Chapter - II

REVIEW OF RELATED LITERATURE
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REVIEW OF LITERATURE

2.1 Prologue:

Known facts build up the edifice of new theories and principles. When a new research project is launched, the researcher has to construct its background with the previous work done by others. We learn from other's experiences and our own previous experiences. By reviewing literature related to the problem, the researcher not only became aware of the history of the research problem but also established a link between the past and the present. Success of a new research project depends upon how well it is linked with the past project on the subject. The researcher armed himself with substantial evidence to support his proposed hypothesis.

Furthermore, he had to explain how right or wrong he was in relation to the studies of others on his subject; what contributions other researcher had made and how they could avoid the pitfall in his own research project. There has been a sort of prior comparison between what has been done and what was proposed to be done by the researcher now. Review of research studies served as a buckle between the old and the new, between the known and the unknown and between the already investigated and the 'to-be investigated'.

By doing so present investigator has tried to identify trends in related research and focus on the findings and conclusions of the researches that have some bearings direct or indirect on the present investigation.
Morty Geoggoj\textsuperscript{1} quoted "The review of the literature promotes a great understanding of the problem and its crucial aspects and ensures the evidence of unnecessary duplications". For this purpose the present researcher consulted many libraries, Sant Gadge Baba Amravati University, Amravati, Rashtra Sant Tukdoji Maharaj Nagpur University, Nagpur, BundelKhand University Jhansi, L.N.I.P.E. Gawalior, Punjab University, Chandigarh, H.P. University, Shimla, Degree college of Physical Education Amravati, Dr. Baba Saheb Nandurkar College of Physical Education, Yavatmal, Shri Shivaji College of Physical Education Amravati and Dr. Panjabrao Deshmukh Medical College, Amravati. Present researcher also took helps from internet by browsing http/www. Pub Med Index from National Library of Medicine and other website related to present research for to collect the reviews given as under.

Sharma K.D. (1973)\textsuperscript{2}, This study attempted to analyse the socio-economic condition of women employees in Bhopal. The sample consisted of 1,119 women selected randomly. Data were collected by using interview schedule. The questions pertaining to the different aspects of life, namely employment, education and training, demographic characteristics, income and expenditure pattern, indebtedness, family aspects housing, health and conveyance, domestic work, attitude towards employment, marriage and family planning, and any specific problems were included. The main findings

\textsuperscript{1}Morty Geoggoj, as cited by Sheela S. Deshpande in "Analytical study of leadership qualities in Junior college students of Vidarbha region". (Ph.D. Thesis, University of Nagpur, 1983); p.27.

of the study were; (i) the number of women employed in different field was: in Central and the State Govt. offices - 486, health - 514, education - 963, autonomous bodies - 432, big industries - 200, P.W.D. and Irrigation and Public Health Engineering - 925, Trade and commerce - 285, Small industries - 1323, (ii) forty-two percent of women worked on daily wages whereas 31 percent had permanent services. Casual leave, earned leave, medical leave and other types of leave were available to nearly 53 percent women employees. (iii) More than 50% women employees were illiterate. (iv) Nearly 80% of the women employees were married. (v) Over 80% husbands had monthly income of less than Rs. 300/- (vi) A majority of 90% of women employees belonged to lower income group. (vii) Women employees contribution to their family income was significant. (viii) The percentage of women employees having amenities like separate kitchen, bathroom, water tap, latrine and electricity was 62.3, 58.1, 37.3, 38.6 and 51 percent respectively. (ix) Over 50% women employees were forced to join their present profession in order to supplement the family income whereas 48% joined either because of financial gain or interest in work or both.

Farooqui J. (1975)\(^3\), The objectives of the investigation were to study : (i) The socio-economic background and the pattern of recruitment of the academic elite, (ii) The relationship of the academic elite with the remaining social structure, (iii) The degree of teacher awareness and participation in academic, community and national life. Data were collected from a representative sample of 300 university teachers, 100 students and 100 community members with the help of separate interview schedules for teachers, students and community members. Chi-square test was used to test the

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statistical significance of associations. Some case histories were also prepared to supplement the finding of the statistical analysis. The major findings of the study were (i) The academic elite consisted of highly educated person and was highly exposed to the western culture. (ii) The average monthly income of the academic elite was lower than that of other community members. (iii) Despite high education, the academic elite had to apply pressure for recruitment. (iv) There existed a wide gap between teachers, students and community members with regard to the ideal role of teachers, role constraints, role expectations and role satisfaction. (v) The teaching profession had lost its prestige in the hierarchy of professions.

Job A.M. (1976)⁴, The purpose of this study was to find out whether any special relationship existed between the teacher's role perception and his socio-economic status. The population covered in the study consisted of 336 secondary schools of Poona district with 5,252 teachers. The sample comprised 856 teachers randomly selected. The tool used for data collection was a questionnaire of closed and open form type. Chi-square test was used for the analysis of data.

The major finding of the study was, (i) The relationship of socio-economic status of the teacher with his role perception was highly significant with reference to the goal of secondary education, factor in choosing the teaching profession, function of secondary teachers, teaching method, teaching ability, descriptive problems, and special attention given to outstanding pupils. (ii) So far as rural and urban background was concerned, the relationship was

highly significant in the choice of the teaching profession, teaching method, teaching ability, organising ability and satisfying factor in the teaching profession.

**Ramanamma A. and Bambawala U. (1979)**, The major aim of the study were (i) to assess whether the university teacher was modern in his approach to the university as a system, (ii) to assess his self image, and (iii) to know how far his performance was in keeping with the needs of his role. The emphasis was measurement of the levels of modernization through aspiration, commitment and authoritarianism among the teachers.

The sample comprised 155 teachers selected on quota sampling basis out of the 300 teachers of the department of Poona University in the faculty of arts, social science, science and law. The research tool was a questionnaire substantiated with a personal interview. Factor analysis was the statistical technique used for data analysis. The major findings were: (i) There was a great disparity between the socio-economic background of men and women teachers in Poona university. Such a disparity did not exist in the case of the enrollment of the student community. (ii) A greater number of teachers were married in age group of 31-45 years, and they belonged to higher castes. They come from homes where a climate for higher education prevailed. It was found that social structure of the academic profession was relatively closed in favour of traditionally better placed groups. (iii) One third of the teachers did

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not have doctoral degree. (iv) Twenty five percent felt that their salary was high and 20 percent felt that it was low. Recognition in the profession was very high in the case of majority of the teachers and yet they expressed some dissatisfaction. (v) The factor analysis did not point out one single important factor accounting for modernization. A consensus of values helped towards modernization.

Sheps S.B. et al. (1979)⁶, This study assessed the utilization of a mandatory pre-employment health examination (PEHE) for 507 new full-time university staff in 1976. A random sample of 126 new employees was interviewed by telephone. Of the 108 (86%) who completed the interview, 80 (74%) had been examined by the staff health service. Notification to take the exam., a reminder, and the employee's perception of its importance were highly associated (Percentage less than 0.0001) with compliance. Only 30% of the food handlers and maintenance personnel and their PEHE before employment started; the proportion was similar for all new employees (29%). Therefore, although this staff health services was moderately successful in getting most new employees to have a PEHE, if the value of the examination is to be enhanced, more attention must be paid to notifying and reminding all prospective employees. Special consideration is needed to ensure that those in potentially high-risk jobs are examined prior to employment. The role of the university administration in improving compliance is emphasized.

Shephard R.J. et al. (1980), Factors influencing participation in an employee fitness program have been studied in a group of 535 early recruits for a Health Fitness Center established at the headquarters office of a larger corporation. The overall participation rate (20% of eligible staff with convenient access to the facility) was much as in previous reports. Interest was relatively equal in men and women. Typical recruits were middle-aged non-smokers who had previously been active elsewhere. Men had an above average maximum oxygen intake and muscle strength, but were also somewhat overweight and fat. Women were closer to their actuarial ideal weight, but had relatively lower levels of cardio-respiratory and muscular fitness than the men. Program acceptability factors (traveling time, hours of work, and cost) had little effect on participation. Subjects perceived that they were active for health, fitness, competition (men), and appearance (women). General and specific health beliefs were well developed, but bore surprisingly little relationship to health practices and outcomes. It was thus argued that the shaping of attitudes by trial of an exercise program may be a more effective tactic for increasing exercise participation than general campaigns designed to change attitudes and values.

Gupta S. (1981), The objective of the study were (i) To compare the socio-economic background of male and female teachers to evaluate their basic environment, (ii) To compare the adjustment pattern of

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male and female teachers in various fields such as health, home, social, economic, institutional and ethical. (iii) To compare the professional behaviour of male and female teachers regarding their attitude, classroom verbal behaviour, liking of students towards them and their cooperative behaviour.

The sample consisted of 219 male and 169 female teachers, selected randomly from eleven coeducational schools and eleven coeducational colleges of Haryana. The teachers were administered the ‘Kulshrestha socio-economic status scale’ (urban as well as rural) and ‘Pandey teacher adjustment inventory’. The classroom behaviour of primary, middle and secondary school teacher was observed through Flander's Interaction Analysis category system, whereas the classroom behaviour of college teachers was observed through the observation scale developed by the investigator. The data were analysed with the help of Chi-square test and analysis of variance.

The finding of the study were: (i) The socio-economic status of the teachers at primary, middle, secondary and college levels were more or less similar. (ii) The total adjustment of male and female teachers improved from lower to higher level of education. (iii) The attitude of male and female teachers towards students differed significantly but female teachers had better attitude at all levels. (iv) At all levels, male teachers were more liked by girls students and female teachers by boys students.

Cox Michael Howard (1982), The study designed to test the relationship between changes in fitness level and specific job related variables (absenteeism, job satisfaction) after employee participation in a well-regulated

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employee fitness program. All employees (both male and female) were eligible for the study. Responses to the employee fitness program were examined in a total of 964 employees, recruited from a test (Canada Life Assurance Company) and a closely matched control (North American Life Assurance Company) company.

Evaluations covered four months prior and five and one-half months after the introduction of the employee fitness program. Five hundred and thirty-four subjects participated consistently in the research.

On the basis of attendance records over the five and a half months of program operation, the subjects were divided into five subcategories: non-participants, dropouts, low adherents, high adherents, and control. After five and one-half months of fitness programming energy expenditure had risen from approximately 450 kilojoules per 30 min. class to 700 kilojoules per 30 min. class, with 15-17 minutes of exercise at more than 65 per cent of the age-predicted maximum heart rate. One hundred and eighty-nine subjects adhered consistently (≥ 2 times/week) to the fitness program, one hundred and fifty-three of these subjects participated fully in the research.

Program participants showed significant gains in conventional measures of fitness (flexibility and cardio respiratory fitness), and a decrease in body fat. A significant difference in turnover and a non-significant reduction of absenteeism were also noted among adherents to the fitness program. However, job satisfaction as measured by the Job Description Index (Smith, Kendal and Hulin, 1969) did not register any changes. Productivity showed small (3-4%) was in both the test and control companies. Of practical significance was the fact, that volunteers recruited into the fitness program,
initially showed no advantage relative to other employees with respect to cardio respiratory fitness. This finding may have implications for program design and promotion.

While the present research showed an employee fitness program improved fitness levels of participants, it is not clear whether other findings were a specific consequence of the fitness program. Improved working conditions as described by Pennock (1930) at the Hawthorne Works years ago. Nevertheless, if a program of this nature may have a positive effect upon the health of the individual, wider use of this technique may be warranted.

Turner Douglas Jack (1982)\textsuperscript{10}, The purpose of this study was to determine the effectiveness of an eight week physical fitness program for the City of Calgary Police Officers. A sub purpose was to determine if the fitness level of these policemen has changed from the time they were recruited four to six years earlier. Another sub purpose was to determine if their fitness level at recruitment was related to retention as a police office.

Fifty male police officers between ages 22 and 38 were chosen randomly from the Calgary Police Force and divided equally into experimental and control groups. The experimental group performed the prescribed fitness program, which consisted of either a treadmill or bicycle ergometer exercise session meeting three times per week for 20 minutes per session. The subjects heart rates were regulated at 70 percent of their maximum heart rate. The findings revealed significant increases in PWC\textsubscript{170} and PWC\textsubscript{170/kg} in favour of

the experimental group over the control group, while there were no significant differences in grip strength, percentage of body fat or predicted O₂ consumption.

The findings also revealed PWC₁₇₀, PWC₁₇₀/kg and predicted O₂ consumption scores decreased significantly from recruitment to present. All other fitness scores did not differ significantly between the two groups.

It was also revealed that PWC₁₇₀, PWC₁₇₀/kg and predicted O₂ consumption measured at the time of recruitment were significantly greater in the policemen who stayed on the force as compared to those who dropped out.

The following conclusions were drawn: (1) the prescribed fitness program is of significant value for improving cardiovascular levels of fitness, even over as short a time period as eight weeks; (2) since there is a reduction in the fitness level of police officers from recruitment to the present, it appeared that there is a need for a supervised fitness program; and (3) the significant differences found between present officers and attrition officers suggest that more emphasis be placed on higher entrance requirements for fitness to ensure greater retention.

Chaiwatcharaporn Chalemp (1983)¹¹, The purpose of this study was to compare the physical fitness levels of the Oklahoma State University faculty group (N=62) with those of the commercial subjects (N=308) who were tested in the Mobile Lab program. Sub problems were to compare the physical fitness levels of the following: all tested males in various age groups, between males and females in various age groups, various professional groups, between males and females in various age groups, various professional groups,

¹¹Chalemp Chaiwatcharaporn, “A Comparison of the Physical Fitness Levels of Selected Oklahoma State University Faculty and Selected Commercial People of the State of Oklahoma”, Dissertation Abstracts International, 43(10), Apr. 1983, p. 3258A.
and the test and retest results on 64 Mobile Lab subjects who were re-evaluated during the year of this study (1979-1980). Comparisons were made on the following: weekly aerobic points total, lying blood pressure, lying pulse rate, percent body fat, respiratory functions, EKG, predicted maximum O₂ intake, strength tests, reaction time tests, flexibility and O₂ saturation. The data was treated with the SAS computer program. This program allowed the research to use Analysis of Variance and Duncan's Multiple Range Test to determine whether there were any differences on the selected physiological variables.

Most of the scores of the physiological variables of males of the Oklahoma State University faculty were better than those of the commercial males. As the mean age increased one year, all tested males showed some decreases in the physiological variables. Most of the physiological variables of males were better than those of females in the commercial group. As the mean age increased one year, males and females in the commercial group showed some decreases in the physiological variables. Among three different communities, most of the physiological variables of females Shawnee were better than those of the others. Among eight different communities, most of the physiological variables of males in Cushing were better than those of the others. Among nine different professions, most of the physiological variables of the health related professionals were better than those of the others. Between the test and retest results, the groups who did and did not exercise before the first test and did later showed some improvements in the physiological variables. The group who did not exercise before or after the first test did not show any improvements in the physiological variables.
Godin G. et al. (1983)\textsuperscript{12}, The Fishbein model was used to assess the impact of physical fitness evaluation with subsequent counselling by professional staff on individual intentions to exercise regularly. The subjects for this study were 172 self-selected adults seeking an evaluation of their current physical fitness. Experimental subjects were given a sequence of fitness testing and counselling; however, this did not significantly change the intention to exercise relative to control subjects. The only significant differences in intentions to exercise regularly were found (i) between subjects differing in fitness level (Percentage less than 0.002), and (ii) between subjects differing in current exercise behaviour (Percentage less than 0.001). Thirty-five percent of the variance in intentions to exercise, were explained by a combination of (i) the two components of the Fishbein model (attitude and social norm) and (ii) an index of current physical activity. Since most of our subjects reported a positive intention to exercise, the most appropriate tactic for an increase of community activity may be to initiate policy changes facilitating behaviour in accordance with existing attitude.

Wilson Rolayne (1984)\textsuperscript{13}, The major purposes of this study were to construct a pictorial paper-and-pencil physical fitness knowledge test for first graders based on the content contained in the AAHPERD (1981a) Basic Stuff with a focus on the Exercise Physiology component of the series, and to establish reliability and validity of the instrument.


\textsuperscript{13}Rolayne Wilson, “A Physical Fitness Knowledge Test for First Graders”, Dissertation Abstracts International, 45(5), Nov. 1984, p. 1336A
The procedure for developing a physical fitness knowledge test for first graders involved construction of a two-way table of specifications delineating test content from Basic Stuff and utilization of a cognitive taxonomy from the Educational Testing Service (n.d.). The pilot studies consisted of 15 test items. The first pilot study analysis indicated that the test did not discriminate well as the test for the second pilot study had three pictorial choices rather than two. The test was administered to 73 first-graders. The Kuder-Richardson Formula 20 yielded a reliability coefficient of 0.38 on the first pilot study and 0.40 on the second pilot study. Flanagan's (1939) method of item analysis was used to determine statistical validity of the 15 test items. Items meeting the criterion for acceptance were retained, while the remaining items were discarded or revised.

The final instrument contained 30 test items. The content areas remained the same from the pilot studies. Three cognitive levels reflected Piaget's theory of cognitive development on the table of specifications. A cognitive jury and an exercise physiology jury evaluated the test items to established content validity.

The final instrument was administered to 215 first graders in North Carolina on May 17-19, 1983. Statistical validity was established using Flanagan's (1939) Item Analysis. Functioning of the test item choices, difficulty rating, and discrimination were determined. Twenty-one items met the statistical criteria in all three areas. The Kuder-Richardson Formula 20 yielded a reliability coefficient of 0.41. The Rasch Analysis calibrated the item difficulty of the 30 items. Using the criterion suggested by Rentz Rentz (1978) and Canner Lenke (1978), the items fit the Rasch Model and were considered "good".
Hammitt Sarah A. (1984)\textsuperscript{14}, The present study represented an attempt to determine the relative effect of attitudes towards participation, social group influence and past experience on the present level of participation of college age persons in sports and/or physical activity.

A four-page questionnaire was given to three hundred students in the registration line at The University of Tennessee, Knoxville, in the fall of 1983. Of the questionnaires distributed, 277 were used in the statistical analysis. Sections of the questionnaire were grouped under the topics of level of participation, past experiences in sports and/or physical activities, influence of the social group, personal participation and attitudes towards participation. 'Likert scale' was used to assess the strength of subjects' responses to each category of items with the total score for each category being the primary independent measure. Pearson's \( r \) was used to determine the relationship between level of participation and past experience, social group influence and attitudes. Analysis of variance was used to determine if the level of participation was influenced by past experience, social group influence and attitudes. Multiple regression was used to explain the percentage of variance in participation level attributable to past experience, social group influence and attitudes. Path analysis was used to determine possible causal determinants among the sets of measures variables. The results indicated that nearly all of the respondents had positive attitudes towards participation and that increases in the level of participation were associated with an increased positive attitude towards participation, an increased social group influence, and an increased

amount of past participation experience. Path analysis procedures further suggested that attitudes influence participation behaviour through an effect on a person's intention to participate. Furthermore, the social group appeared to have a greater influence on persons who participate than on those who do not. Finally, the level of past experience appeared to be one of the major determinants of the level of person's participation in sports and/or physical activities.

Bernacki E.J. and Baun W.B. (1984)\textsuperscript{15}, An investigation of the relationship between exercise adherence and job performance was conducted over a six-month period among a group of white-collar workers (3,231) eligible to participate in a corporate fitness program. The study population was divided into four job categories - management (561), professional (1,265), clerical (1,078), and other (327) - and five exercise adherence groups - nonmember (1,090), non-exerciser (926), exercises less than one time per week (239). Current job performance ratings were determined for all individuals. A strong association (P less than 0.01) was observed between above average performance and increasing adherence levels. An inverse relationship was demonstrated between poor performance and increasing adherence levels (P less than 0.0001). In each adherence group no differences in performance were noted when prior performance was compared with current performance. On the basis of these findings there appears to be a positive although probably non-causal relationship between exercise adherence in a corporate fitness.

Morgan P.P. et al. (1984)\textsuperscript{16}, examined the attitudes, practices and physical characteristics of adults who enrolled in and adhered to a workplace fitness programme. Questionnaires on health beliefs and exercise habits were completed by 409 participants in an employee fitness programme and by 374 randomly selected non-volunteering controls. All underwent initial aerobic testing, and 20 months later 263 of the original enrollees were re-evaluated. Among the males, concern for health and belief in the health value of exercise were significantly stronger among enrollees than in controls. A higher level of perceived health and realistic expectations of the programme characterized male enrollees who went on to higher levels of exercise. For women, perceived health and belief in exercise were stronger in initial participants but there were no clear predictors of exercise adoption. Although attitudes towards exercise generally became more positive over the programme, low-level participants came to view exercise as less "fun" and more "discipline". People who are ready for change and believe in exercise may enter a fitness programme, but adherence is influenced by personal factors such as the perceived state of health and the acceptability of the specific exercise programme.

Baun W.B. et al. (1986)\textsuperscript{17}, undertook a random sample of 517 employees was studied to determine differences in health care costs and absenteeism among exercisers and non-exercisers during the start-up of a corporate health and fitness program. Exercise was associated with decreased


illness absence among female exercisers (47 v 69 hours, P less than 0.05) and there was a trend for illness absence to be inversely related to advancing age among exercisers, whereas illness absence increased among non-exercisers. Total health care cost among exercisers was lower (male $561, females $639) than among non-exercisers (male $1,003, females $1,535). Due to the large variation in the individual cost, the differences between exercisers and non-exercisers were not statistically significant. Ambulatory health care cost for non-exercisers (males $486, females $883) were significantly higher than the costs for exercisers (males $408, females $243). Because the differences were found upon program initiation, they were thought to be characteristics of exercisers and not due to exercise itself.

**Padhan N. (1986)**, The objective of the study were (i) to study the cosmopolitan character of the university in horizontal, vertical and substantive forms, (ii) to study the academic performance of students in different courses with regard to their socio-economic backgrounds, and (iii) to study job-placement of students going out of the university after six months of the completion of courses. The study conducted on the students of M.S. University, Baroda with the following sample: 2021 students for objective (i), 837 students for objective (iii). The sample represents 11 faculties. The tools used were an information schedule, a questionnaire on academic life and future plans, and a questionnaire to follow-up university students. Records surveys personal administration of questionnaires and mailing questionnaires were used for data collection. The data was collected on the sample available for the year 1983-84. Different statistical techniques, like ANOVA and t-test,

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were used for analysis of data. The finding of the study were: (1) The student population of the M.S. University consisted of 77% to Gujarathi, 22% non Gujarathi and one percent of foreign students. (2) Students belonging to almost all parts of the country were admitted in different faculties. (3) The university had a good research and teaching atmosphere in almost all its faculties. (4) The difference in academic performance of male and female, upper caste and SC and ST, Hindu and non Hindu, Hostilities and day scholars and the rural and urban students was found to be significant. (5) Only in the case of arts faculty, was socio-economic background found to be a determinant of academic achievement.

Mishra S. (1987)\(^{19}\), The objective of this study were (i) to determine factors responsible for mobility among teachers e.g. caste, education, economic condition, merits etc., (ii) to find out which type of social mobility vertical or horizontal, was more liked by the teachers, and (iii) to determine how far mobility affected social change. The sample consisted of 152 primary school teachers, 400 secondary school teachers, 72 college lecturers, 20 university professors, 65 readers and 65 lecturers. The teachers were selected through a purposive sampling method. A questionnaire on social mobility among teachers containing questions on educational qualification, income and occupation of family members, working conditions, future prospect of promotion, etc. was prepared by the researcher. The study revealed that better working conditions, locality - from rural to urban cadre were the main factors responsible for mobility among teachers.

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Tsai S.P. *et al.* (1987)^20^, The life table method of analysis was used to study the differences in turnover during a 4-year period among employees who participated in a corporate health and fitness program and those who did not. The study population consisted of 1,360 workers hired between Jan 1, 1982, and Dec 31, 1985, of whom 747 were exercisers; and 1,788 persons hired between Jan 1, 1978, and Dec 31, 1981, of whom 869 were exercisers. Age, sex, general job category, and duration of employment were taken into account in the analysis. For both groups the probability of continued employment among exercisers was significantly greater than among non-exercisers. The differences were particularly profound among female clerical employees. The study did not attempt to assess the causal nature of this relationship. However, we speculate that health and fitness programs influence turnover in employment groups where the personal financial benefits are the greatest.

Usmani Shaheen (1988)^21^, The attempt is to study principal effectiveness in relation to professional attainment, socio-economic background, value of life and attitude towards teaching. The objective of the study are (i) to assess effectiveness of school principals in relation to age, sex, professional attainment, socio-economic status and attitude towards teaching, and (ii) to find out relative contribution of professional attainment, socio-economic background, attitude towards teaching and values of life of the principals to their effectiveness.

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The sample comprised 40 school principals and 200 teachers. The tool used included principal effectiveness scale measure professional attainment, socio-economic background scale by the investigator, scale of attitude towards teaching by Verma and measure personal value by Ojha. The statistics used include 't' test, product movement correlation and multiple regression.

Major findings were (i) age, sex and professional attainment had no effect on principal effectiveness. However, attitude towards teaching was influenced by sex. (ii) Socio-economic background was inversely related to principal effectiveness. (iii) Professional attainment, attitude towards teaching, socio-economic status, economic value, political value and social value contributed significantly to principal effectiveness.

S.P. Tsai et al. (1988)22, The prevalence, cost and type of injury among participants of an employee fitness program and non-exercising co-workers were studied over a 2-year period from 1984 to 1985. The purpose of the study was to determine whether participants of an employee fitness program (n=2,871) experienced a greater risk of injury and resultant higher costs than non-participants (n=3,233). Overall, there were no significant differences in the rate or cost of injuries among the various participation levels (from 0 to 3 or more times per week). However, the data indicated that individuals who occasionally participated in the fitness program experienced a greater, but non-significant, risk of injury (6.3 per 100 persons who exercised

less than 1 session per week, and 7.7 per 100 persons who exercised 1-2
sessions per week) than non-participants (5.7 per 100 persons). Injury
prevalence was lower among individuals who exercised 3 or more sessions per
week (5.4 per 100 persons) as was the resultant per capita cost of injuries ($32
vs $42 for non-participants). We conclude the impact of exercise at an on-site
health and fitness facility on overall injury rates and costs among employees is
negligible.

Williams A. Margie (1988)23, On a small campus, the success
of programming is dependent on participation by both students and employees.
The university studies composed of some 700 employees, and fewer than
4000.

A survey was done in South Illinois university at Carbondale to
determine the health interest of students (N=533) and full-time employees
(N=338), and to students whose average age was 32, and the majority of
whom were employed full time, had families, and commuted to campus only
for part-time study. examine the relationship between selected health habits
and correlate health interests. Health habits were assessed using the wellness
check for Adults (Tierney, 1986), and interest in health promotion programme
was ascertained by the health interest survey (Cherowth, 1986) modified by
the researcher.

Descriptive statistics were used to report demographic
characteristics, perceived health status, health habits and health interests of
employees. Measures of central tendency were reported for all variables and

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23 Williams A. Margie, "Health Habits, Perceived Health Status and Health Interests
S.D. were reported for continuous variable. A Chi-square analysis was reported when comparing groups on both independent and dependent variables. To determine the relationship between the independent and dependent variables, Whitney U and t-test were performed. Relationship were considered significant at the 0.05 alpha level.

Overall participants scores healthfully on the nine categories of health habits, but significant difference between groups were also found in their interest in five of the eleven health promotion program listed. Both groups, however, rank ordered managing daily stress. Results of bivariate analysis relating health habits to specific health interests varied in direction of association, and in significant.

Gionet N.J. and Godin G. (1989)\textsuperscript{24}, The aim of the present study was to assess the validity of different self-reported questions for measuring exercise behaviour of 551 employees. Values of maximum oxygen intake, body mass index, muscular endurance, and a fitness profile, based on the individual results obtained from each of the three physiologic parameters, were used as validity criteria for the self-reported measures. The influence of fitness profile on the measures of exercise habits indicated that the fit employees reported a more active pattern of exercise behaviour, participated in more strenuous physical activity, and expended a greater amount of energy in a typical week than the unfit employees. There was not gain obtain in explaining fitness categorization with a more elaborate method compared with a simple question in measuring exercise behaviour. The results of the present

study show that the suggested simple method (one question) for assessing exercise behaviour of employees is valid and can be useful for nurses and company physicians when evaluating the baseline behaviour of a group of employees to assess the impact of exercise promotion programs at the work site.

Hoag L. J. (1989)\textsuperscript{25}, This cross sectional descriptive study of 590 (545 full-time and 45 part-time) executive women from an executive woman's organization of 1,000 members had two major objectives: to provide a socio demographic, occupational, and health profile and to ascertain how specific socio-economic and occupation characteristics related to overall health. The instrument used to collect the data was 73-item questionnaire that consist of: a socio-demographic section, a general health section that used the Centers for Disease Control Health Risk Appraisal (CDCHRA) - a 32-item questionnaire concerning health knowledge and practices related to the 12 leading cause of death in United States; a job satisfaction section used a 14-tem scale developed by Karasek and colleagues to ascertain job strain and job control; and a home/work/health relationship section developed by the investigator.

Results revealed that this group of well-educated, highly successful executive reported higher level of job satisfaction (mean scores of 17.6) compared with a sample of 1561 executive women in Department of Transportation Quality of Employment Survey (mean score of 20.6). Finding showed comparatively higher overall levels of health on the CDCHRA: a study

group mean score of 85.8 was higher than the mean score of 78.3 from an age-
sex education matched sample of 19,660 working women. The study groups
mean score was similar to the mean score (86.4) of a comparison group of 106
women executives who were on average 12 years younger. Only in two areas
did the study participants fare less well than their comparison groups. Study
participants appeared to drink more heavily and fewer executives reported
knowing their blood pressure and blood cholesterol levels. A multivariate
analysis, designed to ascertain how specific socio-economic and occupation
characteristics related to overall health among this group, was not significant.
These finding suggest that women who have assumed positions of leadership
in business have not necessarily compromised their health; however, they
remain candidates for maximizing their health through continuing health
education and preventive practices.

Mohammad Abu-Saleh Kadhem (1989)\(^26\), Two hundred
twenty male students randomly selected during spring semester 1988 from
each of two Saudi Arabian Universities, King Faisal and King Fahd, were
administered a three part attitude measurement instrument and a four part
health related physical fitness test. The attitude measurement instrument,
derived from the McDonald attitude inventory and the 'wear inventory' as
modified by Ridha (1983), contained 70 statements. Subjects responded on a
five point scale ranging from strongly agree to strongly disagree. The health
related physical fitness test, developed by the American Alliance for health,
consisted of 12-minute run, skinfold measurement, sit-up, and sit and reach

\(^{26}\)Abu-Saleh Kadhem Mohammad, “Measurement and Correlation between
Attitudes towards Physical Education and Health Related Physical Fitness among Male
1989, p. 146.
tests. A total of 316 students completed both tests. Values were assigned to responses of the attitude measurement instrument according to the Likert technique. This results, along with health related physical fitness test scores, were statistically analyzed by multiple regression, t-test, ANOVA, and the Spearman-Brown formula.

Finding showed a positive correlation between attitude towards physical education and scores on the health related physical fitness test. No significant difference in attitude towards physical education was found between students at the two universities but King Fahd students scored significantly better than King Faisal students on the health related physical fitness test.

Between Freshman and Sophomore students at King Fahd university's tested in Ridha's 1983 study and those tested in the present study.

Comparison of health related physical fitness test results to American college students norms showed that American students scored better in distance in nine minutes run, sit-ups and skinfold measurement, while the Saudi students scored better in the sit and reach test.

**Okada K. (1991)**[^27], The higher average age of employees, due to the advancement of the compulsory retirement age, and their sedentary lifestyle in automated environments, have become important issues in the workplace, as witnessed in increased incidence of adult disease and decreased physical fitness levels. The purpose of the present study was to evaluate the effects of a long-term corporate fitness program in helping employees to stay

well. The fitness program consisted of medical checkups, physical fitness tests, and a physical training program, given on an individual basis. The medical checkups and physical fitness tests were evaluated in 1499 male employees, with the following results. 1) The incidence of obesity showed no significant change. 2) There were no significant changes in total cholesterol levels nor in the incidence of hypertriglyceridemia and hypercholesterolemia. 3) Physical fitness was markedly improved. 4) There was a decrease in the percentage of smokers. These results suggest that a long-term corporate fitness program is effective for improving the health and fitness levels of employees and for preventing the progression of adult disease.

Boyce R.W. et al. (1991)\textsuperscript{28}, Police officers (n=514) were studied to determine the relationship between physical fitness capacity and annual absenteeism rate. Hierarchical regression analysis revealed that for officers aged 34 years and younger, only 5% of the variability in absenteeism could be accounted for by age, sex and physical fitness variables. For officers 35 years old and older, 7% of the variability was explained by these variables, and a bicycle ergometer score was a significant predictor of absenteeism. Each individual test and an overall physical fitness score were classified into five levels. ANOVAs revealed no significant differences between overall fitness levels and absenteeism. However, men 35 and over who were most fit on the bicycle ergometer test had fewer absences, and women 34 and under who were thinnest had more absences. In conclusion, at least among police officers, the extent of which physical fitness capacity can predict absenteeism is low.

Kirk S.A. et al. (1993), objective of their study was the health, personal life and attitudes of case managers providing intensive services to severely mentally ill clients were evaluated to see how the managers changed over their first 18 months on the job. The authors report here on changes on major variables related to health status and job attitudes. Methods: A cohort of 82 case managers newly hired during the first year of New York State's intensive case management programme was followed for 18 months. A battery of and 18 months to case managers who remained employed in the programme measures of health, life events, life satisfaction, social support, job situation, and job attitude was administered by mail questionnaire. Results: Approximately 80 percent of the eligible (still-employed) case managers responded at each time point; 64 were still employed at the end of the study. Over time they experienced increasing amounts of job stress and emotional exhaustion, depersonalized clients more, and reported significantly more stress-related physical symptoms and depressive symptoms. However, their sense of personal accomplishment and their job satisfaction remained stable. Conclusions: Case managers appeared able to overcome job pressures and persevere in their professional commitment. What difficulties they had appeared to level off after one year, at least among those who continued in their positions. Although the findings do not indicate that case managers need intensive help, early support and preventive intervention for job difficulties would be helpful.

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Liang M.T. et al. (1993)\textsuperscript{30} This study examined the relationship between unselected first-year medical students' knowledge and attitude about health or exercise and their personal physical fitness. The 131 subjects performed a maximal exercise test to determine physical fitness by measuring maximal oxygen consumption (\(\text{VO}_2\text{max}\)), underwent hydrostatic weighing to asses body fat content (percent body fat), and completed a questionnaire to measure their knowledge and attitudes about health promotion/disease prevention and exercise. Many independent variables were significantly associated with \(\text{VO}_2\text{max}\) in bivariate analyses, but only percent body fat, resting systolic blood pressure, and perceived barriers to health promotion/disease prevention and to exercise were significant predictors of \(\text{VO}_2\text{max}\) (mL x kg\(^{-1}\) x min\(^{-1}\)) in the multivariate analyses. The absolute \(\text{VO}_2\text{max}\) (L x min\(^{-1}\)) can be predicted from percent body fat, weight and perceived barriers to health promotion/disease prevention. Freshmen medical students' attitudes towards health promotion/disease prevention and exercise constitute one of three strong predictors of physical fitness levels and should be determined, along with percent body fat and resting systolic blood pressure, when estimating fitness levels in a medical student population systolic blood pressure, when estimating fitness levels in a medical student population.

Singleton Steven P. et al. (1993)\textsuperscript{31} This study describes the results of a survey among employees at Wayne State University that were designed to determine the desire for and willingness to participate in a campus


\textsuperscript{31}Steven P. Singleton, James T. Fitzgerald, Hermann J. Engels, John C. Wirth, “Attitudes of Employees for an On-Campus Health Promotion Program at a Large Urban University”, Evaluation & the Health Professions, Vol. 16(1), 1993, pp. 87-95.
wellness program. All 4,300 employees were mailed a questionnaire during the period March-June 1989. Among the 2,401 respondents (56% response rate), 81% felt a wellness program should be offered and 57% indicated an intention to participate.

A significantly higher percentage of Blacks (77%) and women (62%) stated they would participate as compared to Whites (51%) and men (51%). There was an inverse relationship between desire for the program and income level; those who held commercial health club memberships and resided closer to campus showed higher interest. In the overall sample, lunchtime activities were the most requested. Types of services most requested included health screening (e.g., cholesterol testing and fitness assessment) and exercise classes.

Ren A. et al. (1994)\(^3\), This study examines the association of health-related worries (over cancers, diabetes, work-related stress, heart attack, obesity, general physical fitness, and/or other health conditions) and perceived health status (excellent, good, fair or poor) to the utilization of health care services for 19,139 Japanese local public service employees. Data on health-related worries and health status were obtained from a self-administered questionnaire survey in 1988 and analyzed in relation to the subsequent 12-month utilization of health care. Results showed that perceived health status was associated with the utilization for almost all medical conditions and so were worry over a specific condition and the subsequent utilization of health

care services. The implication of these findings is that measures targeting the relief of an employee's health-related worries, through either health consultation or other health programs, may contribute to the reduction of an employee's health care utilization and costs.

Lechner L. and De Vries H. (1995)\textsuperscript{33}, This article presents a study of the determinants of starting participation in an employee fitness program. Information from 488 employees, recruited from two worksites, was obtained. From these employees the determinants of participation were studied. Method :- A questionnaire based on two theoretical models was used. The Stages of Change model was used to measure the health behaviour, consisting of pre-contemplation (no intention to participate), contemplation (considering participation), preparation (intending to participate within a short period), and action (participating in fitness). The possible determinants were measured according to the ASE model, including the attitude toward an employee fitness program, social influence, and self-efficacy expectations. Results :- Subjects in action stage were most convinced of the benefits of participation in the employee fitness program and of their own skills to participate in a fitness program. Subjects in pre-contemplation stage were least convinced of the advantage of participation and had the lowest self-efficacy scores. Subjects in action stage experienced the most social support to participate in the employee fitness program. Conclusions :- Health education for employees within industrial fitness programs can be tailored toward their

motivational stage. Promotional activities for industrial fitness programs should concentrate on persons in the pre-contemplation and contemplation stages, since people in these stages are insufficiently convinced of the advantages of a fitness program and expect many problems with regard to their ability to participate in the program.

Lechner L. and De Varies H. (1995)\textsuperscript{34}, This article presents the results of a study of the determinants of adherence level in an employee fitness program. Of all 236 employees who started participating in the program the determinants of level of participation (high adherence, low adherence and dropouts) during the program were studied by means of a pre-test and post-test design. The questionnaire was based on different theoretical concepts. The determinants measured included the attitude toward an employee fitness program, self-efficacy expectation, and social support. The results show that there were no differences in determinants between the groups at the start of the program. During the second measurement the high and low adherence groups were most convicted of the benefits of participation in the program. The low-adherence group and the dropouts were least convinced of their ability to participate in a fitness program. Theoretical and practical implications are discussed.

Lechner L. \textit{et al.} (1997)\textsuperscript{35} The effect of participation in an employee fitness program on reduction of absenteeism due to illness on three


different work-sites (police force, chemical industry, banking) was studied. The study used a longitudinal pre-test and post-test design. From 884 subjects, data were collected on absenteeism in the pre-intervention year and on absenteeism in the first year of the fitness program. The subjects were divided into three groups: high participation, low participation and no participation in the employee fitness program. Results of covariance analyses showed that the high participation group had a significant decline in sick days (4.8 days), while the low and no participation groups showed no change in sick days. Even when self-selection in the participation in an employee fitness program seems to be present, there is potentially for a great deal to be gained from participation of this self-selected group in terms of changed sick days.

Hemingway H. et al. (1997)\(^3\) This study measured the association between socio-economic status and the eight scale scores of the Medical Outcomes Study short from 36 (SF-36) general health survey in the Whitehall II study of British civil servants. It also assessed, for the physical functioning scale, whether this association was independent of disease. Methods:- A questionnaire containing the SF-36 was administered at the third phase of the study to 5766 men and 2589 women aged 39 through 63 years. Socio-economic status was measured by means of six levels of employment grades. Results:- There were significant improvements with age in general mental health, role-emotional, vitality, and social functioning scale scores. In men, all the scales except vitality showed significant age-adjusted gradients across the

employment grades (lower grades, worse health). Among women, a similar relationship was found for the physical functioning, pain and social functioning scales. For physical functioning, the effect of grade was found in those with and without disease. Conclusions:- Low socio-economic status was associated with poor health functioning, and the effect sizes were comparable to those for some clinical conditions. For physical functioning, this association may act both via and independently of disease.

Edward Peterson M. and Edward Dunnagan T. (1998)\textsuperscript{37} this study assessed the impact of participation in a health promotion program and engagement in healthy behaviors on job satisfaction. A survey response rate of 70\% (n = 1,283) was obtained at a northern state university with an established work-site health promotion program. Significant differences in job satisfaction were obtained by education level, job classification, marital status, dependents, and regular exercise behaviors. No differences in job satisfaction were obtained by health promotion program involvement or any other health behavior other than regular exercise. Results suggest that health promotion programs do not significantly impact job satisfaction. Rather, job design and the psycho-social aspects of the work environment may be more influential in improving job satisfaction. Based on the results of this study, organizations attempting to improve employee health should provide health promotion programs and address the job itself. To improve job satisfaction, attention to the job itself is required.

Erikssen G. et al. (1998)\textsuperscript{38}, Point estimates of physical fitness give important information on the risk of death in healthy people, but there is little information available on effects of sequential changes in physical fitness on mortality. We studied this latter aspect in healthy middle-aged men over a total follow-up period of 22 years. Method: 2014 healthy men aged 40-60 years had a bicycle exercise test and clinical examination, and completed a questionnaire in 1972-75 (survey 1). This was repeated for 1756 (91\%) of 1932 men still alive by Dec. 31, 1982 (survey 2). The exercise scores were adjusted for age. The change in exercise scores between surveys was divided into quartiles (Q1=least fit, Q4=fittest). An adjusted Cox's proportional hazards model was used to study the association between changes in physical fitness and mortality, with the Q1 men used as controls. Findings: By Dec. 31, 1994, 238 (17\%) of the 1428 men had died, 120 from cardiovascular causes. There were 37 deaths in the Q4 group (19 cardiovascular); their relative risks of death were 0.45 (95\% CI 0.29-0.69) for any cause and 0.47 (0.26-0.86) for cardiovascular causes. There was a graded, inverse relation between changes in physical fitness and mortality irrespective of physical fitness status at survey. Interpretation: Change in physical fitness in healthy middle-aged men is a strong predictor of mortality. Even small improvements in physical fitness are associated with a significantly lowered risk of death. If confirmed, these findings should be used to influence public health policy.

Costakis E. Catherine et al. (1999) examined the relationship between stage of exercise adoption and the practice of other health behaviours. Design: Demo-graphic, socioeconomic, and health behaviour data were collected using a cross-sectional mail survey. Data were collected as part of a larger employee benefits research study. Setting: Montana State University-Bozeman, Bozeman, Montana. Subjects: University employees (n = 1269) comprised of 46% men with a mean age of 44 years. Measures: Demographic and Socioeconomic data included age, sex, marital status, level of income and education, dependent status and job classification. Stage of exercise adoption classification were based on self reported responses to four exercise statements. The health behavior included in this study were cigarette and smokeless tobacco use, seat belt use, alcohol use and use of stress management practices. Logistic regression analysis was used to determine if stage of exercise predicted the presence of each of the health behaviour while controlling for Demographic, socio-economic, and other health behaviour variables. Results: The survey response rate was 68%. Respondent in action exercise stage (p=.0367) were less likely to smoke cigarettes than respondents in pre-contemplation stage of exercise. Respondents in contemplation (p=.0419), preparation (p=.0060), action. Respondents in maintenance (p=.0059) were likely to use regular stress reduction technique than respondents in pre-contemplation. Conclusion: Although longitudinal research is needed to determine any casual relationship, this research suggests that encouraging individuals to become more involved in exercise could indirectly

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influence other health behaviours. Hence, exercises could be a possible “gateway” behaviour towards healthier lifestyle practices.

**Emslie C. et al. (1999)** Study objective: To examine gender differences in minor morbidity among men and women working in similar circumstances, and to test whether the relation between reported working conditions and health is similar for men and women. Design: Multivariate analysis of data collected from a postal questionnaire distributed to full time employees in white collar jobs within a single organisation. Setting: A British university. Participants: 1641 employees (1009 men and 632 women) working full time in white collar occupations in the university. Main Results: Overall, female university employees reported more "physical" symptoms (2.0 v 1.7, p < 0.001) and more "malaise" symptoms (1.4 v 1.1, p < 0.001) than male employees, but mean scores on a measure of minor psychiatric morbidity did not differ by gender. Poor perceived working conditions (and particularly lack of job stimulation, job drain and poor physical conditions) were consistently related to all three measures of minor morbidity, and these variables accounted for most of the variance in these health measures in this sample. When the analysis Controlled for occupational grade, perceived working conditions and orientation to gender roles, there was no difference between men and women for any of the health measures. The relations for the predictor variables were generally the same for men and women (and there were no interactions with gender for any of the work related variables). Conclusions: Although small gender differences in recent experience of malaise and physical symptoms

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remain when examining men and women in as similar working circumstances as possible, these differences are cumulatively eroded by taking account of occupational grade, reported working conditions and orientation to gender. These results lend support to a differential exposure, rather than a differential vulnerability, model of gender differences in health.

**Haynes George et al. (1999)** During the past two decades there has been a rapid increase in the number of wellness activities within public and private companies. A rationale for implementing worksite wellness programs has been the assumption that wellness programming can contain health-related costs. This investigation examined the relationship between health insurance costs and employee wellness program participation using a sample of 1757 university employees over a 3-year period. Based upon empirical models and analytic techniques that are appropriate for these investigations, the researchers utilized a non-linear regression technique for the data analysis. The researchers suggest that voluntary wellness programs may face a serious adverse selection problem in that relatively unhealthy individuals may self-select into wellness programming. Specifically, the authors show that employees who participate in worksite wellness programming incur higher rather than lower health claims costs.

**Hare S.W. et al. (2000)** The purpose of this study was to assess perceptions of exercise professionals regarding obesity. A three page, 25-item survey was mailed to a random sample of 5000 certified Health Fitness

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Instructors, Exercise Test Technologists, and Exercise Specialists from a certification list provided by the American (College of Sports Medicine (ACSM). The return rate was 66%. Most exercise professionals (74%) supervised or worked directly with obese clients in an exercise/fitness setting. The majority of exercise professionals believed that normal weight is very important to a person's health, that physical activity is very important in the treatment of obesity, that they should be role models by maintaining normal weight, that they are obligated to counsel obese persons concerning the health risk of obesity, that they are very competent to prescribe exercise program for weight loss, and that counseling obese person on exercise on weight loss is professionally gratifying. The majority of exercise professionals also believed sedentary lifestyles, poor eating behaviour, excessive calorie consumption, and psychological problems play a major role in most obesity. Exercise professionals reported that they received most of their information on weight control from textbooks, college classes, scientific journals, workshops/seminars, and past experience.

Voit S. (2001), Physical fitness and health lifestyle habits have been reported to lower the risk of death from disease, foster healthy muscles, joints and bones, and enhance personal function and mental health. Given these benefits, many employers are implementing health and fitness programs into their workplace with the goals of improving and maintaining the health of their employees and increasing worker productivity. However, research is still being conducted to determine if these programs are an effective means of achieving these goals. Objective :- The purpose of this paper is to investigated the

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impact of these programs on employee physical and mental health, employee work performance, and the employer. This paper also investigates the effectiveness of the specific program structures and intervention procedures that were used in the employee health and fitness programs that have been implemented. Study Design :- This paper analyzed 15 previously conducted studies to investigate the impact and design of employee health and fitness programs. Results :- The reviewed literature suggests that the incorporation of an employee health and fitness program can have positive effects for both the employee and the employer. Programs that are structured using a variety of physical fitness programs, health education classes, out-reach and one on one counseling with follow up contact have proven to be most beneficial in terms of employee and employer satisfaction. Conclusion :- The implementation of an employee health and fitness program can have positive lasting effects on both the employee and employer. In addition to implementing programs that offer a variety of choices and one on one counseling, employers would benefit from targeting the at-risk population to ensure that the programs benefit the greatest number of employees possible.

**Phil E. et al. (2002)**\(^{44}\), To compare the occupational and leisure-time physical activity (LTPA) patterns, musculo-skeletal disorders and cardiovascular disease risk factor among the physical education teachers (PETs) and their fellow workers (controls). Methods :- Design : a case-control study. Participants : 86 male PETs and 102 other teachers aged 51-72 years old. Measures : the questionnaire was applied to determine the occupational activity and LTPA level, musculoskeletal disorders, general health status and

lifestyle patterns. Anthropometrical parameters, resting blood pressure values and physical working capacity were measured. Concentrations of total cholesterol (CHOL), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol, triglycerides and glucose were determined and the HDL-C/CHOL ration was calculated. Results - PETs had maintained their physically active lifestyle - 59.3% of them were regularly active in their leisure time. The results of the questionnaire did not reveal any major between-group differences in their health status and health habits (smoking, alcohol consumption, etc.). PETs had a significantly lower adjusted risk of overweight (OR 0.63, 95% CI, 0.21-0.94), hypertension (OR 0.25, 95% CI, 0.13-0.47) and all musculoskeletal disorders (during the past year) (OR 0.52, 95% CI, 0.29-0.94) in comparison with the control group. Conclusions : It is reasonable to assume from their study that long-term physical activity is associated with a lower risk of overweight, hypertension and musculoskeletal disorders in PETs in comparison with sedentary fellow workers.

**Tammelin T. et al. (2002)**

The purpose of their study was to evaluate the association between occupational physical activity and fitness in young workers, taking into account leisure-time physical activity, body size, and smoking. The study population comprised 2188 men and 1987 women, members of the Northern Finland birth cohort 1966, who participated in the 1997-1998 follow-up survey and were employed at the time of the survey. Cardio-respiratory fitness was measured by a 4-min step test and muscular fitness by tests of maximal isometric handgrip and isometric trunk extension.

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Information on occupational and leisure-time physical activity and smoking was obtained by questionnaire, and body height and weight were measured during medical examination. The data were analyzed by analysis of variance and Cox regression. Results: Men doing heavy physical work scored better in cardio-respiratory fitness, handgrip strength, and trunk muscle endurance than men doing lighter work; the finding for cardiorespiratory fitness was similar in women. The associations were independent of leisure-time physical activity, body weight and height, and smoking. Conclusion: A positive association was found between heavy physical work and a high level of fitness in young workers. Due to limitations of the study setting, causality cannot be asserted, but a training effect of heavy work would not seem unreasonable. Previous studies have suggested a reversal of the positive effect of heavy work on fitness with advancing age. Therefore, regular monitoring of workers' fitness at an early phase is justified to enable assessment of workers' capacity for heavy jobs and any possible need for fitness-improving activities.

Wattles G., Chad Harris Matthew (2003)\textsuperscript{46} The purpose of this study was to examine the relationship between various components of health-related fitness and employees perceived productivity, job satisfaction and absenteeism. One hundred forty-three individual employees of a northwest community completed a fitness assessment measuring percent body fat, cardiorespiratory endurance, flexibility, and muscular strength. The participants were sent questionnaires to determine the relationship between fitness levels and perceived productivity and job satisfaction. Absenteeism rates,

\textsuperscript{46}Wattles G., Matthew Harris Chad, “The Relationship Between Fitness Levels And Employee’s Perceived Productivity, Job Satisfaction, And Absenteeism”, Journal of Exercise Physiology, Vol. 6(1) 2003, pp. 24-32.
over a one-year period, were compared to the fitness level of each participant. Stepwise regression analyses using backward elimination were utilized to determine which health-related fitness components predicted productivity, job satisfaction and absenteeism. An alpha level of $p<0.05$ was used to determine statistical significance. It was found that job satisfaction was influenced by the employees' level of cardiovascular endurance, with a beta weight of 0.28, $F(1,133) = 10.90$, $p<0.001$, with less than 8% of variance in job satisfaction being explained by VO$_2$. Productivity was found to be influenced by employees' level of muscular strength, with a beta weight of 0.21, $F(1,133) = 5.36$, $p<0.01$, with less than 8% of variance in productivity being explained by muscular strength level. Absenteeism showed a trend when assessed against employees' level of flexibility, with a beta weight of 0.16, $F(1,133) = 0.40$, $p<0.07$, with less than 3% of variance in absenteeism being explained by flexibility level. This study has identified higher levels of independent components of fitness may positively influence employees' productivity, job satisfaction and absenteeism. Despite the explained variance provided by these variables remaining relatively low, these findings still add valuable insight into the benefits of instituting exercise programs within the work-site.

**Ruzic L. et al. (2003)**$^{47}$, Aim of this study is to determine the possible influence of high physical load in the workplace on the physical fitness of employees. Method: The subjects (494 men) were tested by means of Baecke's questionnaire for evaluation of the Work Index, measuring occupational physical load. The EUROFIT battery of tests was used for testing

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the functional and motor abilities of the subjects. Results: Subjects with a higher Work Index (n=274) performed worse than the subjects with a lower Work Index (n=220), indicating that high physical load in the workplace does not necessarily mean improvement in functional and motor abilities. The "heavy" workers were only found to have a stronger handgrip. This could be attributed to the fact that physical activity performed at the workplace did not have adequate intensity, volume and duration to effect positive changes in other motor and functional capacities.

**Won J.U. et al. (2003)**, This study was conducted to determine whether the size of an enterprise can make a difference to workers' health and to examine those factors, which influence workers' health. The subjects of this study included 26,324 workers employed in manufacturing industry who received medical examinations at the Industrial Health Center at Yonsei University in 1995, 1996 and 1997. Medical examination data were used as a measure of health. Each enterprise was classified by size into three categories: Small scale enterprises (SSE) that employ no more than 50 regular employees; middle scale enterprise (MSE) that employ from 50 to 300 regular employees; and large scale enterprise (LSE) that employ more than 300 regular employees. Health conditions, according to the size of the enterprise, were determined by comparing prevalence rates, and direct standardization methods were used based upon Korean population, as a standard population, in order to adjust for differences in population structure. The findings of the medical examinations showed that, the prevalence rate in SSEs was higher than in MSEs or LSEs, but that this relationship was reversed after standardizing for

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sex and age. Logistic regression analysis showed that, although subjects of advanced age, prolonged work history, and male gender had higher risk of disease, the size of the enterprise had no significant effect upon these risks.

Proper K. I. et al. (2003)\(^49\), objective of their study was to investigate the effectiveness of an individual counseling intervention at the workplace on physical activity fitness and health. Counseling content derived from the Patient-centered Assessment and Counseling for Exercise and Nutrition (PACE) program. A total of 299 employees of three municipal services in the Dutch town of Enschede were randomly allocated into intervention (n = 131) and control group (n = 168). Over a 9-month period, intervention group subjects were offered seven counseling sessions. Counseling was based on the individual's stage of behavioural change using PACE physical activity and nutrition protocols. Subjects in both the intervention and control group received written information about several lifestyle factors. Primary outcome measures were physical activity (total energy expenditure, during sports activities, during physical activity leisure time other than sports, and meeting the moderate-intensity public health recommendations); cardio-respiratory fitness; and prevalence of musculo-skeletal symptoms. Secondary outcome measures were body composition (body mass index [BMI], and percentage of body fat measured via skinfold thickness); blood pressure, and blood cholesterol. Results: There were significant

positive effects on total energy expenditure, physical activity during sports, cardio-respiratory fitness, percentage of body fat and blood cholesterol. No effects were found for the proportion of subjects meeting the public health recommendation of moderate-intensity physical activity, physical activity during leisure time other than sports, prevalence of musculo-skeletal symptoms, body mass index, and blood pressure. It was concluded that individual face-to-face counseling at the workplace based on PACE protocols positively influenced physical activity levels and some components of physical fitness. The implementation of workplace counseling programs for individuals should therefore be promoted.

Davis P. et al. (2004)\textsuperscript{50}, objective of their study was to revise and update the New Zealand Socio-economic Index (NZSEI) in the light of methodological issues in its construction, and to develop an imputation method for use where occupational information in not available. Methods :- Data were drawn from the following New Zealand national surveys : 1996 Population Census; 1996/97 and 1997/98 Household Economic Surveys; 1996/97 Household Health Survey. Three sets of statistical analysis were applied : alternating least squares to generate socio-economic scores; cluster and discriminate function analysis to identify cut-points; and regression and logistic regression to develop and test imputation methods. Results :- Socio-economic scores for the full-time workforce in 1996 showed a different distribution, but much the same occupational ordering, as in 1991. The introduction of part-time and income adjustment multipliers for self-employed

workers significantly affected scores for management and agricultural titles. The application of cluster and discriminate function analysis generated six groupings that were relatively distinct occupationally. An imputation method based on the averaging of scores within age/qualification categories was found to achieve acceptable results. The study concluded that methodological improvements in the construction of NZSEI have enhanced its empirical robustness, while a simple imputation technique has widened the potential application of the scale.

Ekblom O. et al. (2004)51, studied Health-related fitness in Swedish adolescents to assess trends in neuro-muscular and cardio-respiratory fitness and morphological fitness in Swedish adolescents between 1987 and 2001. Methods: Comparison of data from two samples, one from 1987 (n = 479) and one from 2001 (n = 1470). Subjects underwent functional tests of muscular strengths in the lower limbs, trunk and upper body, sub-maximal ergometrics, and measurements of body mass and height. Results: Cardio-respiratory fitness showed only small changes between 1987 and 2001 among boys, with no changes in girls. Neuro-muscular fitness, as measured by three functional tests, was lower in 2001 compared to 1987. The most pronounced changes in these functional tests were found in the arm-hang test, while changes in lower body and trunk strength tests were less. Our results indicate that the difference in the prevalence of overweight in adolescents between 1987 and 2001 is mainly due to a large change in the most unfit group. The

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fittest group showed only marginal changes. It was concluded that the differences in neuro-muscular fitness are at least partly due to differences in the amount and nature of physical activity, and that this might lead to consequences for health later in life.

**Melendez Jeffrey Scott (2004)**, It is well documented that teachers maintain certain attitudes, and that these attitudes may influence their teaching behavior. It is also known that teacher behaviors in the classroom and gymnasium may influence student performance. It is not known, however, if teachers' attitudes are directly associated with student performance. The purpose of this study was to determine if a relationship exists between teachers' attitudes toward fitness testing and student fitness test performance.

A sample of 184 certified, physical education teachers participated in this study. Participants were required to (a) complete and return a previously validated questionnaire designed to determine teachers' attitudes toward fitness tests, and (b) grant the researcher permission to access his or her students' fitness test scores. Once obtained, teachers' attitude scores were correlated with their students Connecticut Physical Fitness Assessment (CPFA) scores.

Results indicated that teachers' maintained mostly neutral attitudes toward fitness tests. Sub-domains of attitude were also measured and indicated that while teachers may have enjoyed using fitness tests results to some extent (4.98 on a 7 point scale), they did not enjoy implementing fitness tests (3.93

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on a 7 point scale). This finding may be due to a general lack of teacher knowledge pertaining to fitness tests, and beckons teacher education programs to increase pre-service teachers' fitness test knowledge through systematic coursework interventions with hopes of positively effecting their attitudes. For in-service teachers, interventions through graduate studies and in-service training may possibly be used to help form more positive attitudes toward fitness tests.

These data also revealed the existence of small to moderate relationship between teachers' attitudes and their students' CPFA performance. Significant relationships were found between each sub-domain of teachers' attitude, and the percentage of students passing all four components of the CPFA. These findings reveal that teachers' attitudes may have some association with students' CPFA performance, and may influence the manner in which the CPFA is administered, and possibly skew student test.

Mc Veigh J.A. et al. (2004)\(^{53}\), studied the relationship between socio-economic status and physical activity patterns in South African Children to examine: (1) the associations between socio-economic status, physical activity, anthropometrics and body composition variables in South African Children; (2) the influence maternal characteristics have on children's physical activity levels; and (3) associations between television watching, activity level and body composition. For this, in 318 South African children, physical activity and socio-economic status were assessed via structured retrospective

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interview using validated questionnaires. An asset indicator score was calculated as a proxy measure of socio-economic status and used to divided children into quartiles. Results: - Children falling into the highest socio-economic status quartile had mothers with the highest educational levels, generally came from dual parent homes, were highly physically active, watched less television, weighed more and had greater lean tissue than children in lower quartiles. A greater percentage of children living in dual parent homes and with mothers of a higher educational status were highly active compared with children living in single parent homes and with mothers of a lower educational status. We found greater levels of lean mass with increased activity level after controlling for television watching time and fat mass. There were high levels of low activity and high television watching time among lower socio-economic status groups. There were significant racial differences in patterns of activity. White children were found to be more active than black children, more likely to participate in physical education classes at school and watched less television than black children. Conclusion: - Physical activity levels and socio-economic variables are closely related in this population of South African Children.

Hemmingsson, T. and Lundberg, I. (2005)\textsuperscript{54} objective: the aim of this study was to analyse the role of risk indicator-associated social mobility in social-economic mortality differences among Swedish men aged 35-50 years. The researchers used data on risk indicators for adult mortality (risk use of alcohol, smoking, low emotional control, psychiatric diagnosis, medication

for nervous problems, experience of unemployment, low body height, low education) collected at compulsory conscription for military training among Swedish men at aged 18-20, fathers socio-economic status at subjects aged 9-11 years, data on subjects socio-economic at ages 34-36 years, and follow-up data on mortality during 1986-1999 (at ages 35-50 years). the results of the study shows that persons in manual occupations in 1985 showed an elevated relative risk (RR) of mortality compared with stable non-manual employees regardless of the social position of their father (RR 1.75 among stable manual workers, and RR 1.74 among the downwardly mobile). In multivariate analysis, taking into account the risk among stable manual workers and also among the downwardly mobile diminishing considerably (RR 1.32 and 1.39, respectively). These results suggest that a substantial part of socio-economic differences in mortality among middle aged men had their origin in childhood circumstances. Risk indicator-associated social mobility was found to contribute substantially to an increase in the relative difference in mortality between male manual workers and non-manual employees.

Wang, N., and Iwasaki, M. (2005)55 Background: a few studies have examined the association of perceived health with socio-economic status, especially income, and social isolation and support in Japan. The purpose of this study was to clarify the associations among perceived health, lifestyle, and socio-economic status, as well as social isolation and support factors, in middle-aged and elderly Japanese. Method: subjects were 9,650 participants aged 47-77 years who computed a self-administered questionnaire in 2000 in the second survey of a population-based cohort (the

Komo-ise study). The questionnaire included items on socio-demographic and socio-economic factors, social isolation and support, lifestyle, past history of chronic disease and perceived health. Perceived health was dichotomized into excellent or good health and fair or poor health. A logistic regression analysis was used to determine the odds ratios of socio-economic status, social characteristics and lifestyle in relation to self-reported fair or poor health. Major findings of the study suggest that household income, physical activity, sleeping, smoking habit and BMI had a strong association with self-reported fair or poor health in middle aged and elderly Japanese men and woman. Male subjects tended to report fair or poor health as household income decreased. The results for women differed in that social isolation and low household income. The results indicated that perceived health was associated with socio-economic characteristics among middle-aged and elderly resident in Japan.

Saastamoinen P. et al. (2005) pain is stronger predictor of reduced work ability and well-being, but there is little information on the prevalence of and socio-economic differences in acute, chronic and disabling chronic pain among employees aged 40,45,50,55 and 60 of the city of Helsinki (N=8970, response rate 67%) included socio-demographic and socio-economic factor and measure of current pain, pain duration and pain-related disability. Pain was acute when lasting a maximum of 3 months and chronic when persisting for more than 3 months. Disabling chronic pain was determined using the disability subscale of Von Korff's Chronic Grade Questionnaire. Acute pain was reported by 15% of women, chronic pain by 29% and disabling chronic pain by 7%. The corresponding figures for men were 12, 24

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and 5%. Chronic and disabling chronic pains were more common in older age groups between both genders. Among women, those with secondary or basic education were more likely to report chronic or disabling chronic pain than those with higher education, and semi-professionals, routine non-manual employees and manual workers were more likely to report disabling chronic pain than managers. Among men, separated/divorced or widowed men more likely to report acute pain than married men, and manual workers were more likely were more likely to report chronic pain than managers. Chronic pain was relatively common in this population, and those with older age, lower education and occupational class appear to be at excess risk for chronic pain, especially for disabling chronic pain.

Rahkonen Ossi et al. (2006)57 The aim of the study was to investigate (1) how much of the association between health and social class is accounted by psychosocial working conditions, and (2) whether health is related to working conditions after controlling for social class. Methods: The data derive from the surveys of the Helsinki health study, collected in 2000, 2001, and 2002 from 40–60 year old employees working for the City of Helsinki (n = 8970, response rate 67%). The study measured occupation based social class and Karasek’s demand-control model. The health outcomes were self rated health as less than good and limiting longstanding illness. Age adjusted prevalence percentages and fitted logistic regression models were calculated. Results: The individual effects of social class and psychosocial working conditions on self rated health and limiting longstanding illness were

strong among both men and women. The relation between social class and both health outcomes considerably attenuated when job control was controlled for, but was reinforced when controlling for job demands. Controlling for both job control and job demands attenuated the relation between social class and self rated health and limiting longstanding illness among women, however, was reinforced among men. **Conclusions:** A substantial part of the relation between social class and health could be attributed to job control, however, job demands reinforced the relation. Although the effect of social class is mediated by psychosocial working conditions, both social class and working conditions were related to health after mutual adjustments.

**Saastamoinen et al. (2006)**, Study objective: Although employees report high rates of pain, little is known about the effects of pain on health related functioning among them. This study examined the effects of pain on employees’ health related functioning by bodily locations of pain, number of painful locations, and whether pain was acute or chronic. **Design:** Cross sectional questionnaire survey. Data on pain and health related functioning as measured with the eight subscales of the short form 36 health survey (SF-36) were obtained in the years 2001 and 2002. **Setting:** Municipal employees of the City of Helsinki, Finland. **Participants:** All employees who reached the age of 40, 45, 50, 55, and 60 years during each study year. Response rate was 66% (n = 5829). **Main results:** Compared with those reporting no pain, those with pain had considerably poorer functioning on all SF-36 subscales. The lowest scores for health related functioning were seen in the physical domain of health, whereas the mental domain was less affected. The association of pain with functioning was practically independent of the bodily

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location of pain. Whether pain was acute or chronic had only a modest effect on functioning. Widest variation in functioning was found by the number of painful locations. **Conclusions:** Among employees pain complaints, irrespective of the location, are associated with a decreased level of functioning. The number of painful locations is likely to be the most useful measure to identify employees with a high risk of poor functioning.

Kapil R.C. and Thakur R. (2007)\(^{59}\), conducted study on Health Status And Health Awareness Among Employees working in Sant Gadge Baba Amravati University, Amravati. The main objectives of the study were: 1) to study the health status of the employees working in Sant Gadge Baba Amravati university. 2) to find out the diseases related with the various system of the human body. 3) to find out the health life style of the employees. 4) to find out the health awareness among the employees regarding their health. Sample comprised of 100 male employees, which were selected through purposive sampling method for the study. Questionnaire which had two parts viz part –A for biodata and medical profile, and part–B for question regarding their health Problem and Health awareness, was prepared by the investigators themselves, and used as a tool for data collection. Percentage was used to analyse the data. Followings were the main findings of the study: 1) most of the employees working in Sant Gadge Baba Amravati university, were grieved by many musculo-skeletal and other diseases. 2) Employees working in Sant Gadge Baba Amravati University showed the negative expression about their health and life style. 3) The employees working in Sant Gadge Baba Amravati University were not aware in regard to their health.