

AN ABSTRACT OF THE THESIS OF

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The purpose of this study was to investigate the effects of participation in physical fitness programs on the self-perceived level of job performance of Oregon public university employees. A volunteer sample of 344 fulltime public university employees responded to the specifically designed questionnaire. Job performance was measured by job satisfaction, work productivity, general health attitude, and university commitment as positive indicators, and absences due to illness as a negative indicator. Data were analyzed using descriptive statistics, analysis of variance, and the Scheffe test.

Public university employees tended to exercise by themselves rather than participate in the university physical fitness program and were generally involved in greater frequency of exercise; however, a considerable number were not involved in regular exercise. Male public university employees participated in more active physical fitness programs while the female employees participated in

less active programs. University employees within the 34 to 54 age range were more actively involved in physical fitness programs than those in the younger or older age ranges. Popular choices of exercise activities were individual exercises.

Participation in physical fitness activities had a positive effect on higher self-perceived levels of job performance, particularly in general health attitude; however, it was not substantiated that participation in physical fitness activities does affect job satisfaction, work productivity, university commitment, and absenteeism.

The Effects of Physical Fitness Programs  
on the Job Performance of Full-Time Employees  
in Public Universities of Oregon

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# The Effects of Physical Fitness Programs on the Job Performance of Full-Time Employees in Public Universities of Oregon

## CHAPTER 1

### INTRODUCTION

Currently, employee fitness programs are becoming increasingly popular in a variety of work places such as in industry, businesses, hospitals and schools (Allen & Delistraty, 1987; Cunningham, 1982; Kaldy, 1985). In the past ten years, the number of fitness programs has increased significantly (Cox, 1984) in response to the popular demand by the employees (Pate & Blairs, 1983). More than 50,000 firms in the United States and up to 1,000 companies in Canada were involved in some aspects of fitness programs (Pyle, 1979; Salmon, 1981). Many private agencies have long been interested in promoting these programs. As reported by Pyle (1979), the President's Council for Physical Fitness Services received at least 20 inquiries from industries and businesses interested in establishing the program. The employees viewed the program as a fringe benefit (Morgan, Shephard, Finucance, Schimmelfing, & Jazmaji, 1984; Shepard, 1986). The program can also be used to promote the company in advertising and recruiting, as well as enhancing the overall image of the company (Jacob & Chovil, 1983).

The company can implement such a program by including

it in apprenticeship programs (Klingen, 1978), training courses and sales conferences (Keir, 1978). For example, the Bosch Company in Stuttgart, West Germany required new employees to attend fitness classes for two hours every week during their first year of employment (Shephard, 1986). It has been suggested that these programs have enhanced physical fitness and were beneficial to the physical and mental health of the employees of these institutions (Herzlinger & Calkins, 1986).

Studies in exercise physiology have shown a direct correlation between the availability of physical fitness programs and improved health conditions among the employees who regularly participated in these programs (Rudman & Steinhardt, 1988). These improved health conditions were manifested in lower levels of blood pressure and cholesterol, a decrease in heart disease, heart attack and the prevention of coronary heart diseases (Bishop, Myerson, & Herd, 1988; Fox & Noughton, 1972; Harris & Associates, Inc., 1984; Morris, Everitt, Pollard, Chave, & Serimence, 1980; Paffenbarger & Hale, 1975; Rechnitzer, Pickard, & Paivio, 1972; Talor, Kleptar, & Keys, 1972), and reduced total body weight and body fat (Cox, Shephard, & Corney, 1981; Simonson, 1986).

Research evidence has also indicated an increase in the range of motion, muscle strength and joint flexion of the

physical fitness program participants (Bassett, McClamrock, & Schnelzer, 1982). These increases were attributed to gains in oxygen intake (Cox, et al., 1981; Folkins, 1976), muscle tone (Briggs, 1975; Tichy & Tichy, 1974), flexibility (Cox, et al., 1981; Tichy & Tichy, 1974), memory (Briggs, 1975), caloric expenditure, cardiovascular strength, and decreases in systolic blood pressure and hypertriglyceridemia (Folkins, 1976).

The benefits from corporate physical fitness programs are not limited to the employees. Employers can also benefit from the savings in corporate health care costs and from increases in labor productivity. One study reported a relationship between fitness indicators and industrial health expenditure (Quasar Systems, Ltd., 1976). Corporate health care costs reflected a positive relationship to increases in health care insurance premiums, which can be presumed to increase along with the incidence of employee health problems (Kondrasuk, 1984; Solomon, Portnoy, Daston, Rogus, & Tuckermanty, 1983). It has been reported that employee fitness programs could reduce corporate health care costs (Girdano, 1986). For example, Canada Life Insurance Company was reported to have saved \$ 36,975 in health care expenses in the first year of its Personal Fitness Program (Tager & Goldberg, 1982). Physical fitness programs aimed at reducing health problems may indirectly reduce the cost of

health care for employees in a company.

As a result of the reduction of health problems effected by participation in fitness programs, workers' productivity may increase (Christenson & Kiefhaber, 1988). Consequently, an increase in productivity may produce a more positive attitude in a working atmosphere. According to Rudman and Steinhardt (1988), a "healthy worker is a happy worker" (p.5). The higher degree of labor productivity resulted from a decrease in job-related stress (Hayden, 1984; Kondrasuk, 1980; 1984), less absenteeism (Byurstrom & Alexions, 1978; White, 1985), and an increase in feelings of well-being (Hettler, 1984). A study by Pravosudov (cited in Kondrasuk, 1984, p. 49) noted that "physical exercise produces a favorable influence on mental labor productivity."

Participation in employee fitness programs seemed to have a positive influence on the employees' motivation and loyalty to the organization (Shephard, 1974). The workers' loyalty is reflected on the low turnover of employees (Howard & Mikalachki, 1979; Rhodes & Dunwoody, 1980; Porter, Crampon, & Smith, 1976; Warner, 1987). This phenomenon directly resulted from the positive attitudes among the workers (Cox, 1984). As the workers became more involved with the management of the company, there was an increase in satisfaction of the working conditions and greater self-

esteem among the workers (Shephard, 1986; Wanzel, 1979). All of these factors tend to create a greater quality of production (Steers & Rhodes, 1978) and greater physical working capacity (Byurstrom & Alexions, 1978; Dedmon, Garder, O'Conner, & Paschke, 1979; Rhodes & Dunwoody, 1980; Shephard & Cox, 1982). However, an index for measuring job satisfaction as related to different levels of fitness is still lacking and further studies in this area are needed.

It is not known how different levels of fitness can positively affect workers' productivity, or improve workers' quality of production. However, an increase in workers' fitness has been associated with improvements of self-image (Hanson & Nedde, 1974), less fatigue on the job (Denton, Feaver, & Spencer, 1980), and a positive change in life style (Bishop, et al., 1988). Bishop, et al. (1988) showed that of those people who participated in a regular exercise program, a considerable number have changed their usual habits by quitting smoking and that regular exercise could improve nutritional habits as well.

Other than physical health benefits, several studies reported that there were high degrees of psychological benefits associated with exercise and sport activities. Highly active groups with deep commitment to exercise were in a more positive psychological frame of mind than the less active groups (Harris & Associates, Inc., 1984). Therefore,



those who exercised tended to feel better about themselves, were less anxious, and demonstrated an increased ability to withstand emotional stress (Young & Ismail, 1977).

Educational institutions are no exception to the rule that productive employees must maintain high levels of job satisfaction, exhibit high standards of morality, and attain a certain level of physical fitness. Therefore, a fitness program can play an important role in an academic comprehensive wellness program in order to encourage healthy behavior in the workplace (Bruhn & Cordova, 1987). As a school superintendent noted:

The success of public education depends upon the day-to-day abilities of our teachers and administrators. Keeping them well is one of the best ways to ensure their effectiveness. Every time we have to bring in a substitute it costs us effectiveness. When you consider that we're developing young minds for the future, you can see how important it is that we be as effective as we possibly can. Health is a big part of that equation. (Bishop, et al., 1988, p.42)

Although there are several studies suggesting that the employee fitness program enhances the worker's physical well-being, there is little scientific evidence which proves that the program is beneficial to worker performance. Therefore, this study is designed to give further scientific

evidence to correlate the effects of the physical fitness programs on the self-perceived level of job performance among public university employees.

### Statement of the Problem

The purpose of this study was to determine the effects of physical fitness programs on the self-perceived level of job performance of fulltime employees in the public universities of Oregon. Answers to the following research questions were sought:

1. What are the demographic characteristics of the employees of the public universities in Oregon
  - a. by physical fitness program category and sex?
  - b. by physical fitness program category and age?
  - c. by ranked choices of physical fitness activities?
  - d. by physical fitness program category and absenteeism due to sickness?
  - e. by physical fitness program category and position description?
2. What is the self-perceived level of job performance by employees of public universities in Oregon and their physical fitness program category?
  - P1 - regularly participate in the university sponsored physical

fitness program once or twice a week

- P2 - regularly participate in the university sponsored physical fitness program at least three times a week
- P3 - never regularly exercise
- P4 - regularly exercise by oneself once or twice a week
- P5 - regularly exercise by oneself at least three times a week

3. Is there a significant difference in the self-perceived level of job performance of the public university employees of Oregon among the five physical fitness program categories?

4. Is there a significant difference in the self-perceived level of job performance of the public university employees among the five physical fitness program categories regarding the following job performance indicators?

- (1) job satisfaction
- (2) work productivity
- (3) general health attitude
- (4) university commitment
- (5) absenteeism

5. Is there a significant difference in the self-

perceived level of job performance of the public university employees among the five physical fitness program categories by items in each of the job performance indicators?

### Definition of Terms

Employees. For purposes of this study, employees are those who worked fulltime and have been with the public university for at least one year.

Job performance. In the absence of a completely satisfactory definition of job performance, the assumption posited by Wise (1975) "that differences in job performance are reflected in measures of success within the firm ..." (p. 355), the researcher conceptualized five measures of success in the job which are defined as follows:

a. Job satisfaction. This term refers to positive physical and psychological feelings or attitudes of people towards work and was measured by items 1, 3, 4, 5, 6, 9, 11, 13, and 22 in the questionnaire (Brayfield & Rothe, 1951).

b. Work productivity. As used in this study, this term refers to feelings of accomplishment and achievement in the job. It was measured by items 2, 8, 12, 15, 17, 21, and 24 in the questionnaire (Rudman & Steinhardt, 1988).

c. General health attitude. This term refers to attitudes toward health aspects as contributory to an individual's well-being. It was measured by items 7, 10,

16, 18, 19, and 25 in the questionnaire which were developed by the researcher.

d. University commitment. Committed individuals or groups are those who would give something of themselves as contribution to the university. This construct was measured by items 14, 20, and 23 (Porter, Crampon, & Smith, 1976).

e. Absenteeism. For purposes of this study, absenteeism was measured by the number of sick leave days reported by the study respondent.

Physical fitness program categories. For purposes of this study, this term refers to the categories developed by the researcher to classify study respondents in accordance with their involvement with fitness related activity, either self-directed or university sponsored. These categories are identified throughout the study by employing the following guidelines:

- P1 - employees who regularly participate in the university sponsored physical fitness program once or twice a week
- P2 - employees who regularly participate in the university sponsored physical fitness program at least three times a week
- P3 - employees who never regularly exercise
- P4 - employees who regularly exercise by oneself once or twice a week

P5 - employees who regularly exercise by oneself  
at least three times a week

University physical fitness programs. This nomenclature refers to physical activity programs which are provided by the university for all employees to regularly participate in at least 2-3 days a week (W. Winkler, personal communication, April 17, 1990).

#### Assumptions

It was assumed that all respondents answered all of the questions in the instrument truthfully and that the research sample was representative of the population.

#### Limitations of the Study

For purposes of this study, the following extraneous variables may have affected the results :

a. Since responding to the questionnaire was voluntary, the respondents may not be a representative sample of the population.

b. The data obtained from the survey instrument were perceptions of the respondents.

c. The study was limited to employees in the public universities of Oregon.

d. Employee physical fitness programs of the three universities represented in the study may vary in scope and

quality. This phenomenon may have positively or negatively influenced employee response to the study questionnaire.

## CHAPTER 2

### REVIEW OF THE LITERATURE

Physical fitness does not happen overnight. Long term efforts need to be made to achieve this aim. Workplaces strive to provide their employees opportunities to keep fit by developing programs to suit their needs. Literature and studies conducted stress the need for physical fitness programs in workplaces because it is believed that these programs positively affect job performance. To logically develop the concepts relevant to this study, the review of the literature is presented in the following sections:

1. Wellness programs in the workplace
2. Physical fitness programs
  - a. Promoting Adherence
  - b. Drop-out
3. Benefits of physical fitness programs

#### Wellness Programs in the Workplace

Wellness programs are those health activities which lead to the improvement of levels of physical and mental fitness, including psychological well-being. These programs include health education and health education efforts, health clinics, the provision of medical services, physical fitness programs, employee counseling programs and a variety



of other programs (Forouzesh & Ratzker, 1984/1985; Roberts & Harris, 1989). These programs include personal fitness counseling, a "healthy-back" class, a low level exercise session for older employees, weekend hiking clubs, specialized dance course, nutrition counseling clinics and sports injury clinics (Peepre, 1978).

Wellness programs were first conceived as a solution to help improve the workers' productivity in North America. The slow growth of workers' productivity in North America compared to European countries and some Asian countries has been attributed to the North American "adverse lifestyle" (Lalonde, 1974).

The development of wellness programs in the workplace was first initiated in the middle of the 1970s and thereafter has gained wide acceptance. A noteworthy progress in this area came from the establishment in 1974, of the President's Council on Physical Fitness in Industry which led to a burgeoning of public interest in fitness and health (Shephard, 1986).

Wellness programs are commonly found in various workplaces. A survey by the Ministry of Culture and Recreation, Ontario, Canada (1979) revealed that 27% of the Canadian companies offered social and cultural programs, 23% offered lifestyle counseling services, and 46% offered sports and recreation programs. The corporate physical

fitness activities and lifestyle programs gained recognition and flourished after the Canada Conference on Employee Physical Fitness in 1974 (Health and Welfare, Canada, 1975).

In the educational sector, perhaps the most noteworthy public university wellness program was the health promotion/risk reduction program established in 1980 by the Division of Continuing Studies at the State University of New York in Albany (Salisch, 1980). The success of this program has lead to a widespread extension of wellness programs to various agencies throughout the country (Bishop, et al., 1988). A survey of organizations with 50 or more employees found that nearly two- thirds of the workplaces had at least one program promoting health, with an average of two programs per company (Warner, 1987). However, it was not known precisely how many business establishments had wellness programs.

Among other forms of wellness programs, the smoking reduction scheme has been the most common form, occurring in 35.6% of the workplaces surveyed (Christenson & Kiefhaber, 1988). The researchers reported that 29.5% of the companies provided health risk assessment programs, 28.6% presented back care programs, 26.6% offered stress management programs, 22.1% sponsored exercise and fitness programs and 19.8% had developed off-the-job accident prevention programs.

The findings of other researchers present a demographic picture of the characteristics of wellness program participants. Rippe (1989) reported that the employees participating in existing programs were overwhelmingly men. Results in Conrad's study (1987) showed that most of the participants were younger and better educated than the non-participants. It was also found that most participants were higher income groups and of higher level positions rather than clerical, skilled, or unskilled employees (Conrad, 1987; Kondrasuk, 1985; Rippe, 1989, Rudman & Steinhardt, 1988) which implies that the wellness program had not sufficiently reached out to the general public.

The school programs supporting the health and well-being of school employees were rare (Blair, Tritsch, & Kutsch, 1987; Falck & Kilcoyne, 1984). Among 112 public schools, community colleges and universities in Texas, only 22 had wellness programs (Lawson, 1985). A recent survey by the National Wellness Information Resource Center (Schmottlach & Malzon, 1990) revealed that only 381 universities and colleges in the United States of America had wellness programs. These figures reflect the dearth of such programs in academic institutions.

The need for employee wellness programs in universities cannot be overlooked. In the study conducted by Blair, et al. (1987), it was reported that employees of

universities were found to suffer from health problems which were similar to the rest of the population. These problems included hypertension, obesity, and cigarette smoking. The study suggested that worksite wellness programs may significantly reduce the costs of employee health plans.

Townsend (1984) reported administrative support for wellness programs in public schools in Texas. The results of surveying the attitudes of Texas public school personnel administrators regarding employee wellness programs enabled the researcher to conclude that:

1. The popularity of public school wellness programs was increasing;
2. Wellness programs varied but appeared to meet the needs and financial constraints of each district;
3. Personnel administrators indicated that all employees should be eligible to participate in a wellness program since all employees worked together to make the educational program successful;
4. Wellness programs appeared to improve employees' health since health insurance costs and sick leave/absenteeism decreased;
5. Wellness programs appeared to have a positive influence on the employee's well-being since morale, attitude and self-concept improved;

6. Personnel administrators indicated wellness programs should be funded by various methods; therefore, funding should not be a deterrent for establishing a program;
  7. Most available data were supportive of wellness programs; overall job performance of school personnel and district operating costs decreased.
- (p. 45)

Also, the study performed by Blair, et al. (1987) reported that preparation time was authorized by several principals for exercise, meditation and other fitness activities and in some schools, facilities were available for use by teachers and staff.

The concerns for health and well-being can be divided into demographic categories of sex, age and education. The female participants of the school wellness program, in general, exhibited greater concern regarding wellness factors than males. Employees possessing lower levels of education have been determined as higher risks concerning eating habits, use of alcohol, involvement in physical activities and proper weight maintenance while employees with graduate degrees were identified as low indicators of needs and risks and high on wellness knowledge and practices (Baker, 1987). Those classified as nonadherers were younger, unconcerned for their health, possess higher levels

of social stability and often live near the work sites. The adherers were older, more concerned with health, possess lower levels of social stability and live farther from their work sites (Scott, 1985).

A study on the perceptions of university employees on the needs for wellness at a large southeastern university showed high concerns regarding medical insurance, physical well-being and fitness, nutrition, stress, dental health and vision (Baker, 1987). Topical areas of greatest interest were stress, fitness, nutrition, and weight control. These concerns may be reflected in the emphases of the contemporary employee wellness program. Physical fitness (Lawson, 1985; Pate, Corbin, Simons-Morton, & Ross, 1987; Vastine, 1984), nutritional awareness and weight control (Lawson, 1985) ranked one, two, and three, respectively as the program's emphases. Therefore, physical fitness should be particularly emphasized in a wellness program as regular exercises are most important and accepted as the central component of a healthy lifestyle (Pate, et al., 1987). To improve an individual's work performance and leisure activities, regular exercises are suggested (Haskell & Blair, 1980). Physical activities can be planned from simple exercises to vigorous, more extensive cardiovascular health programs (Townsend, 1984) on regular basis.

## Physical Fitness Programs

The underlying concept of physical fitness is the provision of the means for modifying the exercise behavior of the individuals to the end of improving individual physical fitness and health (Godin & Shephard, 1983; Kondrasuk, 1985). The purpose of a fitness program is to improve health and cardiovascular conditioning (Kondrasuk, 1985). Fitness activities no longer lead only to stronger muscles and trim looks (Harris and Associates, Inc., 1984) but also improve mental functioning and relieve stress (Kondrasuk, 1985). These physical fitness activities, which are believed to relate to workers' performance, are referred to as physical fitness programs (PFPs).

A number of studies have identified the goals of the corporate physical fitness program as developing better employee health, encouraging employee weight loss and enhancing employee benefit through social interactions and group welfare (Canada Fitness Survey, 1982; Cox, et al., 1981; Heinzelmann & Bagley, 1970; Peepre, 1978; US President's Council on Fitness, 1973). According to Kondrasuk (1985), over 95% of his survey respondents believed that PFPs helped achieve these goals.

It has been said that people do not exercise because it is good for them, but rather because it makes them feel good (Morgan, 1979). Physical fitness programs can, therefore,

be of mutual benefit to both the employees and their employers (Pyle, 1979), based on the theory that the employee who feels better about himself or herself is a better employee. This phenomenon explains the support given by large corporations for comprehensive employee physical fitness programs.

The types of exercise offered by employee physical fitness programs are important factors in motivating employee participation. Exercises should be fun and entertaining to the participants. Moreover, the exercise programs should not require expensive equipment and capital facilities so that a modest initial investment is all that is required for start up (Anderson, Masironi, Rutenfranz, & Selger, 1978; Metcalfe, 1987; Shephard, Cox, & Corey, 1981). The programs should be designed for participants of both sexes and no initial participant skills should be required (Anderson, et al., 1978).

The physical activities can be designed in such conditions to alter the participant's consciousness. William and Glaser (quoted in Harris, 1970, p. 53) reported the conditions to be as follows:

1. The activity must be noncompetitive and voluntarily selected;
2. The activity should be something that could be done easily without much mental effort for at



least one hour a day;

3. The activity should be one that can be done alone and does not depend upon the participation of others;
4. The activity must have some physical, emotional, or spiritual value for the participant;
5. The participant must believe that persistence will result in improvement; and
6. The activity must be one that can be done without self-criticism.

Researchers have identified the most popular physical fitness activities as jogging (Allen & Delistraty, 1987; Michael, 1972), walking, stationary cycling, treadmill walking, rope jumping, aerobic dancing, rowing, nordic skiing (Allen & Delistraty, 1987) and traditional calisthenics (Michael, 1972; Wankel, 1984). Rippe (1989) reported that jogging or running, fitness walking, stationary cycling, calisthenics and weight training were exercises participated in by executives for at least three times a week. By age groups, Shephard (1986) found that the middle age group preferred swimming, calisthenics, fitness classes, tennis, walking, racquetball and cross-country skiing while the older age group favored walking, bowling and swimming. According to the survey by Harris and his associates (1984), the most popular strenuous activities for

the highly active individuals were running, basketball and calisthenics while the lesser strenuous exercises included bowling, walking and swimming. In recent years, however, more participants have been found to favor running or jogging.

A survey in Ontario, Canada, regarding employee fitness programs, found team sports to be most popular (Ministry of Culture and Recreation, 1979). Team sports offered more advantages than individual sports in that physical fitness could be achieved in an atmosphere of mutual entertainment and team sports allowed more participation opportunities for the employees' families (Blozis, Chen, & Cooper, 1988). However, in work-site fitness programs, only a few of the workers (20%) participated and their preferences varied with their objectives and the type of exercise program in which they were involved (Cox, 1984). In general, better educated, active, younger employees are more inclined to maintain a regular exercise program (Blozis, et al., 1988; Harris & Associates, Inc., 1984; Pechter, 1986; Ruskin, Halfon, Pridan, & Branner, 1989). Lindsay and Osborn (1980) also found that those who participated in the PFPs to socialize, were likely to maintain a regular exercise program.

According to Lindsay and Osborn (1980), a highly equipped physical fitness facility usually included a

running track, basketball court, volleyball court, handball court, tennis court, swimming pool as well as exercise and weight lifting rooms, showers and lockers. The design, building construction, furnishing and maintenance of physical fitness facilities and programs can be expensive. Therefore, costs are major factors in setting up physical fitness programs. To reduce the costs, Lindsay and Osborn (1980) suggested that companies interested in an executive fitness program can subcontract for the use of a fitness center in the community, such as the YMCA or a private health club. Some companies usually paid for extending the existing facilities and participating employees usually were asked to pay nominal fees (Collis, 1977; Kondrasuk, 1980; Larock, 1986; Rudman & Steinhardt, 1988).

An in-house physical fitness facility provided obvious advantages over the use of a public facility. These advantages include equal participation for all workers, workers' convenience in the use of the facility, and managements' commitment to the program. However, expenses for such a program are costly. An estimated cost per participant per year, in 1979, was \$ 500 and has risen quite significantly since then (Pyle, 1979).

According to Kondrasuk (1985), a physical fitness program requires trained specialists in different disciplines. These specialists should include an exercise

physiologist, a health education specialist, a clerical staff member, a psychologist, a dietician, a dance instructor, a life guard and a health care personnel such as a physician, or a nurse. A good physical fitness program also requires a qualified coordinator. Miller (1986) surveyed physical education programs in the Southeastern United States and found that the supervisors with bachelor's degrees in physical education were well qualified for the jobs. Similar findings were also reported by Wright (1982), who indicated that some companies required a Master of Science degree in exercise physiology for the supervisory positions. Shephard (1986) suggested that such candidates should demonstrate experiences in various disciplines of physical fitness activity as well as leadership and management qualities. The duties of the program coordinator should include the following:

1. Advertising and promoting the fitness programs in the company;
2. Scheduling, organizing and teaching the fitness and health classes;
3. Supervising and training other coordinators; and
4. Participating in individual counseling such as testing individual fitness and interpreting the results or providing and monitoring exercise prescriptions. (p.185)

## Promoting Adherence

There are two issues which must be addressed when promoting adherence to the program: (1) motivating the employee to participate and adhere at the initial stage and (2) developing strategies which allow employees to maintain the new behavior (Morgan, 1977). Several investigators reported that it was more important to get employees to first participate in the program than to change their beliefs or behaviors (Godin, Cox, & Shephard, 1983; Harris, 1970). Heinzelmann (1973) suggested that the program must provide organization, leadership and social interaction in order to maintain the employee's participation. Other factors included eligibility for participation of the employee's intermediate family members and workmates (Andrew, et al., 1979; Heinzelmann & Bagley, 1970; Heinzelmann, 1973; Shephard, 1986; Stalonas, Johnson, & Christ, 1978; Wankel, 1979) and interest in sports (Spreitzer & Snyder, 1976; 1983).

Factors related to adherence or nonadherence to a physical fitness program could be identified through reports of studies conducted. Dishman, Ickes, and Morgan (1980) for example, stated that the personal attitudes towards physical activity, self perceptions of exercise ability and personal feelings of health consciousness cannot be correlated to the prediction of employee adherence to or dropout from the

exercise program and that such trends had been found to be similar to participants of both sexes. It was found that adherence to the program was more evident in male participants than in female participants (Baun & Bernacki, 1988); those who were more fit, than those who were less fit (Sonstroem, 1978); and the more self-motivated, than those with less self-motivation (Dishman & Ickes, 1981).

The participation of women in the PFP was more influenced by the involvement of their spouses in the program than their early experiences with sports (Spreitzer & Snyder, 1976). It is generally believed that children who exercise regularly, will become adults with better perceptions on health and well-being (Dishman, Sallis, & Orenstein, 1985) but there were contradictory reports on whether participation in sport or health and fitness programs in early youth were important determinants in adult participation in such programs (Sonstroem, 1974; 1978; Steinhardt & Carrier, 1989).

The program environment enhanced or deterred the participant's adherence to the program. The building of social relationships among participants greatly facilitated program adherence (Faukner & Stewart, 1978; Fitness Ontario, 1981; Perrin, 1979). Wankel (1984) indicated that the concept of "exercise buddy" worked well with participants who were already friends. This concept, however, did not

apply to strangers.

A participants' adherence to the program also depended on job-related stress and the workplace environment. Andrew, et al. (1979) reported that those who were not fatigued by their work, could relax easily after work, felt their work had not interfered with their exercise or that the exercise had not interfered with their work, and were more likely to adhere to the program. Other factors (Shephard, 1986) which encouraged greater adherence were better program facilities, better program promotions for greater employee participation and exercise health-related benefits, equal access to the program for all workers and the administration of an employee fitness test.

#### Drop-out

Despite tremendous efforts to encourage regular participation in the exercise program, a 40% to 50% drop-out rate during the first six months to one year was typical (Carmody, Senner, Malinow, & Matarazzo, 1980; Dishman, 1986). Reasons contributing to the drop-out by participants included the lack of individual attention by the exercise staff (Andrew, et al., 1979), lack of time or work conflict (Andrew, et al., 1979; Harris & Associates, Inc., 1984; Oldridge, 1982; Pechter, 1986), lack of enthusiasm, fatigue after exercising, medically related problems, age (Shephard,

1986) and lack of spouse support (Haynes, 1976; Oldridge, 1982). In addition, Andrew, et al. (1979) reported two factors which contributed to a higher employee PFP drop-out rate: (a) individuals whose income has not increased to their expectation over the previous five years; and (b) employees who desired relaxation after work. Body composition, however, was cited as the most reliable physical behavior variable which determined who continued or dropped out of the program (Dishman, et al., 1980; Dishman, 1981a; Young & Ismail, 1977). Additional characteristics which contributed to employee drop-out included being overweight (Dishman, 1981a; 1981b), cigarette smoking (Oldridge, Wicks, Hanley, Sutton, & Jones, 1978; Oldridge, 1979), assignment to blue-collar work positions and exhibiting an history of inactive leisure time pursuits (Oldridge, 1979).

### Benefits of Physical Fitness Programs

Both the employees and the organization can mutually benefit from the physical fitness program. Several health studies (Byurstrom & Alexions, 1978; Folkins & Sime, 1981; Hayden, 1984; Hettler, 1984; Kondrasuk, 1980; 1984; Pyle, 1979; Spreitzer & Snyder, 1976; White, 1985) indicated that physical activities improved both the participant's mental and physical well-being. Among the claims of better health



were lower blood cholesterol and pressure, decrease in heart disease, reduction in total body weight, decreases in resting and heart rates, increase in maximum oxygen intake, a correction of graphic changes caused by intake of low oxygen mixtures, decrease in job-related stress and increase in feelings of well-being. Moreover, Pravosudov (cited in Shephard, 1986, p. 248) suggested that a fitness program could reduce injuries by at least 50%.

The employee's well-being can directly benefit the organization economically. Corporations are now aware of the economic benefits associated with employee physical fitness programs. When the well-being of the employees, the corporate's greatest asset, is improved, it does not only increase the workers' productivity (Falck & Kilcoyne, 1984; Donoghue, 1977; Heinzelmann & Bagley, 1970; Larock, 1986; Rudman & Steinhardt, 1988) but also reduces the corporate health care costs (Cox, et al., 1981; Christenson & Kiefhaber, 1988; Forouzesh & Ratzker, 1984/1985; Larock, 1986; Rudman & Steinhardt, 1988; White, 1985). The employee's health benefits, which result in economic benefits to the company, include decreases in time lost from the job, decreases in disability leaves and reductions in early deaths of the employees (Schended, 1982).

Several studies reported a relationship between employee productivity and employee participation in physical

fitness activities. A gain on employees' productivity due to the corporate PFPs was revealed by two researches (Cox, et al., 1981; Wanzel, 1979) while a third study, Shephard (1986) stated a 4% increase in employee productivity occurring one month after the establishment of employee "exercise breaks". A Canadian survey (Wanzel, 1974) indicated that the corporate PFPs did not only increase the employees' productivity but improved the employees' morale as well. These findings suggested that employees were more eager to go to work although there was no evidence to support the notion that they would work harder (Howard & Mikalachki, 1979).

The corporations' economic benefits extend not only from an augmentation to workers' productivity but a reduction in employee absenteeism. It has been estimated that 400 million work days or 5.1 days per employee are lost each year in the United States (Yolles, Carone, & Krinsky, 1975). This can be translated into approximately \$ 66 per day for each non-managerial employee or a total annual cost of 26.4 billion. A more conservative estimate for the absenteeism cost was 8.5 billion per year. The figures cited by the researchers, included direct salaries, fringe benefit costs, temporary replacement costs, and estimated losses in profit (Mirvis & Lawler, 1977).

The Canadian Postal Service Headquarters reported a

reduction of 1.08 days absenteeism during the first year of its' employee physical fitness program. This number increased to 1.90 days the next year, a decrease in the absenteeism rate of 0.82 days (Richardson, 1974). These statistics reflected that a well organized employee physical fitness program would save the Canadian economy as much as 15 billion per year and extend the life span of the participants as much as 2 years (Shephard, 1986).

Participation in corporate PFPs not only improves the physical well-being of the employee but may result in a number of additional benefits. These positive benefits include changes in life style such as reduction of smoking habits, alcohol consumption (Blaine, 1985; Gallant, 1986; Harris & Associates, Inc., 1984; Kondrasuk, 1985; Sanderson, 1986) and the enhancement of the employee's psychological well-being.

Ballinger (1987), Booth (1987) and Lazarus (1975) reported that physical fitness training improves the ability of the participant to cope with stresses and other environmental factors. Minor or moderate depression created by stress can be alleviated by physical training or running, which is considered to be an alternative somatic treatment (Conroy, Smith, & Felthous, 1982; Greist, Klien, Eischens, Faris, Gurman, & Morgan, 1979; Homeier, 1981; Mutrie, 1986).

A second debilitating psychological state is anxiety.

Studies reported a reduction in anxiety which was a result of participation in physical fitness activities (Driscoll, 1976; Morgan, 1979; Reiter, 1981). In general, exercises appear to enhance the participant's emotional stability (Greist, 1978), positive mood (Mutrie, 1986), morale (Falck & Kilcoyne, 1984; Health Insurance Association of America, 1985; Passwater, Tritsch, & Slater, 1980), self-confidence, psychological well-being, and ability to relax and sleep better (Gary & Guthrie, 1972). All of these factors can help to improve the employee's perception of the organization and employee productivity, as well as reduce absenteeism rates. As reported by Larock (1986), one employee commented that "as a result [of the program], I feel better about myself and my attitude toward work" (p. 12).

Most of the researchers investigating PFPs agree that physical fitness programs are beneficial to both employees and to their companies. However, Blaine (1985) did not observe significant changes in job-related personal attitudes when a physical fitness program was introduced into a school district. Similar studies (Gallant, 1986; Housley, 1985; Koonce, 1986) have observed that in some programs no evidence has been presented regarding the positive effects of the physical fitness program on job-related stress or the general psychological well-being of

the participants. Morgan, Roberts, Brand, & Feinerman (1970) also reported a lack of improvement in workers' depression after six weeks of participation in physical activities. In a parallel study (Stalling, O'Rourke, & Gross, 1975), among several universities in the United States, the researchers reported that faculty members did not show significant improvements on teaching skills or research outputs after they were subjected to participation in sport activities. In addition, Howard and Mikalachki (1979) reported no improvement in the productivity of middle managers after six months of involvement in employee fitness programs.

A more detailed study, conducted by Sanderson (1986) at Ellisville State College, investigated the psychological and physiological benefits of an employee fitness program and revealed no significant improvements in systolic blood pressure, body weight, lung capacity, job stress and sick leaves. A cross sectional survey (Quasar Systems, Ltd., 1976) found evidence of a correlation between fitness indicators and the provincial health expenditures. The results were unclear whether the good health encouraged the participation in physical activity programs or the physical fitness was responsible for good health.

### Summary

An extensive review of literature indicated that participation in physical fitness programs has a positive effect on improved health conditions, increased workers' productivity, increased feeling of well-being, less absenteeism, influence on the employees' motivation and enhances organizational loyalty. Most of the studies were conducted in business organizations while there seemed to be a dearth of such studies conducted in educational organizations. Moreover, there appeared to be no research conducted on the effect of physical fitness programs on self-perceived level of job performance in the university employee population.

## CHAPTER 3

### METHODS AND PROCEDURES

This study aimed to investigate the effects of participation in physical fitness programs on the self-perceived level of job performance. The methods and procedures employed are presented in the following subtopics:

1. The population and research sample
2. Data collection instrument
3. Data collection procedures
4. Statistical treatment of data

#### The Population and Research Sample

The survey population used in this study consisted of fulltime faculty and staff of selected public universities in the state of Oregon which provided physical fitness programs for their employees. The total population was 7,111 fulltime employees. There were 3,591, 2,219 and 1,301 fulltime employees in Oregon State University, University of Oregon and Portland State University, respectively. The names and addresses of the universities which provided PFPs were obtained from the National Wellness Information Resource Center Report (Schmottlach & Malzon, 1990). Program directors provided the names of the employees who

were regular participants in PFPs. Non-participants in PFPs were obtained from university directories.

The sample frame was randomly selected from the population. The research sample was derived from the sample frame. The factor which determined the research sample was the desire of the individual to participate in this study. The sample was divided into different groups based on the criteria established by the American College of Sports Medicine (1978). The categories for physical fitness programs considered the ACSM's criterion that for individuals who exercise less than twice per week, there will be no significant change in maximum volume of oxygen uptake. For the purpose of this study, it was assumed that if there is no change in the physical aspect, corollarily, there will be no change in the psychological aspect. In addition to this consideration, W.Winkler (personal communication, April 17, 1990), the coordinator of the Oregon State University Fitness Program, stated that, in general, there are two types of physical fitness programs: (a) three days per week program and (b) two days per week program. Based on these concepts, the respondents, therefore, were classified in accordance with the following physical fitness program categories:

- P1 Those who regularly participated in the university physical fitness program once or



twice a week;

- P2 Those who regularly participated in the university physical fitness program at least three times a week;
- P3 Those who did not presently participate in the university physical fitness program and never exercised by themselves;
- P4 Those who did not presently participate in the university physical fitness program but exercised by themselves regularly once or twice a week; and
- P5 Those who did not presently participate in the university physical fitness program but exercised by themselves regularly at least three time a week.

Based on the sample size estimation method for determining sample size from a given population proposed by Cochran (1953), responses from 344 employees constituted the research sample for this study. The alpha level was accepted at .04.

#### Data Collection Instrument

A paper-pencil questionnaire was designed to collect data for this study. The questionnaire was constructed in accordance to the guidelines outlined by Dillman (1978) and

consisted of two sections, Section A and Section B.

Section A explored the specific demographic information and consisted of a forced-choice and fill-in-the-blank format. Employee absenteeism due to sickness was obtained from the respondents' response on the specific demographic question.

Section B measured the university employee's self-perceived level of job performance in four indicators: (a) job satisfaction, (b) work productivity, (c) general health attitude, and (d) university commitment. The respondents rated each questionnaire statement by employing a modified five-point Likert scale. The ratings were: strongly agree, agree, undecided, disagree, and strongly disagree, designed as 5, 4, 3, 2, and 1, respectively.

Before the final version of the questionnaire was written, content validity and reliability of the instrument were established. The American Psychological Association (1984) defines content validity as the degree to which the sample of items on a test are representative of some defined universe or "domain" of content. The following techniques were employed to establish validity and reliability of the instrument:

1. The researcher gathered relevant information from a variety of research sources in addition to conducting personal interviews with specialists in the field of

physical fitness programs.

2. The term "job performance" was defined for designing valid Likert scales. An important step in designing valid Likert scales is to define terms. "Job performance" has such a broad definition and is difficult to specify and measure (Ariss & Timmins, 1989). Wise (1975), conducted a study on the relationship between students' academic achievement and their job performance and resorted "to the assumption that differences in individual job performance are reflected in measures of success within the firm ..." (p.355). In this present study, five measures of job performance were included: (a) job satisfaction, (b) work productivity, (c) general health attitude, (d) university commitment, and (e) absenteeism.

The nine statements included to measure job satisfaction were selected (modified) items from the validated Job Questionnaire by Brayfield and Rothe (1951). These statement had a reported reliability coefficient of .87 (Spearman-Brown formula). Seven work productivity items were selected (modified) from the Exercise and Work Productivity Questionnaire (Rudman & Steinhardt, 1988). Items which determined general health attitude were based on Maslow's (1954) general theory of human motivation. Six statements for this construct were included in the questionnaire. University commitment was measured by three

items selected (modified) from the Organizational Commitment Questionnaire (Porter, et al., 1976). Evidence of discriminant validity and predictive validity of the OCQ were reported. Absenteeism was a negative indicator of job performance and was measured by the number of days taken as sick leave.

3. The initial draft of the questionnaire consisted of 52 items which were based on the literature and information from interviews with fitness program directors. Each of the four job performance measures included at least seven items, a criterion recommended by Bohrnstedt (1970). Thirty of the items were written in positive terms and the rest were written in negative terms to avoid neutrality, a questionnaire technique suggested by Likert (1932).

4. The pool of 52 trial statements was submitted to experts (Appendix B) in the field of physical fitness programs for their advice with reference to the relevancy of items, clearness of expression, omissions, elimination of built-in bias, and other necessary changes.

A collective judgment of experts (Delphi panel) has been used by many researchers as one method of examining validity of the survey instrument. Samahito (1983) used this method for questionnaire validation in her study on competency needs for master's degree programs in physical education in Thailand. The questionnaire used in a study on

the science choices and preferences of middle and secondary school students in Utah conducted by Baird, Lazarowitz, and Allman (1984) was also validated using the Depli method. Charoenruk (1989) employed the same approach in his investigation on the application of item response theory in the cross-cultural validation of the Physical Estimation and Attraction Scale.

The Delphi panel consisted of seven experts who met the selection criteria (Baird, et al., 1984; Charoenruk, 1989; Linstone & Turoff, 1975; Samahito, 1989). The criteria for the selection of the members of the committee were based on Webster's Encyclopedic Unabridged Dictionary (1989) definition of an expert as one "who has special skill or knowledge in some particular field" (p. 502). To meet this requirement, two competencies had been established set for the selection of the Delphi committee:

1. The person must have knowledge in the field(s) of theoretical physical fitness programs and/or the psychology of fitness activities; and
2. The person must have at least three years of experience(s) in physical fitness activities and/or the psychological aspects of physical activities.

Based on these qualifications, the Delphi panel selected was composed of two physical fitness program

directors, three physical educators possessing a background in physical fitness activities, and two psychology educators who were experienced in the psychological aspects of physical activity.

5. The output which resulted from the agreement of the Delphi panel was then subjected to a pilot study (Borg & Gall, 1989; Oppenheim, 1966) to determine the reliability and further validity of the data gathering instrument. The questionnaire was administered to five groups of randomly selected fulltime employees who have worked at Oregon State University for at least one year. The 76 pilot study respondents were divided into five categories as follows: 10 volunteers who did not at the time of this study participate in the university physical fitness programs and never exercised by themselves; 9 volunteers who did not at the time of this study participate in the university physical fitness program but exercised by themselves regularly once or twice a week; 19 volunteers who did not at the time of this study participate in the university physical fitness program but exercised by themselves regularly at least three times a week; 19 volunteers who regularly participated in the university physical fitness program once or twice a week; and 19 volunteers who regularly participated in the university physical fitness program three times a week or more.

The researcher personally handed the questionnaire to each respondent, explaining the purpose of the study and giving instructions on how to fill out the questionnaire. The completed questionnaires were collected after two weeks.

6. Each item was then analyzed (Likert's item analysis) based on the responses in order to refine the item pool into a final scale (Mueller, 1986). The Pearson product-moment correlation was employed in the item analysis procedure. The formula is as follows:

$$r = \frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{[N(\sum x^2) - (\sum x)^2][N(\sum y^2) - (\sum y)^2]}}$$

where  $N$  = number of individuals

$\sum xy$  = sum of the products of the x and y scores for each individual

$\sum x$  = sum of x scores

$\sum y$  = sum of y scores

$\sum x^2$  = each x score squared, and summed over all individuals

$(\sum x)^2$  = sum of x scores squared, (Safrit, 1981).

An item analysis was used to determine the effectiveness of the total test for each item (Safrit, 1981; 1986) and to assure a greater reliability and validity of the test (Johnson & Nelson, 1986). The researcher employed the information from the item analysis to select suitable items or to rewrite or discard certain items (Kirkendall,

Gruber, & Johnson, 1980; Thomas & Nelson, 1985).

Other important factors for item analysis are item discrimination and total test reliability (Safrit, 1986). Item discrimination measures the item validity to discriminate different levels of achievement of testees (Johnson & Nelson, 1986). The item which discriminates well will skew the distribution of data of the positive respondents in the direction of "agree" to "strongly agree", and the distribution of negative respondents will be skewed in the direction of "disagree" to "strongly disagree" (on a positively-worded statement) (Shrigley & Koballa, 1984).

The most discriminating statements (Appendix F) are selected by the item-total correlation (Murphy & Likert, 1937). Safrit (1981) suggested the point biserial correlation method to compute for the correlation between each alternative of an item with the total test score. The formula for the point-biserial coefficient correlation is:

$$r_{pb} = \frac{(M_1 - M_0) \sqrt{pq}}{\sigma_Y}$$

where  $M_1$  is the mean Y-score of subjects passing item x;  
 $M_0$  is the mean Y-score of subjects failing item x;  
 $p$  is the proportion passing x;  
 $q$  is the proportion failing x, (p. 752).

On each given item, a t-value was computed:



t-value formula

$$t = pbis \sqrt{\frac{df}{1 - (pbis)^2}}$$

where  $df = \#$  of students minus 2

Furthermore, evidence for selecting a statement with evaluative quality involves the frequency of distribution and the undecided percentages (Shrigley & Koballa, 1984) which were examined considering the following points:

- a. The distribution of data on each valid statement across the five points in the Likert scale is expected to spread in both directions from the neutral point. The mean scores ranging from 2.5 to 3.5 and a range in standard deviations from 1.0 to 1.5 were recommended as guides.
- b. A 25% response or higher for "undecided" should make a statement suspect.

The total test reliability is designed to further validate item homogeneity. Homogeneity is the degree to which various items have common attributes (Scott, 1960). This was measured by using Cronbach's coefficient alpha as suggested by Crano and Brewer (1973) and Nunnally (1978). Cronbach's equation (1960) is presented in this formula:

$$\alpha = [ k/k-1 ] [ 1 - ( \Sigma \sigma_i^2 / \sigma_t^2 ) ]$$

where  $k$  = number of items on the test,

$\Sigma \sigma_i^2$  = variance of item  $i$ , and

$\sigma_t^2$  = the total test variance

This technique was used to determine the reliability of the items in the questionnaire. With 76 subjects responding to the items in the pilot study questionnaire, the reliability (computed was, 0.72), which was believed to be satisfactory (Courtney, 1990; Helmstadter, 1964). The final questionnaire was further subjected to a test of reliability using the data gathered from the 344 research sample respondents. The data were statistically analyzed using Cronbach's coefficient alpha procedure. The results indicated that for the specific component of job satisfaction (9 items),  $r = 0.84$ ; for work productivity (7 items),  $r = 0.29$ ; for general health attitude (6 items),  $r = 0.44$ ; and for university commitment (3 items),  $r = 0.50$ . The overall reliability coefficient was 0.74.

7. The results of the responses were then factor analyzed. Factor analysis is more a strategy to confirm other tests than a strategy for item selection (Abdel-Gaid, Trueblood, & Shrigley, 1986). It is a mathematical

technique which reduces a complex system of correlations into fewer dimensions (Gould, 1981). It is also a systematic method to examine the meaning of a test (Cronbach, 1960). It also determines the dimensionality of the domain as well as select items which best fit into the domain (Bohrnstedt, 1970). For purposes of this study, factor analysis was computed by employing the following procedures, as recommended by Ramsey (1987) and Johnson & Wichem (1988):

- a. identifying observation variables;
- b. taking samples and determining covariant relationships;
- c. determining the maximum number of factors by using an eigenvalue/eigenvector spectral decomposition;
- d. determining the number of factors;
- e. rotating solution to meaningful factors;
- f. testing for goodness-of-fit; and
- g. predicting factor scores.

Factor analysis used in combination with other techniques provide evidence of construct validity. Appendix F and H reflects the item analysis and factor analysis for the measurment items employed in this study. Factor analysis alone accounts for high percentages of item variance but it does not measure the psychological construct under consideration (Disatapundhu, 1989).

The final instrument was then revised based on the

steps previously outlined. The final set of 25 questionnaire items which have been tested for validity and reliability served as part B of study instrument.

Appropriate statistical analyses were employed for measures of central tendency and the needed comparisons and contrasts within and between groups. For the reliability of the instrument, item analysis was done using the data from the responses of the 76 subjects in the pilot study. Means, standard deviations, percent undecided, discrimination indices and item total correlation for job performance items were computed. To reduce the instrument items into the four constructs used to measure job performance, factor analysis was employed. The varimax rotation was used based on its general usefulness with orthogonally rotated factors (Comery, 1973). Factors having an eigen value higher than 1.0 were rotated (Ramsey, 1987).

The sample size was determined by the rule of the thumb for minimum sample size. To provide stable estimation parameters, researchers suggest using a large sample size ( $N = 200$ ) (Wood, 1987) and a minimum of 10 respondents per instrument item (Brinlin, Lonner, & Thorndike, 1973; Crano & Brewer, 1973). Since there were 25 items in the final version of the questionnaire, it would require 250 subjects to ensure a stable parameter estimation for both item analysis and factor analysis procedures. However, similar

studies conducted by Pancharoen (1988) and Chaowranong (1989) used fewer number of subjects than what was prescribed by Wood (1987). In this study, the limited number of subjects ( $N = 76$ ) in the pilot test may be attributed to the unavailability of qualified respondents for each identified physical fitness program.

#### Data Collection Procedures

After the questionnaire was completed, the researcher sent a set of the instrument to each of the randomly selected individuals from the sample frame. Using the guidelines suggested by Dillman (1978), the instrument was sent to the selected respondents by campus mail. The guidelines established by the Oregon State University Committee for the Protection of Human Subjects were strictly followed. The forms employed are included in Appendix B. Each questionnaire (Appendix D) contained a cover letter from the researcher (Appendix C) which explained the objectives and significance of the study and requested respondent cooperation in providing information by completing and returning the questionnaire.

All correspondence pertaining to the gathering of data was authorized by the Department of Exercise and Sport Science, Oregon State University, Corvallis. The questionnaires were forwarded to selected study subjects

and returned to the researcher by campus mail. If the completed questionnaires were not received within two weeks, non-responders were contacted by follow-up letters (Appendix E) or telephone calls.

### Statistical Treatment

The obtained data were processed and analyzed using the Statistical Package for Social Sciences (SPSSX). The following statistical techniques were employed in the study:

1. A five-point Likert scale was employed to determine the self-perceived level of job performance of the employees for the positive indicators. The scale for scoring was:

- 5 = strongly agree
- 4 = agree
- 3 = undecided
- 2 = disagree and
- 1 = strongly disagree

For absenteeism, which is a negative indicator, the raw scores (number of days absent due to illness) were transposed to five intervals. These intervals were used to adjust the skewed distribution of frequency of absences considering the very high number of days absent for a very few number of respondents. Based on logical reasons, the scale for absenteeism was then:

over 4 days = very high

4 days	=	high
3 days	=	moderate
2 days	=	low
1 day	=	very low

The pertinent scale(s) were used in the questionnaire and/or in the interpretation of results. For the responses on the positive statements, 1, was rated the lowest and 5, the highest and for the responses on the negative statements, the numerical values were converted to 1 = 5, 2 = 4, 3 = 3, 2 = 4, and 1 = 5. For items with no response, the data were treated as a missing value.

2. A frequency distribution and percentage was used to describe the university employees' background on each of the demographic variables included in the study.

3. The arithmetic mean was employed to provide the average levels of job performance among university employees in specific measures as well as the overall measure and the employees' average number of days absent from the job due to illness.

4. Cronbach's Coefficient of Alpha was used to calculate the reliability of the instrument, and determine the consistency of the answers given by the respondents.

5. The technique of frequency count was employed to determine the rank of exercise activities currently involved in by employees.

6. The One-way Analysis of Variance (ANOVA) was used to test significant differences between means of different groups in the study. When a significant interaction between two groups existed, the Scheffe Statistical Technique, appropriate for unequal group sizes and considered to be the most conservative test (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975), was used to determine if a significant difference existed between these two groups. Pattanapoorphan (1984) claimed that it was popular among researchers for the reason that it is difficult to commit a Type I error with this statistical technique.



## CHAPTER 4

### RESULTS AND DISCUSSION

Chapter 4 presents the results of the study obtained from the computation and analysis of data collected. The research questions formulated in Chapter 1 were the basis for organizing the presentation of results and discussion. In addition, results of the factor analysis for content validity is also presented.

#### Instrument Validity and Reliability

The data summarized in this section represent a systematic effort to establish validity of the data collection instrument as well as to determine its reliability. Validity measures utilized several techniques, such as definition of the constructs, utilizing the expertise of a Delphi panel, item analysis and factor analysis for the measurement items included in the instrument. The procedure undertaken has been outlined in Chapter 3.

In the pilot study conducted, data generated from 76 respondents on the 25 items of the questionnaire were item-analyzed by determining discrimination indices and item-total correlations. This was to test for the effectiveness of the total test for each item (Safrit, 1981; 1986) and to

assure a more valid and reliable test (Johnson & Nelson, 1986). A table summarizing the results is in Appendix F. All 25 questionnaire items showed significant discrimination indices ( $P < .05$ ), and positive correlations ( $r$ ) ranging from 0.18 to 0.46. However, item 19 (Hypertension is a major health problem that can be treated through regular exercise), reflected a high percentage of "undecided" (32%) responses. Shrigley and Koballa (1984) considers a statement suspect when there is a response of 25% or higher. The 0.37 coefficient of correlation should, however, justify the inclusion of the statement in the survey instrument.

To determine if each item may be identified with a factor, the data obtained were subjected to a factor analysis. Using the Varimax rotation technique (Comery, 1973), factors having an eigen value higher than 1.0 were rotated (Ramcy, 1987). The table in Appendix G shows that four factors needed to be rotated. Interpretations were made from the factor loadings (Appendix H) that were either plus or minus .30 or greater (Chaowranong, 1989).

Factor analysis, as a test of content validity, confirmed the original classification of some items but failed to confirm others. Factor I consisted of items 1, 2, 5, 6, 9, 11, 13, and 22; Factor II consisted of items 2, 8, 12, and 24; Factor III consisted of items 10, 16, 18, and 19; and Factor IV was made up of items 14, 20, and 23. Each

were written for the original classification: Job Satisfaction, Work Productivity, General Health Attitude, and University Commitment.

Six items (4, 7, 15, 17, 21, and 25) did not load on any of the four factors. After further analysis, the researcher observed that item 7 came close to clustering under Factor III; item 21 came close to be classified under Factor II. Both were confirmed by the content of the statement.

The results of the factor analysis revealed that the pool of 25 items lacked the attribute of unidimensionality. However, if the eigen value of the first factor was much greater than the second factor, and the second factor a little higher than the subsequent factors, it could support the claim that this self-perceived job performance questionnaire had unidimension (Lord, 1980; Lord & Novick, 1986; Warm, 1978). On the other hand, Abdel-Gaid and his associates (1986) claimed that a pool of attitude items that is homogeneous need not possess unidimensionality.

Abdel-Gaid, et al. (1986) stated that the data generated from the factor analysis confirms human judgment by sorting out one factor that the investigator has in mind when the trial statements are written. However, Nunnally (1978) advises researchers to move cautiously in the interpretation of data resulting from factor analysis.

Aiken (1980), Hassan & Shrigley (1984), Henersen, Morris, and Fitz-Gibbon (1978), Oppenheim (1966), and Shrigley and Trueblood (1979) agree that the development of an attitude instrument, multidimensionality is expected even when the items under examination have been carefully written and tested for reliability and validity. These principles had been considered in the determination of the inclusion of the items in the research questionnaire.

Based on the premises previously presented, the data on the four factors did not violate the view of unidimensionality considering the correlation of 0.46 among the four factors. Twenty five questionnaire items passed the test for their evaluative quality. As a scale, the 25 items passed several tests suggesting that the pool of items represent a reliable and valid scale for measuring the job performance attitudes of university employees.

#### Research Question One

What is the demographic background of the employees of the public universities in the State of Oregon?

The information obtained from Section A of the questionnaire, which included several aspects of the employee's background, was tabulated and computed with descriptive statistics of frequency and percentage. For the item concerning the types of activities the employee was

engaged in (item 5), ranking was employed with frequency counts on those fitness activities identified by the respondents as their first choice, and for the item on number of days on sick leave (item 6), mean scores were calculated. The summaries for the results on the demographic data are shown in Tables 1-5.

Table 1  
Frequency Distribution and Percentage of Respondents  
by Sex and Physical Fitness Program Category

Sex	Physical Fitness Program Category					Total
	P1	P2	P3	P4	P5	
	Freq.(%)	Freq.(%)	Freq.(%)	Freq.(%)	Freq.(%)	
Male	9(26.5)	36(50.7)	19(33.3)	26(45.6)	64(51.6)	154(44.8)
Female	25(73.5)	35(49.3)	38(66.7)	31(54.4)	60(48.4)	189(54.9)
No Answer					1 (.3)	1 (.3)
Total	34(9.9)	71(20.6)	57(16.6)	57(16.6)	125(36.6)	344(100)

Table 1 presents the frequency and percentage distribution of the total number of respondents by sex and physical fitness program category. The highest percentage (36.6%) of the total number of respondents were those who did not presently participate in the university PFP but regularly exercised by themselves at least three times a

week (P5). This group was followed by those who participated in the university PFP regularly at least three times a week (P2), those who exercised by themselves regularly once or twice a week (P4), and those who never exercised by themselves (P3, 16.6%). Respondents were those who regularly participated in the university PFP once or twice a week constituted the smallest group (P1, 9.9%).

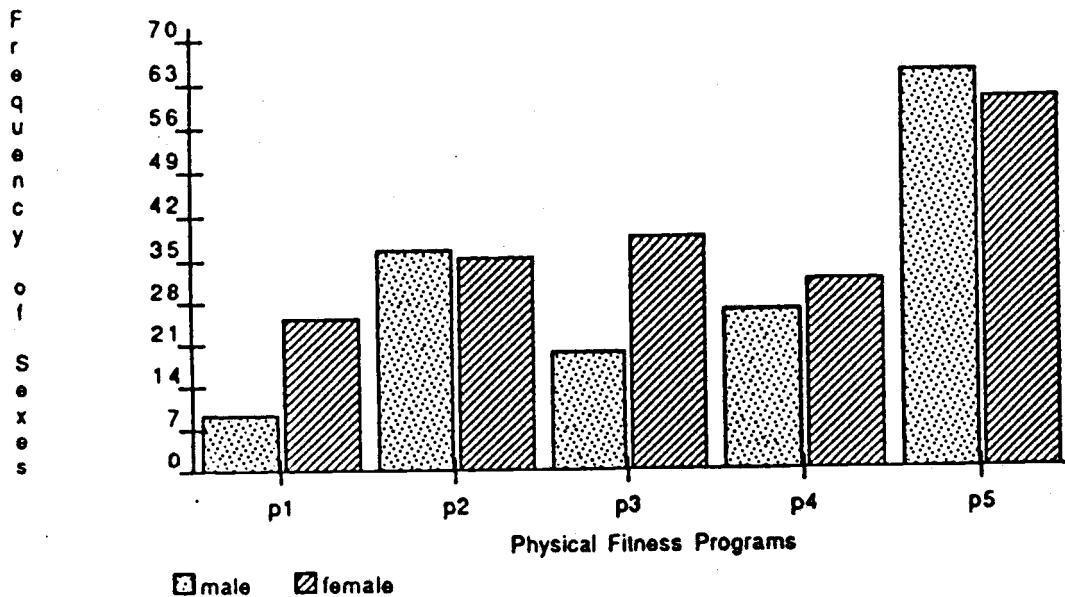
This trend reflects that most respondents exercised regularly at least three times a week, either with the university PFP (P2) or by themselves (P5). It can be noted that the percentage of those who did not exercise (P3) was greater than those who exercised once or twice a week with the university PFP (P1). This was also true for those who exercised once or twice a week by themselves (P4). Their percentage was also higher than the P1 group. This trend indicates that the employees exercised actively or not at all.

There were more females (73.5%) than males (26.5%) who presently participated in the university PFP regularly once or twice a week (P1). The percentage of males (50.7%) and females (49.3%) were quite similar for those who presently participated in the university PFP regularly at least three times a week (P2). A greater majority of females (66.7%) than males (33.3%) indicated they did not presently participate in the university PFP nor did they exercise by

themselves (P3). Females (54.4%) outnumbered males (45.6%) in the category which indicated they did not presently participate in the university PFP but exercised by themselves regularly once or twice a week (P4). A slightly higher percentage of males (51.6%) than females (48.4%) were identified in the category who did not presently participate in the university PFP but exercised regularly by themselves at least three times a week (P5).

These comparisons can be seen more clearly in Figure 1.

Figure 1  
A Comparison Between the Frequency of Male and Female  
Respondents Distributed Among the  
Five Physical Fitness Program Categories



The graph shows that for the male respondents, the greater majority ( $N = 64$ ) exercised by themselves regularly at least three times a week (P5), followed by those who presently participated regularly in the university PFP at least three times a week (P2,  $N = 36$ ). Those who regularly exercised by themselves once or twice a week (P4) were next in rank ( $N = 26$ ) followed by those who never exercised regularly (P3,  $N = 19$ ). The lowest ranking included those who regularly participated in the university PFP at least once or twice a week (P1,  $N = 9$ ).



The trend for the female respondents was similar to that of the males. The greater majority of female respondents (N = 60) exercised by themselves at least three times a week (P5) followed by those who never exercised regularly (P3, N = 38), and those who regularly participated in the university PFP at least three times a week (P2, N = 35). The fourth in rank (N = 31) consisted of females who regularly exercised by themselves once or twice a week (P4), closely followed by those who regularly participated in the university PFP once or twice a week (P1, N = 25). The data show that while many of the female respondents exercised regularly, a number of respondents did not exercise at all.

Comparing the number of males and females in each PFP category, no observable differences were apparent among employees in groups P5, P2, and P4, it was evident that there were a greater number of females (N = 25) than males (N = 9) who regularly participated in the university PFP once or twice a week (P1) as well as those who never regularly exercised (P3, females = 38, males = 19).

This finding implies that males tended to exercise more than females, a phenomenon which is supported by Rippe (1989) who reported that employees participating in existing physical fitness programs were overwhelmingly men. This trend could be attributed to factors related to lifestyles, physical condition, social responsibilities and other

differences between men and women. It was also observed by Baun and Bernacki (1988) that male participants were better adherers to physical fitness programs than females.

Table 2  
Frequency Distribution and Percentage of Respondents  
by Age and Physical Fitness Program Category

Age	Physical Fitness Program Category					Total
	P1	P2	P3	P4	P5	
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	
25 or less	2 (6.1)	0 (0)	1 (1.8)	2 (3.6)	1 (1.8)	6 (1.7)
26-34	3 (9.1)	9 (12.7)	4 (7.0)	13 (23.2)	16 (12.9)	45 (13.1)
35-44	17 (51.5)	30 (42.3)	31 (54.0)	18 (32.1)	47 (37.9)	143 (41.6)
45-54	5 (15.2)	24 (33.8)	18 (31.6)	17 (30.4)	41 (33.1)	105 (30.5)
55-64	6 (18.2)	8 (11.3)	2 (3.5)	6 (10.7)	19 (15.3)	41 (11.9)
65 or more	0 (0)	0 (0)	1 (1.8)	0 (0)	0 (0)	1 (.3)
No Answer						3 (.9)
Total	33 (100)	71 (100)	57 (100)	57 (100)	125 (100)	344 (100)

Table 2 shows the frequency distribution and percentage of respondents by age and PFP category. It appears that the greatest percentage of the sample in each group are those aged between 35 and 44 (41.6% of total sample) followed by

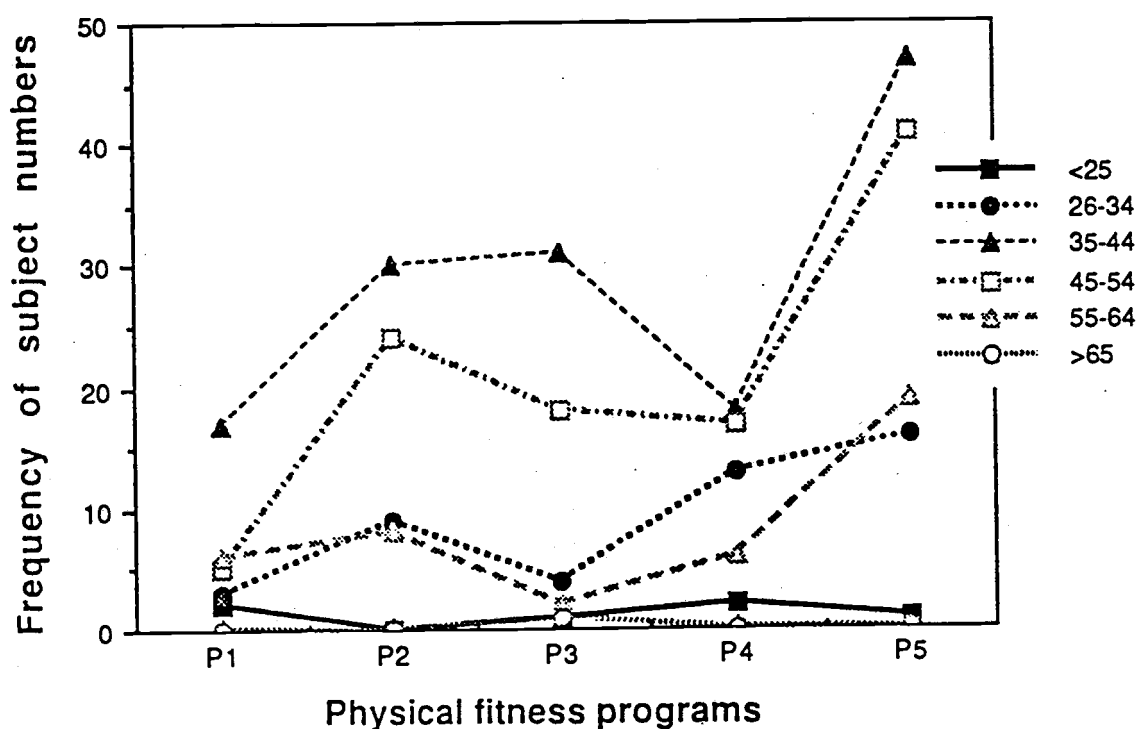
those aged between 45 and 54 (30.5% of total sample).

Those who regularly participated in the university PFP once or twice a week (P1) were predominately in the age group of 35-44 (51.5%) while those who regularly participated in the university PFP at least three times a week (P2) were mostly 35-44 years old (42.3%) and 45-54 years old (33.8%). Those who never exercised (P3) were predominantly 35-44 years old (54.0%). Among those who exercised by themselves regularly once or twice a week (P4), 32.1% were aged between 35-44, 30.4% were aged between 45 and 54, and 23.2% were aged between 26 and 34. Of the university employees who regularly exercised by themselves at least three times a week (P5), 37.9% were within the age bracket 35-44, and 33.1% were within the age bracket 45-54. While a larger percentage of employees aged 35-44 were identified with active groups, a predominant percentage of them also did not exercise regularly (P3, 54.0%). Respondents within the 45-54 age group appeared to be equally distributed among four PFP categories (P2, P3, P4, P5). The exception for this age groups occurred in category P1 (15.2%). Data reflects a regular trend in exercise behavior for those who were within the 45-54 age group. Those within this classification were neither active nor inactive.

Figure 2 reveals a graphic presentation of the frequency distribution of the six age groups among the five

PFP categories.

Figure 2  
Comparison Among Age Groups as Distributed in the  
Five Physical Fitness Program Categories



As shown in Figure 2, of the 6 respondents who were 25 years old or younger, the greatest number exercised once or twice a week either by themselves (P4, N = 2) or within the university PFP (P1, N = 2). The more active programs requiring exercise at least three times a week had lesser participants either exercising by themselves (P5, N = 1) or with the university PFP (P2, N = 0). There was one (1)

university employee aged 25 or less who never exercised, either with the university PFP or by himself/herself (P3). The small sample size (6) in this category, however, may not justify the reliability of this particular finding in this present study.

The age group 26-34 (45 total), generally exercised by themselves at least three times a week (P5, N = 16) or once or twice a week (P4, N = 13), followed in rank by a lesser number (9) who regularly participated in the university PFP at least three times a week (P2).

The greatest number of respondents (N = 143, 41.6%), were those aged between 35 and 44. Employees who exercised regularly by themselves at least three times a week (P5, N = 47) constituted the highest frequency within this age group. While there were 30 employees in this age bracket who regularly participated in the university PFP once or twice a week (P2), thirty one indicated that they never exercised (P3). Those who exercised once or twice a week either by themselves (P4) or within the university PFP (P1), numbered 18 and 17, respectively. Therefore, it may be posited that employees aged 35-44 were more active than inactive in physical fitness activities.

The older than average age category, 45-54, comprised 30.5% (N = 105) of the total sample, and exhibited an interest in exercise. The more active exercise programs

where respondents exercised at least three times a week either by themselves (P5) or with the university PFP (P2) had the highest frequency of participation with 41 and 24, respectively. These group rankings were followed by those who never exercised (P3, N = 18) and those who exercised by themselves once or twice a week (P4, N = 17). This trend is comparable to that of the 35-44 age group, which exhibited similar exercise behaviors.

Active participation in physical fitness programs for members of the age group 55-64 (N = 41) reveals the greatest number (N = 19) exercising at least three times a week by themselves (P5), followed by those who involved with the university PFP (P2, N = 8) and those who exercised once or twice a week either by themselves (P4, N = 6) or with the university PFP (P1, N = 6). A small number of this age group never exercised (P3, N = 2). The distribution of the sample for the age group 55-64 shows a clear picture of diminishing frequency from active to inactive, a situation which is supported by the conclusions of Scott (1985) that adherers are older. Employees in this age group seem to be more settled in life so that regular exercise programs can be better established than for those who are younger and who are presumably less settled in life. Also, employees in the older group are aware that exercise improves the quality of life and longevity.

The oldest age group included in this study were those aged 65 or older. There was only one (1) sample in this category and he/she never exercised. However, inferences cannot be made considering the small, almost nil sample size.

The trends on participation in physical fitness activities reveal that across age groups, the employees tended to be active participants regardless of age. This could be attributed to the growing awareness and concern of an increasing population for one's physical and mental health. It is also evident that there is a growing trend toward self-exercise, a phenomenon precipitated by increased availability of fitness equipment and facilities.

Table 3  
Ranked Physical Fitness Activities Employed  
in Regular Exercise Programs

PFP Activity	Frequency	Rank
Walking	85	1
Aerobics	26	2
Weight lifting/training	22	3
Running	21	4
Jogging	20	5
Biking	19	6

Table 3 summarizes the data regarding first choices of physical fitness activities of the study respondent. Activity frequencies indicated that the initial choices of the university employees were individual activities, preferences similar to those reported by Allen and Delistraty (1987) and Michael (1972). Individual activity affords more flexibility in terms of time and frequency and the equipment used would be less costly, an advantage proposed by Anderson et al. (1978), Metcalfe (1987), and Shephard et al. (1981). Recognizing this trend, physical fitness program directors should endeavor to provide facilities for these activities. A study of 12 universities in Thailand, however, identified respondent needs for exercise activities in the areas of swimming, badminton, calisthenics, tennis, and table tennis (Siriprasert, 1984).



Table 4  
 Frequency Distribution and Measures of Central Tendency  
 for Number of Days Absent Due to Sickness  
 by Physical Fitness Program Category

PFP Category	Frequency	Measures of Central Tendency		
		Mean	S. D.	Median
P1	34	2.20	3.48	1.00
P2	71	.87	1.40	0.00
P3	57	2.07	6.64	0.00
P4	57	2.16	4.33	1.00
P5	125	1.07	1.57	0.00
Total	344	1.48	3.61	0.00

Table 4 summarizes the data on the number of days the respondents reported they were absent due to illness. For the total number of respondents, the average number of absences due to illness was 1.48 days. The average number of days on sick leave was greatest among respondents who participated in the university PFP once or twice a week (P1,  $M = 2.2$ ), followed by those employees who did not presently participate in the university PFP but regularly exercised by themselves once or twice a week (P4,  $M = 2.16$ ). Those who never exercised either with the university PFP or by themselves (P3) were third in rank in the average number of

absences due to sickness ( $M = 2.07$ ) followed by those who regularly exercised by themselves at least three times a week (P5,  $M = 1.07$ ). The fewest number of sick leave absences ( $M = .87$ ) occurred among respondents who regularly participated in the university PFP regularly at least three times a week (P2).

The analysis of the data shows that those who exercised more, either with the university PFP (P2) or by themselves (P5), reported less absences than those who exercised less (P1, P4) or those who never exercised regularly (P3). Results imply that participation in a physical fitness program reduces the incidence of absences due to illness. This contention finds support in the reports of Byurstrom and Alexions (1978) and White (1985) which stated that participation in physical fitness programs causes less absenteeism.

Table 5  
Frequency Distribution and Percentage of Respondents  
by Position Description and PFP Category

Position	Physical Fitness Program Category				
	P1	P2	P3	P4	P5
	Freq.(%)	Freq.(%)	Freq.(%)	Freq.(%)	Freq.(%)
Administrator	6 (17.7)	5 (7.0)	5(10.5)	10(17.5)	21(15.8)
Faculty	8 (23.5)	35(49.3)	21(36.8)	20(35.1)	61(48.8)
Staff	18 (52.9)	28(39.4)	29(50.9)	27(47.4)	39(31.2)
Other	2 (5.9)	3 (4.2)	1 (1.8)	0 (0)	4 (3.2)
Total (344)	34 (9.9)	71(20.6)	57(16.6)	57(16.6)	125(36.3)

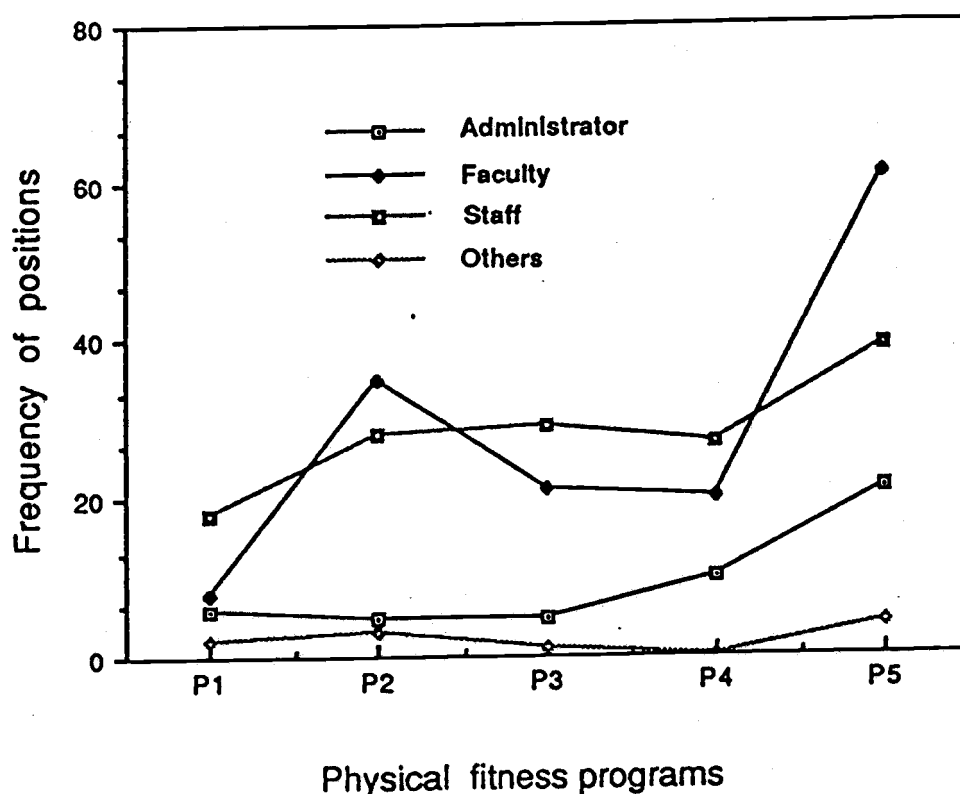
Table 5 reflects a breakdown of survey respondents according to position description and PFP category . Staff member (52.9%) formulated the greatest number of study participant who regularly participated in the university PFP once or twice a week (P1). Those who regularly participated in the university PFP at least three times a week (P2), were predominately faculty (49.3%) and staff (39.9%) members. The group who never exercised regularly (P3) was dominated by staff (50.9%) followed by faculty (36.8). Staff members (47.4%) and faculty members (35.1%) comprised the majority of the respondents who regularly exercised by themselves once or twice a week (P4). The fifth group (P5), those who

exercised regularly by themselves at least three times a week, was dominated by the faculty members (48.8%) followed by the staff members (31.2%).

The more active groups (P2 and P5), those exercising regularly at least three times a week either with the university PFP or by themselves, consisted predominately of faculty members. Assuming that faculty members obtain more formal education than staff members, the current study results concur with of Conrad's (1987) study which reported that most participants in physical fitness program were better educated than non-participants. Similarly, Kondrasuk (1985), Rippe (1989) and Rudman and Steinhardt (1988) stated that most participants within the PFP programs were high income and white collar groups such as professional, technical or managerial employees rather than clerical, skilled or unskilled employees. Further support for these findings was provided by Bishop et al. (1988) whose study on health promotion in a public school district found those in the professional section of the workforce to be more actively involved than others such as secretarial, maintenance and food service workers.

Figure 3 reflects the extent of involvement in physical fitness activities among the four identified positions, and illustrates the characteristics of each group.

Figure 3  
Involvement of Employees in  
Physical Fitness Programs Among University Employees  
by Position Description



Utilizing the data on frequency to illustrate trends on physical fitness program involvement, it can be observed that most administrators exercised regularly by themselves at least three times a week (P5, N = 21), followed by those who exercised regularly by themselves once or twice a week (P4, N = 10). Administrators recognize the need for physical and psychological wellness for effectiveness in the job (Townsend, 1984). Moreover, administrative positions require greater responsibilities and are stress related and

administrators recognize that "physical exercise produces a favorable influence on mental productivity" (Pravosudov, cited in Kondrasuk, 1984, p. 49).

The faculty group tended to exercise regularly by themselves at least three times a week (P5, N = 61) or participate regularly in the university PFP at least three times a week (P2, N = 35). The number of faculty members who never exercised regularly (P3, N = 21) or who exercised by themselves once or twice a week (P4, N = 20) were almost equal. A small number of faculty members regularly participated in the university PFP once or twice a week (P1, N = 8). This small number of faculty who availed themselves of the university physical fitness facilities could be due to the distance from home to the university, unless these individuals possessed a strong motivation to engage in a more extensive active physical fitness program such as those who are identified in category P2.

Factors which may contribute to the non-participation in physical fitness activities of a significant number of faculty members include the potential participants initial level of fitness (Sonstroem, 1978), self-motivation (Dishman & Ickes, 1981), and the lack of opportunity for involvement of spouses in the program (Spreitzer & Snyder, 1976).

The data on the staff members indicate that while most of the group exercised by themselves regularly at least three times a week (P5, N = 39), many of them never

exercised regularly (P3, N = 29). Almost equal numbers regularly participated in the university PFP at least three times a week (P2, N = 28) or regularly exercised by themselves once or twice a week (P4, N = 27). A significant number of staff members regularly participated in the university PFP once or twice a week (P1, N = 18).

Staff member survey respondents were not a very active group considering that the second in group rank frequency consisted of staff who never exercised regularly. This finding could be attributed to the employees' desire for relaxation after work (Andrew, et al., 1979) considering the tedious work that staff members usually do. Assignment to blue-collar work positions (Bishop, et al., 1988; Kondrasuk, 1985; Oldridge, 1979; Rippe, 1989; Rudman & Steinhardt, 1988) could be a factor which negatively affects, to a lesser degree, participation in exercise programs.

#### Research Question Two

What is the self-perceived level of job performance by employees of public universities in Oregon and their physical fitness program category?

To determine the self-perceived level of job performance of the research sample, study participants were asked to respond to statements measuring job performance in a five-point Likert scale for the positive indicators and number of days absent due to illness for the negative

indicator. Arbitrary ranges were designed to stratify the self-perceived level of job performance in accordance to the table below:

positive indications:	Negative indicator:	Rating:
4.21 - 5.00	over 4 days	= Very high
3.41 - 4.20	4 days	= High
2.61 - 3.40	3 days	= Moderate
1.81 - 2.60	2 days	= Low
1.00 - 1.80	1 day	= Very Low

The job performance level in each of the specific physical fitness categories are reflected in Tables 6-10.

Table 6

Self-perceived Level of Job Performance Among University Employees Who Regularly Participated in the University PFP Once or Twice a Week (P1)

Job Performance Indicator	Mean	S.D.	Descriptive rating
Job Satisfaction	3.75	0.65	High
Work Productivity	3.88	0.49	High
General Health Attitude	4.05	0.39	High
University Commitment	3.36	0.68	Moderate
Absenteeism	2.20	3.48	Low



Of the 34 university employees who regularly participated in the university PFP once or twice a week, the mean scores show that they have high self-perceived levels of job satisfaction, work productivity, and general health attitude, a moderate self-perceived level of university commitment and a low level of absenteeism.

The moderate to high level of self-perceived ratings on the job performance indicators could be attributed to the fact that most of the respondents participated in a physical fitness program either with the university PFP (P2, 20.6%) or by themselves (P5, 36.6%) at least three times a week. Mahakhan (1965) asserted that involvement in sport helps the participants to build positive attitudes relating to personal discipline, cultural awareness, and social responsibility. Exercise also appears to enhance morale (Falck & Kilcoyne, 1984). The presence of a high self-perceived level of morale among employees in a university would result in the exception of high self-perceived level of job performance. In addition, employee fitness programs seem to positively influence the employees' loyalty to the organization (Shephard, 1974).

Keeping employees well, a resultant effect of physical fitness programs, is claimed as one of the best ways to ensure their effectiveness (Bishop, et al., 1988). Highly active groups with deep commitment to exercise appeared to be in a more positive psychological frame of mind than the

less active groups (Harris & Associates, Inc., 1984). The low level of absenteeism could likewise be attributed to the employees' regular participation in physical fitness activities once or twice a week.

Table 7

Self-perceived Level of Job Performance Among University Employees Who Regularly Participated in the University PFP at Least Three Times a Week (P2)

Job Performance Indicator	Mean	S. D.	Descriptive rating
Job Satisfaction	3.73	0.58	High
Work Productivity	3.78	0.40	High
General Health Attitude	4.11	0.46	High
University Commitment	3.48	0.60	High
Absenteeism	.87	1.40	Very low

University employees who regularly participated in the PFP of the university at least three times a week showed high self-perceived levels of job performance in each positive indicator and a very low self-perceived level on the negative indicator, absenteeism (Table 7). Compared with the results in Table 6 for those who exercised once or twice a week (P1) within the same program, those who exercised more frequently (P2) had higher self-perceived levels of overall job performance. University commitment,

in particular, was higher for those who regularly participated in the university PFP more frequently (P2) than those who participated less frequently (P1). This further strengthens the contention that participation in physical fitness programs enhances job performance. Several previous studies (Cox, et al., 1981; Wanzel, 1979; Shephard, 1986) also reported a positive relationship between employee productivity and employee participation in organizational sponsored physical fitness activities.

The finding that university employees who regularly exercised at least three days a week by themselves reported a very low rate in absenteeism agrees with study results revealed by Byurstrom and Alexions (1978) that participation in physical fitness activities reduces absenteeism.

Table 8

Self-perceived Level of Job Performance Among University  
Employees Who Never Exercised Regularly (P3)

Job Performance Indicator	Mean	S. D.	Descriptive Rating
Job Satisfaction	3.61	0.78	High
Work Productivity	3.71	0.54	High
General Health Attitude	3.67	0.62	High
University Commitment	3.44	0.70	High
Absenteeism	2.07	6.64	Low

Table 8 shows the self-perceived level of job performance among university employees who have never exercised (P3). While previous studies reported that the higher the frequency of participation in physical fitness programs, the higher the expected job performance, this trend is not reflected in the data analysis of employees who have never exercised regularly (P3). It is interesting to note that all the positive job performance indicators had high ratings and absenteeism, which is a negative indicator, had a low rating. This result could be attributed to the effect of other factors on job performance other than the variable considered in this study. Several investigators reported that participation in physical fitness programs has no effect on job-related personal attitudes (Bline, 1985), job-related stress, or general psychological well-being (Gallant, 1986; Housley, 1985; Koonce, 1986; Morgan, et al., 1970). Among university faculty members, no significant improvements regarding teaching skills and research outputs had been observed for individuals who participated in sport activities (Stalling, et al., 1975).

Table 9

Self-Perceived Level of Job Performance Among University  
Employees Who Exercised Regularly by Themselves  
Once or Twice a Week (P4)

Job Performance Indicator	Mean	S. D.	Descriptive Rating
Job Satisfaction	3.52	0.77	High
Work Productivity	3.79	0.41	High
General Health Attitude	3.95	0.50	High
University Commitment	3.47	0.61	High
Absenteeism	2.16	2.43	Low

The ratings on each of the indicators of job performance for employees who exercised regularly by themselves once or twice a week (P4) are revealed in Table 9. All of the four positive indicators had been rated high and the fifth indicator, which is negative, had been rated low. These results are similar to those of table 6 (P1) in that both respondent groups report regular exercise develops physical and psychological fitness. These findings are similar to those reported by Toeranin (1979), which subsequently enhances job performance. In terms of university commitment, those who exercised by themselves (P4) seemed to have a higher self-perceived level of university commitment (High) than those who presently participated in the university PFP with the same frequency

(P1, Moderate). For purposes of this study, this phenomenon suggests that participation in the university PFP did not have a positive effect on university commitment among the fulltime employees of the university.

Table 10

Self-perceived Level of Job Performance Among University  
Employees Who Exercised Regularly by Themselves  
at Least Three Times a Week (P5)

Job Performance Indicator	Mean	S. D.	Descriptive Rating
Job Satisfaction	3.81	0.55	High
Work Productivity	3.96	0.42	High
General Health Attitude	4.09	0.53	High
University Commitment	3.42	0.64	High
Absenteeism	1.07	1.57	Very Low

Examination of data in Table 10 reveals similar results when compared to job performance of the other PFP categories. There seems to be no observable difference in the self-perceived level of job performance of employees who regularly participated in the university PFP (P2) and those who exercised by themselves with the same frequency (P5). Both groups rated all the positive job performance indicators high and reported a very low rate of absenteeism.

It may be inferred, therefore, that the benefits of a physical fitness program (e.g., higher job performance) does not vary whether the program was conducted by the university or by the employee himself/herself.

### Research Question Three

Is there a significant difference in the self-perceived level of job performance of the public university employees of Oregon among the five physical fitness program categories?

To determine the response to this research question, the data generated by the survey instrument was subjected to statistical analysis. For purposes of this study, the analysis of variance was employed with the alpha level set at .05.

Table 11  
 Difference of Means of Job Performance Scores  
 in the Five Physical Fitness  
 Program Categories

PFP Category	Mean	Difference Among Means				
		P1	P2	P3	P4	P5
		3.81	3.81	3.63	3.69	3.81
P1	3.81	--	0.00	0.18*	0.13	0.00
P2	3.81		--	0.18*	0.13	0.00
P3	3.63			--	0.03	0.18*
P4	3.69				--	0.13
P5	3.81					--

\*  $p < .05$

Inspection of Table 11 reveals a significant difference between the job performance of those who never exercised (P3) and (a) those who regularly participated in the university PFP once or twice a week (P1), (b) at least three times a week (P2), and (c) those who exercised by themselves regularly at least three times a week (P5). This means that university employees who engaged in regular exercise exhibited significantly higher job performance levels than those who never exercised. It was observed by Shephard (1974) that participation in employee fitness programs seems to have a positive influence on the employee's motivation and loyalty to the organization. It has also been reported



that highly active groups with deep commitment to exercise were in a more positive psychological frame of mind, making them feel good (Morgan, 1979) and better than the less active groups (Harris & Associates, Inc., 1984).

A lack of significant difference ( $F = 0.00$ ) in self-perceived employee job performance was found between employees who regularly participated in the university PFP once or twice a week (P1) and those who were involved at least three times a week (P2). Therefore, it may be inferred that the frequency of exercise does not significantly effect the employee's perception of job performance.

A lack of significant difference in the self-perceived level of job performance was also reported during the comparison between university employees who regularly participated in the university PFP once or twice a week (P1) and the university employees who regularly exercised by themselves once or twice a week (P4,  $F = 0.13$ ). This phenomenon would allow the researcher to conclude that the physical fitness program, whether conducted by the university or by the employee himself/herself, results in the same self-perceived level of job performance. A similar conclusion was observed when P1 and P5 were compared ( $F = 0.00$ ).

A significant difference ( $F = 0.18$ ) was obtained regarding employee job performance between employees who

regularly participated in the university PFP at least three times a week (P2) and the employees who never exercised (P3). It is apparent that regular participation in the university PFP produces positive effects on the self-perceived level of employee job performance. Previous researchers observed that exercise appears to enhance morale (Falck & Kilcoyne, 1984) and positive attitudes (Cox, 1984), influences employees' organizational loyalty (Shephard, 1974) and increases work productivity (Christenson & Kiefhaber, 1988).

There is no significant difference in the self-perceived level of job performance between employees who regularly participated in the university PFP at least three times a week (P2), the employees who regularly exercised by themselves once or twice a week (P4,  $F = 0.13$ ), and those who regularly exercised by themselves at least three times a week (P5,  $F = 0.00$ ). All three groups involved in this comparison participated in an exercise program either moderately (once or twice a week) or actively (at least three times a week). These results imply that whether the exercise program is designed by the university or by the employee himself/herself, the same results are manifested (higher self-perceived level of job performance).

There is no significant difference ( $F = 0.03$ ) on the level of job performance between university employees who never regularly exercised (P3) and the university employees

who regularly exercised by themselves once or twice a week (P4).

However, results of previous studies reported that no significant changes occurred in job-related personal attitudes when a physical fitness program was introduced to public school employees. Gallant (1986), Housley (1985), and Koonce (1986) reported that in some physical fitness programs, no evidence had been presented on the positive effects of such programs on job-related stress or the general psychological well-being of the participants.

There is a significant difference ( $F = 0.18$ ) in the self-perceived level of job performance between university employees who never exercised regularly (P3) and university employees who exercised regularly by themselves at least three times a week (P5). The same explanations for this phenomenon are offered as that of the significant difference found between P2 and P3. Active exercise promotes higher self-perceived levels of job performance as confirmed by the significantly higher self-perceived levels of job performance exhibited by university employees who exercised regularly by themselves at least three times a week (P5) compared to the university employees who never exercised regularly (P3).

There is no significant difference in the level of job performance between university employees who exercised regularly by themselves once or twice a week (P4) and

university employees who exercised regularly by themselves at least three times a week (P5). Since both groups had been involved in an exercise program, either moderately or actively, higher self-perceived job performance levels can be expected, a result consistent with the findings of Dubin, Champoux, & Porter (1975) and Shephard (1974) who posited that employee involvement in physical fitness programs appeared to increase worker performance.

#### Research Question Four

Is there a significant difference in the self-perceived level of job performance of the public university employees of Oregon among the five physical fitness program categories in each of the job performance indicators?

Analysis of variance was used to test the difference of means among the five physical fitness program categories. When a significant difference resulted, the Scheffe statistical technique was employed to determine which two groups were significantly different. The Scheffe technique is popular among researchers since it is known to be a conservative test (Nie, et al., 1975), which tends not to reject the null hypothesis, thereby having less tendency to commit Type I errors (Pattanapoorphan, 1984).

Table 12

Summary of F-Ratios and p-Values of the Difference  
of Means Among the Five Physical Fitness Program Categories  
on the Five Indicators of Job Performance

Job Performance Indicator	F-Ratio	p-Value
Job Satisfaction	2.2590	0.0625
Work Productivity	4.2063	0.0025*
General Health Attitude	7.7344	0.0000**
University Commitment	0.2778	0.8923
Absenteeism	2.0730	0.0840
Total	5.1038	0.0005*

\*\*  $p < .01$

\*  $p < .05$

An analysis of variance was utilized on the scores obtained from each of the five specific job performance indicators to determine significant differences among means. A summary of results is shown in Table 12. Resultant p-values indicate that significant difference exists among groups (PFP categories) in the overall scores ( $p = 0.0005$ ); on work productivity ( $P = 0.0025$ ); and on general health attitude ( $p = 0.0000$ ). There is no significant difference among groups on job satisfaction, university commitment, and absenteeism.

In general, a significant difference exists among the five physical fitness program categories on the self-

perceived level of job performance of university employees. However, no inferences could be made at this point until further analysis is made to determine which two groups significantly differ.

There is no significant difference among the five physical fitness program categories on the level of job satisfaction ( $p = 0.06$ ). This result implies that the self-perceived level of job performance among university employees does not vary whether they exercised moderately (once or twice a week), actively (at least three times a week) or not at all. Nor does it make any difference whether the employees participated in the university PFP or exercised by themselves.

Job satisfaction is a construct with a broad meaning. There could be a variety of factors related to job satisfaction which have not been included as part of this study. Participation in a physical fitness activity cannot be singled out as one distinct variable effecting higher levels of job satisfaction. The high level of job satisfaction perceived to exist among university employees, on the other hand, may be attributed to the collective effect of these variables including participation in physical fitness activities.

The application of the Scheffe test to the survey data revealed that no two groups were significantly different when work productivity scores were statistically analyzed.

Pattanapoorphan (1984) and Roscoe (1975) stated that this phenomenon usually happens in some cases when a more detailed analysis of data compares just two groups.

The final results show that there is no significant difference among the five physical fitness program categories on the level of work productivity. Findings of previous researchers provides an explanation for the current study results. Stalling et al. (1975) reported that there were no significant improvements on teaching skills or research outputs after participating in sports activities. Among middle managers, it was reported that there was no improvement in productivity after six months of involvement in employee fitness programs (Howard & Mikalachki, 1979). Nevertheless, there is merit in the suggestion of Haskell and Blair (1980) that regular exercises should be encouraged to improve an individual's work performance.

A significant difference among groups has been identified on the job performance indicator, general health attitude ( $p = 0.00$ ). A more detailed analysis will be presented in Table 13.

There is no significant difference on the level of commitment to the university among the five physical fitness program categories ( $p = 0.89$ ). University commitment implies that the individual identifies with the university in order to facilitate its goals. This commitment would be expected to be modestly related to employee performance

(Mowday, et al., 1979).

There is no significant difference in the frequency of absenteeism of university employees among the five physical fitness program categories ( $p = 0.08$ ). A quantitative analysis by Sanderson (1986) showed that improvement in sick leaves was not evident after employee participation in physical fitness programs. Absenteeism, as a job performance indicator, may be influenced by factors other than job related ones, or physical fitness activities.

Table 13

Difference of Means of the Five Physical Fitness Program Categories on General Health Attitude

PFP Category	Mean	Difference Among Means				
		P1	P2	P3	P4	P5
		4.05	4.11	3.67	3.95	4.09
P1	4.09	--	0.06	0.38*	0.10	0.04
P2	4.11		--	0.44*	0.26	0.02
P3	3.67			--	0.28	0.42*
P4	3.95				--	0.14
P5	4.09					--

\*  $p < .05$

To determine which two groups differed significantly, data on General Health Attitude were subjected to the Scheffe test. Table 13 shows that those employees who did



not exercise regularly (P3) have significantly lower level of general health attitude ( $p < .05$ ) than those employees who regularly participated in the university PFP once or twice a week (P1,  $F = 0.38$ ), those who regularly participated in the university PFP at least three times a week (P2,  $F = 0.44$ ), and those who exercised regularly by themselves at least three times a week (P5,  $F = 0.42$ ).

There is no significant difference on the level of general health attitude between PFP groups P1 and P2 ( $F = 0.06$ ); P1 and P4 ( $F = 0.10$ ); and P1 and P5 ( $F = 0.04$ ). This tendency is expected, since all the physical fitness categories compared exercised on a regular basis, either once or twice a week (P1 and P4), or at least three times a week (P2 and P5). This finding means that self-perceived level of job performance among different physical fitness activity participating groups does not vary considerably.

There is a significant difference on the level of general health attitude between the university employees who regularly participated in the university PFP at least three times a week (P2) and those who never regularly exercised (P3). The significantly ( $F = 0.06$ ) higher level of general health attitude among employees who regularly participated in the university PFP at least three times a week may be attributed to the benefits derived from regular exercise. Researchers indicated that those who exercised were less anxious, demonstrated an increased ability to withstand

emotional stress (Young & Ismail, 1977), and experienced less fatigue in the job (Hanson & Nedde, 1974).

There is no significant difference regarding the self-perceived level of job performance, measured by employee general health attitude, between university employees who regularly participated in the university PFP at least three times a week (P2) and those who regularly exercised by themselves once or twice a week (P4,  $F = 0.26$ ), and those who regularly exercised by themselves at least three times a week (P5,  $F = 0.02$ ). This relationship is expected since all three groups compared identified moderate (once or twice a week) to active (at least three times a week) involvement in physical fitness activities.

No significant difference ( $F = 0.28$ ) is shown between the comparison of respondent groups P3 and P4. This means that university employees who exercised by themselves once or twice a week (P4) did not exhibit a significantly higher level of general health attitude when compared to the university employees who never regularly exercised (P3). The reason that those who exercised once a week had been grouped with those who exercised two days a week might have affected the results. It was suggested that the duration of exercise programs should be at least twice a week in order to obtain significant results (American College of Sports Medicine, 1978; W. Winkler, personal communication, April 17, 1990). It should not be overlooked, however, that other

researchers identified an insignificant relationship between participation in physical fitness programs and employee general health attitude (Gallant, 1986; Housley, 1985; Koonce, 1986).

There is no significant difference regarding the level of general health attitude of university employees who regularly exercised by themselves once or twice a week (P4) and the university employees who regularly exercised by themselves at least three times a week (P5). Exercising by oneself three times a week does not necessarily effect a higher level of general health attitude when compared to exercising by oneself once or twice a week. The element may not be in the frequency but by the regularity of the exercise activity. To achieve positive results, as Toeranin (1979) suggested, exercise should be done regularly, be made as a habit like brushing one's teeth or taking a shower.

#### Research Question Five

Is there a significant difference in the self-perceived level of job performance of public university employees of Oregon among the five physical fitness program categories by items in specific job performance indicators?

Tables 14-22 reflected the analyses performed on specific items within each job performance indicator to pinpoint particular characteristics that may provide insight for further research. Only indicators that showed a

significant difference regarding specific items are presented.

Table 14  
Summary of Means, F-Ratios, and p-Values  
of the Scores on Each Item in Job Satisfaction  
by Physical Fitness Program Category

Item No.	Mean						F-Ratio	p-Value
	P1	P2	P3	P4	P5	Total		
1.	4.15	4.08	3.93	3.79	4.14	4.03	1.46	0.21
3.	4.03	4.00	3.86	3.77	4.10	3.98	1.51	0.20
4.	4.06	4.10	4.00	3.61	4.26	4.06	4.61	0.00**
5.	2.79	2.94	2.65	2.40	2.88	2.77	2.44	0.05*
6.	2.03	2.04	2.18	2.26	2.18	2.15	0.59	0.67
9.	4.00	3.86	3.68	3.64	4.02	3.87	2.52	0.04*
11.	4.68	4.68	4.67	4.72	4.64	4.67	0.23	0.92
13.	4.06	4.13	4.07	3.98	4.17	4.10	0.41	0.80
22.	3.94	3.83	3.79	3.60	3.94	3.83	1.18	0.33

Statement for:

- Item 1. I am satisfied with my job for the time being.  
 Item 3. I find real enjoyment in my work.  
 Item 4. Each work shift/workday seems like it will never end.  
 Item 5. My job seems like a hobby than a job.  
 Item 6. I enjoy my work more than my leisure time.  
 Item 9. Most days I am enthusiastic about my work.  
 Item 11. I take pride in my job.  
 Item 13. My job is usually interesting enough to keep me from getting bored.  
 Item 22. I feel well satisfied with my present job.

\*\*  $p < .01$

\*  $p < .05$

Items in job satisfaction were statistically analyzed and the results are presented in Table 14. Three of the nine items show p-values equal to or lower than .05. There is a significant difference of means among the five PFP categories in item 4 ( $p = 0.00$ ) which states that "Each work shift/workday seems like it will never end," as well as scores in item 5 ( $p = 0.05$ ) which states that "My job seems like a hobby than a job," and in item 9 which states that "Most days, I am enthusiastic about my work". No inferences could be made at this point. It is necessary to determine which PFP groups significantly differed. The Scheffe Statistical technique was, therefore, implemented to achieve this aim and the results are presented in Table 15.

Table 15

Difference of Means Among the Five Physical Fitness  
Program Categories on Item 4  
(Each work shift/workday seems like it never ends.)

PFP Category	Mean	Difference Among Means				
		P1	P2	P3	P4	P5
		4.06	4.10	4.00	3.61	4.26
P1	4.06	--	0.04	0.06	0.45	0.20
P2	4.10		--	0.10	0.49	0.16
P3	4.00			--	0.39	0.26
P4	3.61				--	0.65*
P5	4.26					--

\*  $p < .05$

Results of the analysis of variance show that there is a significant difference between the self-perceived job performance level of university employees who regularly exercised by themselves once or twice a week (P4) and those who regularly exercised by themselves at least three times a week (P5). Those who exercised more often (at least three times a week) had a significantly better attitude towards enjoyment of work than those who exercised less (once or twice a week). Exercising once or twice a week may not be sufficient to effect a significant change either physically or psychologically. That could be the reason why fitness program directors designed a one or two-days-a-week program and/or a three-days-a-week program (W. Winkler, personal communication, April 17, 1990).

The application of the Scheffe Statistical Technique to items 5 and 9 failed to reveal a significant difference between any of the two groups.

Table 16  
Summary of Means, F-Ratios, and p-Values  
of the Scores on Each Item in Work Productivity  
by Physical Fitness Program Category

Item No.	Mean						F- Ratio	p- Value
	P1	P2	P3	P4	P5	Total		
2.	2.71	2.56	2.50	2.40	2.60	2.55	0.41	0.80
8.	4.30	4.25	3.18	3.88	4.32	4.04	15.70	0.00**
12.	3.68	2.99	4.34	3.95	4.03	3.81	11.63	0.00**
15.	4.24	4.23	4.14	4.18	4.25	4.21	0.29	0.88
17.	4.35	4.34	4.16	4.25	4.20	4.24	0.95	0.44
21.	4.44	4.42	4.46	4.46	4.40	4.43	0.15	0.96
24.	3.56	3.68	3.54	3.42	4.00	3.72	3.03	0.02*

Statement for:

Item 2. Seldom do I think about work-related problems.

Item 8. I believe that exercise seems to have no effect on how I perform at work.

Item 12. My exercise program sometimes causes me to be away from my office during my work hours.

Item 15. I am able to concentrate on my work tasks.

Item 17. I relate very well with my co-workers.

Item 21. I am productive at work.

Item 24. The responsibilities of my job often cause me headaches.

\*\*  $p < .01$

\*  $p < .05$

Table 16 presents the summary of means, F-ratios, p-values of items on Work Productivity by physical fitness program category. Of the seven items included in Work Productivity, three items were found to have significantly different means among the five physical fitness program

categories (item 8,  $p = 0.00$ ; item 12,  $p = 0.00$ ; and item 24,  $p = 0.02$ ). Further analysis of Item 24 showed that no two groups were significantly different. Detailed analysis of item 8 and item 12 are shown in Table 17 and Table 18.

Table 17

Difference of Means Among the Five Physical Fitness  
Program Categories on Item 8  
(I believe that exercise seems to have no effect  
on how I perform at work.)

PFP Category	Mean	Difference Among Means				
		P1	P2	P3	P4	P5
		4.30	4.25	3.18	3.89	4.32
P1	4.30	--	0.05	1.12*	0.41	0.02
P2	4.25		--	1.07*	0.36	0.07
P3	3.18			--	0.71*	1.14*
P4	3.89				--	0.43
P5	4.32					--

\*  $p < .05$

Results of the statistical analysis of item 8 which states "I believe that exercise seems to have no effect on how I perform my work," are shown in Table 17. No significant difference on the self-perceived level of work productivity, measured by this specific item, exists between the employees who regularly participated in the university



PFP once or twice a week (P1) and those who regularly participated in the university PFP at least three times a week (P2,  $F = 0.05$ ); and those who regularly exercised by themselves once or twice a week (P4,  $F = 0.41$ ) or at least three times a week (P5,  $F = 0.02$ ). This trend is expected since all groups (P1, P2, P4, and P5) are regularly involved in physical fitness activities either once or twice a week (P1 and P4) or at least three times a week (P2 and P5), either with the university PFP (P1 and P2) or by themselves (P4 and P5).

Table 17 shows a significant difference ( $F = 1.12$ ) of the self-perceived job performance scores of item 8 between the employees who regularly participated in the university PFP once or twice a week (P1) and those who never exercised regularly (P3). The perception that exercise does not hinder work performance is significantly higher among employees who exercised with the university PFP once or twice a week (P1) than those who never exercised regularly (P3). This finding concurs with Gatesing and his associates (1977), who claimed that a person who exercises regularly will work more effectively, creating good feelings about one's work.

A significant difference ( $F = 1.07$ ) was identified in the self-perceived level of job performance, as measured by item 8, between employees in categories P2 and P3. This trend is expected since a significant difference was found

between P1 and P3. University employees grouped in P2 regularly participated in the university PFP at least three times a week while university employees grouped in P1 regularly participated in the university PFP once or twice a week. By ratio and proportion, an increasing tendency is expected.

There is no significant difference between means of P2 and P4 ( $F = 0.36$ ) and P2 and P5 ( $F = 0.07$ ). The nature of these three groups is homogeneous, with the employees in these classifications belonging to the three groups involved in physical fitness activities. Therefore, this finding is expected.

A significant difference was noted in the self-perceived level of job performance pertaining to item 8, between P3 and P4 ( $F = 0.71$ ), and between P3 and P5 ( $F = 1.14$ ). The results indicate that those who regularly exercised by themselves, regardless of the duration, exhibited significantly higher levels of perception that exercise does not hinder work performance.

There is no significant difference between means of P4 and P5 ( $F = 0.43$ ), regarding item 8. This result was anticipated since these two groups were involved in regular physical fitness activities conducted by themselves.

To summarize responses to item 8, groups involved in some kind of regular activity perceived that exercise did not hinder their work performance. Andrew et al. (1979)

reported that those who were not fatigued by their work, could relax easily after work, felt their work had not interfered with their exercise or the exercise had not interfered with their work, and were more likely to adhere to the program.

Table 18

Difference of Means among the Five Physical Fitness  
Program Categories on Item 12

(My exercise program sometimes causes me to be away  
from my office during my work hours.)

PFP Category	Mean	Difference Among Means				
		P1	P2	P3	P4	P5
		2.68	2.99	4.34	3.95	4.03
P1	2.68	--	0.31	1.66*	1.27*	1.35*
P2	2.99		--	1.35*	1.35*	1.04*
P3	4.34			--	0.39	0.31
P4	3.95				--	0.08
P5	4.03					--

\*  $p < .05$

Table 18 presents the results of the analysis of variance on the scores in item 12 using the Scheffe technique. This item is a negative statement, subsequently, higher values represent higher negative feelings.

There is no significant difference in the self-

perceived level of job performance, as measured by item 12, between P1 and P2 ( $F = 0.31$ ). This result is expected since both groups are involved in regular exercise programs.

There is a significant difference between P1 and P3 ( $F = 1.66$ ), P1 and P4 ( $F = 1.27$ ), and P1 and P5 ( $F = 1.35$ ). Also there is a significant difference between P2 and P3 ( $F = 1.35$ ), P2 and P4 ( $F = 1.35$ ), and P2 and P5 ( $F = 1.04$ ). P3, university employees who never exercised regularly, exhibited significantly higher perceived negative feelings that exercise may sometimes cause them to be away from their job, compared to those who regularly participated in the university PFPs (P1) and (P2). Groups P4 and P5 participated in self-directed activity. Since the locations of exercise would be outside the university premises, there are more chances that the employees' exercise programs may sometimes cause them to be away from the office during office hours.

There is no significant difference between P3 and P4 ( $F = 0.39$ ), P3 and P5 ( $F = 0.31$ ) and P4 and P5 ( $F = 0.08$ ). All three groups included in this comparison exhibited similar perceptions that exercise programs sometimes cause the employee to be away from the office during office hours.

Statistical analysis of item 24 failed to produce between group significant differences.

Table 19  
Summary of Means, F-Ratios, and p-Values  
of the Scores on Each Item in General Health Attitude  
by Physical Fitness Program Category

Item No.	Mean						F- Ratio	p- Value
	P1	P2	P3	P4	P5	Total		
7.	3.03	3.01	2.89	3.11	3.42	3.16	1.93	0.10
10.	4.41	4.27	3.70	4.02	4.26	4.04	7.70	0.00**
16.	4.71	4.62	3.23	4.18	4.54	4.29	36.18	0.00**
18.	4.32	4.63	4.47	4.56	4.30	4.45	1.60	0.18
19.	4.18	4.14	3.88	4.07	4.03	4.05	1.09	0.36
25.	3.65	4.00	3.84	3.77	4.01	3.92	1.29	0.28

Statement for:

Item 7. Weight control is a problem to me.

Item 10. Looking trim and fit is important to me.

Item 16. Regular exercise is an important part of a productive life.

Item 18. Alcohol abuse is a danger to health.

Item 19. Hypertension is a major health problem that can be treated through regular exercise.

Item 25. I frequently go on a diet to lose weight.

\*\*  $p < .01$

The summarized results in Table 19 reveals significant differences regarding item 10, "Looking trim and fit is important to me" ( $p = 0.00$ ) and item 16, "Regular exercise is an important part in a productive life" ( $p = 0.00$ ).

Tables 20 and 21 reflect the summaries of the Scheffe statistical analyses.

Table 20

Difference of Means Among the Five Physical Fitness  
Program Categories on Item 10  
(Looking trim and fit is important to me.)

PFP Category	Mean	Difference Among Means				
		P1	P2	P3	P4	P5
		4.41	4.27	3.70	4.02	4.26
P1	4.41	--	0.14	0.71*	0.39	0.15
P2	4.27		--	0.57*	0.25	0.01
P3	3.70			--	0.32	0.56*
P4	4.02				--	0.24
P5	4.26					--

\*  $p < .05$

Comparisons of P1 with P2 ( $F = 0.14$ ), P1 with P4 ( $F = 0.39$ ), and P1 with P5 ( $F = 0.15$ ) did not produce significant differences. The reason could be that these four groups exhibit similar characteristics concerning involvement in exercise programs. Each group projects positive attitudes toward the importance of looking trim and fit.

A significant difference was identified, however, between P1 and P3 ( $F = 0.71$ ). University employees categorized in P3 never exercised regularly. Those who participated in the university PFP once or twice a week (P1) indicated significantly higher levels of general health attitude, as measured by item 10, than those who never

exercised regularly (P3).

The significant difference obtained in a comparison of P2 and P3 ( $F = 0.57$ ) is a corollary to the previous finding of a significant difference between P1 and P3.

The lack of significant difference between P2 and P4 ( $F = 0.39$ ) and P2 and P5 ( $F = 0.15$ ) is attributed to the involvement in a regular physical fitness program of these groups.

There is no significant difference between P3 and P4 ( $F = 0.32$ ). This finding implies that exercising once or twice a week by oneself does not significantly effect positive attitudes toward the importance of being trim and fit. This phenomenon supports the American College of Sports Medicine (1978) recommendation that physical fitness programs should be designed to consist of at least twice a week participation. The ASCM recommendation was implemented by administrators of the Oregon State University Physical Fitness Program.

A significant difference was noted between P3 and P5 ( $F = 0.56$ ) regarding the importance of appearing "neat and trim". This trend is anticipated since previous results showed similar differences between P3 and P1 and P2.

Conversly, significant difference exists between P4 and P5 ( $F = 0.24$ ), an expected result consistent with intra-groups comparison of employees who regularly exercise, either by themselves or within the PFPs.

Table 21

Difference of Means Among the Five Physical Fitness  
Program Categories on Item 16  
(Regular exercise is an important part  
of a productive life.)

PFP Category	Mean	Difference Among Means				
		P1	P2	P3	P4	P5
		4.71	4.62	3.23	4.16	4.54
P1	4.71	--	0.09	1.48*	0.55*	0.17
P2	4.62		--	1.39*	0.46*	0.08
P3	3.23			--	0.93*	1.31*
P4	4.16				--	0.38
P5	4.54					--

\*  $p < .05$

Table 21 summarizes the F-ratios between groups. The comparison of P1 with P2 ( $F = 0.09$ ) and P5 ( $F = 0.17$ ) are not significantly different. These three PFP categories are involved in regular exercise and this commonality could be the reason for this test result. There is a significant difference between P1 and P3 ( $F = 1.48$ ) and P1 and P4 ( $F = 0.55$ ). Employees involved in a university PFP once or twice a week (P1) reveal that regular exercise is an importance part of a productive life, a direct contrast to those who never regularly exercise (P3). The significant difference between P1 and P4 implies that participation in a university



PFP (P1) creates a more favorable health attitude than exercise by oneself with the same frequency (P4). The adherence to regular exercise could be greater when participating in the university PFP since there will be higher expectations of regular participation from the members of the group than when conducting exercises by oneself. The "exercise buddy" concepts worked well with participants who were already friends (Wankel, 1984).

Comparisons between P2 and P3 ( $F = 1.39$ ) and P2 and P4 ( $F = 0.46$ ) resulted in significant differences. However, there is no significant difference between P2 and P5 ( $F = 0.08$ ). The results may be attributed to the frequency of exercise, whether it be by oneself or with the physical fitness program.

There are significant differences between P3 and P4 ( $F = 0.93$ ), and P3 and P5 ( $F = 1.31$ ). Exercising regularly by oneself once or twice a week (P4) or at least three times a week (P5) indicates that regular exercise is an important part of a productive life.

There is no significant difference between P4 and P5 ( $F = 0.38$ ). The regularity of exercise, rather than the frequency of exercise, seems to be a factor in effecting better general health attitudes.

Table 22  
Summary of Means, F-Ratios, and p-Values  
of the Scores on Each Item in University Commitment  
by Physical Fitness Program Category

Item No.	Mean						F- Ratio	p- Value
	P1	P2	P3	P4	P5	Total		
14.	4.03	4.30	4.25	4.33	4.26	4.25	0.78	0.54
20.	4.18	4.10	3.97	4.04	4.15	4.09	0.53	0.71
23.	1.88	2.06	2.11	2.05	1.92	2.00	0.58	0.68

Statement for:  
 Item 14. I really care about the future of this university.  
 Item 20. I am proud to tell others that I am a part of this university.  
 Item 23. I would accept almost any type of job assignment in order to keep working for this university.

$p < .05$

The analysis of variance results for the items in University Commitment are shown in Table 22. No significant difference on the level of university commitment among the five PFP categories is evident, an implication that participation in physical fitness activities does not effect the degree of university commitment.

## CHAPTER 5

## SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

This chapter presents a summary of the results, the conclusions drawn from these results, the relevant implications of these findings to physical fitness programs and related concerns, as well as recommendations for further research.

## Summary

The purpose of this study was to investigate the effects of participation of physical fitness programs on the self-perceived level of job performance of Oregon public university employees. To present a background of the respondents, information on their demographic characteristics was obtained.

The sample included in this study were fulltime university employees of public universities of Oregon. A volunteer sample of 344 employees responded to the specifically designed questionnaire by campus mail.

The questionnaire consisted of two sections. Section A included demographic information on sex, age, physical fitness category, number of months of regular exercise prior to answering the questionnaire, types of exercise activities involved in, number of days absent due to illness, and

position description. Section B included 25 items which measured reported self-perceived of job performance in accordance with a five-point Likert scale. These items were grouped into specific job performance indicators: job satisfaction, work productivity, general health attitude, and university commitment. The internal consistency coefficients of the instrument were .72 for the pilot study and .74 for the final study. The instrument questionnaire items were subjected to item analysis and factor analysis in order to obtain validity and reliability. The instrument passed the test on evaluative quality for test items as well as validity and reliability.

The survey data were statistically analyzed using descriptive statistics, one-way analysis of variance and the Scheffe test. Appropriate statistical procedures were implemented to elicit answers to the following research questions:

1. What is the demographic background of the public university employees in Oregon?
2. What is the self-perceived level of job performance of the public university employees of Oregon?
3. Is there a significant difference in the self-perceived level of job performance of the public university employees of Oregon among the five physical fitness program categories?

4. Is there a significant difference in the self-perceived level of job performance of the public university employees of Oregon among the five physical fitness program categories in each of the job performance indicators?

5. Is there a significant difference in the self-perceived level of job performance of the public university employees of Oregon among the five physical fitness program categories by items in the specific job performance indicator?

Answers to these research questions were successfully obtained using a limited sample of public university employees. A summary of the findings are subsequently presented.

### Demographic Background of Participants

#### Sex

1. There was a slightly higher percentage of males than females involved in active physical fitness programs (at least three days a week).

2. There was a higher percentage of females than males in less active physical fitness programs (once or twice a week).

3. There was a considerably higher percentage of female who were inactive in physical fitness programs (never exercised regularly).

## Age

1. Public university employees in Oregon ages 25 and below, who participated in the study were were less actively involved in physical fitness programs.

2. Those who were in the 26 - 34 age category were less actively involved in the university physical fitness programs. The majority in this category were involved in exercise programs not connected with the university.

3. A great percentage of those who in the 35 - 44 age group were actively involved in regular exercise either by themselves or with the university physical fitness program. 21% of those in this age category were inactive.

4. Public university employees in Oregon, ages 45 - 54, were actively involved in physical fitness programs.

5. Those aged 55 - 64 reported less active involvement to active involvement in physical fitness programs. More than half of those in the 55 - 64 age category were involved in exercise programs not connected with the university.

6. Employees aged 65 and above were inactive in exercise.

For purposes of this study, however, the limited sample size for employee groups of ages 25 and under and ages 65 and over does not justify the reliability of statements 1 and 6.

## Physical Fitness Activities

The physical fitness activities identified by public university employees as most popular were ranked accordingly:

- Rank 1 - Walking
- Rank 2 - Aerobic exercise
- Rank 3 - Weight lifting/training
- Rank 4 - Running
- Rank 5 - Jogging
- Rank 6 - Biking

## Absenteeism

Study results revealed that the groups actively involved in physical fitness programs reported fewer absences than other study respondent groups.

## Position Description and Physical Fitness Program Involvement

A higher percentage of faculty than staff and a higher percentage of staff than administrators participated in the study.

1. Most faculty members exercised regularly at least three times a week either by themselves or with the university physical fitness program.

2. While most of the staff members regularly

exercised by themselves at least three times a week, a considerable percentage never exercised regularly.

3. Most administrators exercised regularly by themselves at least three times a week.

#### Self-Perceived Level of Job Performance by PFP Category

Five arbitrary classifications were used to stratify the self-perceived level of job performance of the university employees.

1. For university employees who regularly participated in the university physical fitness program once or twice a week, the self-perceived level of job performance was high on job satisfaction, work productivity, and general health attitude; moderate on university commitment; and low on absenteeism.

2. For university employees who regularly participated in the university physical fitness program at least three times a week, the self-perceived level of job performance was high on the four positive indicators and very low on absenteeism.

3. For university employees who never regularly exercised, the self-perceived level of job performance on the four positive indicators was high and low on absenteeism.

4. Among those university employees who regularly



exercised by themselves once or twice a week, the self-perceived level of job performance for the four positive indicators was high and low on absenteeism.

5. For university employees who exercised regularly by themselves at least three times a week, the self-perceived level of job performance on the four positive indicators, was high and very low on absenteeism.

Generally, the reported self-perceived job performance of all university employees was high on the positive indicators (job satisfaction, work productivity, general health attitude, and university commitment) and low on the negative indicator, absenteeism.

#### Difference in Self-Perceived Level of Job Performance by PFP Category

Statistical analyses of data elicited significant findings on the effect of physical fitness programs on self-perceived levels of job performance. Groups where significant differences occurred are reported first, followed by groups where no significant difference existed.

The self-perceived level of job performance among employees who regularly participated in the university physical fitness program once or twice a week or at least three times a week was significantly higher than those who never exercised regularly.

The self-perceived level of job performance among university employees who regularly exercised by themselves at least three times a week was significantly higher than those who never exercised regularly.

No significant differences were found: 1) among the university employees who regularly participated in the university physical fitness program once or twice a week; 2) those who regularly participated in the university physical fitness program at least three times a week; 3) those who regularly exercised by themselves once or twice a week; 4) and those who regularly exercised by themselves at least three times a week.

No significant difference regarding the self-perceived level of job performance was found between university employees who regularly exercised by themselves once or twice a week and those who never regularly exercised.

#### Difference in Self-Perceived Level of Job Performance by Indicator

Statistical analyses, comparing levels of job performance among PFP groups of university employees by specific job performance indicators, produced the following results:

A significant difference between groups existed in the university employee's attitude toward general health.

Particular groups that significantly differed were: 1) university employees who never regularly exercised; 2) those who regularly participated in the university PFP once or twice a week; 3) those who regularly participated in the university PFP at least three times a week; and 4) those who exercised regularly by themselves at least three times a week. This finding is similar to that of the results in the analysis of the overall self-perceived level of job performance by PFP category presented in the preceeding section.

Similar observations accounted for the findings of a lack of significant difference for the overall self-perceived level of job performance compared to the specific indicator, general health attitude.

Significant differences regarding the self-perceived level of job performance among the five PFP groups on job satisfaction, work productivity, university commitment, and absenteeism did not occur.

#### Difference of Self-Perceived Level of Job Performance by Items

The comparisons of the five PFP groups on specific items in each job performance indicator were also subjected to statistical analysis. The salient findings are summarized in the following paragraphs.

## Job Satisfaction

Results of the analysis of data in job satisfaction showed that in item 4 (Each work shift/ workday seems like it never ends), the level of attitude of university employees who regularly exercised by themselves once or twice a week was significantly lower than university employees who regularly exercised at least three times a week.

There is no significant difference among the other groups regarding this item. Likewise, there is no significant difference among the five PFP groups in any of the other items which referred to job satisfaction.

## Work Productivity

Item 8 (I believe that exercise seems to have no effect on how I perform at work) and item 12 (My exercise program sometimes causes me to be away from my office during office hours) were found to be significantly different between groups.

The reported level of work productivity measured by item 8 was significantly lower for university employees who never regularly exercised than those who regularly exercised either with the university PFP or by themselves.

The level of work productivity measured by item 12 was significantly lower for those who regularly participated in

the university PFP compared to those who never regularly exercised, or who regularly exercised by themselves.

#### General Health Attitude

Two items pertaining to General Health Attitudes, item 10 (looking trim and fit is important to me) and item 16 (regular exercise is an important part of a productive life), produced significant differences among the five PFP groups.

The level of general health attitude of university employees who never regularly exercised was significantly lower than university employees who regularly participated in the university PFPs or who regularly exercised by themselves at least three times a week.

There is no significant difference between the level of general health attitude, measured by item 10, among university employees who never exercised regularly and those who regularly exercised by themselves once or twice a week.

As measured by item 16, the level of reported general health attitude of the university employees who never exercised regularly was significantly lower than the four groups which were involved in exercise programs.

Likewise, the level of reported general health attitude of the university employees who regularly exercised by themselves once or twice a week was significantly lower than

those who regularly participated in the university PFPs.

#### University Commitment

Statistical analyses of statements pertaining to university employee commitment failed to produce significant differences among the five categories of study respondents.

#### Conclusions

Physical fitness is a valid concern for everyone and the benefits derived from participation in physical fitness activities are recognized, not only for the enhancement of job performance, but for the development of the general well-being of the individual as well. Not only does involvement of employees in physical fitness programs benefit the employee, the organization gains indirect benefits, too. These benefits have been documented in the literature. This study focuses on the involvement in physical fitness programs of Oregon public university employees to determine the subsequent effects on job performance and offers the following conclusions:

1. Public university employees are actively involved with exercise programs. 83.4% of the study respondents participate regularly by themselves or within the university physical fitness program.

2. Public university employees tend to exercise by

themselves rather than participate in the university physical fitness program.

3. Public university employees generally prefer more frequent exercise programs than less frequent exercise programs.

4. Male public university employees tend to participate in more active physical fitness programs than female public university employees.

5. Public university employees between the ages 34-54 are more likely to participate in active physical fitness programs than younger or older age groups.

6. Public university employees generally prefer to be involved in individual, rather than group activities.

7. Involvement in active physical fitness exercises contributes to reduced absences due to illness.

8. Public university employees generally present a high self-perceived level of job performance.

9. Regular involvement of public university employees in physical fitness programs enhances self-perceived levels of job performance.

10. Regular participation by public university employees in physical fitness programs failed to show effect job satisfaction, work productivity, university commitment, and absenteeism.

11. Regular participation by public university

employees in physical fitness programs does positively effect general health attitudes.

### Implications

The results of the study have implications to personnel administration, primarily. Raising the self-perceived level of job performance is a global concern. It has been the main concern of organizations, public or private, in all sectors, economic, social, political, or educational. Immediate concerns are focused on university personnel administration and the physical fitness programs of the university.

The increasing responsibility and accountability in the job as well as in the home, have created additional stress and pressure among university employees. Promoting health and well-being of employees may alleviate such problems and the resultant effects of these efforts may be greater employee job productivity and effectiveness.

Public university employees prefer to exercise by themselves rather than participate in the university physical fitness program. This phenomenon may be attributed to a conflict between work time and program scheduling (Andrew, et al., 1979; Harris & Associate, Inc., 1984; Oldridge, 1982; Petcher, 1986) or lack of spouse support (Haynes, 1976; Oldridge, 1982).



The tendency of female public university employees toward inactivity should stimulate university fitness program directors to encourage female participants by creating flexible hours and providing equal opportunities for both sexes. To encourage participation of physically inactive employees, these programs may start with light exercise. There is documental evidence that light exercise is a stress reducer (Byrd, 1963).

Exercises should be fun and entertaining to the participants. The exercise programs should not require expensive equipment (Metcalf, 1987; Shephard, et al., 1981), and should be something that could be done easily without much effort for at least one hour a day (William & Glaser quoted in Harris, 1970, p. 53). Consideration should be given to the inclusion of team activities in order to encourage participation by members of the employee's family (Blozis, et al., 1988).

To attract those who are more physically active, programs which are offered at least three days a week should be promoted. This study showed that regular exercise of once or twice a week failed to positively effect job performance. Participation at least two to three times a week was recommended by Oregon State University's fitness program director (W. Winkler, personal communication, April 17, 1990). At least three to five days a week, a minimum of

15 to 60 minutes per period at the level of intensity of 60 to 90 percent of maximum heart rate was suggested by the American College of Sport Medicine (1978) for significant increases in physical as well as psychological fitness.

When the physical fitness program of the university has succeeded in attracting the participation of the employees, rewards will follow. University commitment may increase as the feeling that the university cares about the well-being of the employee increases, lost time for employees to be away from the office may be diminished, and better employee relations may be fostered.

#### Recommendations

The positive effects of physical fitness programs on employee job performance has been documented within the limitations of this study. From the guidelines suggested by the literature and from the results and conclusion of this study, the following areas are recommended for additional study:

1. The present study should be replicated and employed before and after testing to ascertain the effects of involvement in different physical fitness programs.
2. The relationship between the self-perceived level of job performance and specific types of exercise activities or sports should be examined to provide input regarding the

types of activities to be included in physical fitness programs.

3. The present study should be modified to enable external qualified personnel to rate the job performance of the study respondents.

4. The present study should be replicated and interview or observation techniques used as an evaluative tool to increase the validity of the ratings.

5. The present study should be replicated and data gathered via a more comprehensive survey instrument.

6. The present survey instrument should be employed on different populations (military, hospital staff, etc), to determine the relationships of physical fitness programs and the self-perceived level of job performance.

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## APPENDICES

## APPENDIX A


## OREGON STATE UNIVERSITY

## APPLICATION FOR APPROVAL OF THE HUMAN SUBJECTS BOARD

Principal Investigator\* Dr. Dow Poling  
 Department Exercise and Sport Science Phone 737-3718  
 Project Title The Effects of Physical Fitness Programs on the Job Performance of  
Full-Time Employees in Public Universities of Oregon  
 Present or Proposed Source of Funding student  
 Type of Project Faculty Research Project  
X Graduate Student Thesis Project\*  
 (Student's name Siriprasert, Jirakorn)

The following information should be attached to this form. All material, including this cover sheet, should be submitted IN DUPLICATE to the Research Office, AdS A312. Feel free to call x3437 if you have questions.

1. A brief description of the methods and procedures to be used during this research project.
2. A list of the risks and/or benefits (if any) to the subjects involved in this research.
3. A copy of the informed consent document and a description of the methods by which informed consent will be obtained. (Information concerning the "Basic Elements of Informed Consent" is reproduced for your information on the back of this form.)
4. A description of the method by which anonymity of the subjects will be maintained.
5. A copy of any questionnaire, survey, testing instrument, etc. (if any) to be used in this project.
6. If this is part of a proposal to an outside funding agency, attach a copy of the proposal.

Signed  Date 28 Sept 1990  
 Principal Investigator

\*Note: Graduate Student Thesis projects should be submitted by the major professor as Principal Investigator.

## APPENDIX B

## DELPHI PANEL

Bochmer, Beth, Director of Timber Hill Fitness Club, Corvallis, Oregon.

Dickinson, Vern, Associate Professor, PhD, Exercise and Sport Science Department, Oregon State University.

Ketcham, Pat, Director of Fitness Program, Western Oregon State College.

O'Shea, J. Patrick, Professor, EdD, Exercise and Sport Science Department, Oregon State University.

Siemann, Art W., PhD candidate, Exercise and Sport Science Department, Oregon State University.

Suttie, Sandra J., Associate Professor, PhD, Exercise and Sport Science Department, Oregon State University.

Wilcox, Anthony, Associate Professor, PhD, Exercise and Sport Science Department, Oregon State University.

## APPENDIX C

## COVER LETTER

The Department of Exercise and Sport Science  
Oregon State University  
Corvallis, OR 97331-3302

October 31, 1990

Dear

I am requesting your assistance in investigating the effects of physical fitness programs on job performance. Please complete the questionnaire if you are a permanent, full-time employee and have been employed for one year or more. Do not complete the questionnaire if you do not meet the stated criteria. There are no correct or incorrect responses. Please apply the appropriate code to indicate your response to each questionnaire item.

All individual responses will be kept confidential. The number at the top of the questionnaire is merely to determine who returned the questionnaires, in case a second mailing is required to obtain adequate sample sizes. Upon receipt the number will be destroyed.

I would very much appreciate your completing the questionnaire and returning it to the below address via campus mail, by November 14, 1990. A copy of the results will be forwarded to you upon request.

Sincerely,

Jirakorn Siriprasert  
Investigator

Forward to : Jirakorn Siriprasert  
The Department of Exercise and Sport Science  
Langton Hall 214  
Oregon State University  
Corvallis, OR 97331-3302



## APPENDIX D

## STUDY QUESTIONNAIRE

Survey of the Effects of Physical Fitness Programs  
on Job PerformanceSection A

Directions : Please indicate your response to each of the following items by circling the appropriate number or completing the specification as necessary. Please be sure to answer every items and try to be honest and accurate as possible in your responses.

## 1. Gender

- a. male
- b. Female

## 2. Age

- a. 25 or less
- b. 26 - 34
- c. 35 - 44
- d. 45 - 54
- e. 55 - 64
- f. 65 or more

## 3. Do you currently participate in the university physical fitness programs?

3.1 \_\_\_\_ Yes (if yes, go to 3.1 a. or b.)

- a. Two days per week or less
- b. Three days per week or more

3.2 \_\_\_\_ No (if no, go to 3.2 a. or b.)

- a. I never exercise (if circle here go to question #6)
- b. I exercise on my own regularly
  - a. Two days per week or less
  - b. Three days per week or more

## 4. Number of months you have regularly exercised prior to answering this questionnaire

- a. Less than 6 months
- b. 6 months or more

## 5. Please list the types of activities you employ in your regular exercise program in order of frequency.

_____	_____
_____	_____
_____	_____

6. How many days were you absent from your job because of sickness during the six months prior to answer this question?  
\_\_\_\_\_ days

## 7. Which category best describes your position within the university?

- a. Administrator
- b. Faculty
- c. Staff
- d. Other (Please indicate) \_\_\_\_\_

**Section B**

Directions : Below are a number of statements regarding to your job performance during the past six months. After reading each statement, please employ the following code to identify your responses for each item:

- 5 = Strongly agree  
 4 = Agree  
 3 = Undecided  
 2 = Disagree  
 1 = Strongly disagree

1. I am satisfied with my job for the time being.....	5	4	3	2	1
2. Seldom do I think about work-related problems.	5	4	3	2	1
3. I find real enjoyment in my work.....	5	4	3	2	1
4. Each work shift/work day seems like it will never end.....	5	4	3	2	1
5. My job seems more like a hobby than a job. ....	5	4	3	2	1
6. I enjoy my work more than my leisure time.....	5	4	3	2	1
7. Weight control is a problem to me.....	5	4	3	2	1
8. I believe that exercise seems to have no effect on how I perform at work.....	5	4	3	2	1
9. Most days I am enthusiastic about my work.....	5	4	3	2	1
10. Looking trim and fit is important to me.....	5	4	3	2	1
11. I take pride in my work.....	5	4	3	2	1
12. My exercise program sometimes causes me to be away from my office during my work hours.....	5	4	3	2	1
13. My job is usually interesting enough to keep me from getting bored.....	5	4	3	2	1
14. I really care about the future of this university.	5	4	3	2	1

5 = Strongly agree  
 4 = Agree  
 3 = Undecided  
 2 = Disagree  
 1 = Strongly disagree

---

15. I am able to concentrate on my work tasks.....	5	4	3	2	1
16. Regular exercise is an important part of a productive life.....	5	4	3	2	1
17. I relate very well to my co-workers.....	5	4	3	2	1
18. Alcohol abuse is a danger to health.....	5	4	3	2	1
19. Hypertension is a major health problem that can be treated through regular exercise.....	5	4	3	2	1
20. I am proud to tell others that I am a part of this university.....	5	4	3	2	1
21. I am productive at work.....	5	4	3	2	1
22. I feel well satisfied with my present job.....	5	4	3	2	1
23. I would accept almost any type of job assignment in order to keep working for this university.....	5	4	3	2	1
24. The responsibilities of my job often cause me to have headaches.....	5	4	3	2	1
25. I frequently go on a diet to lose weight.....	5	4	3	2	1

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Would you like to have the results of this study?

- a. Yes  
 b. No

Your Address

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## APPENDIX E

## FOLLOW UP LETTER

The Department of Exercise and Sport Science  
Oregon State University  
Corvallis, OR 97331-3302

November 21, 1990

Dear

Two weeks ago you received a questionnaire which was designed to survey the effects of physical fitness programs on the job performance of full-time employees in public universities in Oregon. Up until now your completed questionnaire has not been received. I have enclosed an additional questionnaire for your consideration.

Your participation is critical to insure an accurate representation of survey respondents. Please devote a portion of your valuable time to answer this questionnaire and return it before November 30, 1990.

If you have already returned the initial questionnaire, please disregard this request. Your cooperation in this matter is greatly appreciated.

Thank you so much for your time, assistance and cooperation.

Sincerely,

Jirakorn Siriprasert  
Investigator

Forward to : Jirakorn Siriprasert  
The Department of Exercise and Sport Science  
Langton Hall 214  
Oregon State University  
Corvallis, OR 97331

## APPENDIX F

THE MEANS, STANDARD DEVIATIONS, PERCENTAGES OF UNDECIDED,  
DISCRIMINATION INDICES (t), AND ITEM-TOTAL CORRELATION  
FOR JOB PERFORMANCE ITEMS (n=76).

Questions	positive or negative*	mean	standard deviation	% undecided	t <sup>b</sup>	r
1	P	4.09	0.73	14.67	4.65	0.36
2	P	2.52	1.07	17.33	12.5	0.23
3	P	3.98	0.77	14.67	6.57	0.35
4	N	3.95	1.01	10.67	4.96	0.21
5	P	2.44	0.98	24.00	9.90	0.28
6	P	2.08	0.79	14.67	7.21	0.18
7	N	3.14	1.38	9.330	16.9	0.20
8	N	2.56	1.25	10.67	9.81	0.20
9	P	3.80	0.73	18.67	7.42	0.33
10	P	4.00	0.84	8.000	9.66	0.35
11	P	4.45	0.57	0	4.86	0.25
12	N	3.88	1.15	5.330	19.4	0.23
13	P	4.16	0.58	2.670	6.46	0.29
14	P	3.90	0.86	14.67	8.62	0.23
15	P	4.02	0.74	2.670	11.03	0.22
16	P	4.32	0.81	6.670	7.47	0.30
17	P	4.16	0.69	5.330	6.91	0.24
18	P	3.89	0.91	20.00	7.63	0.24
19	P	3.72	0.77	32.00	5.24	0.37
20	P	3.69	0.79	24.00	7.86	0.46
21	P	4.24	0.64	4.000	5.98	0.37
22	P	3.86	0.85	20.00	7.13	0.43
23	P	2.24	0.94	20.00	8.98	0.36
24	N	3.50	1.18	16.00	7.96	0.33
25	N	3.70	1.16	8.000	13.77	0.40

\* P, positive; N, negative

<sup>b</sup> p < 0.05

## APPENDIX G

THE EIGEN VALUES AND PERCENTAGES OF VARIANCE  
OF JOB PERFORMANCE ITEMS.

Factor solution	eigen value	% common variance	% cumulation
1	4.5349	30.7	30.7
2	2.4319	16.5	47.2
3	1.9499	13.2	60.4
4	1.2983	8.8	69.2
5	0.97171	6.6	75.8
6	0.68613	4.6	80.4
7	0.63054	4.3	84.7
8	0.59142	4.0	88.7
9	0.42271	2.9	91.6
10	0.39264	2.7	94.2
11	0.28080	1.9	96.1
12	0.25387	1.7	97.8
13	0.15073	1.0	98.9
14	0.12706	0.9	99.7
15	0.03969	0.3	100
16	-0.03089	0	100
17	-0.04667	0	100
18	-0.11742	0	100
19	-0.15682	0	100
20	-0.18745	0	100
21	-0.21109	0	100
22	-0.22006	0	100
23	-0.24185	0	100
24	-0.26922	0	100
25	-0.27048	0	100

## APPENDIX H

## THE ROTATED ITEMS FOR THE FOUR MAJOR FACTORS

Item number	Factors			
	I	II	III	IV
1	0.48848	0.02132	0.00490	0.39918
2	-0.16793	0.33785	-0.07702	0.27143
3	0.81435	-0.04793	0.21293	-0.00324
4	-0.19656	0.31524	-0.16588	-0.04221
5	0.36624	-0.22362	-0.15713	0.16868
6	0.64520	-0.12883	-0.26733	0.02375
7	-0.24224	0.65551	0.14148	-0.00051
8	0.26264	0.63905	-0.43138	0.03155
9	0.54033	-0.07849	0.37567	0.02083
10	0.22450	-0.29590	0.38310	0.08858
11	0.53127	-0.19040	0.17280	0.09512
12	0.18480	-0.50617	-0.09031	0.04499
13	0.59228	-0.10198	0.18586	-0.04312
14	0.06501	-0.15521	0.09004	0.67916
15	0.11606	-0.00315	0.24126	-0.02483
16	0.03353	-0.53852	0.61500	-0.00543
17	0.07295	0.00524	0.49896	0.20353
18	0.00073	0.14699	0.47609	-0.04569
19	0.09072	-0.09614	0.58140	0.17298
20	0.08760	0.06162	0.11706	0.79984
21	0.49108	-0.12242	0.43340	0.20581
22	0.51262	-0.03477	0.30658	0.35935
23	0.18005	0.38356	0.08254	0.48601
24	-0.05066	0.41160	-0.11797	0.03320
25	-0.01631	0.62503	0.45154	-0.00650