

AN ABSTRACT OF THE THESIS OF

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This study investigated the relationships between the independent variable physical activity, and the dependent variables burnout, absenteeism, organizational commitment, job satisfaction, and job performance. Participants were 211 employees of various organizations who completed the online or paper and pencil version of the survey.

Employees were given a measure of exercise, the Copenhagen Burnout Inventory (CBI), a measure of absenteeism, the Organizational Commitment Questionnaire (OCQ), the Brief Index of Affective Job Satisfaction (BIAJS), and a measure of job performance.

The results were more easily interpreted when physical activity, done as part of the job, was examined separately from exercise during leisure time. Results indicated high intensity and time spent on physical activity at work is related to low job satisfaction.

Conversely, intense leisure time activity was related to decreased burnout and absenteeism. Employees engaging in a total 250-300 minutes over three to five instances of leisure exercise per week reported being the least burnt out and the least absent.

Exploratory analyses indicated that industry type might moderate the relationships between exercise and the other variables.

Keywords: exercise, job satisfaction, absenteeism, burnout

THE POSITIVE AND NEGATIVE ORGANIZATIONAL OUTCOMES OF PHYSICAL
ACTIVITY

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CHAPTER 1

LITERATURE REVIEW

The benefits of exercise have been studied for over two thousand years, but researchers have only recently begun to investigate the psychological benefits of exercise on the workplace (Parks & Steelman, 2008; Tipton, 2014). This area of interest began when companies started offering wellness programs to employees. Originally designed to help employees recover from alcohol abuse, wellness programs are now expected to directly and indirectly influence the company's bottom line in multiple ways (DeGroot & Kiker, 2003). Researchers and companies expect wellness programs to increase job satisfaction and productivity, improve morale and commitment, reduce stress and accidents, decrease absenteeism and turnover, decrease health care expenditures through improved employee health, and act as a benefit for recruiting and retaining employees (DeGroot & Kiker, 2003; Falkenberg, 1987; Harrison & Liska, 1994; Kerr & Vos, 1993; Merrill, Anderson, & Thygerson, 2011; Parks & Steelman, 2008; Pavett, Butler, Marcinik, & Hodgdon, 1987).

Despite the widespread belief that wellness programs can provide these types of benefits, the research has been less conclusive for some of them. Although educational wellness programs can be helpful, fitness programs are expected to provide the most benefits (Parks & Steelman, 2008). Therefore, this study will focus on the relationship between exercise and the benefits listed above.

Exercise and Stress, Anxiety, Depression, and Burnout

Long-term exposure to stress is thought to increase a person's risk for heart disease, ulcers, cancer, and other health problems (Sutherland & Cooper, 1990).

Consequently, employers are becoming more concerned with the effects of stress in the workplace (Falkenberg, 1987). Ideally, employers concern for their employees' health should be reason enough to reduce workplace stress, but combined with the expected health care savings, it would be hard for any company to justify not attempting to reduce workplace stress.

Previous research indicates that exercise is an effective way to reduce stress, anxiety, and depression. For example, Sutherland and Cooper (1990) found exercise to be as effective as psychotherapy for clinically depressed participants. Although many employees might not be clinically diagnosed, Norvell and Belles (1993) point out that "significant symptoms of psychological distress exist in populations who are not seeking psychological or psychiatric intervention" (p. 524), and they suggest that exercise can produce beneficial effects for a majority of the population. Additionally, other research has determined that the effects of exercise are not limited to clinically diagnosed groups, but also affect unfit and "normal" participants (Altchiler & Motta, 1994).

In a review of exercise literature, Falkenberg (1987) stated that long-term exercise can produce changes in trait anxiety while short-term exercise can influence state anxiety. Similarly, a study by Altchiler and Motta (1994) found that people who engaged in aerobic exercise had lower state anxiety levels, and as the number of weeks spent exercising increased, state anxiety levels decreased. Furthermore, participants in the aerobic condition who did not exercise prior to the study experienced a decrease in trait anxiety.

Although the study found that aerobic exercise was better than non-aerobic exercise at reducing state and trait anxiety, over 70% of the participants in both groups

gave subjective reports of increased energy, and feeling more calm and relaxed (Altchiler & Motta, 1994). Falkenberg (1987) suggests that vigorous exercise is more likely to reduce state anxiety, so the emphasis on stretching in the non-aerobic exercise group of the Altchiler and Motta (1994) study might explain why participants did not experience a reduction in state anxiety.

Other research has supported the idea that in addition to aerobic exercise, anaerobic exercise can decrease stress, anxiety, and depression (Norvell & Belles, 1993; Pavett et al., 1987; Salmon, 2001). For example, Pavett et al. (1987) implemented a circuit weight training program for Navy participants after the ship failed an important training mission. They found a reduction in job stress for participants, but an increase in stress for non-participants.

Falkenberg (1987) found that highly trained individuals have lower levels of anxiety and depression than untrained individuals, but even highly trained individuals can further reduce their anxiety by exercising. Therefore, the act of exercising is expected to be more important than an individual's fitness level. This idea is supported by the fact that physically fit individuals who were not exercising were in worse moods than all others (Salmon, 2001). In addition, Altchiler and Motta (1994) indicate that the antidepressant effects of exercise occur much faster than the physiological changes that indicate improvement in cardiovascular fitness. It has also been reported that exercise at a level too low to improve fitness is better at reducing stress and anxiety than exercise intense enough to improve fitness (Salmon, 2001).

A related concept that also has a negative impact on employees is job burnout (Toker & Biron, 2012). Burnout results from long periods of stress in the workplace, and

its symptoms include physical fatigue, cognitive weariness, and emotional exhaustion.

Although all three of these dimensions of burnout involve a form of tiredness, increasing physical activity has been found to reduce the negative impact of burnout.

A longitudinal study by Toker and Biron (2012) found that increases in depressive symptoms from T1 to T2 were related increases in burnout symptoms from T3 to T4. Furthermore, they found increases in burnout symptoms could predict subsequent increases in depressive symptoms. In regards to physical activity, the researchers reported that employees who were not physically active had the largest increase in depression and burnout, while those who exercised more were less likely to experience increases in depression and burnout.

A similar study reported comparable findings in their longitudinal study that also examined physical activity, depression, and burnout (Lindwall, Gerber, Jonsdottir, Börjesson, & Ahlberg, 2013). Their study found that initial levels of depression and burnout were related to initial levels of physical activity. Additionally, increases in physical activity resulted in decreases in depression and burnout. These results were found to hold true within-subjects and between-subjects.

There are several theories describing how exercise reduces stress and anxiety. One theory is that exercise can act as a distraction from the stress, somewhat like a displacement defense mechanism (Sutherland & Cooper, 1990). Although there is not much direct evidence of this, there is indirect support for this idea. In a study on the neurological effects of exercise, Schneider et al. (2013) suggested that changes in the brains blood flow during exercise indicate the participant becoming immersed in the

exercise. Furthermore, the rhythm of the exercise was found to be important, and it could be that the rhythm helps the participant become more immersed in the exercise.

Second, exercise might decrease stress by increasing self-esteem and self-efficacy (Sutherland & Cooper, 1990). Exercise allows people the opportunity to reach goals and master difficult tasks (Salmon, 2001). Salmon (2001) reported improvements in mood when strenuous activity is completed at familiar levels, and it is especially true for fitter participants confident in their abilities. If people develop high self-esteem, and a general sense of self-efficacy, they are likely to experience less stress because they believe they can handle the challenge (stressor).

A third theory is based on the idea that stress creates the fight or flight reaction (Sutherland & Cooper, 1990). Because either reaction (fight or flight) involves physical exertion, exercise could be considered the natural way to reduce stress (Sutherland & Cooper, 1990). In addition to reducing stress caused by uncontrollable factors, exercise creates a controllable stress that helps build stress coping mechanisms (Salmon, 2001). The controllable stress created by exercise activates the same responses as uncontrollable stressors, but exercise helps the individual learn to control arousal (Falkenberg, 1987; Sutherland & Cooper, 1990). Having control over arousal makes it harder for arousal to reach stressful levels. Although any stress can influence arousal, repeated exposure to controllable stress allows more rapid changes in arousal control than exposure to uncontrollable stressors (Salmon, 2001). This is supported by the fact that frequent exercise was found to reduce participants' sensitivity to stress.

The fourth theory is based on an idea similar to the opponent process theory (Solomon, 1980). When a person does not regularly exercise, the exercise is initially

unpleasant, but completion of the exercise results in opposing (positive) feelings. These positive feelings, combined with motivators such as social interaction and expected benefits of exercise, reinforce the exercise behavior (Salmon, 2001). As the research on the opponent process shows, if the person continues to exercise, the initial feelings of unpleasantness will decrease, but the opposing process of positive feelings will not only remain, but grow stronger with repetition (Solomon, 1980). Through this process, exercise is expected to increase tolerance to (or reduce the effects of) depression, anxiety, and stress (Salmon, 2001).

It should be noted that these theories overlap each other in some areas. Furthermore, they are not mutually exclusive, so more than one could influence the stress-exercise relationship. For example, the opponent process might explain reductions in state anxiety (pleasure directly after exercise) while the mastery theory results in reductions of trait anxiety (long-term positive feelings).

Stress is thought to cause illnesses, so reducing stress through exercise should also help to reduce absences due to illness (Sutherland & Cooper, 1990). In addition to absenteeism, reducing stress is expected to increase organizational commitment and job satisfaction, and improve job performance (Carson, Baumgartner, Matthews & Tsouloupas, 2010).

Exercise and Absenteeism

In 1994, Altchiler and Motta estimated the cost of absenteeism to American companies to be \$26 million annually. By 2003, that number was estimated at \$25 billion (Bungum, Satterwhite, Jackson & Morrow, 2003). Additionally, employers are expected to lose 10.4 million work days each year to absenteeism (Parks & Steelman,

2008). As the costs associated with absenteeism continue to skyrocket, companies have turned to fitness programs as a possible remedy.

In a review of the effects of fitness programs on organizations, Falkenberg (1987) reported that fitness program participants that regularly attended the program had a 22% lower rate of absenteeism than low attendance participants or nonparticipants. The fitness programs are expected to reduce absenteeism by improving the health of the employees, and healthy employees are less likely to be absent; however, this assumption only applies to medically related absences (Falkenberg, 1987; Kerr & Vos, 1993). In support of this assumption, a weight training intervention was found to reduce the physical symptoms of employees (Norvell & Belles, 1993). Additional support comes from the Bungum et al. (2003) finding that obese participants (and employees with more health risks) were more likely to be absent. Not only were obese participants more likely to be absent, but they were 4.1 times more likely to be in the top 25% for health care expenses.

A study by Kerr and Vos (1993) examined differences between high participation in a fitness program, low participation, independent exercisers (exercisers not participating in the fitness program), and non-exercisers (control group). They found that the high participation group experienced a -41.1% change in absences, a -28.4% change for low participation, an 11.4% change for independent exercisers, and a 48.1% change in the control group. It should be noted, however, that absences were limited with all groups within the range of 5.3-10.5 days of absences on average. Their study also found that long-term absences decreased for the two groups participating in the fitness program while increasing for nonparticipants. There was no difference between any groups for

short-term absences. Kerr and Vos explain the reduction of long-term absences without an effect on short-term absences by pointing out that long-term absences are typically involuntary (caused by sickness or injury) while short-term absences are voluntary. Based on this explanation, this research supports the previously mentioned idea that exercise might only reduce absences due to illness.

Kerr and Vos (1993) also reported that cardiovascular fitness was negatively related to absenteeism (as fitness increases, absenteeism decreases). Despite controlling for individual differences on variables such as age, gender, income, smoking, and body fat percentage, the correlation between fitness and absenteeism still existed. Interestingly, the correlation was stronger for female participants than male participants. They also reported that fitness programs were more effective at reducing absenteeism in physically demanding occupations due to a decrease in occupational injuries.

Two recent meta-analyses found the correlation between wellness program participation and absenteeism to be near -0.30 (DeGroot & Kiker, 2003; Parks & Steelman, 2008). DeGroot and Kiker (2003) conducted a moderator analysis and reported several interesting results. The correlation between voluntary participation and absenteeism was -0.34 while involuntary participation had a -0.09 correlation with absenteeism. Although wellness programs do not always contain fitness components, voluntary programs that were fitness based resulted in a -0.37 correlation with absenteeism.

Some studies did not find a relationship between fitness and absenteeism, but they might have been influenced by methodological limitations (DeGroot & Kiker, 2003). For example, Altchiler and Motta (1994) found no reduction in absenteeism for either aerobic

or nonaerobic exercisers. The low base rate of absenteeism in their study might have limited the ability to detect differences, and the lack of a control (non-exercising group) limited the researchers' ability to control for extraneous variables that could affect absenteeism. Another study failed to find the relationship between exercise and absenteeism, but the researchers suspect that using self-report measures of absenteeism, and using participants who were paid hourly might have influenced the results (Carson et al., 2010).

Bertera (1990) conducted a study to determine the utility of implementing a wellness program in order to save on organizational costs associated with absenteeism. He found that the companies in his study that implemented a wellness program used 5,863 fewer sick days per year (an equivalent of one person working over 22 years) than the companies without a wellness program. Furthermore, the wellness program returned \$1.11 in reduced sick days for every dollar spent on the program in the first year. After the startup costs of the first year, the second year returned \$2.05 per dollar spent for an average return of \$1.42 over the two years. Additionally, companies with high participation levels returned \$1.63 per dollar spent over the two year period while lower participation sites returned \$1.22. Furthermore, these savings only indicate returns from sick days, and do not include other potential returns (reduced healthcare claims).

Falkenberg (1987) points out that simply having a place to exercise on the company location could reduce lateness because employees would not have to travel elsewhere to exercise over the lunch period. Along those lines, it is possible that employees that value fitness more than (or equal to) work will show decreases in

absenteeism. Aligning employee values with organizational values provides the added bonus of potentially increasing organizational commitment.

Exercise and Organizational Commitment

Organizational commitment is the psychological attachment an individual has to an employer (Magnini, Lee, & Kim, 2010). An individual's commitment to the organization is thought to be enhanced when the organization shows commitment or concern for its employees (Falkenberg, 1987). Based on this premise, an organization that provides a wellness program could be seen as more caring; therefore, employees would become more committed to the organization. The increase in organizational commitment should be even greater if the individual is more interested in, or places more value on health and fitness (DeGroot & Kiker, 2003).

Very few studies have examined the relationship between organizational commitment and exercise. One study involving a fitness program for Navy men produced interesting results in the midst of an organizational disaster where the ship had recently failed an important training assignment (Pavett et al., 1987). The results showed a decline in organizational commitment for everyone on the ship, but there was only a slight decline for the men in the fitness program while the control group experienced a decline nearly four times larger. Although this study did not find an increase in organizational commitment, the difference between the exercise and control group suggest organizational commitment could increase in more typical (less disastrous) business situations.

Research by Schleicher, Hansen, and Fox (2011) suggests that organizational commitment is related to work ethic. They state that a person's perceived competence

and ability is also related to organizational commitment. Other researchers suggest that exercise can create an unambiguous connection between effort and positive outcomes (Pavett et al., 1987). Therefore, in the context of the study by Schleicher and colleagues (2011), exercise could potentially increase an individual's perceived ability to work hard and succeed. That relationship should in turn increase organizational commitment.

Organizational commitment is related to job satisfaction, so it is likely that an increase in perceived ability would also improve an employee's job satisfaction.

Exercise and Job Satisfaction

Job satisfaction is defined as the positive feelings an employee has toward the job (Parks & Steelman, 2008). It is influenced by the characteristics of the job and the organization for which they work. Organizations that offer wellness programs are likely perceived as more positive by their employees, and therefore, job satisfaction should increase for their employees. On the other hand, simply exercising improves physical health, and health is related to general happiness (as noted in the stress section), and indirectly to job satisfaction.

Research on the relationship between job satisfaction and exercise has produced mixed results due to methodological problems. For example, a study by Altchiler and Motta (1994) found no increase in job satisfaction after an exercise intervention, but they cite a possible ceiling effect as the cause because the participants had initially high job satisfaction scores (even perfect on some subscales). That study was further limited by failing to have a non-exercising control group for comparison. A different study reported a slight decrease in job satisfaction, but the authors stated that a bad economy could have caused the negative change (Merrill et al., 2011). This study also lacked a control group,

and all of the data was obtained from employees who voluntarily filled out a health assessment, so employees who did not fill out the assessment might have differed on important variables.

A meta-analysis by DeGroot and Kiker (2003) also found no relationship between participation in a wellness program and job satisfaction. However, they noted that job satisfaction was commonly measured through facet measures. It is possible that facet measures are inappropriate because fitness is not likely to change certain factors (e.g., satisfaction with coworkers, supervisors). Similarly, facet measures do not capture all of the content that global measures of job satisfaction do (Highhouse & Becker, 1993).

Despite the limitations found in much of the research, a more recent meta-analysis reported a moderate effect size for the relationship between participation in a wellness program and job satisfaction (Parks & Steelman, 2008). It should be noted that individuals who participate in wellness programs tend to have higher job satisfaction than those who choose not to participate (Altchiler & Motta, 1994; Parks & Steelman, 2008). The employees with high job satisfaction also participated more frequently than those with lower job satisfaction. One possible explanation for this finding is that people who already exercise are more likely to have higher job satisfaction, and be more likely to value and participate in the wellness program, but more research is necessary on that topic.

Exercise and Job Performance

Exercise is clearly linked to the ability to physically perform on the job, but exercise also provides a myriad of psychological changes that can influence job performance. It is expected that exercise improves a person's ability to focus and

concentrate (Falkenberg, 1987). Another way exercise helps is through an increased control of arousal (Falkenberg, 1987; Sutherland & Cooper, 1990). According to the Yerkes-Dodson law, if arousal is too high (or too low), performance decreases (Geen, 1984). Although exercise does not influence one's ability to increase arousal for performance on a cognitive task, it does help when trying to reduce arousal (Falkenberg, 1987). Additionally, employees who participated in fitness programs frequently reported a perceived increase in their capacity to work harder mentally. There was also a significant relationship between regular participation in a fitness program and above average job performance.

In a study that examined the dimensions of performance in multiple entry-level military positions, physical fitness was determined to be one of the five dimensions of performance that was similar across all of the jobs (Campbell, McHenry, & Wise, 1990). The researchers suggested that fitness might not be as important in non-military occupations; however, its prevalence in military jobs indicates that it should be a factor in certain occupation types outside the military.

A meta-analysis by DeGroot and Kiker (2003) found a .34 correlation between participation in a wellness program and job performance. However, the effects of a fitness program appear to depend on the type of participation in the program. When voluntary and involuntary participation were examined separately, voluntary programs had a .18 correlation while involuntary programs had a .50 correlation. It is possible people who would benefit most from a fitness program are also the least likely to participate in it.

Even more recently, research in neuroscience has reported physical changes in the brain caused by exercise. Although the studies do not explicitly examine job performance, the physical changes are related to numerous cognitive functions that contribute to successful job performance. The improved functioning includes areas such as reasoning, reaction time, fluid intelligence, and visuospatial abilities (Curlik & Shors, 2013). Additionally, higher standardized math, reading, and IQ scores have been reported for more active children. Finally, exercise improves executive functioning including inhibition, scheduling, planning, selective attention, sustained attention, and working memory (Guiney & Machado, 2012).

The benefits of exercise on the brain's structure and functioning have been found for people of all ages. For example, in older people aerobic exercise reversed hippocampal shrinking, reduced atrophy in the prefrontal cortices, and increased gray matter density in the frontal, temporal, and parietal cortices (Curlik & Shors, 2013; Guiney & Machado, 2012). Those physical changes relate to better reasoning, working memory, and reaction time. In children, fitness is linked to larger areas of the brain related to selective attention and memory, as well as increases in working memory capacity, selective attention, and inhibitory control (Guiney & Machado, 2012). Young adults in a control group experienced a decrease in the size of the left insula, but the group participating in an aerobic dance class experienced no decrease. Finally, adults experienced a 50% increase in neurons in the dentate gyrus after two weeks of daily exercise (Curlik & Shors, 2013). The increase in neurons creates the ability to learn a new skill or task faster.

A study by Schneider and colleagues (2013) explained that several factors can moderate the relationship between exercise and cognitive changes. First, they noted that the benefits of exercise depended on an individual's preferred intensity level. Runners benefited from running at a self-chosen pace, but there was no cognitive benefit from running at a pace predetermined by the researcher. If the exercise was too intense for the individual, it could create stress, but too low of an intensity could also inhibit cognitive improvements (Curlik & Shors, 2013; Schneider et al., 2013). Another important consideration is the individual's preference for exercise type. In this study, the most preferred activity was running, and it was the only activity related to enhanced cognitive performance. Other research also indicated that the type of exercise can facilitate or inhibit learning based on individual differences (Curlik & Shors, 2013). Finally, a study on rats found that neurogenesis only occurred when the rats had a choice of exercise, but not when they were forced to exercise (Schneider et al., 2013).

Exercise Addiction

Although exercise is generally a beneficial and healthy behavior, addiction to exercise can cause negative symptoms (Landolfi, 2013; Lejoyeux, Avril, Richoux, Embouazza, & Nivoli, 2008). As Landolfi (2013) points out, musculoskeletal injuries commonly result from excessive exercise. Furthermore, individuals addicted to exercise can experience withdrawal symptoms including anxiety, irritability, depression, fatigue, and insomnia.

Exercise addiction is defined by Lejoyeux and colleagues (2008) as a desire for physical activity that causes excessive exercise habits in addition to negative physiological and psychological symptoms. This type of addiction is categorized by an

individual experiencing three or more of the following symptoms: (a) a need for increased exercise to achieve the desired results, (b) withdrawal symptoms when exercise decreases, (c) exercise takes longer than intended, (d) excessive time is spent doing or preparing for activity, (e) exercising at the expense of valued social, occupational, or recreational activities, and (f) continuing to exercise when a physical problem or injury exists.

Landolfi (2013) reported exercise addiction is more likely in individuals who exercise for secondary reasons, such as altering their appearance as opposed to exercising for the enjoyment of exercise. Other research has commonly found exercise addiction in individuals with eating disorders and body image issues (Lejoyeux et al., 2008).

Individuals who engage in only one type of exercise are also at risk for developing an exercise addiction (Landolfi, 2013).

The research on exercise addiction has several implications for future research on the benefits of exercise. First, exercising more does not always mean better outcomes. Unsurprisingly, individuals addicted to exercise spend more days and more hours each day exercising (Lejoyeux et al., 2008). Second, offering and encouraging the use of multiple types of exercise may produce more benefits than a single type of exercise (Landolfi, 2013).

Hypotheses

Based on the previous research, it seems likely that exercise is related to multiple attitudes and behaviors pertaining to an individual's job. The hypotheses of the current study are presented below with support provided by previous research.

Hypothesis 1a. Frequency of physical activity will have a curvilinear relationship with burnout.

Hypothesis 1b. Intensity of physical activity will have a curvilinear relationship with burnout.

Hypothesis 1c. Time spent exercising will have a curvilinear relationship with burnout.

In other words, increases in any dimension of exercise (frequency, intensity, and time) will be related to less burnout, but at a certain point, too much of any dimension of exercise will create diminishing returns and burnout will start to increase. Burnout is expected to decrease with exercise because Pavett et al. (1987) reported a decrease in stress for employees engaging in a weight training program, while stress for the control group increased. Furthermore, another study found increases in physical activity resulted in decreases in depression and burnout, for both within-subject and between-subject designs (Lindwall et al., 2013). However, burnout is expected to increase at some point because Lejoyeux and colleagues (2008) found that individuals with exercise addiction exercise more frequently during the week. Salmon (2001) reported that exercise is not as effective at reducing stress when it is at a high enough intensity to improve fitness. Toker and Biron (2012) reported significant relationships between exercise and burnout for individuals that spent between 0 and 150 minutes per week exercising, but the relationship was non-significant for those who spend more than 240 minutes per week exercising. It is possible the excessive amount of time spent doing or preparing for the activity comes at the expense one's health.

Hypothesis 2a. Frequency of physical activity will have a curvilinear relationship with absenteeism.

Hypothesis 2b. Intensity of physical activity will have a curvilinear relationship with absenteeism.

Hypothesis 2c. Time spent exercising will have a curvilinear relationship with absenteeism.

In other words, increases in any dimension of exercise will be related to less absenteeism, but at a certain point, too much of any dimension of exercise will create diminishing returns and absenteeism will start to increase. Absenteeism is expected to decrease with exercise because Bungum et al. (2003) reported that obese participants (who are likely to engage in less physical activity) were more likely to be absent. For more direct support, Kerr and Vos (1993) stated that cardiovascular fitness was negatively related to absenteeism even after controlling for individual differences, including body fat percentage. However, at some point exercise is expected to increase absenteeism because Lejoyeux and colleagues (2008) found that individuals with exercise addiction spend more hours each day exercising. This could lead to overuse injuries which keep people out of work.

Hypothesis 3a. Frequency of physical activity will have a curvilinear relationship with affective organizational commitment.

Hypothesis 3b. Intensity of physical activity will have a curvilinear relationship with affective organizational commitment.

Hypothesis 3c. Time spent exercising will have a curvilinear relationship with affective organizational commitment.

In other words, increases in any dimension of exercise will be related to higher organizational commitment, but at a certain point, too much of any dimension of exercise will create diminishing returns and organizational commitment will start to decrease. Organizational commitment is expected to increase with exercise because Pavett and colleagues (1987) found that organizational commitment decreased slightly among employees engaged in a weight training program, while organizational commitment decreased dramatically in the control group as the organization experienced a crisis. It is likely that, under more typical circumstances, physical activity would increase organizational commitment. This could be due to a perceived link between effort and success that is developed through exercise and carried over into the work setting. However, organizational commitment is expected to decrease at some point because, as mentioned previously, Lejoyeux and colleagues (2008) found that individuals with exercise addiction spend more hours each day exercising. Perhaps these individuals are overly committed to their exercise, which comes at the expense of their organizational commitment.

Hypothesis 4a. Frequency of physical activity will have a curvilinear relationship with job satisfaction.

Hypothesis 4b. Intensity of physical activity will have a curvilinear relationship with job satisfaction.

Hypothesis 4c. Time spent exercising will have a curvilinear relationship with job satisfaction.

In other words, increases in any dimension of exercise will be related to higher job satisfaction, but at a certain point, too much of any dimension of exercise will create

diminishing returns and job satisfaction will start to decrease. Previous research shows that the individuals who chose to participate in fitness programs tend to have higher initial job satisfaction than those that choose not to participate (Althiler & Motta, 1994; Parks & Steelman, 2008). This could be because people who are already physically active are more likely to participate in fitness programs. It is also possible that reduced stress through exercise creates a general happiness that spills over into job satisfaction. However, individuals with exercise addiction spend excessive amounts of time exercising or preparing for exercise (Lejoyeux et al., 2008). Such an addiction might cause an inner conflict for the employee who finds that his or her work role is interfering with his or her athletic role. This could make him or her resentful toward work and cause a decrease in job satisfaction.

Hypothesis 5a. Frequency of physical activity will have a curvilinear relationship with job performance.

Hypothesis 5b. Intensity of physical activity will have a curvilinear relationship with job performance.

Hypothesis 5c. Time spent exercising will have a curvilinear relationship with job performance.

In other words, increases in any dimension of exercise will be related to higher job performance, but at a certain point, too much of any dimension of exercise will create diminishing returns and job performance will start to decrease. It is clear that certain exercises could improve performance in jobs requiring physical strength and endurance, but research in neuroscience supports the idea that physical activity can improve cognitive functioning as well. This includes improved working memory, reasoning,

planning, and selective attention (Curlik & Shors, 2013; Guiney & Machado, 2012). However, individuals with exercise addiction, who spend more hours each day exercising (Lejoyeux et al., 2008), may invest more cognitive energy into their workouts than into their jobs. It was also reported that individuals with exercise addiction spend significantly more time on the internet. The researchers suggested the difference might be because those addicted to exercise spend more time on exercise related websites such as looking at workout clothes, equipment, or sports forums. This behavior could reduce job performance if it occurs during work hours.

Hypothesis 6. The relationship between exercise performed during leisure time and positive work outcomes will be stronger than the relationship between exercise performed during work hours and positive work outcomes.

A meta-analysis by DeGroot and Kiker (2003) found that voluntary wellness programs were more effective at reducing absenteeism than mandatory wellness programs. Although the opposite was true of job performance in that study, several more recent studies suggest having a choice of activities and performing them at preferred intensity levels produces greater cognitive improvements (Curlik & Shors, 2013; Schneider et al., 2013). Therefore, leisure time exercise should produce greater results than work time exercise assuming that the employee has more choice of activities and intensity level when exercising outside of work.

CHAPTER 2

METHOD

Participants

A total of 211 usable surveys were collected. The participants in this study were 123 females (58.3%), 56 males (26.5%), one person responded with “other,” and 31 did not answer (14.7%). Participants’ ages covered a wide range (12.3% were 18-24 years old; 22.7% were between ages 25-34; 16.6% were 35-44 years old; 19.4% were ages 45-54; 11.8% were 55-64 years old; and 2.8% were 65-74). For the highest level of education attained, 17.5% of the participants had a graduate degree, 36.5% had a bachelor’s degree, 8.5% had an associate’s degree, 16.1% had some college, 5.7% had a high school degree or equivalent, and 15.6% did not respond. There were 18% of the participants who had worked for their organization less than a year, 11.8% between one and two years at their organization, 7.6% between two and three years, 12.3% between three and five years, 15.2% from five to ten years, 6.6% from 10-15, 14.2% working over 15 years for their organization, and 14.2% did not report their tenure. Part-time workers made up 11.8% of the population while 73.9% work full-time, and 14.2% did not respond. Manufacturing workers made up 19%, service workers made up 62.1%, and 4.3% answered “other” with a description that was unable to be categorized as either service or manufacturing while 14.7% did not respond to the question.

Measures

Exercise. The self-report exercise measure was designed to gather information on three dimensions of physical activity (see Appendix A). This measure was used once to determine how much exercise the participant engaged in as part of the job, and again

for exercise during leisure time (not part of the job). I also created an overall exercise score by adding the work exercise and leisure exercise scores together for each dimension, so I had a total of nine measures of exercise.

Frequency. Exercise frequency was measured by the number of days per week the participant reported engaging in physical activity.

Intensity. Exercise intensity consisted of three levels: light, moderate, and vigorous. Light intensity was defined as causing a slight increase in heart rate. Similarly, moderate intensity causes a moderate increase in heart rate, and vigorous intensity causes a substantial increase in heart rate. Using three intensity levels is based on the research for the Concise Physical Activity Questionnaire (CPAQ; Sliter & Sliter, 2014).

Time. Exercise time was calculated by adding up the total number of minutes spent on physical activity during the week. Due to limitations with the online survey format, times were recorded in 5 minute intervals with 90 minutes as the maximum recordable amount time per intensity level per day.

Burnout. This variable was measured using the Copenhagen Burnout Inventory (see Appendix B; Kristensen, Borritz, Villadsen, & Christensen, 2005). Specifically, the 6-item subscale measuring personal burnout and the 7-item subscale measuring work-related burnout were used. Both subscales use a 5-point Likert scale and produced a Chronbach's alpha of .91 in the current study. One item is reverse scored. I combined the scales for one measure of overall burnout.

Absenteeism. This variable was measured with a single, self-report item (see Appendix C). The item asked how many days the participant had missed work in the past 12 months due to illness or injury.

Affective organizational commitment. This variable was measured with the six items comprising the affective commitment to the organization subscale from the Organizational Commitment Questionnaire (see Appendix D; Meyer, Allen, & Smith, 1993). The items use a 7-point Likert scale and produced a Chronbach's alpha of .87 in the current study. Three of the items are reverse scored.

Job satisfaction. Global job satisfaction was measured using the Brief Index of Affective Job Satisfaction (see Appendix E; Thompson & Phua, 2012). This scale includes four questions that are rated on a 5-point Likert scale. The four questions had a Chronbach's alphas of .91 in the current study.

Job performance. This variable was measured with a single, self-report item (see Appendix F). The item asked how the participant was rated on the most recent performance review. Guan's (2012) study pilot tested this measure with ten employees at an American university. The test-retest reliability was .82.

Other questions. In addition to the measures above, I also measured the following demographics: age, gender, tenure, and education (see Appendix G). Participants were asked to indicate how physically demanding their jobs are on a 5-point Likert scale. As an additional exploratory question, I also asked participants to rate how satisfied they were with their current exercise habits on a 5-point Likert scale.

Procedures

I obtained IRB approval (see Appendix H) before starting data collection. The participants received a cover letter in place of the informed consent form (see Appendix D). The cover letter was distributed with the online survey as well as the paper and pencil version.

The survey was made available electronically for anyone to participate through the website Survey Monkey. I posted a link to the survey on my Facebook page for approximately 216 friends to see. Additionally, I used a snowball method to collect responses by asking my Facebook friends to share the link with their friends, family, and coworkers in order to increase the number of responses. I received 162 responses from this method.

I also emailed a link to the survey to my family members, and asked them to send it to friends, family and coworkers that do not have Facebook. I received 20 responses from this source. A similar email was sent to a local Human Resources (HR) professionals group after I attended a meeting to introduce myself and discuss my research. The HR professionals were encouraged to distribute the link and information to their employees, and I received 8 responses from this method.

Additionally, one HR manager agreed to let me conduct paper and pencil surveys during breaks at a local metal manufacturing company. The first and second shift employees who were present at work on that day were given the chance to complete the survey during their lunch break. Cookies were provided as an instant incentive for those who chose to complete the survey. I collected 23 completed surveys from this method.

CHAPTER 3

RESULTS

The results of hypotheses one through five are shown in Table 1. All curvilinear analyses are reported. Linear relationships were not hypothesized, but significant linear relationships are reported below.

Hypothesis 1

My first hypothesis had three parts. I hypothesized that frequency of exercise, intensity of exercise, and time spent exercising would all have a curvilinear relationship with burnout. In other words, I expected that exercise would be related to less burnout, up to a point. However, at a certain point, I thought too much exercise might create diminishing returns and be related to increased burnout. To test these three parts of the hypothesis, I used regression analyses with a quadratic equation. I found no significant result when examining the curvilinear relationship between burnout and total exercise frequency, $F(2,180) = .83, p = ns$, or total exercise intensity, $F(2,180) = .34, p = ns$, or total exercise time $F(2,180) = .02, p = ns$. Therefore, hypothesis one was not supported.

Hypothesis 2

My second hypothesis also had three parts. I hypothesized that frequency of exercise, intensity of exercise, and time spent exercising would all have a curvilinear relationship with absenteeism. In other words, I expected exercise would be related to less absenteeism, up to a point. However, at a certain point, I thought too much exercise might create diminishing returns and be related to increased absenteeism. To test the three parts of this hypothesis, I used regression analyses with a quadratic

Table 1

Summary of Quadratic Regressions of Total Exercise Scores as a Function of Work Outcomes

Work Outcome	R Square	df1	df2	F
Burnout				
Frequency	.009	2	180	.83
Intensity	.004	2	180	.34
Time	.000	2	180	.02
Absenteeism				
Frequency	.014	2	179	1.31
Intensity	.026	2	179	2.36
Time	.017	2	179	1.57
Org. Commitment				
Frequency	.010	2	180	.92
Intensity	.001	2	180	.11
Time	.040	2	180	3.73*
Job Satisfaction				
Frequency	.025	2	180	2.30
Intensity	.029	2	180	2.66
Time	.052	2	180	4.96**
Job Performance				
Frequency	.028	2	176	2.50
Intensity	.005	2	176	.45
Time	.025	2	176	2.26

* $p < .05$

** $p < .01$

equation. I found no significant result when examining the curvilinear relationship between absenteeism and total exercise frequency, $F(2,179) = 1.31, p = ns$, or total exercise intensity, $F(2,179) = 2.36, p = ns$, or total exercise time $F(2,179) = 1.57, p = ns$. Therefore, hypothesis two was not supported. However, I did find a significant linear relationship between total exercise intensity and absenteeism, $r = -0.16, p = .036$. This means that employees that engaged in more intense exercise were less likely to be absent from work.

Hypothesis 3

This hypothesis also had the same three parts as the previous hypothesis. I hypothesized that frequency of physical activity, intensity of physical activity, and time spent exercising would all have a curvilinear relationship with affective organizational commitment. In other words, I expected that exercise would be related to more organizational commitment, up to a point. However, at a certain point, I thought too much exercise might create diminishing returns and be negatively related to organizational commitment. To test the three parts of this hypothesis, I used regression analyses with a quadratic equation. I found no significant result when examining the curvilinear relationship between organizational commitment and total exercise frequency, $F(2,180) = .92, p = ns$, or total exercise intensity, $F(2,180) = .11, p = ns$. However, I did find a significant curvilinear relationship with total exercise time, $F(2,180) = 3.73, p = .026$, where affective organizational commitment increases with total exercise time up to approximately 500 minutes before affective organizational commitment starts to decrease. Therefore, hypothesis three was partially supported (see Figure 1).

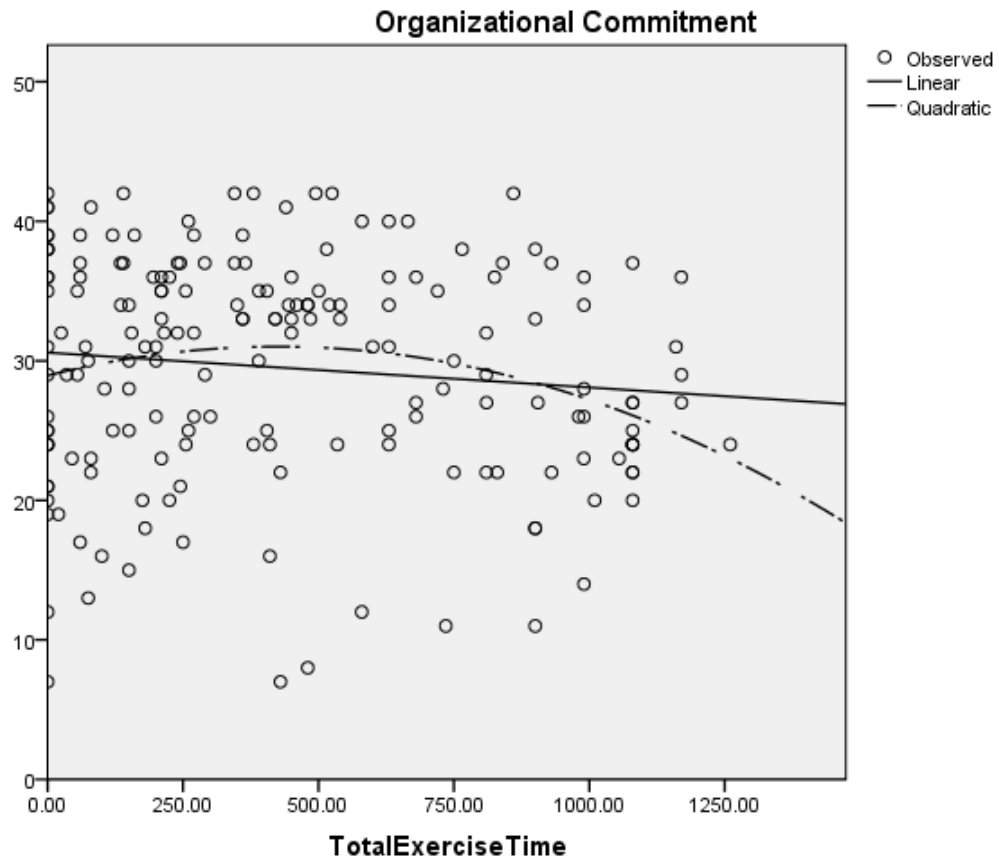


Figure 1. Scattergram of Exercise Time and Organizational Commitment

Hypothesis 4

I hypothesized that frequency of physical activity, intensity of physical activity, and time spent exercising would all have a curvilinear relationship with job satisfaction. In other words, I expected that exercise would be related to more job satisfaction, up to a point. However, at a certain point, I thought too much exercise might create diminishing returns and be negatively related to job satisfaction. To test the three parts of this hypothesis, I used regression analyses with a quadratic equation. I found no significant result when examining the relationship between job satisfaction and total exercise frequency, $F(2,180) = 2.30, p = ns$, or total exercise intensity, $F(2,180) = 2.66, p = ns$. I did find a significant curvilinear relationship with total exercise time, $F(2,180) = 4.96, p = .008$; however, the data was explained better by the linear relationship $r = -0.22, p = .003$. Therefore, hypothesis four was not supported. Additionally, I found significant linear relationships between job satisfaction and total exercise frequency, $r = -0.16, p = .034$, and job satisfaction and total exercise intensity $r = -0.17, p = .022$. In other words, employees who exercise less frequently, for less time, and at a lower intensity are more satisfied with their jobs.

Hypothesis 5

I hypothesized that frequency of physical activity, intensity of physical activity, and time spent exercising would all have a curvilinear relationship with job performance. In other words, I expected that exercise would be related to higher performance, up to a point. However, at a certain point, I thought too much exercise might create diminishing returns and be related to lower performance. To test these three parts of the hypothesis, I used regression analyses with a quadratic equation. I found no significant result when

examining the curvilinear relationship between job performance and total exercise frequency, $F(2,176) = 2.50, p = ns$, or total exercise intensity, $F(2,176) = .45, p = ns$, or total exercise time $F(2,176) = 2.26, p = ns$. Therefore, hypothesis five was not supported.

Hypothesis 6

My sixth hypothesis was that the relationship between exercise performed during leisure time and positive work outcomes would be stronger than the relationship between exercise performed during work hours and positive work outcomes. To test this hypothesis, I ran the same regressions as Hypotheses 1-5; however, I examined work exercise data (see Table 2) and leisure exercise data (see Table 3) separate from one another.

The frequency, intensity, and time spent exercising at work were unrelated to feelings of burnout. These findings are reported in Table 2. On the other hand, there was a significant curvilinear relationship between weekly frequency of leisure exercise and burnout, such that burnout was higher in employees who exercised either zero times a week or seven times a week, and burnout was lowest in employees who exercised three, four, or five times per week. This relationship is depicted in Figure 2. Leisure exercise intensity had a negative linear relationship with burnout, $r = -0.16, p = .031$, where burnout was less for employees who exercised with more intensity during their leisure time. Time spent exercising during leisure was unrelated to feelings of burnout. These results are shown in Table 3.

Table 2

Summary of Quadratic Regressions of Work Exercise Scores as a Function of Work Outcomes

Work Outcome	R Square	df1	df2	F
Burnout				
Frequency	.003	2	180	.28
Intensity	.015	2	180	1.36
Time	.017	2	180	1.60
Absenteeism				
Frequency	.006	2	179	.51
Intensity	.011	2	179	1.01
Time	.017	2	179	1.56
Org. Commitment				
Frequency	.001	2	180	.13
Intensity	.012	2	180	1.10
Time	.015	2	180	1.38
Job Satisfaction				
Frequency	.020	2	180	1.83
Intensity	.050	2	180	4.76**
Time	.032	2	180	2.98
Job Performance				
Frequency	.014	2	176	1.23
Intensity	.015	2	176	1.32
Time	.014	2	176	1.27

* $p < .05$

** $p < .01$

Table 3

Summary of Quadratic Regressions of Leisure Exercise Scores as a Function of Work Outcomes

Work Outcome	R Square	df1	df2	F
Burnout				
Frequency	.037	2	180	3.45*
Intensity	.026	2	180	2.36
Time	.025	2	180	2.34
Absenteeism				
Frequency	.073	2	179	7.01**
Intensity	.031	2	179	2.83
Time	.036	2	179	3.38*
Org. Commitment				
Frequency	.010	2	180	.89
Intensity	.007	2	180	.61
Time	.039	2	180	3.67**
Job Satisfaction				
Frequency	.026	2	180	2.40
Intensity	.005	2	180	.46
Time	.051	2	180	4.79*
Job Performance				
Frequency	.003	2	176	.30
Intensity	.000	2	176	.01
Time	.005	2	176	.45

* $p < .05$

** $p < .01$

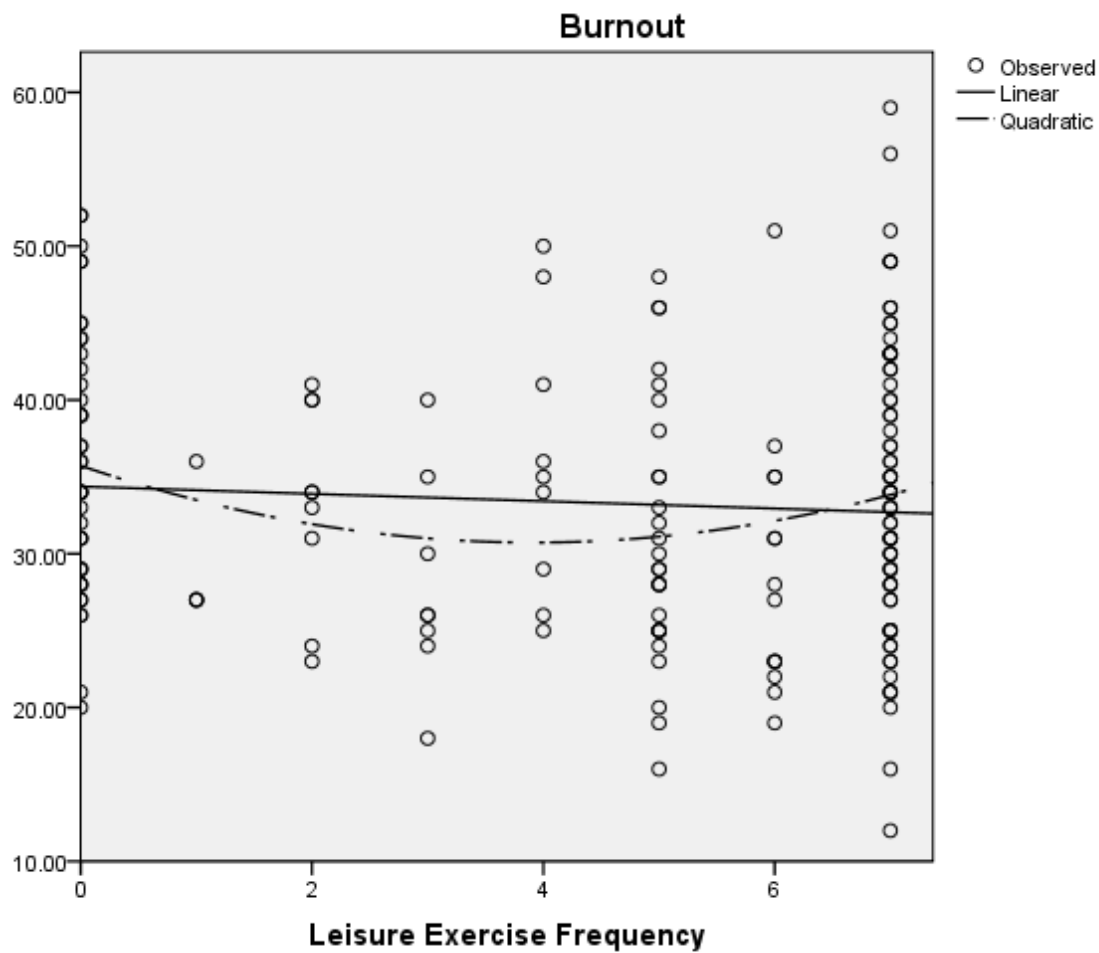


Figure 2. Scattergram of Leisure Exercise Frequency and Burnout

The frequency, intensity, and time spent exercising at work were unrelated to feelings of absenteeism (see Table 2). Conversely, leisure exercise frequency had a curvilinear relationship with absenteeism, $F(2,179) = 7.01, p = .001$, so employees who exercise zero or seven times per week are more likely to be absent from work than employees who exercise between three and five times per week (see Figure 3). Leisure exercise time also had a curvilinear relationship, $F(2,179) = 3.38, p = .036$, such that employees who exercise approximately 300 minutes per week tend to be absent from work least often (see Figure 4). There was also a linear relationship between leisure exercise intensity and absenteeism, $r = -0.17, p = .021$, so employees who exercise with more intensity during their leisure time are less likely to miss work due to injury or illness.

The frequency, intensity, and time spent exercising at work were unrelated to organizational commitment (see Table 2). Leisure exercise frequency and intensity were also unrelated to organizational commitment. However, organizational commitment had a curvilinear relationship with leisure exercise time, $F(2,180) = 3.67, p = .027$, so employees who spend approximately 250 minutes per week doing leisure time exercise are more committed to their organizations than employees who spend more (or less) of their free time exercising (see Figure 5).

Work exercise frequency was not related to job satisfaction (see Table 2). Exercise intensity while at work had both a curvilinear relationship with job satisfaction, $F(2,180)=4.76, p = .01$, and a linear relationship, $r = -0.21, p = .004$, meaning that people are less satisfied with their jobs when they engage in intense physical activity

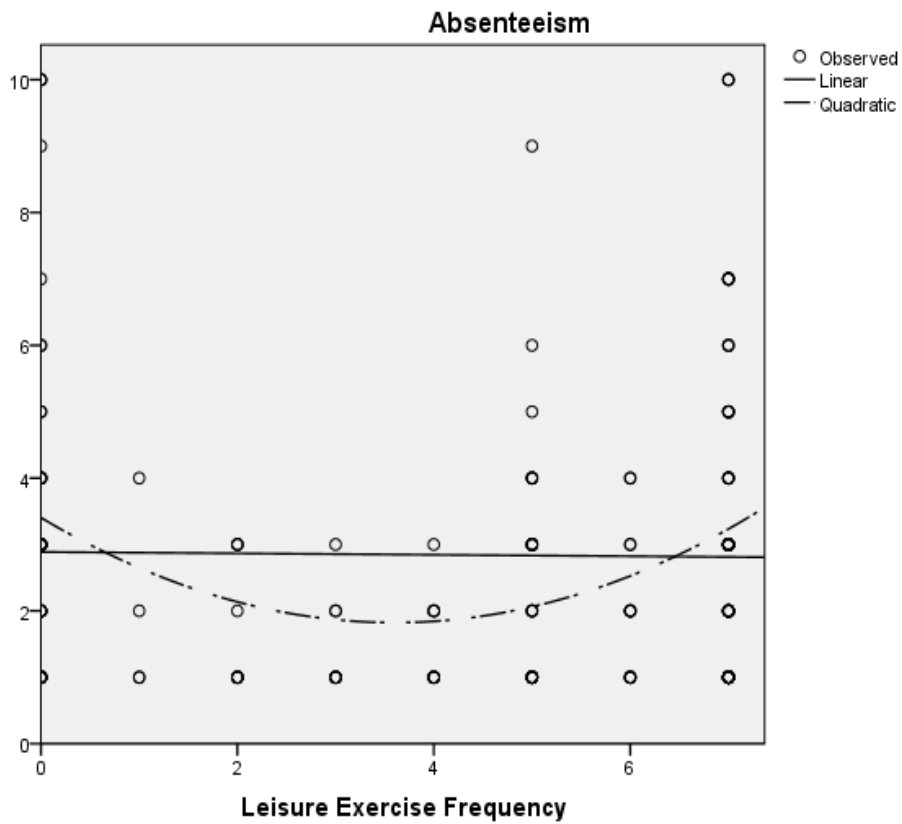


Figure 3. Scattergram of Leisure Exercise Frequency and Absenteeism

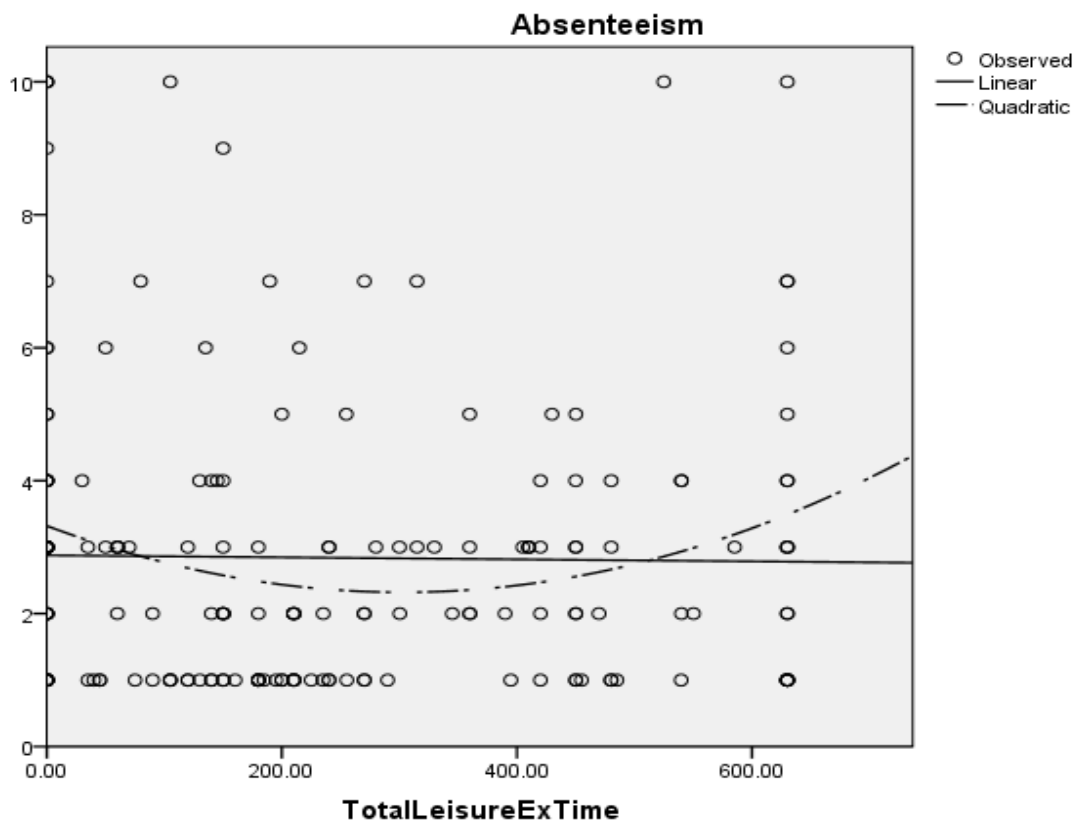


Figure 4. Scattergram of Leisure Exercise Time and Absenteeism



Figure 5. Scattergram of Leisure Exercise Time and Organizational Commitment

during work, and their satisfaction drops more quickly the more intensely they exercise while at work (see Figure 6). There was also a significant linear relationship between work exercise time and job satisfaction, $r = -0.18$, $p = .015$, so people who spend more time exercising as part of their jobs tend to have lower job satisfaction. Similar to work exercise intensity, leisure exercise time had both a curvilinear relationship with job satisfaction, $F(2,180) = 4.79$, $p = .009$, and a linear relationship, $r = -0.19$, $p = .009$. In other words, employees who spent more of their free time exercising were less satisfied with their jobs, but their satisfaction drops more quickly the more time they spend exercising in their free time (see Figure 7).

The weekly frequency of exercise, intensity of exercise, and time spent exercising at work were unrelated to job performance. Likewise, the weekly frequency of exercise, intensity of exercise, and time spent exercising during leisure time were also unrelated to job performance. These results are reported in Table 2 and Table 3 respectively.

Overall work exercise had one significant curvilinear relationship and two significant linear relationships to work outcomes. In all three cases, work exercise resulted in negative work outcomes (lower job satisfaction). Conversely, leisure exercise had five significant curvilinear relationships and three significant linear relationships to work outcomes, and only one of each resulted in negative work outcomes (lower job satisfaction). Therefore, the sixth hypothesis partially supported the idea that leisure time exercise is more related to positive work outcomes than exercise done on the job.

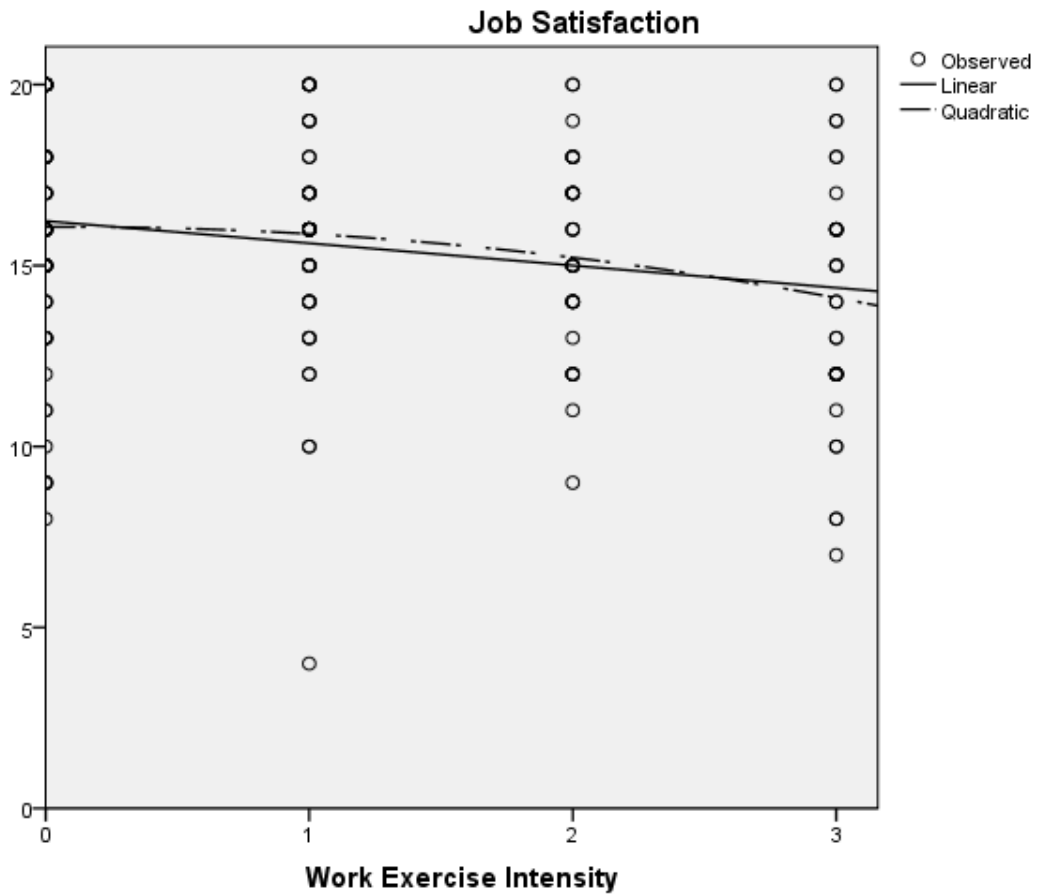


Figure 6. Scattergram of Work Exercise Intensity and Job Satisfaction

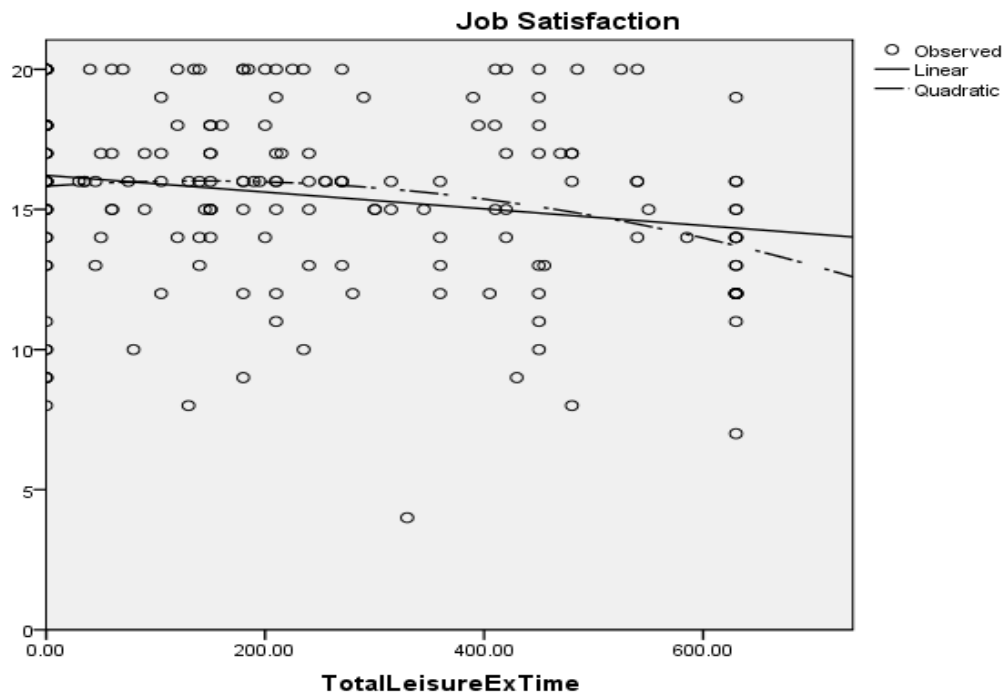


Figure 7. Scattergram of Leisure Exercise Time and Job Satisfaction

CHAPTER 4

DISCUSSION

When examining the results of Hypotheses 1-5, it appears that there are very few relationships between exercise and work outcomes. In fact, out of the 15 curvilinear relationships hypothesized, only two were significant (organizational commitment and job satisfaction with exercise time). If the 15 linear relationships (not hypothesized) between the same variables are included, only four more significant relationships were found, and three of those were with job satisfaction (the other with absenteeism). Fortunately, all of those relationships, and several more, can be better understood through the results of Hypothesis 6 which separated exercise done at work from exercise completed on the employees' own (leisure) time.

A meta-analysis by DeGroot and Kiker (2003) found that voluntary wellness programs were more effective at reducing absenteeism than mandatory wellness programs. Similarly, the results of this study indicate that engaging in voluntary physical activity can be related to lower levels of burnout and absenteeism, and higher levels of organizational commitment, and job satisfaction in some cases. Other recent studies have also suggested that having a choice of what activity to participate in and having autonomy to choose the intensity level can be important to get the most benefit from the exercise (Curlik & Shors, 2013; Schneider et al., 2013).

Knowing choice and autonomy are important when it comes to physical activity, the relationships between physical activity at work and job satisfaction found in this study are not surprising. The results indicate that employees generally become more dissatisfied as their jobs become more physically demanding in terms of both the

frequency and the intensity of the activity. It may be the case that employees who are expected to work at a prescribed (high) intensity and frequency also lack autonomy, which would reduce job satisfaction (Jackson, Potter, & Dale, 1998; Spector, 1986). Interestingly, if only employees working for manufacturing organizations are included in the results, employees are least satisfied with moderately intense jobs. Employees in the manufacturing industry also exhibited a negative correlation between work exercise intensity and organizational commitment that approached significance, $r = -0.31$, $p = .051$, meaning that employees in manufacturing organizations are less committed to their organization as their work intensity increases. This suggests that industry type may influence the results of work exercise because employees working in industries with more physically demanding jobs might have been seeking out a physically demanding job.

The results examining leisure exercise frequency indicate exercising about four times per week provides the optimal benefit for the variables studied. Employees who exercised between three and five days per week reported being the least burnt out, and absent from work less often. As reported in previous studies, burnout and absenteeism decreased with exercise (Bungum et al., 2003; Kerr & Vos 1993; Lindwall et al., 2013). However, the results of this study show exercising more than five times per week resulted in more burnout and absenteeism. Those individuals who engage in frequent exercise might encounter negative outcomes, such as anxiety, stress, and injuries, similar to those who have an exercise addiction (Lejoyeux et al., 2008).

Similar to frequency, there is an ideal amount of leisure time an individual should spend exercising, between 250-300 minutes per week. Employees who were absent from work the least tended to exercise around 300 minutes per week. This is likely because of

the improved health that comes from exercise, although too much exercise can cause injuries that keep employees from work (Bungum et al., 2003; Kerr & Vos 1993; Lejoyeux et al., 2008). Those who exercised approximately 250 minutes per week exhibited the highest levels of organizational commitment, possibly due to a perceived link between effort and success that is developed through exercise and carried over into the work setting (Pavett et al., 1987). However, those who spend too much time exercising could be more committed to exercise instead of the organization.

Additionally, when only service industry employees are examined, job satisfaction increases with exercise up to approximately 250 minutes before it starts to decrease. It is possible that engaging in moderate amounts of exercise indicates a job that offers a good work-life balance while excessive amounts of exercise cause anxiety, stress, and dissatisfaction when trying to manage all of the time commitments (O'Driscoll, Ilgen, & Hidreth, 1992).

Intensity was unlike the other two facets of exercise in that it had linear relationships, where high intensity was related to less burnout and absenteeism. Salmon (2001) reported that exercise is not as effective at reducing stress when it is at a high enough intensity to improve fitness, but Falkenberg (1987) indicated that including some vigorous activity resulted in better stress reduction. On the other hand, intensity that is high enough to improve fitness provides health benefits that probably resulted in less absenteeism for those who exercised with more intensity (Bungum et al., 2003; Kerr & Vos 1993). Intensity was calculated by determining the highest level of intensity the participant reported, so this result does not mean that a person should only do intense

exercise; it simply means a person should regularly (at least once a week) engage in some vigorous physical activity.

Job performance was not related to any measures of total exercise. Similarly, it was not related to any measures of leisure or work exercise. It is possible that the self-report style of this measure was biased by employees' desire to present themselves favorably by reporting average or higher job performance ratings, and/or their inability to accurately recall their most recent evaluation.

Overall, there appear to be several themes in the results of this study. First, leisure exercise seems to be more important than total exercise or work exercise, except in the case of job satisfaction where work exercise is very important. Second, exercising three to four times per week for a total close to 300 minutes seems to produce optimal benefits for the individual and organization. Third, engaging in at least some vigorous activity is likely to more produce more positive outcomes for burnout and absenteeism, but the results are less clear for job satisfaction and organizational commitment. Finally, physically demanding work is related to some negative work outcomes, but the industry type might play an important role in moderating the relationships.

There are several things organizations can do to encourage employees to engage in physical activities in order for both the employee and organization to benefit. For example, the company Mondo offers to pay the fees employees incur for participating in a variety of fitness activities ranging from yoga to endurance races (Cattel, Hart, & Risher, 2014). Other companies, like Coupons.com and Sparks, provide on-site workout facilities, group activities, and a culture that encourages participation. These companies

know it is not enough to simply tell employees that exercise is good for them, but it is critical to provide resources and support to employees that are active.

The current study indicates that more exercise is not always better, so organizations can also provide employees with resources to help them know when they are overdoing it. Both General Electric and General Mills offer free health assessments and advice from health professionals to help employees make healthy changes without exceeding their limits (Cattel et al., 2014). Similarly, Centro and SolidFire pay for their employees' preventative care needs, so employees can stay healthy with free health advice. Earth Friendly Products sponsors a wellness program that provides employees with information to maintain a healthy lifestyle. In general, giving employees free access to health and fitness professionals who can provide assessments and individualized advice is likely to reduce the chances of experiencing the effects of too much exercise.

Limitations

One of the major limitations of this study was the correlational design. Gathering the data from participants at only one point in time means causation cannot be determined. Therefore, the results could also be interpreted that individuals who experience lower levels of burnout and absenteeism are more likely to exercise three to five times per week for a total of 300 minutes; however that is less likely based on the results of previous longitudinal research.

A second limitation was the small sample size of employees in manufacturing organizations. The data presented in this research was composed of mostly employees of service organizations. A few significant relationships were found when examining only manufacturing industry employees, but a larger sample size might have yielded better

results. Also, the overall data matched very closely the results of just service industry employees, so additional differences between the industry types may exist.

Finally, the measures used in this study also created a limitation. One unforeseen limitation was with the exercise time measurement. It was originally going to be an exact time amount calculated by adding up all of the time each participant recorded in the exercise measure. However, the online survey format did not allow fill in the blank responses for the exercise measure, so time ranges were used instead to aid in the easy completion of the measure. Unfortunately, that meant anyone who used the response of “90+ minutes” was given a time of 90 minutes for that day, so the exercise time measure was not as accurate as it was originally intended to be. Furthermore, all of the measures used in this study were self-report. This is necessary for certain measures such as job satisfaction, organizational commitment, and burnout, but organizations will typically have a record of employee absences and job performance ratings that would be more accurate and potentially produce stronger results. The frequency, intensity, and time spent exercising could all be measured more accurately since there may be bias involved in having an individual simply recall their exercise habits for the average week.

Future Research

As research on the relationships between exercise and work outcomes moves forward, researchers should utilize longitudinal research designs in order to more conclusively determine the causal relationship between the variables. Researchers should also strive to collect more objective data in the place of self-report measures (Carson et al., 2010). This might not be possible in the case of certain variables such as burnout, organizational commitment, and job satisfaction; however, absenteeism and job

performance are typically recorded by the employer (DeGroot & Kiker, 2003).

Additionally, exercise data could be recorded by the participants shortly after exercising instead of asking them to recall what exercise they do on average.

The current study found some differences between service industry employees and manufacturing industry employees. Therefore, future research on the effects of exercise on work outcomes should investigate industry type as a possible moderator.

Future research should also investigate the negative effects of exercising on the job. The current study found that exercising at work is generally related to lower levels of job satisfaction, but the physical demand of work is rarely, if ever, considered as a facet of job satisfaction (Jackson et al., 1998). Some of the results of the current study indicated that exercising at work is also related to lower levels of organizational commitment. Therefore, work exercise should be considered an important variable when studying work attitudes.

Finally, previous research has shown wellness programs can be effective for creating positive organizational outcomes, but the current study found that exercising at work is related to negative outcomes (DeGroot & Kiker, 2003; Kerr & Vos, 1993). Future studies examining the effects of organizationally sponsored fitness programs should examine potential moderators that would explain why some exercise at work produces benefits while other exercise at work produces negative outcomes.

Conclusion

Although the relationships between exercise and physical fitness are frequently reported and generally understood, this study indicates exercise is involved in complex relationships that extend beyond fitness to include several psychological variables related

to work outcomes. In the case of the variables examined in this study, moderation of exercise seems to be related to the best outcomes for both the individuals and their organizations. Future research should continue to expand on these relationships as well as those between exercise and other psychological variables.

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Appendix A

Exercise

For the following two questions, use the following definitions:

Light physical activity causes a slight increase in heart rate.

Moderate physical activity causes a moderate increase in heart rate.

Vigorous physical activity causes a substantial increase in heart rate.

1. On average, how many minutes do you spend each day doing light, moderate, and vigorous physical activity as part of your job? Write the number of minutes in the appropriate box.

	M	T	W	T	F	S	S
Light							
Moderate							
Vigorous							

2. On average, how many minutes do you spend each day doing light, moderate, and vigorous activity that is NOT part of your job? Write the number of minutes in the appropriate box.

	M	T	W	T	F	S	S
Light							
Moderate							
Vigorous							

Appendix B

Burnout

Instructions: Please indicate how often you experience each of these situations by circling one of the numbers between 1 (Never) and 5 (Always).

	Never	Seldom	Sometimes	Often	Always
3. How often do you feel tired?	1	2	3	4	5
4. How often are you physically exhausted?	1	2	3	4	5
5. How often are you emotionally exhausted?	1	2	3	4	5
6. How often do you think "I can't take it anymore?"	1	2	3	4	5
7. How often do you feel worn out?	1	2	3	4	5
8. How often do you feel weak and susceptible to illness?	1	2	3	4	5
9. Do you feel worn out at the end of the working day?	1	2	3	4	5
10. Are you exhausted in the morning at the thought of another day at work?	1	2	3	4	5
11. Do you feel that every working hour is tiring for you?	1	2	3	4	5
12. Do you have enough energy for family and friends during leisure time?	1	2	3	4	5
13. Is your work emotionally exhausting?	1	2	3	4	5
14. Does your work frustrate you?	1	2	3	4	5
15. Do you feel burnt out because of your work?	1	2	3	4	5

Appendix C

Absenteeism

16. In the past 12 months, how many total work days have you missed because of your own illness or injury? (two half days equal one workday)

- | | |
|---|--|
| <input type="checkbox"/> none | <input type="checkbox"/> five workdays |
| <input type="checkbox"/> one workday | <input type="checkbox"/> 6-7 workdays |
| <input type="checkbox"/> two workdays | <input type="checkbox"/> 8-9 workdays |
| <input type="checkbox"/> three workdays | <input type="checkbox"/> 10-11 workdays |
| <input type="checkbox"/> four workdays | <input type="checkbox"/> 12 or more workdays |

Appendix D

Affective Organizational Commitment

Instructions: Please indicate the extent to which you either agree or disagree with the following statements by circling the appropriate response.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree
17. I would be very happy to spend my rest of my career with this organization.	1	2	3	4	5	6	7
18. I really feel as if this organization's problems are my own.	1	2	3	4	5	6	7
19. I do not feel a strong sense of "belonging" to my organization.	1	2	3	4	5	6	7
20. I do not feel "emotionally attached" to this organization.	1	2	3	4	5	6	7
21. I do not feel like "part of the family" at my organization.	1	2	3	4	5	6	7
22. The organization has a great deal of personal meaning for me.	1	2	3	4	5	6	7

Appendix E
Job Satisfaction

Instructions: Please indicate the extent to which you either agree or disagree with the following statements by circling the appropriate response.

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
23. I find real enjoyment in my job	1	2	3	4	5
24. I like my job better than the average person	1	2	3	4	5
25. Most days I am enthusiastic about my job	1	2	3	4	5
26. I feel fairly well satisfied with my job	1	2	3	4	5

Appendix F
Job Performance

27. How were you rated by your supervisor on your last performance review?

- Much below average
- Below average
- Slightly below average
- Average
- Slightly above average
- Above average
- Much above average
- I have not been reviewed
- It was not made clear to me how I was rated

Appendix G
Demographics

Age: _____

Gender (circle one): Male Female

Indicate your highest level of education attained (check one):

- less than High School
- High School or equivalent
- Some college
- Associate's Degree
- Bachelor's Degree
- Master's Degree or higher

How long have you been with the current organization? (check one)

- less than 6 months
- 6 months to 1 year
- 1-2 years
- 2-3 years
- 3-5 years
- 5-10 years
- 10-15 years
- More than 15 years

How often is your job physically demanding? (circle one)

- Never
1
- Rarely
2
- Sometimes
3
- Often
4
- Always
5

How satisfied are you with your current exercise habits? (circle one)

- Very Dissatisfied
1
- Dissatisfied
2
- Neutral
3
- Satisfied
4
- Very Satisfied
5

Appendix H
IRB Approval

EMPORIA STATE UNIVERSITY

■ GRADUATE SCHOOL AND
DISTANCE EDUCATION

Research and Grants Center
Campus Box 4003
1 Kellogg Circle
Emporia, Kansas 66801-5415
620-341-5351
620-341-5909 fax
www.emporia.edu/research

August 5, 2014

Asher Delmott
2947 W 24th Ave., # 2
Emporia, KS 66801

Dear Mr. Delmott:

Your application for approval to use human subjects has been reviewed. I am pleased to inform you that your application was approved and you may begin your research as outlined in your application materials. Please reference the protocol number below when corresponding about this research study.

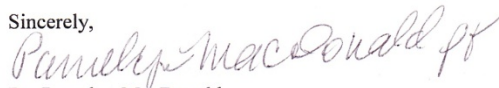
Title:	The Positive Organizational Outcomes of Physical Exercise
Protocol ID Number:	15001
Type of Review:	Expedited
Time Period:	07/18/2014 - 11/18/2014

If it is necessary to conduct research with subjects past this expiration date, it will be necessary to submit a request for a time extension. If the time period is longer than one year, you must submit an annual update. If there are any modifications to the original approved protocol, such as changes in survey instruments, changes in procedures, or changes to possible risks to subjects, you must submit a request for approval for modifications. The above requests should be submitted on the form Request for Time Extension, Annual Update, or Modification to Research Protocol. This form is available at www.emporia.edu/research/irb.html.

Requests for extensions should be submitted at least 30 days before the expiration date. Annual updates should be submitted within 30 days after each 12-month period. Modifications should be submitted as soon as it becomes evident that changes have occurred or will need to be made.

On behalf of the Institutional Review Board, I wish you success with your research project. If I can help you in any way, do not hesitate to contact me.

Sincerely,



Dr. Pamela MacDonal
Chair, Institutional Review Board

pf

cc: Dr. George Yancey

Appendix I

Cover Letter

July, 2014

Dear employee,

Today I would like you to complete a short survey about work attitudes and behaviors. By completing this survey, you will be able to communicate to your organization about the quality of your work life. You will also help me, Asher Delmott, collect data for my Master's thesis in Industrial/Organizational Psychology from Emporia State University. Your participation in this research project is deeply appreciated.

Please complete the survey, place it in the envelope, and seal the envelope. Please do not put your name in the survey so that we can maintain your confidentiality. The survey takes about 10 minutes to complete. The results will be used for research purposes only and only summarized results of the data will be reported. No one at your company will ever see your individual survey.

If you are interested in receiving a copy of the findings, you can email or call me at the address or number listed below. Please leave your name and your email address or mailing address so that I will know where to send the findings.

If you have any questions or concerns, please feel free to contact me. Thank you for your help in my research efforts.

Sincerely,

Asher Delmott
Researcher
adelmott@g.emporia.edu
620-366-2421

I, Asher Delmott, hereby submit this thesis to Emporia State University as partial fulfillment of the requirements for an advanced degree. I agree that the Library of the University may make it available for use in accordance with its regulations governing materials of this type. I further agree that quoting, photocopying, or other reproduction of this document is allowed for private study, scholarship (including teaching) and research purposes of a nonprofit nature. No copying which involves potential financial gain will be allowed without written permission of the author. I also agree to permit the Graduate School at Emporia State University to digitize and place this thesis in the ESU institutional repository.

Signature of Author

3-7-2015

Date

The Positive and Negative Organizational Outcomes of Physical Activity
Title of Thesis

Signature of Graduate Office Staff Member

Date Received

