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FITNESS LEVEL, TYPE A BEHAVIOR, AND
ANXIETY LEVELS IN AN OCCUPATIONAL SETTING

BY

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B.A., University of Florida, 1982

THESIS

Submitted in partial fulfillment of the requirements
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ABSTRACT

An assessment was made of the relationship between physical fitness level, anxiety level and Type A behavior in a non-clinical sample of healthy middle-age adults. Forty nine mid-level managers from Westinghouse Steam Generator and Turbine Division, World Headquarters participated by filling out a battery of tests, including the Jenkins Activity Survey, the State-Trait Anxiety Inventory, and a fitness questionnaire. No significant relationship was found between physical fitness level and Type A behavior. A significant negative relationship was found between physical fitness level and trait-anxiety. Trend analysis revealed a significant linear decrease in mean anxiety scores for groups of increasing levels of fitness. A discussion of these results and their implications for research in an occupational setting is included.

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Special thanks are given to Andy Workum and his co-workers at Westinghouse, without whose cooperation this study could not have been possible; and to Mark Miller, for his humor and encouragement along the way.

This study is dedicated in the loving memory of my father, Gene Kilduff, and to my mother Eileen, who expressed their confidence in me from the beginning.

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INTRODUCTION

Nowhere is the mind-body interrelation more evident than in studies regarding physical and mental health. The growing research in this area reflects both the increasing popularity of physical exercise as a means of health maintenance, as well as continuous research efforts attempting to validate the assumption that physical fitness contributes to mental and emotional health.

The psychological benefits of physical fitness have been studied over a variety of psychological dimensions, including; personality, mood states, and work behavior. *Reductions in tension, depression, and anxiety, following a 10-week exercise program were reported by Blumenthal, Williams, Needels, and Wallace (1982) in a non-clinical group of healthy, middle-aged adults, who registered for an adult fitness program. *The exercisers exhibited less state and trait anxiety, less tension, depression, fatigue, and more vigor, following the exercise program, than did the controls, who were selected from a population of community volunteers who agreed to participate in research at Duke University. These subjects were individually matched for age, education, sex, and health status. *Other studies report increased feelings of self-worth (Carter, 1977) and self-satisfaction (Snyder & Sprietzer, 1974) following individual exercise sessions. *

The degree of benefit received from an exercise program has been linked to several factors, including degree of change in fitness, and the starting point (fitness level) of the experimental group at the beginning of the program. In a study using cardiac and normal patients McPherson, Paivio, Yuhasz, Rechnitzer, Pickard, and Lefcoes (1969) reported that cardiac patients involved in a 24-week exercise program showed greater mean changes, in a favorable direction, than non-cardiac exercisers on 43 out of 50 semantic differential inventory items including; anxiety, self control, aggressiveness, tension, and hurriedness. This was significantly higher than the non-cardiac exercisers, and cardiac controls who did not participate in the exercise program. The cardiac exercisers reported a relatively greater increase in happiness, confidence and optimism, and felt more active, hopeful, cheerful, adventurous and sociable than the normal exercisers. The cardiac exercisers also felt more energetic, patient, self-assertive and easy-going than the normal exercisers, after the exercise session. An inter-group comparison at the beginning of the study indicated that normal exercisers differed significantly from non-exercisers in both groups in that they showed a greater degree of self control and self-reliance, less aggressiveness, hurriedness and tension.

The finding that psychological benefits from an exercise program varied inversely with the physical fitness level at the start of the program is consistent with other reports in the literature (Gutin, 1966). Folkins, Lynch & Gardner (1972) also suggested that those who are in the poorest physical condition will show the greatest improvement, both physically and psychologically, after physical

training. The study examined changes in physical and psychological fitness in normal male and female joggers enrolled in a semester long jogging class, along with a control group made up of archers and golfers. Significant improvements in physical fitness were found for the joggers, but not for the control group. In the experimental group, pretest measures showed the men to be in better shape initially, than the females and that the women who enrolled in the jogging course were more "down" psychologically than the women who enrolled in the archery or golf class. The female joggers were initially more anxious, depressed, less self-confident, and less well adjusted than their control counterparts. The major criteria for judging whether there was a significant improvement in fitness were the 1.75-mile run test (Cooper, 1968) and the resting heart rate scores. Post-training tests revealed a significant change on the 1.75-mile run measure for both men and women in the experimental group, but only the women showed significant changes (decreases) in heart rate. After the training class women joggers showed significant positive changes on psychological fitness measures yet no significant changes were found for the male joggers. The correlations between the change scores on the physical fitness measures and psychological fitness measures were significant for that group which showed the most physical fitness change, the women, but correlations did not reach significance for the males. Perhaps this was due to greater changes in physical fitness for the women, and their lower levels of physical fitness initially.

Blumenthal, Williams, Williams, and Wallace (1980) compared Jenkin Activity Survey (JAS) scores of 50 normal individuals before

and after completing a 10-week cardiovascular fitness program to determine if a systematic exercise program could be effective in modifying the risk profile of Type A individuals, including the Type A behavior pattern itself. The Type A behavior pattern is characterized by aggressive, dominant behavior, hard driving competitiveness, and a chronic sense of urgency. It has also been linked with the development of coronary atherosclerosis (Blumenthal, Williams, Kong, Schanberg & Thompson, 1978). In the 1980 study, Blumenthal et al. found that Type A subjects lowered their scores on the JAS Type A scale after fitness training, while scores of the Type B subjects remained unchanged. The implication is that the Type A behavior pattern may be modified by participation in a regular exercise program. It is noteworthy that here again those who were more anxious, tense and uptight to begin with (the Type A's) experienced the greatest amount of change.

Most of the controlled studies in the literature deal with clinical populations, for which an exercise program is professionally designed to induce increases in cardiovascular fitness and is imposed on the experimental group producing near perfect adherences. These programs are well supervised, scheduled and provide the subject with immediate feedback, reinforcement, and attention. Yet most of these variables, such as feedback, supervised workouts, medical attention, and reinforcement, are absent when one undertakes a personal fitness regimen. Perhaps more than increased physical fitness levels are responsible for the reported changes in psychological well-being, for example, ^{*}a Hawthorne type effect; ^{*}since "control" groups are not correctly designed to match the experimental groups on this important

variable.

Although of less sophisticated design, deVries (1968) ran a study which eliminated "Hawthorne" differences between control and experimental conditions, by doing a repeated measures, within-group comparison. Twenty-nine college age subjects were measured before and one hour after five minutes of bench stepping; and on a control day when rest replaced the exercise period, to test for the possible existence of a tranquilizer effect from a physical exercise session. A significant reduction in neuromuscular activity was found after exercise, with no change on the control day. deVries also noted that those subjects with the highest electrical activity values prior to the program derived the greatest benefit from the physical exercise (p.10).

Correlational studies provide an additional way of evaluating these effects without the Hawthorne component. Blair, Blair, Howe, Pate, Rosenberg and Parker (1980) found that leisure time physical activity (LTPA) had no effect on job performance in a group of white-collar insurance employees. *Liden (1969) found a significant relationship between physical fitness, assessed by bicycle ergometer, and work absences in a group of 51 customs officials; fitter individuals had fewer absences. However, no relationship was found between physical fitness and absences in a group of 51 firemen or in 75 male and female office workers involved in the same study.*

In light of the suggestive research findings indicated above, several questions are raised. First, perhaps increasing fitness levels is a good therapeutic measure, but really makes no difference in affecting psychological variables in normal, already fit adults. If

this were so, then the real psychological beneficiaries of exercise programs are those who are physically out of shape (and therefore in a high risk category) or extremely anxious to begin with. This is to say that perhaps it is not the fitness level itself that is important, but rather the change from one fitness level to another (i.e. change in cardiovascular fitness and capacity) that is associated with changes in psychological well-being (i.e. reduced anxiety). It would follow then, that those who experience the greatest change in fitness level also experience the greatest psychological changes.

Second, the results of controlled studies, which produce physiological changes in the participants, must be accepted with some degree of caution, in that many of the variables affecting them are situation specific, and would not be present under normal conditions. For example; scheduled exercise sessions, consistent, immediate feedback, the attention of a researcher, as well as the social aspects of participating in a study of this design, are not found in normal, personal fitness programs.

Controlled studies have shown that physical fitness programs can be beneficial in modifying several behavior dimensions. It is suggested, however, that correlation, although a less sophisticated research design, is more appropriate to tap the relationship between physical fitness and psychological fitness, or well-being. In this case the relationship between physical fitness itself, instead of changes in physical fitness, and psychological well-being may be examined using levels of fitness as they naturally occur without Hawthorne type confounding variables.

The following correlational study was designed to assess the relationship between (1) physical fitness level and trait-anxiety, as measured on the Trait-anxiety subtest of the State-Trait Anxiety Inventory (STAI) and (2) physical fitness level and Type A behavior, as reflected on the Jenkins Activity Survey (JAS), among 169 normal, middle-aged subjects.

Hypotheses must be very tentative for these relationships. If it is hypothesized that fitness level itself is not associated with measures of psychological well-being, but that changes in fitness level are what produce the changes in well-being then in a correlational study based on longterm fitness activities no significant relationship would be expected to be found between fitness level and anxiety level. If, however, anxiety level is related to fitness level, then a significant correlation would be expected to be found between STAI scores and fitness level scores.

The experimental work reflected in the literature has shown reductions in Type A behavior; however, these results may be due, in part, to ~~to~~ confounding variables not present under normal conditions. Less sophisticated designs, such as correlation, have eliminated the "Hawthorne" component in these studies, and, have focused mainly on the relationship between physical fitness and measures of work performance.

The second goal of this study was to assess the relationship between physical fitness and measures of Type A behavior, when the "Hawthorne" component has been eliminated. If the results of experimental studies finding reductions in Type A behavior are due to "Hawthorne" type variables, then no significant relationship between

physical fitness and JAS scores (reflecting Type A behavior) was expected to be found when these variables were removed through correlation.

If, however, real psychological benefits are gained through fitness (i.e. reductions in Type A behavior), and are not artifacts of the experimental design itself, then a significant correlation between measures of physical fitness and JAS scores will be found.

From this analysis, a low non-significant correlation, or no correlation was expected to result between fitness levels and trait-anxiety measures, indicating that fitness level itself is not associated with psychological well-being (i.e. reduced anxiety). It was expected that a high negative relationship would exist between fitness level and JAS scores, in that subjects who scored high on fitness points made responses less reflective of Type A behavior.

METHOD

Subjects

One hundred sixty-nine executives, employed at the Westinghouse Steam Engine and Turbine Division, World Headquarters, Orlando, Florida, were asked to participate by filling out an informed consent sheet, and a survey packet consisting of three questionnaires. Of the 169 packets originally distributed, 74 packets (44%) were completed and returned. Twenty-five of these had missing or incomplete responses and were therefore omitted from the analysis. The final analysis was made on 49 subjects (46 male, 3 female) aged 31-65 years ($x = 45.8$ years, $S.D. = 9.5$ years).

Procedure

One week prior to receiving the survey packets, the subjects received a letter from the Human Resource Manager at Westinghouse which announced the upcoming study (see Appendix A).

Survey packets were distributed on the morning of the study so that the subjects found them on their desks when they arrived at work that day. A cover letter was attached to each survey packet, providing the participant with information regarding the purpose of the study, risks involved with participation, and confidentiality.

A consent sheet and envelope were also attached (see Appendix B).

Participants were instructed to sign and detach the consent sheets prior to filling out the survey packets. The three surveys within each packet were number coded to keep them together, and no master list was kept to insure confidentiality. Participants were not asked to sign any of the surveys. Once completed, the subjects were asked to seal the surveys in the envelope provided and return them to the experimenter who was at Westinghouse the day of the survey.

Each packet contained the Jenkins Activity Survey (JAS), the State-Trait Anxiety Inventory (STAI), and a fitness questionnaire regarding amount (frequency and duration) and type of exercise the subject had participated in regularly over the past six months.

Psychological Instruments

The Jenkins Activity Survey Form C, (JAS) is a 52 item multiple choice questionnaire designed to place respondents on a Type A-B continuum. The survey contains four scales including Type A behavior, Speed and Impatience, Job Involvement, and a Hard driving and competitive scale.

State-Trait Anxiety Inventory (STAI) is made up of two twenty item subtests designed to assess state and trait anxiety. State anxiety refers to the level of anxiety and tension at the time the questionnaire is filled out. Trait anxiety refers to the general level of anxiety that the subject experiences (i.e. how the subject usually feels).

The fitness questionnaire is based on Cooper's (1977) point system and is designed to assess levels of fitness by assigning points to

different types of physical exercise (ie. running, swimming, walking, cycling) based on the amount (frequency and duration) of exercise received. As points accumulate, level of fitness increases.

Scoring

Only trait-anxiety subtest scores from the STAI were used in this analysis. Each item response was given a weighted score. Weighted scores for the twenty items were then summed for each subject to get a raw score. Raw scores were transformed to standard scores for NORMAL ADULTS which could range from 33 (low trait-anxiety) to 102 (high trait-anxiety).

The JAS was scored by adding the weighted item responses for each of the twenty one items making up the Type A scale. These scores were then standardized with a mean of 0.00 and a standard deviation of 10.0. Scores in a positive direction are reflective of Type A behavior, while negative scores are reflective of Type B behavior.

Point values were assigned to exercises on the fitness questionnaire based on Cooper's (1977) point value system. Point values for each exercise were then multiplied by the number of times per week the subject performed the exercise. Weekly fitness points for each exercise were then summed to obtain a Total Fitness Point (TFP) value for each subject. Male subjects were also grouped into fitness categories (very poor, poor, fair, good, and excellent) based on TFP values. Cooper defined the boundaries for these categories as: very poor (< 1), poor (1-14), fair (15-29), good (30-50), and excellent (> 50).

RESULTS

Pearson Product Moment Correlation Coefficients were used to measure the degree and direction of the linear relationship between (1) TFP scores and JAS scores, and (2) TFP scores and trait-anxiety scores from the STAI. No significant correlation was found between JAS scores and TFP scores ($r = .145$, $p > .05$); however, a significant negative correlation ($r = -.392$, $p < .05$) was found between TFP and trait-anxiety scores.

Since the Pearson r indicates a significant degree of linear relationship between the individual fitness levels and trait-anxiety scores, the subjects were grouped into Cooper's five fitness categories which were then used as levels of the "fitness" independent variable in a one way randomized analysis of variance (ANOVA), see Table 1. As shown in Table 2, the expected linear relationship was evaluated by the linear component of trend analysis over the five fitness categories. This linear component was significant with $F(1,40) = 5.85$, $p < .05$. Thus, not only do individual fitness scores show a significant relationship to trait-anxiety scores, but as Figure 1 shows, fitness groups (i.e. very poor, poor, fair, good, excellent) also show that as fitness category of the groups improves, a significant linear decrease in mean anxiety scores takes place ($\bar{x} = 51.33, 48.68, 48.67, 46.50$ and 42.57 , respectively).

Table 1. Analysis of Variance of the Trait-Anxiety scores for the five fitness groups.

SOURCE	SS	DF	MS	F	W2
<hr/>					
FITNESS					
LEVEL	326.65	4	81.66	1.76	.06
WS	1860.15	40	46.5		
TOTAL	2186.8	44			

Table 2. Trend Analysis of the Trait-Anxiety scores for the five fitness groups.

SOURCE	SS	DF	MS	F	W2
<hr/>					
FITNESS LEVEL					
LINEAR	271.88	1	271.88	5.85*	.1
QUADRT	15.52	1	15.52	.33	.01

*: P = .05

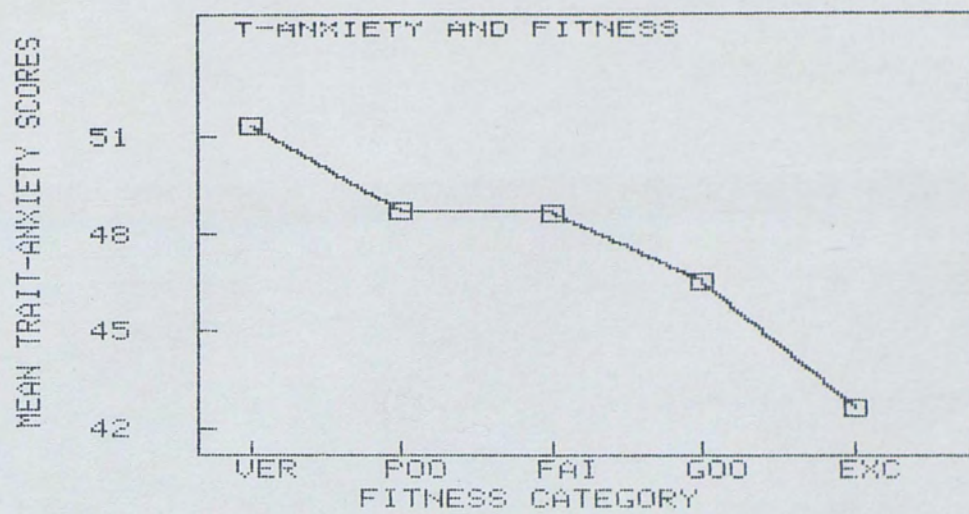


Figure 1. Mean trait-anxiety scores as a function of fitness level category.

DISCUSSION

The psychological benefits of physical fitness have been predicated in both the scientific literature and the popular press.

The major finding of this study is the significant reduction in trait-anxiety associated with increased levels of physical fitness. A general decrease in trait-anxiety was documented as physical fitness level increased.

No relationship was reported between physical fitness level and measures of Type A behavior, although an inverse relationship was expected. One interpretation may be that reports of reductions in Type A behavior (Blumenthal et al., 1980) following an experimentally imposed fitness program may be due, in part, to Hawthorne type variables stemming from the nature of the experimental design itself.

Many times, experimental fitness training is offered to subjects who are self-selected, and seek out exposure to the training. This selection bias poses a serious problem in any attempts at comparison with controls. In addition, the experimental subjects know they are "experimentals", and so the added attention factor may become one of several confounding Hawthorne type variables. Some researchers (Haskell & Blair, 1980) suggest that the experience of exercising in a group could provide social-psychological benefits that would assist in

stress management. Cureton (1963) for example, followed 2,500 adults through a physical conditioning program and, through interviews and checklists, concluded that the physical conditioning program helped make friends, relieved tension, and increased energy level.

Jenkins (1971) characterized Type A, "coronary prone" behavior as; more diligent toward achievement, more perfectionistic, tense and unable to relax, more committed to a job or profession, and more active and energetic than corresponding Type B behavior. In the 1980 study, Blumenthal et al. found that scores on the Type A scale declined over time for the Type A subjects as physical fitness improved, while scores of the Type B subjects remained the same. Some researchers assume that physical fitness improvements give people a sense of mastery, a sense of having control over bodily functions, which is then associated with an experience of well-being (Ismail & Trachtman, 1973; Solomon & Bumpus, 1978). Keeping in mind the descriptive characteristics of the Type A individual, and that the present study correlated Type A behavior and fitness level based on stable exercise routines over the past six months; an alternate interpretation to the findings might be that many "Type A" individuals had actually reduced the magnitude of their Type A behavior pattern over the six month period prior to the correlation. Type B individuals, on the other hand, would have remained the same. Correlational studies cannot predict cause-effect relationships, and it may be that exercise, over time, facilitates a reduction in the Type A behavior pattern, which would explain why no relationship was reported using a correlational design.

Increases in physical fitness have been linked to a variety of psychological variables including improved self concept (Collingwood & Willett, 1971; Hilyer & Mitchell, 1979; Martinek, Cheffers & Zaichkowsky, 1978; McGowan, Jarman & Pedersen, 1974), a sense of improved "life quality" (Morris & Husman, 1978), reduced depression (Greist, Klein, Eischens, Faris, Gurman & Morgan, 1979; Brown, Ramirez & Taub, 1978), and improvements in sleep behavior (Folkins, Lynch, & Gardner, 1972). Folkins and Sime (1981) provide an extensive review of theory and research that have attempted to relate physical fitness training to improvements on psychological variables among normal as well as clinical populations.

The present finding that a significant inverse relationship exists between trait-anxiety and physical fitness level is consistent with other studies which suggest that improvements in physical fitness are associated with reductions in trait-anxiety (Blumenthal et al., 1982; Folkins et al., 1972; McPherson et al., 1969).

The majority of research dealing with physical fitness and anxiety have been the result of controlled studies which impose physiological changes on the participants. These studies raise questions regarding the contributory effect of Hawthorne type variables, not unlike those raised with experimental research on Type A behavior. For example, scheduled exercise sessions, consistent, immediate feedback, the attention of a researcher, as well as the social aspects of participating in a controlled study are not found in normal, personal fitness programs.

The finding that trait-anxiety correlated significantly with fitness level in the absence of Hawthorne type variables lends

strength to the notion that fitness level itself is related to lower levels of anxiety, and this reduction is not merely an artifact of the experimental design.

The psychological "highs" associated with changes in fitness level and, in the case of controlled studies, the added attention from an experimenter, may be important factors in anxiety reduction. A third factor which may play an important role in anxiety reduction is the physiological change which accompanies physical fitness.

Change in fitness level, per say, was not a contributing factor in the present study as measurements were not taken over time. Similarly, social or participation effects were also minimized by the nature of the correlational design. The fact that change in fitness level itself (i.e. from unfit to fit) was not measured, yet the linear component of the trend analysis showed a significant inverse relationship between fitness category and trait-anxiety suggests that it is not "achieving" physical fitness that is associated with changes in psychological well-being (i.e. reduced anxiety) but that fitness level itself is important, and the higher the level of fitness, the better the results in terms of anxiety reduction.

The exact nature of the physiological relationship between physical fitness and anxiety is unclear. Folkins et al. (1972) suggest that a plausible explanation may lie with the specific feedback cues from the body which may be more reassuring when a person becomes more physically fit. Reductions in resting muscle action potential following exercise have also been offered as an explanation for tension relief (deVries, 1968). Still others propose that exercise provides a distraction or diversion from anxiety provoking

cognitions (Bahrke & Morgan, 1978; Morgan & Horstman, 1976).

Implications for Research in Occupational Settings

In the past decade, substantial progress has been made in documenting effective behavioral approaches to the management of both psychological and physiological responses to stress (Schwartz, 1980). The organizational consequences of job stress (including anxiety and tension) have been reviewed by Beehr and Newman (1978). This body of research will continue to grow as industry becomes more and more aware of the importance of its role in promoting employee health, and the potential benefits that may accrue as a result of this commitment.

The major finding of this study was a significant inverse relationship between trait-anxiety and level of physical fitness in a non-clinical, occupational setting. Other researchers (Lyons, 1971) have linked job related tensions to less desirable aspects of job performance, such as voluntary turnover, employee withdrawal (i.e. absenteeism), and psychological withdrawal (i.e. lower job involvement, less identification with the organization). Anantharman and Kaliappan (1982) administered a job involvement scale and the STAI to a sample of 46 nurses and found a significant negative relationship between measures of both state and trait anxiety, and job involvement. Srivastava and Krishna (1980) administered a job anxiety scale to a sample of 160 semi-skilled employees in a textile factory and found that those with a high degree of anxiety produced significantly less than those with low anxiety.

Schachter (1961) found that intense emotional arousal (i.e. anxiety, tension) had little effect on stereotyped (task oriented)

performance, but a very negative effect when work became more cognitive and required considerably more thought. Sharma and Sharma (1978) studied the interrelationship among measures of job involvement, job satisfaction, and general (trait) anxiety in a sample of 40 high level and 80 low level white collar workers. They found job involvement and job satisfaction positively related, and that both job involvement and job satisfaction were negatively related to general anxiety.

These research findings, and the findings of the present study imply that the role of physical fitness in the reduction of anxiety and tension may have far reaching effects in an industrial setting. Donoghue (1977) reported that exercise breaks on the job appear to reduce tension and errors, and improve worker output. Much more research needs to be done to fully explore the benefits of increased physical fitness as a means of reducing anxiety and other aspects of job stress. This part of the research domain seems particularly inviting to Industrial/Organizational psychology because of the ease with which it lends itself to experimental, evaluative research.

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APPENDIX A

Letter from Human Resource Manager at Westinghouse



From: STGD ORLANDO 240
 With: 439-2130
 Date: FEBRUARY 24, 1984
 Subject: SURVEY FOR UCF MASTERS DEGREE STUDENT THESIS

To: STGD/PGOD Managers

On Monday, March 5, 1984, Ms. Susan Kilduff, a graduate student in the University of Central Florida Industrial Psychology program, will conduct a survey for her Masters Thesis. Her study will assess the relationship between fitness level and psychological attitudes.

The results of individual survey participation will be kept confidential - results will be computed on the entire division, not individual, department or section data. The surveys will be coded to ensure that each of the three parts can be kept together. Copies of the results of the study will be available for each participant as well as the Orlando division. We are requesting that each manager complete the surveys on Monday, March 5th, no later than the end of the work day. Please do not take the surveys home. Susan will be present in the building (Human Resource Department) all day on March 5th, to answer any questions or concerns regarding the study.

The survey packet will be on your desk when you arrive for work on Monday, March 5th. In the packet will be the three survey forms, a participant information form and a informed consent form; this later form is a requirement of UCF and must be signed by each participant. Participation in this study is voluntary; however, since the data will be available to us to analyze for our own Wellness Program, we urge you to cooperate.

Due to the size of our total population and the limited evaluation resources available to Susan, plus time constraints for her thesis program, we will survey only managers during this phase. We will review the possibility of extending the study to all associates at a later date after examining the data from this particular study.

Thank you in advance for your cooperation with Susan, UCF and our Wellness Program.

Sincerely,

A. Workum
 Manager Human Resource Development

Mary Anne Ciavatta
 Corporate Nurse

Discard Date:

MJW0118-1

APPENDIX B

Survey Packet Materials

Participant Information

Dear Participant,

Let me begin by expressing my gratitude to you for taking some time out of your busy schedule to complete this survey. I am a graduate student at the University of Central Florida, in the Industrial/Organizational Psychology program. The survey data will be used for my Masters thesis, which is the final requirement I must meet to receive my degree.

So that you will be fully informed about the nature of this survey, I ask that you read the following outline before signing the informed consent sheet that follows.

Project Title: A Masters Thesis on the Assessment of Fitness Level and Attitudes in an Occupational Setting

Experimenter: Susan D. Kilduff Faculty Advisor, David W. Abbott, Ph.D.
Psychology Department, Phillips Hall 321, UCF.

a. Description of Procedures:

The purpose of this study is to assess the relationship between fitness level and several psychological attitudes, in an occupational setting. You will be asked to sign an informed consent sheet after reading this participant information form.

Your participation will require that you fill out three surveys. The first survey will require that you answer questions about aspects of behavior that have been found helpful in medical diagnosis. The second survey contains two parts. Each contains a number of statements which people have used to describe themselves. In part one, you will be asked to read each statement and then indicate how you feel right now, at this moment. In the second part, you will be asked to read each statement and indicate how you feel in general.

The third questionnaire requires that you answer some questions regarding your participation in several physical exercises.

b. Risks and Discomforts:

It is not felt that participating in this study will bring with it risk or discomfort, other than that produced by taking time away from your normal work schedule.

c. Benefits:

Your participation will provide you with an opportunity to make several self-evaluations by describing your present attitudes, general attitudes, and present fitness level. In addition, copies of the results of the study will be made available to each participant.

d. Alternative Procedures:

Please feel free to ask additional questions before, during, or after participating in this study. I will be available at ext. 2133 to discuss any questions, comments, or concerns you may have regarding the study.

e. Protection of Confidentiality:

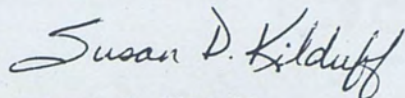
The results of your survey participation will be kept confidential. The surveys will be treated by coded number and only coded data will be recorded in order to protect your identity. Results are computed on group, not individual data. No sub group data will be computed or made available to anyone. No individual data will be made available to anyone.

Participant Information

The surveys in your packet have been coded so that we may keep each participant's responses together. There is no need for you to put your name anywhere on these surveys. The informed consent sheet will be detached and turned in separately when you return your packet. Survey packets should be returned to me at location 2E16, or you may detach your consent sheets, seal your responses in the envelopes provided, and leave both at your cluster. All surveys should be returned between 4:30 and 5:00 PM.

Once again, thank you for allowing me to interrupt your schedule for this short time.

Sincerely,

A handwritten signature in cursive script that reads "Susan D. Kilduff". The signature is written in dark ink and is positioned above the typed name.

Susan D. Kilduff

Consent Sheet

I, _____, agree to participate in a study of attitudes and physical fitness currently being conducted by Susan D. Kilduff, Industrial/Organizational Psychology graduate student at the University of Central Florida, Orlando, Florida. I have been informed of the nature of this research and I understand that my responses will be held in the strictest confidence and will be used only as data collected for this study. I further consent to the use of such data in any publication of the results of the study, under the assurance that my participation will be both anonymous and confidential. I understand that I may terminate my participation in this study at any time without penalty or prejudice.

Date

Signature

Fitness Questionnaire

Subject # _____ Sex M F Age: _____ Date: _____

I. Personal History: Please indicate the response which provides the best description of yourself.

- | | |
|---|--|
| (A) <u>Personal History of Heart Attack</u> | (B) <u>Family History (blood relative) of Heart Attack</u> |
| () None | () None |
| () Over 5 years ago | () Yes, over 50 years old |
| () 2-5 years ago | () Yes, 50 years or under |
| () 1-2 years ago | |
| () 0-1 years ago | |
| (C) <u>Smoking Habits</u> | (D) <u>Tension-Anxiety</u> |
| () None | () No Tension - Very Relaxed |
| () Pipe/Cigar | () Slight Tension |
| () Past only/Quit | () Moderate Tension |
| () 1-10 daily (cigarette) | () High Tension |
| () 11-30 daily | () Very Tense, "High Strung" |
| () 30+ daily | |

II. Exercise Information: Below is a list of physical activities. Please list those activities you have regularly participated in over the past six months, and are currently engaged in. List the number of days each week you do the activity, and the average amount of time you spend on each activity per day.

Example:

<u>Activity</u>	<u>Days/Week</u>	<u>Distance</u>	<u>Units</u>	<u>Duration</u> (hours, minutes, seconds)
Jogging/Running	3/week	2.50	miles	:23:30
Tennis(singles)	6/week	3.0	games	2:00:00

Per Day

<u>Activity</u>	<u>Days/week</u>	<u>Distance</u>	<u>Units</u>	<u>Duration</u>
Jogging/Running	____/____	____.	miles	____:____:____
Walking	____/____	____.	miles	____:____:____
Stationery Rnng	____/____	____.	steps/minute	____:____:____
Cycling	____/____	____.	miles	____:____:____
Stationery Cylg*	____/____	____.	_____	____:____:____
Swimming	____/____	____.	yards	____:____:____
Tennis(singles)	____/____	____.	games	____:____:____
Tennis(doubles)	____/____	____.	games	____:____:____
Badminton(sgls)	____/____	____.	games	____:____:____
Badminton(dbls)	____/____	____.	games	____:____:____
Stair Climbing	____/____	____.	steps	____:____:____
Walk/Jog	____/____	____.	miles	____:____:____
Golf	____/____	____.	holes	____:____:____
Calisthenics	____/____	____.	**	____:____:____
Rope Skipping	____/____	____.	**	____:____:____
Hockey	____/____	____.	**	____:____:____
Soccer	____/____	____.	**	____:____:____
LaCrosse	____/____	____.	**	____:____:____
Football	____/____	____.	**	____:____:____
Skiing	____/____	____.	**	____:____:____
Volleyball	____/____	____.	**	____:____:____
Handball	____/____	____.	**	____:____:____
Squash	____/____	____.	**	____:____:____
Wrestling	____/____	____.	**	____:____:____

Other:

_____	____/____	____.	_____	____:____:____
_____	____/____	____.	_____	____:____:____
_____	____/____	____.	_____	____:____:____

* enter body weight in distance column, resistance in units column.
 ** the following activities require duration information only.