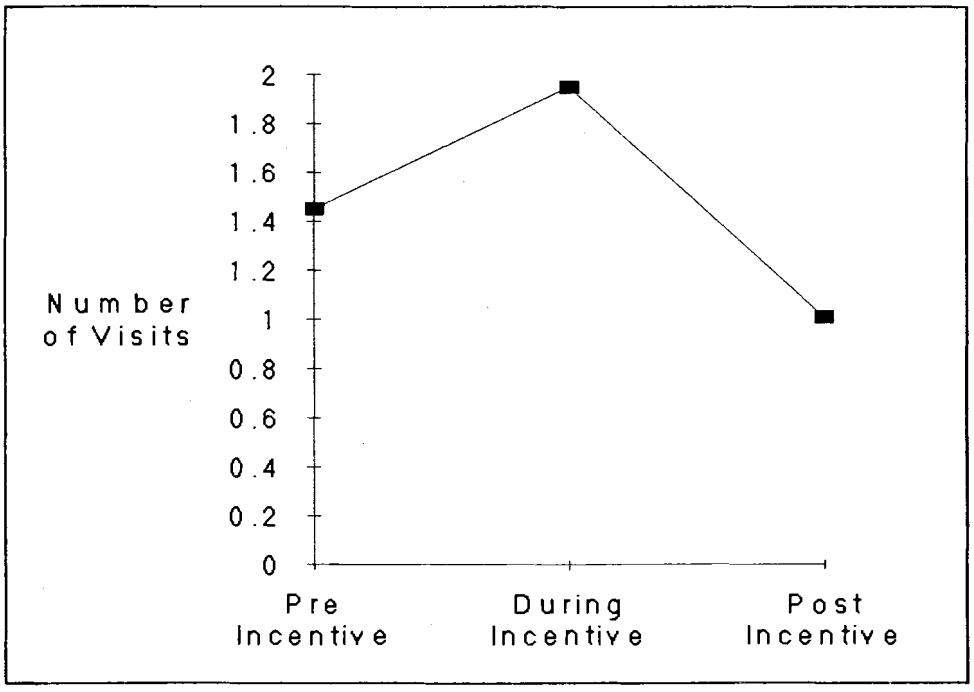


Figure 3: FITNESS LEAGUE 2000 MEANS

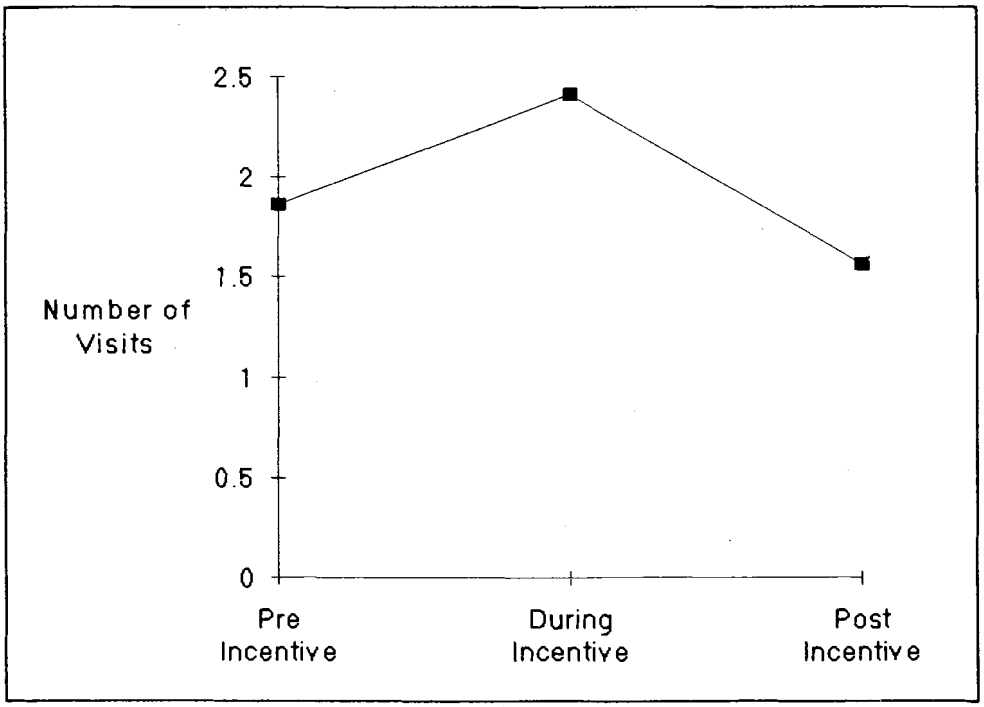
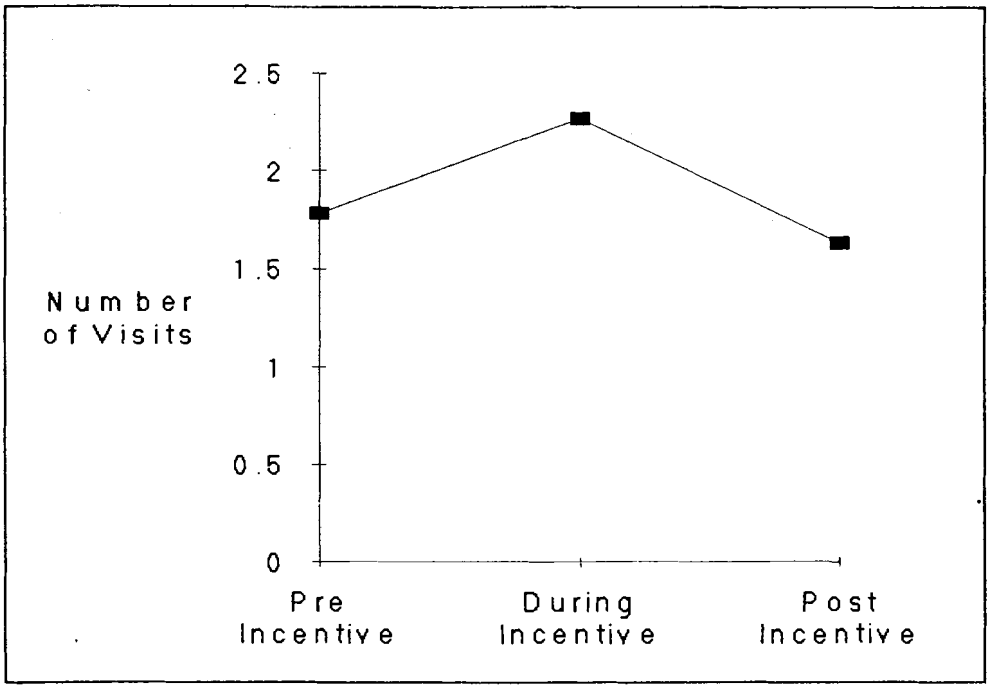


Figure 4: FITNESS LEAGUE 2001 MEANS



Further post hoc analysis was performed using paired t-tests to compare the means within each incentive group. These paired t-tests were employed to find the specific differences generally identified by the repeated measures test. Cardio Minutes 2000 was the only group out of the four incentives which did not show a significant ($p \leq .05$) increase in adherence from the pre-incentive period to the during incentive period. This group also had the largest number of participants (n=67). All of the groups showed a decrease in adherence when comparing the pre-incentive period to the post incentive period. In two of the groups, (Cardio Minutes 2000 and Cardio Minutes 2001) this decrease was significant ($p \leq .05$). All of the groups showed a significant ($p \leq .05$) decrease in adherence once the incentive period was completed (during incentive to post incentive). Tables 4-7 list complete paired t-test results from Cardio Minutes 2000, Cardio Minutes 2001, Fitness League 2000 and Fitness League 2001 respectively.

Table 4: Cardio Minutes 2000
Post Hoc t-tests for Correlated Means

PARTICIPATION PERIOD	MEAN (# OF VISITS)	SD	t	df	p
Pre-Incentive	1.83	1.44	-1.51	66	.135
During-Incentive	2.06	1.28			
Pre-Incentive	1.83	1.44	2.17	66	.033*
Post-Incentive	1.46	1.22			
During-Incentive	2.06	1.28	3.77	66	.000*
Post-Incentive	1.46	1.22			

* Statistical significance at $p \leq .05$

Table 5: Cardio Minutes 2001
Post Hoc t-tests for Correlated Means

PARTICIPATION PERIOD	MEAN (# OF VISITS)	SD	t	df	p
Pre-Incentive	1.45	1.26	-3.25	54	.002*
During-Incentive	1.95	1.33			
Pre-Incentive	1.45	1.26	2.89	54	.006*
Post-Incentive	1.01	1.07			
During-Incentive	1.95	1.33	7.08	54	.000*
Post-Incentive	1.01	1.07			

* Statistical significance at $p \leq .05$

Table 6: Fitness League 2000
Post Hoc t-tests for Correlated Means

PARTICIPATION PERIOD	MEAN (# OF VISITS)	SD	t	df	p
Pre-Incentive	1.85	1.12	-2.92	41	.006*
During-Incentive	2.41	1.43			
Pre-Incentive	1.85	1.12	1.24	41	.223
Post-Incentive	1.59	1.19			
During-Incentive	2.41	1.43	3.24	41	.002*
Post-Incentive	1.59	1.19			

• Statistical significance at $p \leq .05$

Table 7: Fitness League 2001
Post Hoc t-tests for Correlated Means

PARTICIPATION PERIOD	MEAN (# OF VISITS)	SD	t	df	p
Pre-Incentive	1.78	1.16	-2.08	27	.047*
During-Incentive	2.27	1.63			
Pre-Incentive	1.78	1.16	.56	27	.580
Post-Incentive	1.63	1.21			
During-Incentive	2.27	1.63	2.14	27	.014*
Post-Incentive	1.63	1.21			

• Statistical significance at $p \leq .05$

Not all of the changes in adherence from pre to during to post incentive in each of the four groups studied were not statistically significant. However, they all followed the same trend. An increase in adherence occurred during the incentive period, and a drop below the pre-incentive adherence levels occurred in the post incentive period. It is interesting to note that regardless of the time of year, the number of the participants or the type of incentive offered, this pattern of adherence to exercise repeated itself in every case.

CHAPTER 5

DISCUSSION

The worksite has evolved into an optimal arena for health promotion programs. These programs are employed in an attempt to decrease an individuals chances for developing the risk factors associated with coronary heart disease(CHD) and although many corporations offer their employees a variety of health promotion programs and behavior modification strategies, only a small percentage of the working population take advantage of such efforts. Only 15 to 20 percent of a working population will participate in corporate sponsored activities and fitness regimens. This becomes an extremely important statistic due to the fact that this indicates that many people, of whom the majority are most likely to be at risk for CHD, are not participating. Recent studies report that greater than 70% of the adult population are not participating in regular programs of physical activity, and less than 10% are participating regularly at levels suggested by the 1990 Physical Fitness Exercise Objectives(29). There is no question physical activity is the primary deterrent to many chronic diseases and illnesses, however, exercise adherence has become the primary barrier for most Americans.

When investigating the relationship between physical activity and quality of life, it is well documented that "habitual exercise" is beneficial to health(10). A worksite health promotion program can build on the established channels of communication, previously existing social support networks, as well as specific behavioral patterns. Exercise adherence is the most critical issue facing corporate health and fitness directors. In contrast to the commercial fitness world where membership sales and profit maintain to be the primary objectives of the industry, corporate programs are concerned with

recruitment, and adherence, to consistently and exponentially increase participation to justify the cost. There is no question that every company in America is out to make a profit, and if cutting health care costs, decreasing absenteeism, and increasing productivity are the results of well managed corporate fitness programs, then owners and stockholders will continue to support and fund such programs.

When investigating the relationship between physical activity and quality of life, it is well documented that "habitual exercise" is beneficial to health(10). This notion of regular physical activity has resulted in variable definitions over the years. A single definition or set of guidelines simply isn't sufficient for all research because physical activity is such a complex behavior. Habitual exercise may be defined as the regular and planned performance of physical activity with the final or intermediate objective of improving or maintaining specific levels of physical fitness (10). However, regardless of what definition is used and what frequency, intensity, duration, and mode is prescribed, the fact still remains that the majority of Americans simply do not adhere to exercise programs.

When prescribing exercise for fitness and adherence it is important for an exercise specialist to carefully choose the appropriate frequency, intensity, duration and mode of exercise. These variables can either "make or break" the exercise program by making it too easy or too hard. If it is too easy, results will come slow and people will get frustrated and most likely stop participating. If it is too hard, delayed onset muscle soreness and fatigue will ultimately lead to drop-out. Therefore, fitness professionals must utilize data from fitness testing and evaluations to determine the best frequency, intensity, duration and mode of exercise for the individual. Exercise program should be designed not only to

develop optimal fitness but also for enhancing long-term adherence. Duration and intensity are two of the most important variables when attempting to prevent fatigue and burn-out. These variables should be established based on which will give the participant the most comfortable yet rewarding experience during the early stages of a new program.

Previous research on this dilemma has produced several factors or variables that negatively influence exercise adherence. Study's indicate and predict that 60% of individuals that begin an exercise program will dropout within the first six months. The variables commonly used to predict exercise dropout include programming factors such as inconvenient time or location, excessive cost, lack of variety, lack of positive feedback and poor exercise leadership. Other factors include, but are not limited to, lack of spousal support, inclement weather, excessive job travel, injury, medical problems, and any recent job changes or moves.

Adherence to regular exercise regimes remains the major problem in the health and fitness industry. Drop-out rates continue to soar during the first six months of an initial exercise program averaging approximately 60%. Previous research on exercise adherence in the corporate setting has revealed, that when the exercise activity is coupled with an incentive-based program, adherence rates drastically increase. Some studies have reported adherence rates of as high as 95% when an incentive to exercise is also utilized, and conversely adherence rates of as low as 19% when an incentive isn't offered(29).

Although the associated positive benefits of adopting a healthy and active lifestyle have been published and reported for many years, individuals often times become dissatisfied because these benefits are not immediately evident. The internal cardiovascular and metabolic adaptations associated with a regular exercise regimen, as

well as the physical changes one aspires to in regards to weight loss and muscular tone, certainly do not occur over night. This may be one of the reasons why dropout rates during the first six months are so high. Other reasons may include but certainly are not limited to the fact that the majority of people beginning new exercise programs often make drastic changes to their schedules, need to shop for new clothes, need to deal with the initial muscle soreness and stiffness and often sacrifice time with their families. Change and sacrifice are often difficult enough to adjust to and stay positive about, but when you factor in the limited number of initial benefits from beginning a new exercise program it doesn't seem overly extraordinary that attrition rates in the beginning stages are so high.

This is why fitness specialists and health promotion programs, no matter if it's in the corporate or commercial setting, need to focus on the variables that promote adherence while reinforcing and rewarding individuals for their efforts. Such variables include group participation, fun, variety and enjoyment, progress testing and reporting, spousal and peer support, providing qualified and enthusiastic professionals, and by recognizing participants accomplishments through a system of rewards and incentives.

During the early stages of new program some professionals have incorporated a system of rewards to encourage participation. In this study the implementation of four fitness-based incentive programs were employed to try and motivate employees to adhere to four similar, yet specified exercise regimens. This study was unique in that it examined adherence to exercise programs and participation at a corporate fitness facility prior to, during and following a fitness-based incentive program. Examining the results of this study was interesting because the expectations of such incentive programs are that

adherence and participation would increase from the pre to the during incentive period. In addition, it was expected that we could possibly retain a certain percentage of the increase in visits during the incentive, into the post incentive period. One relationship and assumption that proved to be intriguingly wrong when after the results were calculated was the relationship between the pre and the post incentive periods. One would hope, in an effort to promote long-term adherence that the average number of visits during the post incentive period would be higher than the pre-incentive period. However, in this study this was not the case. Although all of the changes in adherence from pre to during to post incentive in each of the four groups studied were not statistically significant they did all follow the same trend. An increase in the average number of visits for each program occurred during the actual incentive period, and a dropped below the pre-incentive levels in the post incentive period. These trends which are graphically illustrated in Graphs 1-4 depicts just how important the relationship between fitness-based incentive programs are in promoting adherence and increasing visits. It is interesting to note that regardless of the time of year, and the number of the participants or the type of incentive offered, this pattern of adherence to exercise repeated itself in every case.

Significant differences were found in the number of visits (adherence) to the fitness center in three out of the four cases studied. The significance ranged from .000 to .006. In the case in which no significance was found (Fitness League 2001) this program also had the lowest number of participants (n=28). This was interesting because it makes it relatively easy to say that had more people participated in the program, a statistical significance would have been found.

Another interesting analysis was determined using paired t-tests, which were employed to find the specific differences generally identified by the analysis of variance for repeated measures test. These results as seen in Tables 4-7 are interesting because they, along with they graphical representations of the means in graphs 1-4, illustrate the trends that one would assume to be the case when implementing fitness-based incentive programs.

Health promotion programs are put in place to help promote the behaviors that decrease a person's chances of developing cardiovascular disease, cancer, and pulmonary disease. Nearly 30% of company health care costs can be attributed to unhealthy behaviors (31). Company sponsored health promotion activities not only influence the health behaviors and health practices of the employee, but also have the potential for reaching covered dependents and retirees (31). The challenges facing corporations are with recruitment, retention and implementing programs that will result in the greatest impact. The key is finding the right program and determining the right audience to promote it to. As the results in this study demonstrate the use of incentives or rewards motivate people to maintain a high level of adherence when a specific exercise regimen is coupled with enticing prizes.

In light of the significance found in the test for repeated measures, a post hoc analysis was performed which included the calculation of Partial ETA Squared. The highest value obtained for this measure was 0.276 occurring in the Cardio Minutes 2001 group and the lowest value (0.098) was found in the Cardio Minutes 2000 group. This post hoc analysis of the data was performed using the calculation of Partial ETA Squared to determine the main effect of time on the results (mean weekly visits for each period).

These results indicate that although the passage of time was statistically significant from the pre-incentive period to the during incentive period, as illustrated by the analysis of variance for repeated measures, the partial ETA squared comparison determined just how important the significance was. In three out of the four comparisons we had a significant main effect for time in the repeated measures test, however not much of the total variance can be explained by the main effect (ETA Squared) due to the fact that the significant increase in visits from the pre period to the during period was negated by the fact that there was a significant decrease in visits from the during period to the post period.

This study supports previous research done on the topic of incentives and rewards in relationship to exercise adherence. Incentives do motivate individuals to stay focused on a specified goal because they can see the positive and desirable reward at the end of the road. The goal for the fitness professional is that the prizes and rewards will serve as incentives for employees to choose to adopt healthier lifestyles by maintaining a greater consistency with their workouts. The problems of unhealthy lifestyles don't often present themselves as chronic diseases until later in life which makes it difficult for health professionals to sell exercise adherence with the idea that it will decrease your blood pressure and cholesterol, and prevent you from developing coronary heart disease. It makes it much easier to sell the idea when the reward is a DVD player, football jersey of their choice, or a gift certificate.

The ultimate hope of this study was that the number of visits would increase during the incentive. However, the statistics that determine the benefits and value of such programs lye in the ability to retain a percentage of those visits after the program concludes. This is where long term adherence begins to take shape and the role of the

fitness director becomes critical. Increased participation and adherence from year to year symbolizes profits in the eyes of the company, it's owners and it's stockholders.

The mean number of weekly visits during the post incentive period wasn't statistically significant in every case however as seen in the comparisons of the paired t-tests, the trend demonstrated that adherence during the post incentive period was less than that of the pre-incentive period. This finding although unexpected, will prove to be the most important finding of the study. If the mean weekly visits retained or not retained during the post incentive period indicate whether or not the incentives have or have not promoted long term adherence then, decisions can be made by the fitness director or program coordinator to eliminate or restructure such programs. In the case of these four fitness-based incentive programs elimination would be an incorrect decision. In these programs serious decisions need to be made in regards to the specified program requirements such as duration of the program, and intensity and frequency of the exercises involved. Future research must consider and examine these variables to determine the optimal lengths for different incentive programs, in addition to determining ways to regulate frequency and intensity to prevent "burn-out". The incentive programs in this study were extremely competitive and employees and their spouses would increase the workouts substantially each week in pursuit of the reward. Moreover, program participants received points for minutes spent working out, which ultimately resulted in workouts lasting anywhere from 90 to 120 minutes and for some people twice per day. All of the incentives lasted 16 weeks and for someone to maintain this intensity for that amount of time, over-training is nearly inevitable.

There are also a number of other possible variables that may have played a role in the significant decrease in the post incentive period compared to that of the pre-incentive period. Employees and there spouses may have visited the facility less than they did during the pre-incentive period because of a lack of time due to a new to a new job, because of health related problems, lack of spousal support, poor exercise leadership and enthusiasm on the part of the fitness specialists, or simply because they began to lack the confidence they had when they initially joined the program. These rival explanations must be taken into consideration with the "burn-out" and over-training philosophy if one is to paint a complete picture of the reasons behind the decrease. Another idea for future consideration is to run the exact same programs using solely unique participants and add in a fifth and sixth group, one for the Cardio Minutes incentive and one for the Fitness League incentive respectively. These two new groups would be comprised of employees and spouses who are new to the facility and have never visited prior to the incentive. This would also help paint a better picture about what impact the program guidelines has on mean visits to the facility during these periods.

A second variable that should be examined and considered in future research should be the specific incentives offered to the employees. Although recruitment, adherence and wellness remain to be primary objectives for the fitness director and their health promotion programs one must also be able to carefully budget and justify the cost of such incentive programs. This makes it critical to determine the optimal amount of funds that need to be spent for each program, each year to elicit the greatest return (mean number of visits). The questions that need to be answered to further justify incorporating incentives and rewards into a health and fitness program are whether or not it takes $40 or

$400 to produce the greatest return? The next question would be do we have to spend any money at all or is it just as cost effective to ask individuals to place an initial monetary deposit and receive a predetermined amount back each month, for meeting the required exercise regimen and visitation guidelines? And finally what results can be expected if funding for the incentives just isn't available in the future years of your program? What rewards can then be offered to maximize participation?

In conclusion, many years of research have illustrated time and time again that recruitment methods and sound multifaceted adherence strategies are critical concepts that must be incorporated into the design of all corporate fitness programs, if participation is to be optimized and adherence is to be maintained. Although knowledgeable, enthusiastic, and prudent leadership is critical to customer satisfaction and program credibility, we now begin to realize the importance of team competitions, contractual behavioral agreements, verified tracking and reporting systems, educational programs, social and spousal support, and the ever growing importance of incentive based strategies which, entice, motivate, and reward participants without creating burnout. Therefore, a sound fitness-based incentive program which incorporates meaningful incentives, professional leadership, specific program requirements, and a sound tracking and reporting system should increase program participation, and enhance long-term exercise adherence.

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