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IMPACT OF A WORKSITE PHYSICAL WELLNESS PROGRAMME ON SICK LEAVE, ABSENTEEISM AND HEALTH-RELATED FITNESS

MA (Biokinetics, Sport and Leisure Sciences) UP 2001

IMPACT OF A WORKSITE PHYSICAL WELLNESS PROGRAMME ON SICK LEAVE, ABSENTEEISM AND HEALTH-RELATED FITNESS

by

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Submitted in fulfilment of the requirements for the degree

Magister Artium (HMS)

in the

FACULTY OF HUMANITIES

DEPARTMENT BIOKINETICS, SPORT AND HUMANITIES

UNIVERSITY OF PRETORIA

PRETORIA

DECEMBER 2001

DEDICATION

This dissertation is dedicated to my husband.

ACKNOWLEDGEMENTS

I wish to express my thanks to the following persons and institutions for their guidance and assistance without which help this study would never have been possible:

MR. B. VAN VUUREN (Promoter): (Department Biokinetics, Sport and Leisure Sciences, University of Pretoria). For his invaluable guidance, motivation, time and unfailing support at all times. It was a real privilege to be his student.

DR. H.J. VAN HEERDEN: Department Biokinetics, Sport and Leisure Sciences, University of Pretoria). For his guidance and intelligent input.

PATIENTS THAT PARTICIPATED IN THE PROJECT: Their involvement and co-operation made this project possible.

MARGE ROPER: For her help with the collecting of the sick leave and absenteeism data.

CHRISTINE SMIT: For her valuable assistance with the analysis of the statistical data.

PATIENTS THAT PARTICIPATED IN THE PROJECT: Their involvement and willingness made the research project possible.

MARIUS DIEPERINK: For the linguistic care of this dissertation.

RANKIN GRACE: For taking the photographs.

MY HUSBAND: A special word of gratitude to my husband, Rankin, for his loving support, motivation and encouragement. Without his help I would not have finished this dissertation.

MY HEAVENLY FATHER: For wisdom. With Him everything is possible.

SYNOPSIS

TITLE	: Impact of a worksite physical wellness programme on absenteeism, sick leave and health-related fitness.
CANDIDATE	: J.M. Grace
PROMOTOR	: T.B.R. Jansen van Vuuren
DEGREE	: M.A. (HMS)

The impact of a physical wellness programme on absenteeism and sick leave in South African companies will remain uncertain until research has provided a firmer foundation than presently exists. We know what exercise does for individuals and that it is cost-effective, but we do not know how it affects the economy of the company or if worksite physical wellness programmes will have a positive impact on sick leave, absenteeism and health-related fitness.

The purpose of this stratified randomised controlled trial was to determine the impact of a worksite physical wellness programme on absenteeism, sick leave and health-related fitness.

Sixty-eight black African males (mean age 44,8 years) performing physical labour were used in the study, with subjects being stratified randomly assigned to either a control group (n=34) or an experimental group (n=34). The control group was requested to continue with their established lifestyles, while the experimental group participated in a 6-month physical wellness programme. It included the attending of one wellness

workshop, the following of a Biokinetic home exercise programme with a frequency and duration of at least three sessions of forty five minutes per week. Both groups were evaluated by means of a questionnaire and a clinical and physical evaluation before the intervention of the physical wellness programme and immediately thereafter. Sick leave and absenteeism data for both groups were recorded and compared before and during the intervention programme.

In general the physical wellness programme induced positive changes in all the parameters tested, with statistically significance ($p \leq 0,05$) in three of the eight parameters.

More specifically, the experimental group showed statistically significant differences ($p \leq 0,05$) in the **clinical and physical evaluation** for systolic blood pressure with the pre- and post test (**pre**: 135 ± 26,85; **post**: 127 ± 19,94) and in the pre- and post with hamstring and lower back flexibility (**pre**: 32,8 ± 9,10; **post**: 34,5 ± 8,23 ($p \leq 0,001$).

The most important statistical significant change was with the pre- and post test of the **sick leave and absenteeism days** ($p \leq 0,01$) of the experimental group (**pre**: 6,3 ± 15,35; **post**: 1,4 ± 3,3) compared to the control group (**pre**: 4,9 ± 5,7; **post**: 4,6 ± 6,03).

In conclusion, the results indicated that a worksite physical wellness programme where a home-based Biokinetic exercise programme was performed, and a wellness workshop addressing all the wellness dimensions was presented, had a positive impact on sick leave, absenteeism and health-related fitness. It is suggested that longer prospective studies are warranted to support this study, specifically the cost-effective analysis and cost-benefit analysis of a worksite physical wellness programme on sick leave and absenteeism. More research is needed to determine what needs to be done in order to help black African men to make the proposed health expected lifestyle changes that coincides with their unique culture. Finally, biokineticists have a contribution to make to the research area of worksite physical wellness programmes.

KEY WORDS: WELLNESS; PHYSICAL WELLNESS; SICK LEAVE; ABSENTEEISM; BIOKINETICS; LOW BACK PAIN; STRESS; HOME EXERCISE PROGRAMME; BLOOD PRESSURE; FITNESS; LOWER-BACK-HAMSTRING FLEXIBILITY; FAT PERCENTAGE.

SINOPSIS

TITEL	:	Die invloed van 'n werkgerigte fisieke welstand program op siekverlof, afwesigheid en gesondheidverwante fiksheid.
KANDIDAAT	:	J.M. Grace
PROMOTOR	:	T.B.R. Jansen van Vuuren
GRAAD	:	M.A. (MBK)

Die impak van 'n fisieke welstand program op siekverlof en afwesigheid in Suid-Afrikaanse maatskappye sal onduidelik bly tensy navorsing 'n beter basis ter ondersteuning bied as wat reeds bestaan. Ons weet wat oefening vir die individu doen en dat dit koste-effektief is, maar ons weet nie tot watter mate dit die ekonomie van 'n maatskappy affekteer nie en of 'n werkgerigte fisiek welstand program wel 'n positiewe invloed op siekverlof, afwesigheid en gesonheidverwante fiksheid het.

Die doel van die eksperimentele epidemiologiese studie was om die impak van 'n werkgerigte fisieke welstand program or siekverlof, afwesigheid en gesondheidverwante fiksheid te bepaal.

Agt-en-sestig swart mans (gemiddelde ouderdom 44,8 jaar) wat fisieke werk verrig, is in die studie gebruik. Die proefpersone is gestratifiseerd ewekansig toegewys aan of 'n kontrole groep (n=34) of 'n eksperimentele groep (n=34). Die kontrolegroep is gevra om voort te gaan met hulle huidige lewenstyl, terwyl die eksperimentele groep aan 'n

sesmaande fisieke welstand program deelgeneem het. Dit het die bywoning van 'n welstand werkswinkel ingesluit sowel as die deelname aan 'n Biokinetika tuisprogram met 'n frekwensie en tydsduur van ten minste 3 sessies van 45 minute per week. Beide groepe is geevalueer deur middel van 'n vraelys sowel as 'n kliniese en fisieke evaluasie voor en na afloop van die fisieke welstand program. Siekverlof en afwesigheid data van beide groepe is voor en tydens die intervensie program vergelyk.

In die algemeen het die fisieke welstand program 'n positiewe verandering in al die parameters wat getoets is te weeg gebring, met statisties beduidende ($p \leq 0,05$) veranderinge in 3 van die 8 parameters.

Meer spesifiek het die eksperimentele groep statisties beduidende verandering ($p \leq 0,05$) getoon in die sistoliese bloeddruk (**voor**: 135 ± 26,85; **na**: 127 ± 19,94) en lae-rug-hampese soepelheid (**voor**: 32,8 ± 9,10; **na**: 34,5 ± 8,23 ($p \leq 0,001$) met die **kliniese en fisieke evaluasie**.

Die mees belangrikste statisties beduidende veskil was met die voor- en na toets in die **siekverlof en afwesigheid dae** ($p \leq 0,01$) van die eksperimentele groep (**voor**: 6,3 ± 15,35; **na**: 1,4 ± 3,3) in vergelyking met die kontrole groep (**voor**: 4,9 ± 5,7; **na**: 4,6 ± 6,03).

Samevattend kan verklaar word dat die resultate daarop dui dat 'n werkgerigte fisieke welstand program waar daar aan 'n Biokinetika tuisprogram deelgeneem is, en 'n welstand werkswinkel aangebied is wat al die welstand dimensies aangespreek het, 'n positiewe impak op siekverlof, afwesigheid en gesondheidverwante fiksheid gehad het. Daar word voorgestel dat langer prospektiewe studies onderneem moet word om die studie te ondersteun, en meer spesifiek die koste effektiewe- en koste voordeel analise van 'n werkgerigte fisieke welstand program op sekverlof en afwesigheid te bepaal. Meer navorsing is nodig om vas te stel wat gedoen moet word om swart mans te help om die voorgestelde gesondheid verwante lewenstyl veranderinge te weeg te bring wat in

ooreenstemming met hulle unieke kultuur is. Ten slotte, Biokinetici het 'n bydrae om te maak in die area van werkverwante fisieke welstand programme.

SLEUTELWOORDE: WELSTAND; FISIEKE WELSTAND; SIEKVERLOF; AFWESIGHEID; BIOKINETIKA; LAE RUGPYN; SPANNING; TUISPROGRAM; BLOEDDRUK; FIKSHEID; LAE-RUG-HAMPESE SOEPELHEID; VET PERSENTASIE.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1

THE PROBLEM

1.1 INTRODUCTION

Cost-benefit analysis and cost–effectiveness analysis are advocated or used with increasing frequency as an aid to resource allocation decisions in the health-care sector. Corporations concerned with generating a profit and surviving in a competitive marketplace are increasingly troubled over the rising cost of employee health care benefits. Some corporations, in an attempt to reduce health care costs for preventable illnesses and injuries are capitalising on the recent trend toward wellness and initiating health promotion programmes for their employees (Tulloch & Healy, 1982). At the same time, more visibility has been given to prevention and a number of reports have suggested that expanded preventative activities could significantly improve the health of the American people (Elinson et al., 1978, Fielding, 1978, Nightingale et al., 1978, Department of Health and Human Services, 1980).

Employers frequently incur both direct economic costs in the treatment of employees who become ill and indirect costs due to absenteeism and sick leave. One of the major arguments in favour of worksite health promotion and wellness programmes is its potential for producing economic benefits that offset or even exceed programme costs (Cole et al., 1987; Warner, 1990).

Research to date strongly supports the positive physiologic and health benefits of regular exercise. Song, et al., (1982) indicated that over the first six months of an employee fitness programme, high adherents to the programme showed a substantial reduction of absenteeism and turnover relative to poor adherents in the same company and to employees in a control company (Song et al., 1982). Exercise in the form of participation

in an employee fitness programme has been related to decreased sickness absence (Shepard et al., 1981, Song et al., 1982), decreased visits to physicians and health care facilities, and reduced health care costs. Linden (1969) found positive associations between exercise and objective productivity parameters such as absenteeism. A pilot study on the impact of a health promotion programme on absenteeism reported favourable changes in physical status, stress management and feelings of well being (Blair et al., 1986). In a presentation to the United States Council on Wages and Price Stability Hearing on Health Care Costs, Dr. R. Keeler (1974) mentioned that the introduction of an employee fitness programme by Goodyear Narrköping, Sweden caused a decrease in absenteeism of nearly 50%. Dr. Pravosudov of the U.S.S.R. provided impressive statistics on employee fitness and absenteeism. He found that those who are not physically active are ill five to six times more than those who exercise (Pravosudov, 1976).

Therefore the cost-benefit analysis of the impact of a physical wellness programme on absenteeism and sick leave in South Africa will remain uncertain until research has provided a firmer foundation than that which presently exists. We know what exercise does for individuals and that it is cost-effective, but we do not know how it affects the economy of the company and if physical wellness programmes will have a positive impact on sick leave and absenteeism. What is the financial bottom line for the company and is the physically fit employee of benefit to the economic health of the organisation for which he/she works?

1.2 PROBLEM STATEMENT

Out of the above mentioned literature it is clear that existing research is limited by the fact that to date no attempt has been made to analyse the impact of a worksite physical wellness programme on absenteeism and sick leave in any South African company. Dreyer (1996) revealed that to date there is no concrete empirical evidence that corporate based wellness programmes show a cost-benefit to companies. With the above motivation, the work is directed primarily towards understanding the impact of a worksite

physical wellness programme on absenteeism and sick leave among black African men. Secondarily, this study will provide answers to the question whether a physical wellness programme will have a positive effect on health-related fitness.

1.3. HYPOTHESES

The following hypotheses are related to the purpose of the study:

1. Subjects exposed to a worksite physical wellness programme will show a difference in sick leave and absenteeism over six months of intervention from those that did not receive intervention.
2. Subjects exposed to a worksite physical wellness programme will show a different health and fitness profile over six months of intervention from those that did not receive intervention.

1.4 DEFINITIONS

The following concepts are related to the study:

1.4.1 ABSENTEEISM

Nel (1973) defines the term absenteeism as being the failure of employees to report on the job when they are scheduled to work. This term is also used to indicate the time lost when sickness or accidents prevent a worker from being on the job, as well as the time that a worker may spend away from the job for any unauthorised reason. However absence may take on a variety of forms, which are not always as easily identifiable and objective as the measurement of labour turnover. The difficulty would appear to arise from the fact that absence may be a measure of unsatisfactory work adjustment, which is difficult to measure, or it may reflect a genuine inability by an individual to be at work.

1.4.2 SICK LEAVE

Sick leave can be defined as the permission to be absent from work or duty because of illness (Linden, 1969).

1.4.3 PHYSICAL WELLNESS PROGRAMMES

Physical wellness refers to an individuals physical health that include optimal physical, biological and psychological functioning. It refers to aspects such as lifestyle, personal behaviour and medical selfcare that can influence a person's muscle strength, muscle endurance, cardiovascular function, flexibility, body composition, energy levels, sleeping patterns, self image and the absence of disease (Eberst, 1984). Several researchers indicated that regular physical exercise has an influence on the abovementioned aspects that referring to physical wellness (Burdick, 1983; Ardell., 1986; Seaward 1988).

1.4.4 HEALTH PROMOTION PROGRAMMES

Defining health promotion is not a clear-cut task; no universally agreed-upon definition of health promotion exists (Lusk, 1995). The meaning of health promotion according to Greenberg (1985) is unclear, because of the ambiguous relationships between health, wellness, illness and disease prevention.

Health promotion programmes are those designed to promote health or reduce illness-producing behaviour (Lusk, 1995). It is the process of fostering awareness, influencing attitudes and identifying alternatives so that individuals can make informed choices and change their behaviour in order to achieve an optimum level of physical and mental health and improve their physical and social environment (American Hospital Association, 1979). Health promotion according to Goodstadt et al. (1987) is the maintenance and enhancement of existing levels of health through the implementation of effective programmes, services and policies. It involves two separate but complementary strategies namely *optimisation* and *integration*.

Optimisation firstly refers to the narrowing of the gap between actual and potential levels of wellness in the one domain or more. This ideal state, which may never be realised, is defined by the individual's personal goals, potentials, and limitations in the different domains of health (Goodstadt, 1987). The second strategy namely *integration* refers to the establishment of a balance or equilibrium among the various domains of health, resulting in an overall or holistic level of wellness on one's life (Perry, 1985).

1.4.5 COST-BENEFIT ANALYSIS

It measures the economic efficiency in monetary units of a programme as a relationship of costs and benefits (Durstine et al., 1993). Cost-benefit analysis is welfare economics and provides a framework for determining whether health promotion programmes are a good economic investment for corporations (Anderson et al., 1977; Sassone et al., 1978).

1.4.6 COST-EFFECTIVE ANALYSIS

Cost-effective analysis measures the value or merit of a programme in non-monetary units (Durstine et al., 1993). It is a means for measuring the extent to which resources allocated to an accepted specific objective under each of several alternatives actually contributes to accomplishing that objective, so that different ways of achieving the objective may be compared (Grayson, 1972).

1.4.7 DIRECT COSTS/BENEFITS

Direct costs or benefits affect the real value of an output and refer to changes in production and/or consumption opportunities in the economy resulting from any project or policy (Sassone et al., 1978; Cohn, 1979). Direct economic benefits include reductions in health care costs, life insurance, disability, workers' compensation and improvements in labour productivity, such as reduction in absenteeism and sick leave (Warner, 1987).

1.4.8 INDIRECT COSTS/BENEFITS

Indirect costs or benefits reflect the impact of the project on the rest of the economy and involve changes in the demand for and supply of goods, services, resources, and factors of production that arise from a particular project (Sassone et al., 1978; Cohn, 1979). According to Warner (1987), indirect benefits include improvements in employee job satisfaction and the ability to recruit healthy motivated employees, and a general polishing of "corporate image" (Warner, 1987).

1.5 LIMITATIONS

The following limitations are related to the study:

1. A paramount consideration is that the experimental group will co-operate and comply to the home Biokinetic exercise programme and follow-up sessions for the duration of the study in order to ensure comparative testable results.
2. The fact that some of the subjects may have HIV/AIDS will have a delimiting effect on the results.

1.6 SIGNIFICANCE OF THE STUDY

Physical exercise and worksite physical wellness programmes according to overseas studies reduce illnesses, absenteeism, improve individual physical and health status, and in the process benefit employees as well as employers. The results of the impact of a worksite physical wellness programme on the prevalence of absenteeism and sick leave in the South African context among black African men will be significant.

Of major significance in this study is whether worksite physical wellness programmes and physical exercise are arguably a unique advantageous situation, good for individual health, good for public health, and good for the economy of South African companies. Thus, a significant selling point and buying consideration for worksite physical wellness

and physical exercise programmes is the notion that it represents sound financial investment, in addition to (and as a result of) enhancing the health of employees. The argument is a simple one: avoidable behaviour-related illnesses impose costs on businesses in the form of higher health insurance premiums, disability, workers' compensation, sick pay and absenteeism.

CHAPTER 2

LITERATURE REVIEW

Economic considerations constitute a significant factor on the businesses' interest in adopting health promotion (HP) and wellness programmes; and in the wellness community's attempts to sell such programming to business. Substantial elements of both the business and wellness communities believe that health promotion and wellness programmes are financially profitable, in addition to, and as a result of, improving employees' health (Warner, 1987).

Companies are eyeing HP and wellness programmes with the prospect of a long-term relationship in mind. While the current relationship hardly qualifies a full-blown romance, casual dating might be a more apt characterisation. Recent evidence demonstrates that limited health promotion programming is fairly common within the corporate sector, particularly among larger firms (Fielding & Breslow, 1983). Furthermore, increasing numbers of major companies are adopting relatively complete models of wellness programming (Warner, 1987).

As with all courting, the future of the relationship between business and health promotion is quite unpredictable. However, as with all budding romances, a mutual sense of optimism dominates expectations. The romance is not one-sided. The business community finds the health promotion community aggressively seeking corporate suitors and quite prepared to arrange marriages. Many elements of the business community are quite receptive. Interest in the business community derives from several economic motivations, as well as less profit-driven concern for the welfare of employees. Interest in the wellness community reflects recognition that, in the 1980's, the workplace is the most promising locus for the development and diffusion of substantial health promotion activity (Warner, 1987).

When the terms of a firm's marriage to wellness programming are being discussed, the business expresses interest in receiving economic gifts as a substantial part of the dowry. The health promotion matchmaker rarely hesitates to offer many such gifts. If economic benefits comprise a major section of the marriage contract, it behoves both bride and groom to be open and honest and well informed about the economic aspects of the intended relationship. Today however, each party possesses only the most rudimentary knowledge of the economics of health promotion programming, and both corporate buyers and wellness community sellers are all too eager to accept the best possible interpretation of the economic gifts that health promotion has to offer. If this interpretation is not realised, and a growing body of evidence suggests that it may not be; one wonders about the long-run stability of the relationship (Warner, 1987).

Examination of the foundation of the above mentioned belief will follow with specific focus on physical wellness and health promotion programmes, as well as the history, nature, significance and validity of wellness and health promotion programming in the workplace.

2.1 PHYSICAL WELLNESS PROGRAMMES

The definition and description of physical wellness according to some researchers are summarised in table 1.

Table 1: Definitions and descriptions of physical wellness.

Seaward (1988)
The physical component forms the "backbone" of wellness programmes. Improvement of people's cardiovascular ability, muscle strength and flexibility forms an integral part of the programme with its focus on the controlling of coronary risk factors and stress. Endurance exercises were promoted as a mode of stress management, which in turn supported the mind-body concept.

Greenberg (1985)
It is the ability to perform daily tasks with energy remaining for unforeseen circumstances: the biological integrity of the individual.
Eberst (1984)
The components referring to this component include the following: • Level(s) of fitness • Presence or lack of disease • Predisposing factors (risk behaviours) • Functionality of body systems • Levels of exposure to abuse (alcohol, stress, radiation)
Ardell (1986)
The benefits of regular exercises and fitness are being emphasised. Guidelines on the improvement of fitness levels are given.
Robbins (1997)
Physical wellness deals with the functional operation of the body. It involves the health-related components of physical fitness namely: • Muscle strength • Muscle endurance • Cardiorespiratory endurance • Flexibility • Body composition It also includes aspects such as diet, sleep, sexual and drinking behaviours.

O' Donnel (1986)
He refers to the following physical wellness aspects: • Fitness • Nutrition • Medical self care • Control of substance abuse

A study of all the different wellness models indicate that physical wellness forms an integral part of total wellness as illustrated by Robbins et al. (1997) and Seaward (1988).

The wellness model of Robbins et al. (1997) is a circle divided in 7 equal parts. Each part represents a dimension of wellness that influences it namely the social, spiritual, physical, occupational, environmental, emotional and intellectual (fig.1).

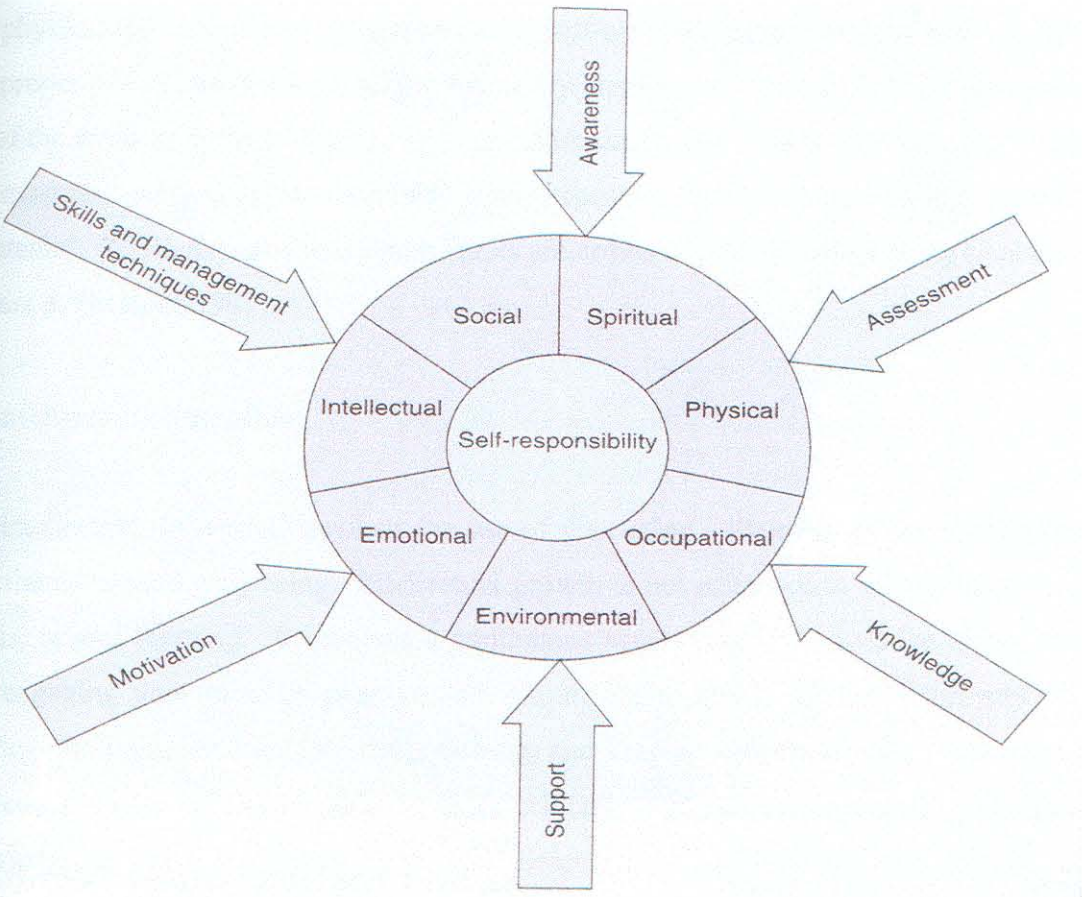

Figure 1: Wellness model of Robbins et al.

Since wellness living is an active process, understanding how each of the factors contributes to your growth in each dimension is important.

- **Physical Dimension**

The physical dimension deals with the functional operation of the body. It involves the health-related components of physical fitness namely muscular strength, muscular endurance, cardiorespiratory endurance, flexibility, and body composition. Dietary habits have a significant effect on physical well being. Your sexual, drinking, and drug behaviours also play a role in physical health. Do you smoke? Do you get an adequate

amount of sleep? Do you catch many colds? These questions deal with physical health. The physical dimension also includes medical self-care like regular self-tests, check-ups, and proper use of medications, taking necessary steps when you are ill and appropriate use of the medical system. Managing your environment also affects physical well being. For example, do you try to minimise your exposure to tobacco smoke and harmful pollutants? Obviously, positive health habits are critical to physical well being (Robbins, Powers & Burgess, 1997).

- **Intellectual Dimension**

The intellectual dimension involves the use of your mind. Maintaining an active mind contributes to total well being. Intellectual growth is not restricted to formal education, that is, school learning. It involves a continuous acquisition of knowledge throughout life, engaging your mind in creative and stimulating mental activities. Curiosity and learning should never stop. Reading, writing, and keeping abreast of current events are intellectual pursuits. Being able to think critically and analyse, evaluate, and apply knowledge are also associated with this dimension. The link between intellectual stimulation and healthy living is undeniable (Robbins, Powers & Burgess, 1997).

- **Emotional Dimension**

Having a positive mental state is directly linked to wellness. Emotional wellness includes three areas: awareness, acceptance, and management. Emotional awareness involves recognising your own feelings, as well as the feelings of others. Emotional acceptance means understanding the normality of human emotion, in addition to realistically assessing your own personal abilities and limitations. Emotional management is the ability to control or cope with personal feelings and knowing how to seek interpersonal support when necessary. The ability to maintain emotional stability at some mid-range between the highs and the lows is essential. The abilities to laugh, to enjoy life, to adjust to change, to cope with stress, and to maintain intimate relationships are examples of the emotional dimension of wellness (Robbins, Powers & Burgess, 1997).

- **Social Dimension**

Everyone, with the possible exception of a hermit, must interact with people. Social wellness involves the ability to get along with others, as well as to appreciate the uniqueness of others. It means exhibiting concern for the welfare of your community and fairness and justice towards others. The social dimension of wellness also includes concern for humanity as a whole. A person has achieved social wellness when you feel a genuine sense of belonging to a large social unit. Good friends, close family ties, community involvement, and trusting relationships go hand in hand with a high-level of wellness. Whereas feelings of isolation and loneliness are linked to ill health, feeling "connected" to a person, group, cause, or even a pet is a health strengthener (Robbins, Powers & Burgess, 1997).

- **Spiritual Dimension**

Spiritual wellness is not always synonymous with religion. The spiritual dimension may not identify a creator, a god, or a theology. Instead, it involves the development of the inner self and one's soul. Spiritual wellness involves experiencing life and reflecting on that experience in order to discover a personal meaning and purpose in life. Why am I here? What path will lead to fulfilment in my life? What is life about? These questions are most often answered within the context of a larger reality beyond the physical and material aspects of existence. Selflessness, compassion, honesty, and the development of a clear, comfortable sense of right and wrong are components of spiritual wellness (Robbins, Powers & Burgess, 1997).

There is a strong connection between spirituality and self-esteem because of the internal feelings of self-worth that occur when a sense of hope, optimism, and morality are developed. Attempts to achieve long-term self-esteem by external constructs of power, socio-economic status, or physical appearance fail. Like all dimensions of wellness, spirituality does not "happen." It is a process of growth requiring time and attention (Robbins, Powers & Burgess, 1997).

- **Environmental Dimension**

The environmental dimension of wellness deals with the preservation of natural resources and the protection of plant and animal wildlife. We all have basic biological needs that include adequate air, water, and food. Our dependence on the automobile, as well as the general industrialisation of our world, has created worldwide pollution and changes in the atmosphere. Habits such as recycling, limiting the use of pesticides, carpooling, and conserving electricity show positive involvement in the environmental dimension of wellness. Demonstrating a commitment to the protection of wildlife and plants is also a component of environmental wellness. We must all take part and encourage others to do the same for the benefit of future generations (Robbins, Powers & Burgess, 1997).

- **Occupational Dimension**

The occupational dimension involves deriving personal satisfaction from your vocation. Much of your life will be spent at work. Therefore, it is important that your chosen career provide the internal and external rewards you value. Do you want a job that allows for creativity, interaction with others, daily challenge, autonomy? Do you prefer opportunities for advancement, personal entrepreneurship, leadership, or helping others? How do you feel about mobility? Is salary your major motivation? Answering these questions may help you with career selection. Occupational wellness also involves maintaining a satisfying balance between work time and leisure time. It involves a work environment that minimises stress and exposure to physical health hazards. A majority of your college life is spent analysing and integrating your skills and interests with career choices. It is vital that your vocational choice be personally enriching and stimulating. If you are not happy with your occupation, you will find that your entire well being suffers (Robbins, Powers & Burgess, 1997).

Wellness is a combination of all seven dimensions. It means striving for growth in each dimension, as well as appreciating the interconnectedness between all of them. Is there one dimension in which you are strongest? Which dimension is your weakest? Neglecting any dimension destroys the balance critical to high-level wellness. Certain dimensions may take on a greater importance at different times throughout your life. Nevertheless, striving for balance contributes to your wholeness (Robbins, Powers & Burgess, 1997).

The wellness concept according to Seaward (1988) comprises of the following four components: mental, physical, spiritual and emotional well being (fig. 2). In addition, the balance and integration of these components to promote and maintain one's optimal potential is important.

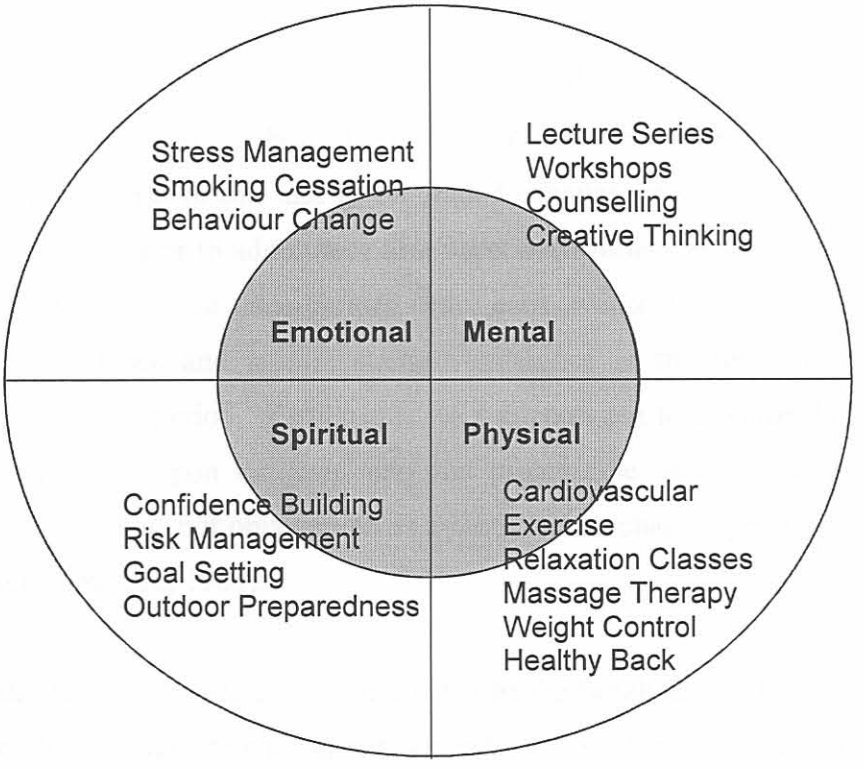

Figure 2: Wellness model of Seaward.

Today's concept of wellness emphasises the importance of the principle that each individual must take responsibility for his/her own health. Of the four components, corporate fitness programming has placed a major emphasis on the concrete component "physical well being," quite often eclipsing the other three (Seaward, 1988).

- PHYSICAL WELL BEING

The common approach to physical well being in the past 20 years has primarily been through physical fitness, with a specific emphasis on cardiovascular endurance. As with other model programmes, the concept of physical well being originated with pre-existing adult fitness classes. These classes, originally designed and administered to reduce or prevent the common risks associated with coronary heart disease, laid the foundation for the preventive aspect of the programme (Seaward, 1988).

This framework was left intact as a stability factor with the understanding that more programme services would be built from this existing structure. Participants were screened for coronary risk factors and given graded exercise stress tests and an exercise heart rate prescription prior to admittance to a supervised fitness class. The three major components of fitness were incorporated into each workout, including flexibility, cardiovascular endurance and muscle strength/endurance in the respective warm-up, stimulus and cool-down period. Participants were encouraged to monitor their progress with fitness appraisals upon entrance into the programme and at regular intervals throughout the year. This not only served as a motivator to chart improvement, but as a database as well (Seaward, 1988).

Although cardiovascular fitness classes originated as the backbone of the programme, it was soon extended to integrate and support several other wellness courses and concepts. For example, endurance exercise was promoted as a mode of stress management, which in turn supported the mind/body concept. In addition, as a result of the assessment of participant needs and to reinforce the self-reliance concept, non-leader-led fitness classes were created. Several fitness classes held theme days in which wellness components

were combined. For example, silent Thursday was a theme day on which participants tried to combine mental and physical abilities. Firstly, mentally attacking a personal concern during the warm-up, and by the end of the work-out, coming up with two viable solutions, all under the limitations of no verbal communication while jogging or walking (Seaward, 1988).

- MENTAL WELL BEING

The premise of this wellness area was expressed as the ability to tap the intellectual capabilities of the mind, to increase one's mental awareness and to promote and utilise mental thought processes. Programmes, lectures and workshops were created to educate participants not only in health-related areas, but also in areas of concern in domestic, work and social environments. They took the opportunity to create a lecture series offering topics from a host of wellness subjects including; Anorexia and Bulimia, Death and Dying, How to Train for a Marathon, Holiday Stress Survival, Spirituality of Fitness, Creative Right-Brain Thinking, Common Athletic Injuries, Dealing with the Fear of Failure, Mythical Fad Diets and the Myths and Fallacies of Exercise. The primary purpose of the lecture series was to create a greater awareness of the selected issues and how best to address them in one's life. At one level, the integration of the mental and spiritual components occurred with the combination of creative thinking exercises and the promotion of self-reliant behaviour. This combination allowed participants to be more accepting of creative ideas and to build confidence to make them manifest into reality. Although results were not quantified, many participants saw this as a major step to increasing their productivity (Seaward, 1988).

- SPIRITUAL WELL BEING

The concept of spirituality often appears to be an abstract essence which health educators regularly refer to as an essential aspect of the wellness concept, yet kept at a safe non-offensive distance. The LIFE-LINE Wellness programme, in an effort to avoid religious limitations, adapted the Jungian approach to spirituality, "a belief system of self-reliance;

a belief system comprised of inner faith, confidence, self-worth, humbleness, patience, intuitiveness, and acceptance." Jung noted that a spiritual crisis was a breakdown in one's own belief system manifested during the absence of one or more of these characteristics which results in a lack of inner peace. Unlike other psychiatrists of his time, Jung understood that man's spirituality was integrated into his psychic wellness (Seaward, 1988).

With the understanding that spirituality was best expressed as *self-reliance,* courses were developed in confidence building and risk management, as well as exercises and events in other programmes which would support the theme of self-reliance. For example, several participants in the jogging and aerobic classes created health and fitness goals geared at strengthening self-reliant behaviour including running road races and trying new activities and other athletic and non-athletic events to reinforce this concept. The fulfilment of these goals brought about a tremendous motivation to further promote this behaviour modification as well as lend camaraderie to other participants (Seaward, 1988).

From one perspective, the spirituality or self-reliance concept permeated the entire programme regarding one of the major goals to ultimately have each participant accept the responsibility for his or her own health (Seaward, 1988).

- EMOTIONAL WELL BEING

The ability not only to express one's emotions productively but also to understand why specific emotions surface, and how best to employ the energy they manifest to benefit the individual and situation are some of the specific approaches to augmenting one's emotional well being (Seaward, 1988).

The component of emotional well being was initially engineered through the concept and vehicle of stress management and relaxation courses and value clarification workshops and extended to short-term counselling on personal matters in a host of various conditions. The approach to stress management was itself holistic. The theme in

teaching stress management was not only to treat the symptoms of stress, but also to recognise and address the causes of stress as well.

With the understanding that up to 70% of all disease and illness is associated with stress, one programme goal was to combine the emotional and physical components with regard to preventive steps to minimise the effects of the stress response. Endurance exercise was used by many participants as a means of training the bodies stress response to adapt to mental and emotional stress through physical stress (Seaward, 1988).

2.2 HEALTH PROMOTION PROGRAMMES

Health promotion programmes are those designed to promote health or reduce illness-producing behaviour (Lusk, 1995). It is the process of fostering awareness, influencing attitudes and identifying alternatives so that individuals can make informed choices and change their behaviour in order to achieve an optimum level of physical and mental health and improve their physical and social environment (American Hospital Association, 1979). Berry (1981) defines health promotion as the application of knowledge from basic, clinical and behavioural science to influence the practices of individuals; groups, families, and communities to prevent illness. Its principal strategy is to motivate individuals to learn to practice life-long positive health behaviour. Berry (1981) further defines health promotion according to the following "approaches to health" pyramid (fig. 3).

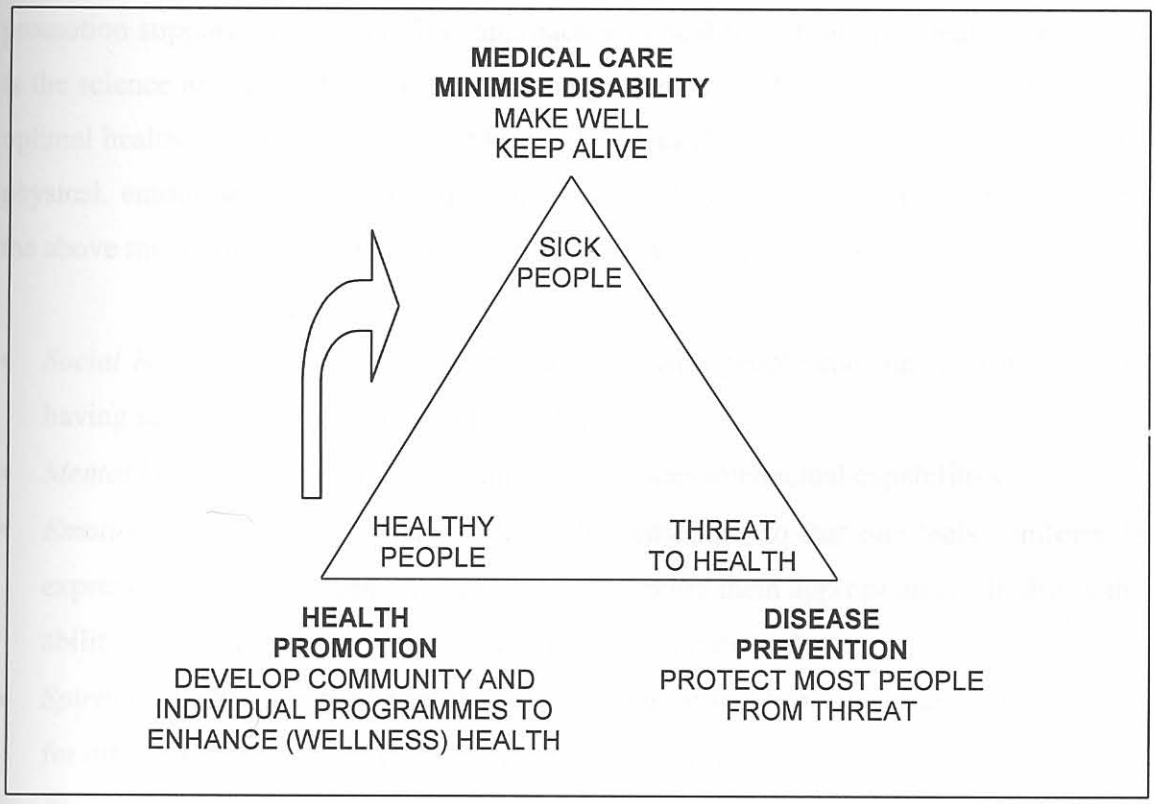

Figure 3: Berry's approaches to health.

The peak which is most visible and where most of today's actions occur is *Medical Care*. It starts with sick people and attempts to keep them alive, get them well and prevent permanent disability.

The right base is *Disease Prevention*. It begins with a threat to health (polio, for instance), and the effort is to keep as many people as possible from becoming victims to threat.

The left base is *Health Promotion*. It start with healthy people, and the effort is to develop programmes to enhance that state of health, and to help individuals achieve their highest functioning level.

The abovementioned "approaches to health" pyramid in this context refers to the broader meaning of health or even to total wellness. O' Donnel's (1989) definition of health

promotion supports Berry's (1981) "approaches to health" definition. Health promotion is the science and art of helping people change their lifestyle to move toward a state of optimal health. Optimal health according to O' Donnel (1989) is defined as a balance of physical, emotional, social, spiritual and intellectual health. Greenberg (1985) supports the above mentioned definition and describes health as a multifaceted concept:

- *Social health:* It is the ability to interact well with people and the environment and having satisfying interpersonal relationships.
- *Mental health:* It is the ability to learn and includes intellectual capabilities.
- *Emotional health:* It is the ability to control emotions so that one feels comfortable expressing them when appropriate and does express them appropriately. It also is the ability not to express emotions when it is inappropriate to do so.
- *Spiritual health:* It is the belief in some unifying force. For some, that will be nature, for others it will be scientific laws, and for others it will be a godlike force.
- *Physical health:* It is the ability to perform daily tasks with energy remaining for unforeseen circumstances; the biological integrity of the individual.

Eberst (1984) illustrates health by means of his "cube" model of health (fig. 4). There are six dimensions to human health namely the physical, emotional, mental, vocational, social and spiritual that is separate, but intimately related, and function synergistically with one another.

These six dimensions are represented on a cube known as Rubiks's Cube. This three-dimensional cube with its six sides represents one of the six health dimensions, and thus allows for all six dimensions to "work" together as a whole. Each face representing one of the health dimensions contain nine smaller moveable sub-elements of the same colour. These sub-elements represent the factors that's influencing each health dimension.

Rubik's cube is held together and interconnected by three intersecting axles. Human health requires a core to support and provide for leverage and articulation of the six health dimensions. Employing this "cube" concept as a model of health, total wellness

(highest level health) in each dimension would theoretically be represented when all of the sub-elements of the entire dimension were the same colour and each was in its proper position.

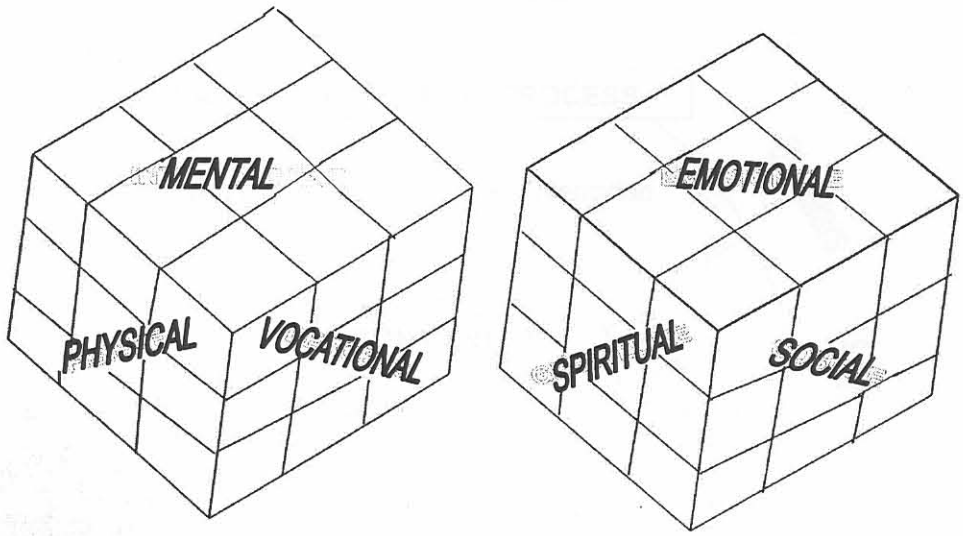

Figure 4: Eberst's "cube" model of health.

Health is also defined as a state of total physical, spiritual and social wellness and not merely the absence of disease (Kulys & Meyer, 1986; Robbins et al., 1997).

Lifestyle changes according to O' Donnel (1989) can thus be facilitated through a combination of efforts to enhance awareness, change behaviour, and create environments that support good health practices (O' Donnel, 1989). He concludes his definition with the remark that of the three, supportive environments will probably have the greatest impact in producing lasting changes.

According to O'Donnel (1986), health promotion programmes consist mainly out of three phases (fig. 5).

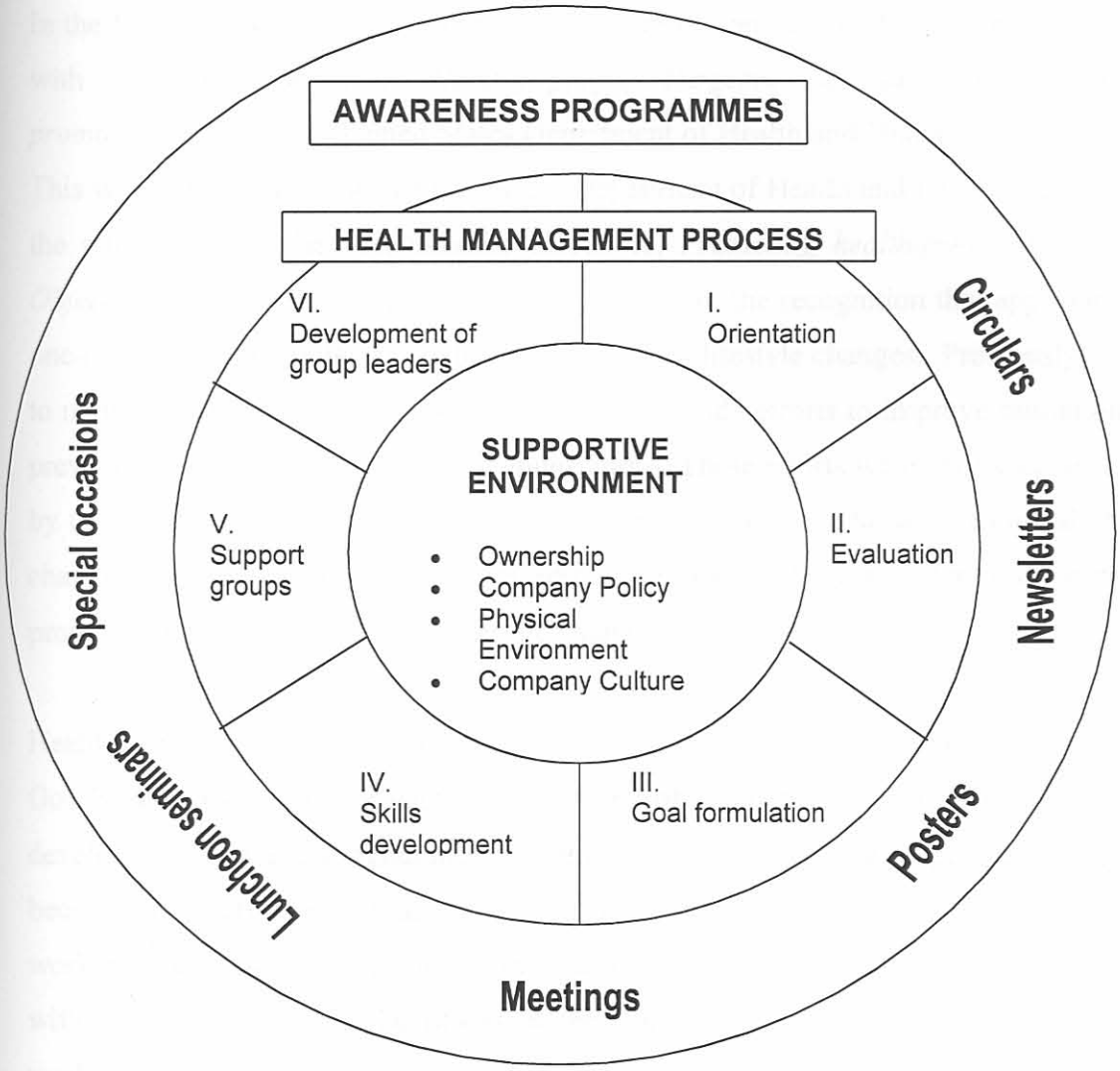

Figure 5: O'Donnel's health promotion model.

The aim of phase I is to enhance the participant's knowledge and to make them aware of how their lifestyles influence their health. Phase II focuses on employer behaviour. It entails the following six steps: evaluation, goal formulating, orientation, the development of skills, and finally, the establishment of group leaders. Phase III concentrates on the establishment of a positive and supportive environment.

2.3 HISTORY OF HEALTH PROMOTION AND WELLNESS PROGRAMMES

In the United States, the national emphasis on health promotion dates to the mid-1970's with the preparation of the *Healthy people: Surgeons General's report on health promotion and disease* (United States Department of Health and Human Services, 1979). This was followed in 1980 (United States Department of Health and Human Services) by the publication of the first national objectives, *Promoting health/preventing disease: Objectives for the nation.* This initiative grew out of the recognition that approximately one-half of premature deaths could be prevented by lifestyle changes. Previously, efforts to reduce deaths had been focused on community-wide efforts to improve sanitation and prevent infectious disease through immunisations. These efforts were very successful, but by the 1970's, offered little more margin for change. Thus, national attention shifted to changing individuals' behaviours; for adults, the logical place to offer programmes to promote healthy behaviours and lifestyle changes was in the workplace.

Health promotion and corporate-funded lifestyle intervention programmes according to Goldbeck (1984) went through four stadiums of generation in the USA. The initial development of these programmes were not aimed at improving employees health, but because of safety precautions employees' were forbid to smoke or to use alcohol on working premises. During this stadium recreation programmes were not implemented with the aim to enhance the fitness of the employees, but to uplift the morale of the workforce.

The focus of the second generation programmes according to Goldbeck (1984), were the identifying of coronary risk factors. Employees' risk factors were identified and once-off intervention programmes (mainly fitness programmes) were incorporated in an attempt to reduce coronary risk factors. These programmes, mainly corporate fitness programmes; a classical example of this second generation programmes, were presented to certain sections of the workforce (Goldbeck, 1984).

The third generation programmes incorporated a broader spectrum of methods in order to reduce health care costs and to increase productivity. The focus during this period were on the total workforce, pensioners, as well as the employees' dependants (Goldbeck, 1984).

The fourth generation programmes were characterised by total wellness as the guiding principle of companies and societies health strategies (Goldbeck, 1984).

In South Africa the prevalence of related research studies on wellness and health promotion programmes are restricted to studies by Strydom and Delport (1986): *Industrial fitness: a new dimension in productivity;* Strydom et al. (1985): *The effect of a 24-week training programme on some physical, physiological and biochemical parameters among executives in the South African motor industry;* Dreyer and Strydom (1992): A *Few physical, physiological and personal experienced advantages of a executive fitness programme.* The Transvaal Department of Hospital Services (1986) researched the health status of the average South African and established a health plan for South Africa. Dreyer (1996), wrote a study guideline for Human Movement Science students called *Total wellness: A conceptualisation.* It addresses the different wellness dimensions.

2.4 FACTORS MOTIVATING WORKPLACE HEALTH PROMOTION

According to Fielding and Breslow (1983), no one knows precisely how much health promotion programming is occurring in the business community. An empirical assessment of the matter requires a sophisticated and elaborate survey, and given the apparent rapidity of change in the adoption of such programming, survey results are likely to be dated by the time a survey can be completed and results released. Furthermore, conceptual issues cloud the issue: there is no widely accepted definition of what constitutes health promotion programming (Davis, 1984). It is clear that if one includes traditional occupational safety and health activities such as production line accident prevention, "health promotion" will appear much more commonplace than if one

restricts attention to health-related behaviour modification (e.g., diet, smoking, exercise) (Fielding and Breslow, 1983). Nevertheless, activity in the latter category is definitely increasing and the survey evidence paints a picture of rapid growth in overall health programming from the late 1970's into the early 1980's (Fielding and Breslow, 1983 & Davis, 1984). Given the intense interest in health promotion programming exhibited since then in both the professional and trade literature, it seems reasonable to measure that the level of new activity has not subsided.

2.5 REASONS FOR COMPANIES' INTEREST IN HEALTH PROMOTION AND WELLNESS PROGRAMMES

The reasons for the business community's interest in health promotion range from the personal health experience of company executives (e.g. the company president starting a fitness programme after surviving a heart attack), to carefully calculated financial assessments that find economic merit in health promotion. Both of these kinds of motivation seem to play significant roles in the adoption and dissemination of workplace health promotion, as do several others. According to Berry (1981), the most important reason is that companies are already involved due to the financial burden imposed on business. Within the professional and trade literature, however, interest concentrated on the economic merits of health promotion and wellness programmes: do they reduce health care costs? Do they decrease life insurance premiums? Do they increase productivity? Do they reduce absenteeism, turnover and disability? (Warner, 1987).

The reasons why it is imperative to conduct health promotion and disease prevention programmes at the workplace according to Berry (1981), is because of the many advantages of such programmes (table 2).

Table 2: Advantages of health promotion at the worksite.

- CONVENIENCE TO EMPLOYEES
- EMPLOYEES PRESUME QUALITY IF COMPANY SPONSORED
- EMPLOYEES VIEW PROGRAMMES AS PART OF PAY
- HIGHER DEGREE VOLUNTARY PARTICIPATION
- POTENTIAL ECONOMIC RETURN OF EMPLOYER'S HEALTH CARE COST
- ***OFFERS CHANCE FOR***:

* SOCIAL SUPPORT FOR BEHAVIOR CHANGE
* ACQUISITION OF HEALTH RELATED DATA
* APPLICATION OF LONG-TERM INTERVENTIONS
* COMMUNICATION ON MASS OR INDIVIDUAL BASIS

The degree of voluntary participation at the worksite has run 90-95% in several surveys, while it averages only 30% for similar community programmes offered free (Berry, 1981). In addition, significant benefits accrue to a company conducting programmes conducive to improving health (table 3). Such benefits are necessary to affect overall reduction in the complex, escalating health care bill for companies.

Table 3: Health promotion benefits to the company.

- DECREASE IN HEALTH CARE COSTS
- REDUCE ABSENTEEISM
- REDUCE TURNOVER OF EMPLOYEES
- INCREASE EMPLOYEE PRODUCTIVITY
- INCREASE EMPLOYEE FITNESS
- INCREASE EMPLOYEE COPING CAPABILITY
- DEMONSTRATE COMPANY INTEREST IN GREATEST ASSET – EMPLOYEES

A recent survey for the American Academy of Family Physicians (Berry, 1984) further underscores the need for such involvement. Six occupational groups were studied, and the worksite was reported as the greatest producer of stress reaction leading to adverse health habits

The treatment of the economic issues within the trade and professional literature is not uniformly analytical. In general, the trade publications have adopted a much more anecdotal approach: they tend to describe individual programmes and draw economic conclusions from often-simplistic evaluations; a distinct flavour of unfettered enthusiasm and advocacy is apparent. The professional journals by contrast, publish many more genuinely analytical assessments of the economic implications of health promotion

programmes, although, as is discussed later in this study, these analyses typically are not sophisticated, nor are they entirely devoid of enthusiasm and advocacy.

2.5.1 ECONOMIC CONSIDERATIONS

The economic considerations of the business community can be categorised as direct and indirect; some of the costs and benefits will be readily measurable while others will not. The most immediate and familiar costs are direct and measurable. This consists primarily of expenditures for programme inputs (labour, supplies, and facilities) and employees' time off from work to participate in the programmes. Less immediate and generally unfamiliar costs are indirect consequences that are measurable in concept but occur so far in the future as to commonly go wholly unrecognised. The principal costs in this category, discussed in the next section, are the pension costs and later health care and disability costs experienced by employees who remain in the job, or alive during retirement, thanks to the success of a health promotion and wellness programmes (Warner, 1987).

The direct economic benefits include reductions in a variety of "insurance" costs, including health care (sick leave), life insurance, disability (short- and long-term), and workers' compensation, and improvements in labour productivity, such as reductions in absenteeism and turnover and increases in the productivity of workers while in the job.

A rather comprehensive classification of absence behaviour according to Venter (1974) includes forms of absence, which occur, and provides a useful framework, which is summarised below:

- Authorised and unauthorised absences

An authorised absence usually refers to a leave facility that is granted to company members. Annual leave is not included in this category, and such absence is normally

unpaid leave, special leave with permission or compassionate leave. Any unauthorised absence is due to an incident that may occur outside a company's leave policy.

- Excused and unexcused absences

This may also be called arranged and unarranged absence, and is very similar to the above category. In an arranged absence, the worker gives advance notice of his intention to be absent and this way he/she enables management to make alternative arrangements. Such excused absence is synonymous with sanctioned absence, either prospectively or retrospectively. Unexcused absence is synonymous with unsanctioned absence and in many companies is commonly termed absence without leave (a.w.o.l.).

- Short and long term absence

This type of absence is said to depend upon the company. The disrupting and unarranged one or two day absence maybe viewed as short-term, while three days or more can be seen as a long-term absence.

In connection with the categorisation of absence, it is important to note that the method or type of classification will largely depend upon the type of firm, the classification used in the past, and the use to which the absence statistics will be put.

Like labour turnover, absenteeism as a form of withdrawal, it is linked to the adjustment of the individual to the work situation, and is also related to length of service. This adjustment of the worker refers to his stability as a worker, rather than the achievement of psychological equilibrium, and as such, this adjustment can be usefully related to his length of service. Hill and Trist (1955) refer to this adjustment as " the progressive internalisation of the stresses of the person-work relationship". A study of this symptom in labour has shown how entrants follow an acclimatisation period through the already-mentioned three phases, namely the induction crisis, differential transit and settled connection phases. When the worker's orientation changes from that of a leaver to that

of a stayer, the employer is now expected to try and maintain the person-work relationship, which may still hold certain negative aspects. Therefore, being a stayer and consequently not desiring permanent withdrawal from the work (that is leaving), the worker resorts to absenteeism as a form of temporary withdrawal.

Such absence from work provides the new employee with a measure of temporary relief from the stresses caused by the work situation. During the induction crisis period, while labour turnover tends to be high, absenteeism is usually low. This understandably due to the worker still being strange and not knowing the organisation culture. However, with increasing length of service, the worker begins to learn this absence culture of the organisation. They also begin to realise that as they become more productive, they are becoming more valuable to the firm, who may now be willing to overlook certain absences. Gradually as the stayer's role is maintained, the sanctioned absence (that which is excused or tolerated) increases while at the same time the unsanctioned absence is a day "taken" while later when absence becomes more sanctioned, a day is "lost". In the one case, the worker is an "offender", and in the other he is a "casualty" states Nel (1973). He adds that absenteeism should be tolerated at times, because it provides some relief, which if denied may result in labour turnover that may be far worse than a predictable level of absence. Thus, it would appear that a more sympathetic and tolerant attitude should be taken towards absenteeism, especially during the early stages of entrance into an organisation, in order to allow the worker to internalise any stress that they may experience in attempting to maintain a good person-work relationship.

In studying absences Nel (1973) postulates that while absentees may be a category of stayers who experience trouble in adjusting to the stresses of the work situation, and therefore consciously seek a means of temporary withdrawal, there also exist various related factors which may be classified as incentives to attendance or barriers to adjustment. Such factors are many and varied, and they can all be conveniently categorised into personal and home factors, work factors and internal and external organisational factors. While not delving into any depths concerning the numerous factors that fall under these three broad headings, it may nevertheless be seen that

absence can be a function of many factors that may, and in some cases may not, be under the control of management.

In industry, for any investigation of absenteeism to be truly effective and for diagnoses to be carried out properly, it is necessary that a clear definition of each type of absence exists and also that proper control procedure are established. While many uses exist for absence statistics, there are mainly two reasons why statistical diagnosis of absence is carried out. The first of these is an attempt to determine the extent to which employees are staying away from the work, and the second reason is to find out whether absence has risen to above the expected level (Venter, 1974).

For the purpose of this study unauthorised, unexcused absence, short and long term absence were taken into consideration when absenteeism was determined.

The Basic Conditions of Employment Act of, No 75 of 1997 stipulates the following with regards to sick leave in South Africa:

"1. A sick leave cycle means the period of 36 months employment with the same employer immediately following an employee's commencement of employment; or the completion of that employee's prior sick leave cycle.

1. During every sick leave cycle an employee is entitled to an amount of paid sick leave equal to the number of days the employee would normally work during a period of six weeks.

2. Despite subclause 2, during the first six months of employment, an employee is entitled to one day's paid sick leave for every 26 ordinary days worked.

3. During an employee's first sick leave cycle an employer may reduce the employee's entitlement to sick leave in terms of subclause 2 by the number of days sick leave taken in terms of subclause 3.

4. Subject to subclause 8, an employer must pay an employee for a day's sick leave –

5a) the ordinary wage the employee would have received, excluding any allowance.

5b) on the employee's usual payday.

5. An agreement may reduce the pay to which an employee is entitled in respect of any days absence in terms of this clause if the number of days of paid sick leave is increased at least commensurately with any reduction in the daily amount of sick pay: and

6 a) the employee's entitlement to pay -

- i. for any day's sick leave is at least 75 percent of the wage payable to the employee for the ordinary hours the employee would have worked on that day; and
- ii. for sick leave over the sick leave cycle is at least equivalent to the employee's entitlement in terms of subclause 2.

6. An employer may, as a condition precedent to the payment by the employer of any amount claimed in terms of this clause by an employee require the employee to produce a certificate signed by a registered medical practitioner, or any other person who is certified to diagnose and treat patients and who is registered with a professional council established by an Act of Parliament stating the nature and the duration of the employee's incapacity: in respect of any absence from work; -

7a) on more than two consecutive working days; or

7b) on the working day immediately preceding or the working; day immediately succeeding, in the case of:

- i) a security officer a free period, public holiday or Sunday;
- ii) any other class of employee a Sunday or public holiday.

8. When an employee has, during any period up to eight weeks received payment in terms of this clause on two or more occasions without producing such a certificate, an employer may during the period of eight weeks immediately succeeding the last such occasion require the employee to produce such a certificate in respect of an absence from work."

For the purpose of this study the abovementioned aspects were taken into consideration when sick leave was recorded.

Indirect economic benefits include improvements in employee job satisfaction and the ability to recruit healthy, highly motivated employees, and a general polishing of "corporate image" (Warner, 1987).

While each of these economic factors receives attention in the business community, clearly the driving force in the business' economic interest in health promotion is health care costs, their level, and their rate of growth. Employees in the United States of America pay about 80% of all private health insurance premiums (Clement & Gibbs, 1983), thereby assuming responsibility for between one-fifth and one-fourth of the American nation's entire bill for personal health care services, estimated at more than $400 billion in 1985 (Arnett et al., 1985). Depending on the nature and depth of coverage, area of the country, and other factors, employers annually pay out up to several thousand dollars per employee, including their dependants, and retirees approach $5000 per active employee in health care expenditures. At Ford Motor Company, as one high-cost example, the annual cost of health care for employees, including their dependants, and retirees approach $5000 per active employee (Warner, 1987).

While the cost of health care is a source of substantial current concern, the rate of growth in health care costs is the added dimension that has activated the business community to

seek means of containing their health care costs. In the two decades since 1965, while the Gross National Product rose by a factor of 5.8, national health expenditures increased tenfold. Most recently, in the first four years of the current decade, Gross National Product rose by just over one-third (36.7%) and health expenditures grew by almost two-thirds (65.3%) (Arnett et al., 1985). As the nation's principal buyer of private health insurance, business in general has shared this national experience, and indeed contributed to its evolution. However, many businesses have experienced much more rapid growth in their health care liabilities, reflecting such factors as the expansion of employee health benefits and the ageing of work forces (Warner, 1987).

The business community has adopted, and is exploring, a wide variety of approaches to containing health care costs and their growth. Prominent among these is utilisation of Health Maintenance Organisations and Preferred Provider Organisations, insurance incentives including deductibles and co-payments, utilisation review programmes, ambulatory surgery, and second-opinion surgery programmes. For each of these, cost containment is the sole significant objective; improvement in employees' health is either incidental or even contrary to expectation. Health promotion, by contrast, is expected to achieve cost containment benefits through improvements in employees' health. Indeed, it can be argued that it is precisely this duality, the cost containment potential and prospective health benefit that makes health promotion a candidate for consideration as a cost containment measure. For a number of reasons that will emerge later in this study, it seems unlikely that health promotion would be considered a viable competitor to alternative delivery systems and insurance incentives if it had to compete solely on the basis of health care cost containment potential.

2.5.2 OTHER CONSIDERATIONS

Several important motivators of business health promotion should not be characterised as being primarily economic in nature, although an underlying concern with economic implications may play a role in each. In their survey of Colorado businesses, Davis et al. (1984) found that, among the companies having existing health promotion programmes,

improvement of employee health was by far the leading reason for initiating the programme, identified by 82% of the firms. The second most common reason was to improve employee morale (59%), and three additional common responses also have a non-economic flavour: response to employee demand or interest (33%), to be part of an innovative trend (32%), and to improve the business' public image (20%). Thirdly, economic considerations also rated highly: reduction of health care costs (57%), reduction of turnover and absenteeism (51%), and improvement in productivity (Davis et al., 1984).

When Davis et al. (1984), queried companies not having health promotion programmes but expressing interest in starting them, the relative weights of the motivating reasons shifted considerably. Improvement in employees' health remained the number one attraction (68%), but only by an insignificant margin over the principal economic concern: reducing health care costs (67%). The next two factors were also economic: improving productivity (64%) and reducing turnover and absenteeism (57%). The second leading reason among the firms that had programmes was to improve employee morale. It fell to fifth place among firms contemplating programmes (52%). Only one-tenth to one-fifth of the respondents acknowledged the other non-economic reasons (Davis et al., 1984).

Among the potential explanations of the differences between firms with and without programmes is the possibility that the firms that had already made a commitment to employee health promotion programmes were simply more selflessly interested in the welfare of their employees. Conceivably, they were larger and/or more profitable, and hence under less pressure to be concerned with the bottom-line implications of health promotion. It is also plausible that their experience with health promotion programmes had led them to appreciate the employee benefits more than the economic ones; perhaps the former were more self-evident. In any case (and many other explanations can be offered), if the difference is more than an anomaly in the group of businesses studied, the finding suggests that economic considerations may play an increasingly important role in the future growth of workplace health promotion. The unavailability of a more refined

breakdown in the published study, however, makes this conclusion highly conjectural. (Warner, 1987).

The cynic might argue that all of a firm's actions ultimately derive from a concern with "the bottom line" and that the ostensibly altruistic motivations noted earlier are actually economic at their core. A more charitable, and likely realistic, reading is that underlying motivations vary substantially from firm to firm and from one executive to another within a firm. There is little doubt that a genuine interest in the welfare of employees has motivated some of the firms that have thus far adopted health programmes (Warner, 1987).

An additional factor related to employee welfare is responsiveness to the health promotion objectives of organised labour; a more specific instance of what Davis et al. (1984) categorised as "response to employee demand or interest." Health promotion programming can be an item included in labour contract negotiations. While it does not compete in importance with the bread-and-butter issues, nor with basic benefits, several recent major contracts have included provisions pertaining to health promotion. The future of labour demand for health promotion rests in large part on convincing labour of the desirability of health promotion programming. This may be most difficult for the employee groups that might derive the most benefit from health promotion, e.g., blue-collar assembly line workers.

Certainly an important factor in the growth of workplace health promotion has simply been the "fad." This is reflected in the finding of Davis et al. (1984) that one-third of respondent companies that had adopted health promotion programmes identified the desire "to be part of an innovative trend," and that 11% of companies expressing interest shared this motivation. The fad of health promotion has spread into many sectors of our society, as is seen in the evolution of health promotion agencies in the federal and state governments, in the televised pitch for "healthy" breakfast cereals, in the booming sales of jogging shoes, and in the everyday behaviour of consumers. Thus, in part the popularity of health promotion and wellness programmes in business is simply a

reflection of a broader societal acceptance of the health promotion message (Terborg, 1986). The Occupational Health and Safety Act of South Africa (1986), stipulates that it is the employers responsibility to provide such information, instructions, training and supervision as may be necessary to ensure, as far as is reasonably practicable, the health and safety at work of his employees. Ultimately, the future of health promotion in the workplace likely rests as much on this general proclivity toward fitness as on its inherent health and economic benefits (Terborg, 1986).

2.6 REASONS FOR THE WELLNESS COMMUNITY'S INTEREST IN THE WORKPLACE

The workplace has many inherent attractions to health professionals interested in promoting the wellness movement. In addition, in an era of less government and more reliance on private sector voluntarism, the prospect of enlisting business support for health promotion becomes increasingly attractive, or essential.

The two most fundamental attractions of the workplace are the length of time that people spend there and the fact that, while there, they constitute a "captive audience," in both physical and psychological dimensions. The time factor is self-evident: during the work week, the typical worker is at work one-third or more of the day; close to 50% of the waking hours are spent working. The "captive audience" feature refers both to the fact that people are regularly physically present, with the use of their time often prescribed by some superior, and they are subject to powerful influences encouraging conformity (Warner, 1987). The latter can include peer pressure, reflecting the natural community that often exists within the work setting, the shared norms and values, and also employer-provided incentives, including financial inducements to participate in a health promotion programme and non-financial encouragement such as use of company time or facilities (Warner & Murt, 1984). That time influences encourage participation and compliance is indicated by surveys that find consistently higher levels of both participation and compliance in workplace health promotion programmes than in similar programmes offered in the community (Hartman, 1984).

A third attraction of the workplace is that the labour force consists of groups believed to be either highly receptive to health promotion efforts (i.e. white collar) or very much in need of them in terms of the prevalence of unhealthy behaviours (i.e. blue collar). With either motivation or need high, the potential to have a substantial impact is believed to be great. The attractiveness of the workplace in this regard could decrease over time if wellness could be inculcated in another captive audience like school children, since increasingly smaller proportions of the work force would then reach the working years burdened with the kinds of habits that health promotion programmes address (Warner, 1987).

Other features of the workplace add to its potential as a locus of health promotion. The daily gathering of workers, already noted, facilitates communication about, delivery of, and compliance with programmes, as does the existence of internal communications systems effectively in place (e.g. company newsletters and informal word-of-mouth networks). The workplace adds convenience to the factors already mentioned: commuting time, travel costs, and the psychological barrier of having to get from one place to another are all avoided. Finally, medical personnel are often already present, so that a health promotion programme can be integrated into an established company concern with employee health. This lends credibility to the effort, in addition to taking advantage of existing resources (Warner,1987).

A final attraction of the workplace is the ready opportunity to introduce a variety of incentive programmes to foster participation and compliance. To date, the notion of motivating health promotion participation or compliance through the use of specific incentives has received limited attention. Examples of incentives that have been offered in the business community include paying employees a weekly bonus if they do not smoke on the job and the offering of prizes to the competing group within a firm that manages to lose the most collective weight. The holding of a lottery for an all-expense-paid vacation for employees who sign a pledge to wear their seatbelts, assuming that the employee group as a whole attains a pre-specified level of belt use. Given the large number of diverse kinds of businesses, and of employee populations, there is an

opportunity to introduce a large and varied set of health promotion incentives. Evidence accumulated to date suggests that incentives can play an effective role in motivating behavioural change (Warner & Murt, 1984).

2.7 EXAMPLES OF COMPANY HEALTH PROMOTION AND WELLNESS PROGRAMMES

A concerned employee may say that all of the foregoing sounds good, but is anybody conducting any such programmes now? The answer is a resounding "yes!" You will not be the first, no matter which programme you elect to try.

The Washington Business Group on Health (1987), reported a survey of industry-sponsored health promotion, prevention and education programmes in 59 of its member companies. Sixty percent of the companies had medical departments, 76% require pre-employment physical examination, but it could not be determined from the survey whether this was used as a health promotion tool. Thirteen programmes were listed in the survey. The most frequent offered programme was CPR (cardio-pulmonary-resucitation) at 85%; while education on how to use health services was lowest at 34%. Fifty percent or more offered nutrition, obesity control, smoking cessation, exercise, safety, immunisation, hypertension and breast self-examination programmes. Almost half of the health promotion programmes have been initiated since 1975. Immunisation and safety programmes originated prior to 1970, but all the others began after that time. The most common source of funding was the medical department, not pre-paid health insurance benefits.

Still-what about the company without a medical department? Only 12% (850) of all companies with 500 or more employees have full-time physicians. Only 18% employ part-time physicians, and the other companies none. Even with physicians and nurses present, little company time is spent on health education of employees. Only about 50% of the larger companies (over 1000 employees) provide education for health, and of the smaller companies (fewer than 1000 employees), barely 15% offer a programme. There

is lots of room for growth and improvement in health promotion within the business community (Washington Business Group on Health, 1987).

Several companies have comprehensive programmes aimed at overall health and reduction of risk factors for coronary heart disease, accidents and other health problems. Examples are:

2.7.1 THE JOHNSON & JOHNSON LIVE FOR LIFE PROGRAMME

The LIVE FOR LIFE programme according to Wilbur (1983) is part of a comprehensive cost containment strategy. Its mission is to provide direction and resources to Johnson & Johnson employees and families that will result in healthier lifestyles. An important benefit is that the programme can help contain illness care and related operating costs. LIVE FOR LIFE is a component of a general approach that includes employee assistance, workplace safety efforts, benefits design, and traditional occupational medicine.

The specificity of LIVE FOR LIFE's mission helps management focus on very simple questions, such as what lifestyle changes will help contain costs the most, and how can these changes be achieved effectively and efficiently? Because the primary goal is cost containment, answers to these questions are continually sought and evaluated. A dynamic, rather than static programme management process results. Current programme objectives (i.e. improved nutrition, weight control, fitness, smoking cessation, stress management. and blood pressure) will undoubtedly change as evidence accumulates on the relative impact of these or other lifestyle changes on illness care and other operating costs.

LIFE FOR LIFE is managed by numbers. During its initial phase it is being carefully evaluated in terms of its impact on employee health and its overall cost benefit to the corporation. This commitment is rooted in the two primary goals with which the programme was begun in early 1979:

(a) to provide the means for Johnson & Johnson employees to become among the healthiest in the world,

(b) to determine the degree to which LIVE FOR LIFE is cost beneficial.

A 2-year epidemiological study is being conducted to evaluate the impact of the LIVE FOR LIFE programme on a wide range of employee health and lifestyle characteristics. These variables, which are collected annually, include *biometrics* (e.g. blood lipids, blood pressure, body fat, weight, and estimated maximum oxygen uptake) and *behavioural* (e.g. smoking, alcohol use, physical activity, nutrition, coronary prone behaviour pattern). Finally, *attitudinal* measures (e.g. general well being, satisfaction with job performance and working conditions, company perception and health attitudes) are conducted. Using a quasi-experimental design, four Johnson & Johnson-affiliated companies receive the complete LIVE FOR LIFE programme, while three companies participate as "controls." Health and lifestyle information is collected at all epidemiological sites at baseline and at the end of years 1 and 2. Approximately 4 000 employees are involved in the epidemiological study sample, almost equally divided between control and active sites. Results are being analysed at this time.

Work is also underway to measure the costs and benefits of LIVE FOR LIFE. Since Johnson & Johnson is self-insured for illness care costs, any changes in the number or dollar amount of illness care claims attributable to a positive health programme are of considerable interest as a measure of programme benefit. Other potential benefit measures include rates of absenteeism, turnover and accidents as well as a host of employee and management attitudes about themselves, their work and one another.

The objective of economic evaluation is to assess relationships between epidemiological variables and cost. Specific goals include:

(a) measurement of economic differences among individuals with different biometric, behavioural and attitudinal measures at baseline,

(b) determination of economic changes for treatment and control groups over the 2-year evaluation period,

(c) development of predictive models for quantifying excess costs and projecting potential economic benefits for different amounts of biometric, behavioural and attitudinal changes.

Over the long term, their strategy is to merge the epidemiological and economic databases into a human resource management system. It would project the potential economic benefits of employee health improvements and monitor LIVE FOR LIFE's performance in achieving desired results. Projecting economic benefits enables management to make prudent programme spending decisions. Effective cost containment efforts require a human resource management system where basic measures (dollars) are consistent with those used in conventional business decision making.

LIVE FOR LIFE is furthermore a health marketing process designed to maximise employee participation in healthful lifestyles. The process is built on fundamental marketing considerations. First, the "product" is well defined. It consists of comprehensive health information and educational services, integrated for product identity purposes, under the theme LIVE FOR LIFE. A colourful "rainbow" logo increases product recognition and is prominently displayed on all materials and activities. They want employees to think of positive health when they see the logo. Second, the product is priced to sell. Positive and immediate benefits of programme participation are emphasised. Moreover, minimising barriers to participation is a key consideration in the design and delivery of services. Third, LIVE FOR LIFE promotion is pervasive throughout the workplace. All means of communication are considered, including statements from the company president, prestigious testimonials, signs, flyers, newsletters, and displays. Communications are selectively targeted toward the needs of different employee segments. Finally, programme services are distributed in multiple ways to maximise penetration. Services range from formal group programmes to less formal, individual consultation programmes, do-it-yourself reading kits, telephone

consultation programmes, newsletters, and informal health fairs, information displays, and special events. The following indicates how the LIVE FOR LIFE marketing process works.

2.7.1.1 SALES PRESENTATION TO COMPANY MANAGEMENT

The sales process begins with a presentation to a company's management board. The management board is asked to make three commitments: financial resources, management time and responsiveness to employee requests for the creation of a worksite environment more supportive of good health.

2.7.1.2 SELECTION OF VOLUNTEER LEADERS

A management board member, often the Vice President of personnel, is assigned operational responsibility for LIVE FOR LIFE. The employer recruits a small group of talented middle managers and labour leaders to serve as a voluntary task force. They are assigned responsibility for managing their company's programme.

2.7.1.3 HEALTH SCREEN

For most employees, the LIVE FOR LIFE process begins with participation in the Health screen. The Health screen is promoted as a unique opportunity for all employees to find out how healthy they are and to learn a tremendous amount about health in the process. The screening is offered on company time and takes about 1 hour to complete. The wide range of health, lifestyle, and attitudinal measures collected during the Health screen has been described. The LIVE FOR LIFE corporate staff are responsible for providing the Health Screen service. Company leaders bear primary responsibility for the organisation, promotion, recruitment, and scheduling of employees into the Health screen, although LIVE FOR LIFE corporate staff is available to provide extensive advice and logistical assistance. An 80% participation rate is the recommended target.

2.7.1.4. LIFESTYLE SEMINAR

The LIVE FOR LIFE process continues with a Lifestyle seminar that is usually scheduled about 6 weeks after an employee completes the Health screen. The Lifestyle seminar is the primary vehicle for introducing employees to the programme. Personal responsibility for health is emphasised, especially within the context of a programme in which the company has committed itself to creating a work environment rich in opportunities to improve and maintain personal health. Employee health screen results are returned at this point via an attractive document called a Lifestyle Profile. The Lifestyle Profile is presented as a way to determine "how healthy you are" and provides the basis for taking action to improve health through LIVE FOR LIFE participation. Upcoming LIVE FOR LIFE health enhancement opportunities are reviewed and promoted. The Lifestyle seminar is offered on company time to groups of about 50 employees each and takes about 3 hours.

LIVE FOR LIFE corporate staff is responsible for conducting the Lifestyle Seminar and ensuring that each employee who participated in the Health Screen receives his Lifestyle Profile at this point. Company leaders are primarily responsible for the promotion, recruitment, and scheduling of employees into the Lifestyle seminar. They are also responsible for presenting to employees, the health enhancement opportunities available through their companies LIVE FOR LIFE Programme during the coming year. A target of 75% employee participation is recommended.

2.7.1.5 LIFESTYLE IMPROVEMENT PROGRAMMES

An essential component of the LIVE FOR LIFE process is the ongoing opportunity for employees to improve or maintain their health through participation in formal programmes. LIVE FOR LIFE Action programmes are offered regularly in smoking cessation, weight control, stress management, nutrition, exercise, and high blood pressure control. Action programmes are distributed in a variety of formats, including groups individual consultation, self-help kits, and the telephone. In addition to Action

programmes, LIVE FOR LIFE regularly offers a wide range of shorter educational and promotional programmes built around such themes as breast self-examination, biofeedback, nutrition, blood pressure, and carbon monoxide analysis for smokers.

LIVE FOR LIFE corporate staff is responsible for making available to participating companies carefully tested programmes as well as trained professionals to conduct the programmes. Moreover, LIVE FOR LIFE corporate staff conduct ongoing audits to ensure that all lifestyle improvement programmes meet established quality and performance standards. A report on the quality and performance of all lifestyle improvement programmes supplied by LIVE FOR LIFE corporate staff is issued to company leaders regularly.

Company leaders are responsible for the ongoing selection, promotion, recruitment, and scheduling of employees into lifestyle improvement programmes. They need not select programmes available through LIVE FOR LIFE corporate staff. The strategy is to offer a combination of lifestyle improvement programmes that achieve high employee participation and, as a consequence, fundamentally restructure the social environment at work.

First year participation targets include:

- Weight control: 25% of all overweight employees
- Smoking cessation: 20% of all employees who smoke
- Stress management: 20% of all employees
- Exercise: 40% of all employees
- Blood pressure: 75% of all hypertensives

2.7.1.6 PROGRAMMES FOR SUSTAINED PARTICIPATION

The introduction of a novel health promotion programme like LIVE FOR LIFE invariably creates widespread employee interest and involvement. The challenge is to

sustain high programme participation after the novelty wears off and initial enthusiasm subsides. Company leaders, in consultation with the LIVE FOR LIFE corporate staff, begin planning ways to sustain participation during the early phases of programme development and execution. One popular programme is an incentive system. In business, regular feedback to employees on their performance has been shown time and again to be a critical aspect of sustaining and improving performance over time. This basic management principle also applies to health. Employees participate in lifestyle improvement programmes to the extent that they perceive positive consequences (feedback) for doing so. Many employees find a structured incentive system to be a powerful source of positive consequences. Participating in various LIVE FOR LIFE activities can earn "points," and non-monetary incentives like programme T-shirts, key chains, and umbrellas can be awarded to those employees who earn a predetermined number of "points."

Regular feedback to company leaders and management on programme performance is also a necessary feature to sustain participation. Company leaders are more enthusiastic and committed to programme promotion when they receive regular information on their success to date. Positive consequences for leaders are directly linked to evidence that their volunteer efforts are paying off. In the short run, regular reports of programme participation and results, such as the number of employees attending weight control programmes and the average weight loss, provide essential feedback. Over time, a concise summary of overall programme impact on employee health and lifestyles is a richly satisfying reward for leaders. LIVE FOR LIFE corporate staff is responsible for supplying regular feedback reports to company leaders and their management.

Another method for sustaining programme involvement is regular follow-up. LIVE FOR LIFE corporate staff has developed a system whereby all employees who participated in lifestyle improvement programmes are contacted by phone or mail at regular intervals after the completion of that programme. The primary purpose is to provide participants with a minimum structure through which they can report progress in sustaining the lifestyle improvements (e.g. weight loss, smoking cessation, regular exercise) that were

initially achieved during the structured Action programme. The follow-up system also serves to reinforce the key lifestyle activities considered essential to sustained lifestyle improvement (e.g. regular weighing and counting calories in weight control, regular practice of stress management skills). Moreover, regular follow-up provides programme management with valuable information on effectiveness over a period of time.

Of equal importance to sustained improvement of living habits is the need to establish a mechanism for replacing programme leaders. Leadership assignments should last no longer than 1 year. Plans are developed early for the orderly transfer of management responsibility from one set of leaders to another. Part of this process may involve hiring permanent personnel to assume many of the daily administrative duties of the programme following the introductory phase. This person(s) may direct fitness activities as well as co-ordinate other programme activities. A permanent person assigned LIVE FOR LIFE responsibilities, either full or part time, ads much-needed continuity to the programme over time.

2.7.1.7 CREATING A HEALTHY ENVIRONMENT

The primary responsibility of company leaders is to create a work environment that supports and encourages positive health practices among the greatest number of employees possible. Offering regular, convenient, and attractive lifestyle-improvement programmes will go a long way toward creating a positive social environment based on high employee participation. Other aspects of the work environment are targets for improvement as well. Examples of environmental improvements in key areas include:

Fitness

- Shower and locker facilities on site
- Exercise facilities either on site or rented from local organisations

Weight Control/Nutrition

- Scales in restrooms

- Availability of convenient nutrition information where food is sold
- Availability of nutritious foods in the company cafeteria and vending machines

Stress management

- Employee Assistance Programme to provide professional treatment and referral services to troubled employees
- Availability of management training programmes designed to improve supervisor-supervisee relations
- Flexitime
- Carpooling
- Self-administered blood pressure equipment

Smoking Cessation

- A clearly stated smoking policy
- Availability of LIVE FOR LIFE "Thank You For Not Smoking" signs

Publicity

- LIVE FOR LIFE newsletter
- LIVE FOR LIFE bulletin board and information display area
- Comprehensive recruitment brochure
- Health fairs
- Poster displays for upcoming programmes

2.7.1.8 CONCLUSION

LIVE FOR LIFE is an active, health promotion process at work within the Johnson & Johnson family of companies. Economic and epidemiological studies are in progress to estimate its true impact on employee health and illness care and other operating costs. Management perceptions of benefits have already fuelled a steady expansion. In 1979, LIVE FOR LIFE was available to 2 000 employees at three locations. By the end of 1982, management at 22 locations had decided to make LIVE FOR LIFE available to 16

000 employees. Current plans call for expansion to 75 000 employees world-wide by the end of 1986 (Wilbur, 1983).

2.7.2 IBM'S PLAN FOR LIFE

As a result of rapidly escalating health care costs, IBM established a comprehensive health care strategy (Beck, 1982). While all facts in the area of prevention are not known, IBM believes action must be taken to begin preventing the diseases causing companies' health care costs to escalate. Health is a complex issue and any approach to employee health care must be comprehensive. A comprehensive programme should cover a wide range of health issues and meet both on-the-job concerns for the employees, their families, retirees and their spouses. In addition to health promotion programmes, on-the-job efforts include monitoring systems for protection in the work place against chemicals, noise, fumes, radiation, dust, and other hazards. Concern at home includes programmes that encourage employees to take care of themselves, emphasising promoting wellness father than treating illness. IBM also believes that involvement in the community by the company, employees, and their families plays a part in solving health care problems. IBM's health care strategy is designed to encompass all these needs.

Over a six-year period claims costs increased on a per-employee basis approximately 108%. Hospitalisation increased 73%, surgical 104%, and major medical 240%. Such dramatic cost increases affect not only the company but also employee and their families. IBM cannot cover every expense and consequently both employees and the company share the cost of these rapidly rising costs. In addition, the corporation must delay improvements in old programmes or the introduction of new programmes in order to fund the current benefits. As a result, IBM developed the following health care strategy.

The strategy has five principles. The first is *individual responsibility.* Responsibility for good health belongs to the individual, not the doctor, company or government. With this

as the primary principle, all programme efforts are aimed at helping the individual employee, retiree, or family member take responsibility for his or her own health.

Because it is the individual's responsibility, all non-job related programmes are *voluntarily*. This means that the corporation must create an environment that motivates employees and their families to take better care of themselves.

A third principle of importance is *privacy*. Individuals want and expect the privacy of their personnel records, including medical records. Therefore, everything possible is done to protect the privacy of the health care and lifestyle data collected.

Company assistance is the fourth principle. Since good health is the individual's responsibility, the company should not take over full care. Instead it should provide the environment and support, and to a certain extent the reimbursement that assists individuals to choose healthy lifestyles. IBM's benefit programme is broad-based, non-contributory, and designed to protect against catastrophe. The non-contributory feature permits employees to supplement those programmes to meet individual needs. The health education and early detection programmes are helpful to participants, but require personal action and commitment.

The final, but very important, principle is that health care programmes be *cost-effective*. While in past years most companies paid little attention to this, in more recent years IBM has placed emphasis on the need to built-in cost-effective features in any future programmes. Where possible, current programmes are being modified.

IBM's comprehensive health care strategy is composed of several elements: early detection, health education, employee involvement programmes, cost-effective benefits design, contributions, research, and external activities. The following discussion will focus on health education, or what IBM calls A Plan for Life and early detection of disease through the voluntary health-screening programme.

2.7.2.1 EARLY DETECTION

Until 1981 IBM placed less emphasis on health education than on early-detection programmes. In 1968 the Voluntary Health Screening Examination Programme (VHSP) was offered to all employees based on age. The VHSP starts at 35 and proceeds in five-year intervals. It involves a questionnaire of 170 questions relating to health habits, illness, and disease, accompanied by urine and blood tests. Cancer tests, vision, glaucoma and hearing tests, resting ECG, blood pressure, and family history were included. It is a nurse examination from start to finish. Historically, a relatively high level of participation has been found; nationally, 65 to 70 percent of employees participate.

Since the inception of the VHSP programme, over 190 000 examinations have been given to over 100 000 employees. Because of the age parameters some of these employees have received more than one examination. Through such health screening, the corporation was able to identify some "medical condition" in 74% of their employees. They range from slight obesity to more serious conditions like cancer. In 41% of the cases, the employees learned of their medical condition for the first time from the IBM programme. Work is under way to utilise the large database to develop an age/risk oriented examination schedule with more follow-up and risk-oriented education.

2.7.2.2 HEALTH EDUCATION – "A PLAN FOR LIFE"

In designing a comprehensive health education programme, IBM established some basic principles at the outset. First, the company wanted to avoid hiring specialists in order to provide programmes in all 50 states to 200 000 employees and their families. Additionally, the company needed a programme that would permit branch offices without medical or personnel staff to participate.

IBM's programme was designed to meet both employee needs and make an attempt to contain costs. Since about two-thirds of the company's medical dollars are spent on the family and retirees, they were included.

The company also wanted a programme that would be designed to meet employee interest. Experience indicated that, during summer months especially, employees have many other outside activities that mitigate against establishing a fitness facility that must be maintained 12 months out of the year. Therefore, IBM concluded it should use community facilities and community resources. Many organisations have excellent facilities that are not being fully utilised and have the staff available to do training.

Last, but not least, one of the principles is to minimise the effect on business operations. In order to ensure that there was management's support and involvement from top to bottom, the programmes would be outside of working hours.

During 1980, IBM pilot-tested in five cities the "A Plan for Life." Approximately 1 600 people signed up for about 4 500 courses or 2,6 courses per individual.

The enrolment broke down into 67% employees, 28% spouses, 4% children and 1% percent retirees and their spouses. Certain locations were limited in the number of instructors even though they had a greater demand. A good example is a large plant site that had 6 500 employees. Only 9% of the employees were able to enrol as compared to a branch office that had 460 employees where 31% enrolled in a course. The courses offered are shown in table 4.

Table 4: Courses offered.

Mini Courses (1½ hours)	Comprehensive Courses
Exercise	10 weeks, 3 times a week
Smoking Cessation	8 weeks, 1 time a week
Stress Management	8 weeks, 1 time a week
Healthy Back	6 weeks, 2 times a week
Weight Management	12 weeks, 2 times a week
First Aid	2 weeks, 2 times a week
CPR/Obstructed Airway	2 weeks, 2 times a week
Health and Nutrition	(No comprehensive course)

2.7.2.3 PILOT PROGRAMME EVALUATION

Employees who signed up and participated in the pilot programme were asked a number of questions on an opinion survey. Where both an employee and family member enrolled in a course, the rating was 98,2% positive for offering the programme to employees, and the opportunity for the family was rated 97,8% positive. When neither an employee nor a family member enrolled in a course, the employee continued to give a high rating to making the programme available both to the employee and the family: 90,8% and 90,2% respectively.

Employees who did not enrol were asked to provide the reasons for their decision. More than half of the reasons cited were prior personal commitments. Fifteen percent cited being in a car pool, while only 13% indicated they already had enough knowledge. Only five percent indicated that IBM should not offer such courses at all. Non-enrolees represent less than 3 percent of all those who responded to the survey.

Employees were also asked to indicate their interest in taking future courses. In addition, employees were asked whether they had taken similar courses during the past five years. Most employees who were interested in taking specific courses in the future had not taken a similar course in the past. This was particularly significant since it reflected an interest by employees who were not formerly involved in health programmes (table 5).

Table 5: Comparison of future plans versus plans taken in the past.

Course Desired In Future	Percent Taken Course In Past
Exercise	29,3
Smoking	6,7
Stress	10,2
Healthy Back	4,7
Weight	9,6
First Aid	16,7
CPR	16,0

To ensure the programme could be implemented without hiring professional staff, a detailed administrator's guide was developed, field-tested, and then distributed to programme co-ordinators throughout the United States.

In addition to IBM-run courses, a feature was included to reimburse for certified community courses under a tuition-assistance plan. This feature permitted employees and eligible family members to seek out a course that was more convenient to them. Specific reimbursement amounts are provided to the employees in advance and can range, depending on the charges of the sponsoring organisation, from a small percentage to the total cost.

The programme was implemented nation-wide in the spring of 1981. It has been extremely well received by employees and their families. Over 41 000 enrolled in the first nation-wide offering, and the demographics were almost the same as the pilot.

In addition to the "A Plan For Life" programme the company encourages locations to hold "theme" days. These are localised programmes that utilise local resources and agencies to run screening programmes such as breast self-examination, high blood pressure, diabetes, and glaucoma. Employees are eager to participate, and yet the programmes are of relatively low cost to the corporation.

This is another area early detection and prevention in IBM's effort to provide health protection in the workplace. While not going into any detail here this aspect of the company's strategy should be mentioned because it can avoid duplicating costs of other health screening programmes and minimise employee inconvenience. For many years IBM has given some of the following occupational exams: employment, cafeteria, radiation, customer engineers (service personnel), drivers, security guards, pilots, and employee and their families who go on international assignments. The IBM Hearing Conservation and Screening Examination Programme is fully automated and permits the physicians and nurses to have computerises analysis on individual employee's hearing over periods of time, as well as large groups of employees for comparison purposes.

The newest automated health monitoring system is the Environmental Chemical Occupational Evaluation System (ECHOES). It is an automated monitoring system that takes input from the industrial hygienist for measurements in the workplace, the first-line manager for time of exposure and chemicals used, and the medical department for specific medical measurements. Through computer analysis using a data system and material safety information, the programme calls out warnings for any employees who might be approaching threshold limit exposures. It provides an automated system for scheduling required occupational examinations. The system also permits epidemiological studies to establish broader health protection measures for large groups of employees.

The company believes that offering the above programmes result in better health and better morale. Employees and their families feel their company cares about their health (Beck, 1982).

2.7.3 KIMBERLY-CLARK CORPORATION, NEENAH, WISCONSIN

The medical department has developed a comprehensive "Health Management Programme" in a well-equipped facility. Assessment includes multiphase screening, complete physical examination, health history, health hazard appraisal and cardiovascular stress testing on a treadmill. The medical department found 22,6% of males and 14,4 % of females had two cardiovascular risk factors and 4,6% of males and 1,8% of females had three. Intervention and education programme include, among other activities, nutrition counselling, exercise programmes in an in-house facility, smoking cessation, blood pressure control, and weight reduction. A wide range of education methods is utilised. There is also an Employee Assistance Programme (Dedmond & Kubiak et al., 1980).

2.7.4 CAMPBELL SOUP, CAMDEN, NEW JERSEY

The Medical department has been screening for cardiovascular risk factors, their number one problem, with their physical and laboratory evaluation. Thirty-five percent of those assessed had elevated cholesterol levels and were counselled about low-fat diets. Hypertension control programmes have evaluated 10 000 employees since 1968, with in-house treatment programmes being undertaken to reduce the cost. Smoking cessation programmes have a 25% success rate thus far (Wear, 1980).

2.7.5 GENERAL MILLS, MINNEAPOLIS, MINNESOTA

The Medical department provides an extensive health assessment. An Employee Assistance Programme and alcohol-chemical abuse programme are tied to community resources. A nutrition programme is carried to the cafeteria, with food content of calories

and fats displayed. Physical fitness programmes use in-house facilities at the main office (Berry, 1981). Here are some other examples in the major programme areas:

2.7.5.1 SMOKING CESSATION

Speedball Corporation, an electronics company in Hayward, California, reduced their smokers from 24 to 4 by offering a $7.00 per week bonus for not smoking on the job.

Dow Chemical, Texas Division, conducted a "reward smoking cessation programme" using $50 incentives and finally a boat and motor to get one-quarter of the 33% of their employees who smoke to join the "I am a quitter" ranks. The company wanted to decrease the number of smokers because they had 5,5 days more absenteeism, 7,7 days more disability, and 12% more illness per year than non-smokers (Berry, 1981).

2.7.5.2 HYPERTENSION

Burlington Industries, Greensboro, North Carolina, launched a blood pressure screening programme in 1974, incorporating referral and follow up. It was added to the existing employee health programme. Twenty-five of those initially screened had elevated blood pressure readings, and 50% of this group needed medical care.

Ford Motor Company has a blood pressure screening and treatment programme at four plant sites. Eleven thousand employees have been screened and 1 600 are in follow-up care. This is part of an overall cardiovascular risk intervention programme started in 1972, when it was discovered that heart attacks accounted for 28% of the medical costs at the Michigan headquarters. Seeing that risk factors interact, exercise, smoking cessation and "Heart Healthful" eating plans are all part of the programme. Some 2 200 of 5 500 employees are in the programme (Berry, 1981).

2.7.5.3 FITNESS-EXERCISE

Bonnie Bell in Lakewood, Ohio, has a jogging path through the woods with exercise stations enroute, exercise classes three times weekly, tennis courts and lessons, exercise rooms and shower facilities.

Sentry Insurance Company of Stevens Point, Wisconsin, provides a gymnasium, swimming pool, racquet and handball courts, indoor driving range and varied exercise equipment. Health screening and stress testing are used in assessment, and the medical department conducts classes related to risk factor reduction (Berry, 1981).

2.7.5.4 WEIGHT CONTROL

Colonial Bank & Trust, First State Bank of Chicago, and Parkway Bank and Trust Company in Chicago, Illinois, have overweight employees attending classes and engaging in exercise programmes as part of a contest among the banks to see which bank employees have the greatest weight reduction. It was organised by a bank president (Berry, 1981).

2.7.5.5 SCREENING

Cannon Mills in North and South Carolina has screened 11 000 of its 16 000 employees over an 18-month period. Some 1 600 hypertensives, 80 diabetics and 21 with cancer were discovered (Berry, 1981).

2.7.5.6 STRESS MANAGEMENT

Ford Motor Company, Corporate Headquarters, Dearborn, Michigan, has employees use local recreation department instruction in transcendental meditation and yoga several times per week.

The Faultless Starch/Bon Ami Company of Kansas City, Missouri, advocates meditation for stress reduction and anticipates the programme will pay off in future reduction of health insurance premiums (Berry, 1981).

2.8 PHYSICAL FITNESS PARAMETERS

There is no universally accepted definition for physical fitness, but most experts in the field of exercise would agree that it is the capacity of the heart, lungs, blood vessels, and muscles to function at optimal efficiency (Robbins et al., 1997). The fit individual is able to complete the normal routine for the day and still have ample reserve energy to meet the other demands of daily life like recreational sports, rewarding relationships, and other leisure activities. Plus, the fit has the adequate energy to handle life's emergency or crisis situations whenever they arise.

According to Robbins et al. (1997), physical fitness is multifaceted and involves skill-related and health-related components. The skill-related components are speed, power, agility, balance, reaction time, and co-ordination. The five health-related components of physical fitness are cardiorespiratory endurance, muscular strength, muscular endurance, flexibility and body composition.

For the purpose of this study the following health-related components of the experimental and control groups were evaluated: cardiorespiratory endurance, flexibility and body composition.

2.8.1 CARDIORESPIRATORY ENDURANCE

According to Robbins et al. (1997), cardiorespiratory endurance is the most important fitness component. It is the ability to deliver nutrients, especially oxygen, to the working muscles of the body and to remove waste products during prolonged physical exertion. It involves the efficient functioning of the heart, blood vessels and lungs.

2.8.2 MUSCULAR STRENGTH

Muscular strength is defined as the muscular force against movable and immovable objects (Durstine et al., 1993). It is characterised by activities of short duration at high intensity. Lifting a heavy object such as a suitcase or 100 kilogram weight one time are examples.

2.8.3 MUSCULAR ENDURANCE

Muscular endurance involves the ability of a muscle group to repeat identical movements (dynamic) or to maintain a certain degree of tension over time (static) (Durstine et al., 1993). It is characterised by activities of long duration but low intensity. Examples of muscular endurance are performing repetitions of push-ups or sit-ups.

2.8.4 FLEXIBILITY

According to Durstine et al. (1993) flexibility is the ability to move the body parts through a wide range of motion without undue strain to the articulations and muscle attachments. Flexibility is essential to smooth, efficient movement and may help prevent injuries to ligaments and joints. Being able to sit and touch your toes without bending your knees is an example of hamstring and lower back flexibility.

2.8.5 BODY COMPOSITION

Body composition refers to the amount of body fat in proportion to fat-free weight. The ratio between body fat and fat-free weight is a better gauge of fatness than is body weight (Robbins et al., 1997).

2.9 WELNESS AND PHYSICAL FITNESS

Becoming physically fit is a positive health habit that has a major impact on your wellness. It is one area where you can assume control of your lifestyle. It is the golden thread that penetrates all the dimensions of wellness (table 6) (Robbins, et al. 1997).

Table 6: Benefits of physical fitness on wellness dimensions.

PHYSICAL
Slows down the aging process; increases energy; improves posture and physical appearance; helps control weight; improves flexibility; improves muscular strength and endurance; strengthens bones, reducing osteoperoses; reduces risk for coronary heart disease.
EMOTIONAL
Relieves tension; aids in stress management; improves self-image; events out emotional swings; provides time for adult play.
SOCIAL
Enhances relationships with family and friends; increases opportunity for social contacts.
INTELLECTUAL
Develops concepts of body and mind oneness; increases alertness; enhances concentration; motivates toward improved personal habits (smoking cessation, reducing drug and alcohol use, better nutrition); stimulate creative thoughts.

OCCUPATIONAL
Decreases absenteeism; increases productivity; decreases disability days; lowers medical care costs; lowers job turnover rate; increases networking possibilities.
SPIRITUAL
Develops appreciation of body/mind connection; enhances appreciation for healthy environment; builds compassion for those less able.
ENVIRONMENTAL
Develops appreciation for healthy air and water; increases concern for recycling and preservation of our natural resources; increases in interest eliminating toxins and chemicals from food chain.

According to Robbins et al, (1997) there is now strong evidence linking fitness not only to better health but also to decreased medical costs and to improved job productivity. Do you want an edge on the future job market? Employers who must absorb medical care costs of their employees are fast realising it costs less to keep an employee healthy than it does to treat workers once sick. Many employers are now looking to hire "fit employee," one who has already adopted a wellness lifestyle. Decide now to be more than half-well. Climb up the wellness ladder to become more physically fit and exert greater control over your wellness destiny (Robbins, Powers & Burgess, 1997).

2.10 THE IMPACT OF HIV/AIDS ON THE WORKPLACE

Only fifteen years ago, if one had called businesses, labour, government and non-government representatives together to discuss how to deal with the AIDS epidemic, most would not have even more than a fleeting idea of what it was, let alone why they should discuss it. Today, companies have lost top managers, workers have lost

colleagues and huge amounts of time, energy and emotion have been spent pre-occupied with issues of illness and loss. Whole families have collapsed, while companies struggling against a background of chronic poverty have taken on deeper burdens of dependency (Smart, 2000). The above mentioned are confirmed according to Smart (2000) by the following ten HIV/AIDS workplace facts.

- The crisis is immense – AIDS is a real problem, affecting workers and business operations. Many companies are losing around 3% of their workers to AIDS each year.
- 80% of HIV transmission in South Africa occurs due to heterosexual sex.
- Young adults have the highest levels of infection and our nation's economically active population; parents of young children and future leaders are at greatest risk.
- AIDS will decrease life expectancy in South Africa by 20 years to about 40 by the year 2008.
- HIV has increased the burden of ill health and mortality in the 15-50 year group two to three fold. An average of 15 years of working life will be lost per employee due to AIDS.
- The indirect cost of HIV/AIDS is greater than the direct costs. The costs of lost time have been consistently shown to be the most significant costs to companies.
- HIV infected persons have 5-10 years on average of asymptomatic productive working life. Health promotion, exercise and stress management can lengthen this period.
- Transmission of HIV poses little risk in most settings.
- Averting an HIV infection through prevention programmes yields a cost benefit ratio to companies of anything from 1:2 to 1:400.
- The workplace is an appropriate and important setting for AIDS programmes because workers spend a significant amount of time at work.

CHAPTER 3

METHODS AND PROCEDURES

3.1 METHODS

3.1.1 SUBJECTS

The subjects that participated in this study were originally 184 black African males, performing physical labour. Their mean age was 44,8 years and they were selected from a group of employees working at two specific departments, namely the ECAS (Escom Catering and Accommodation Services) and Security departments. The subjects were stratified randomly assigned to either a control group (n=92) or an experimental group (n=92). Fifty-eight subjects dropped out of the study. Thirteen went on early pension, 5 died of Aids and 40 subjects did not comply with the exercise programme or preferred to withdraw from the wellness programme due to their unique culture. Data is thus presented on an experimental group of 34 subjects compared to a age, gender and occupation matched control group of subjects. The experimental group was exposed to an intervention programme for half a year, while the control group subjects were requested to continue with their present lifestyles.

The department managers announced the availability of the programme. The programme was then explained to employees where they were invited to voluntarily enrol. It forms part of a total wellness drive in the company where the whole company will eventually be evaluated. The success of similar health promotion programmes led to the approval of the company to implement the programme throughout the company and make it available to all employees.

An informed consent was obtained from all subjects involved in the study (appendix A).

3.1.2 INSTRUMENTS

In completion of the evaluation of the subjects, the following instruments were utilised:

a) an ALPK2 aneroid sphygmomanometer was used in the indirect measurement of systematic arterial blood pressure.
b) a Sit-and-reach box was used to measure hamstring and lower back flexibility.
c) a John Bull skinfold calliper was used to determine the subject's fat %.
d) a Reebok step-up bench was used to determine the subject's physical fitness.
e) a Medical and health habits questionnaire was used to determine the subject's health and fitness status (appendix B).

3.2. PROCEDURES

The evaluation commenced with a questionnaire, signing of an informed consent, which led to the physical and clinical evaluation of the subjects. The medical and health habits questionnaire (appendix B) indicated the subject's medical and health status. The clinical and physical evaluation consisted of the following tests:

a) *Blood pressure*: A stethoscope and an aneroid sphygmomanometer were used in the indirect measurement of systematic arterial blood pressure. Each subject was seated with the arm and back supported with the arm at heart level when blood pressure was taken. Unless the first two readings varied by more than 5mm Hg, five readings, at least one minute apart, were taken to get an averaged reading (fig. 6).

Figure 6: Blood pressure measurement.

b) *Sit-and-reach test*: A Sit-and-reach test was used primarily to determine the flexibility of the hamstring musculature, and secondarily the flexibility of the lower back. The subjects were seated on the floor with legs extended straight in front and against a 30,5 cm. high box with a measuring tape secured on top. The 50 cm. mark of the measuring tape should be at least at the edge of the box. The person then placed the index finger of both hands together and slowly reached forward as far as possible on the measuring tape, holding the position for 1 second. The score was the most distant point reached by the fingertips in the better of two trials. The knees had to be straight and in contact with the floor at all times. Bouncing into the stretch position was not allowed and the movement had to be slow and gradual (fig.7).

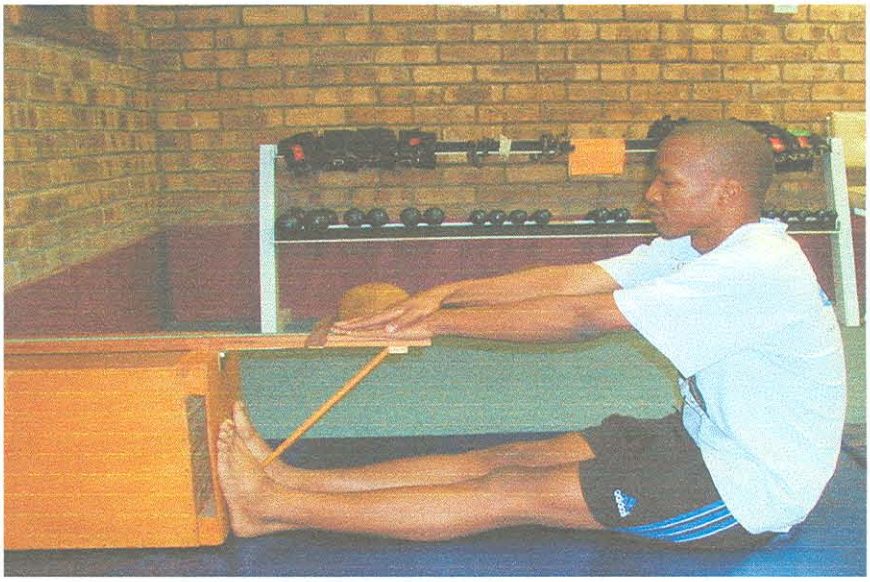

Figure 7: Hamstring and lower back flexibility test.

c) *Body fatness / Fat %:* A John Bull skinfold calliper was used to determine the subject's fat percentage. Test procedures for taking the three-skinfold measurements (pectoral, abdominal, thigh) were the adapted form used by Jackson & Pollack (1978). All measurements were taken on the right side of the body.

A short description of the three skinfold sites are as follow:

Pectoral /Chest

A diagonal fold taken one half of the distance between the anterior axillary line and the anterior axillary line and the nipple (fig. 8).

Figure 8: Pectoral/Chest measurement.

Abdominal

A vertical fold taken at a distance of 2 cm. to the right side of the umbilicus (fig. 9).

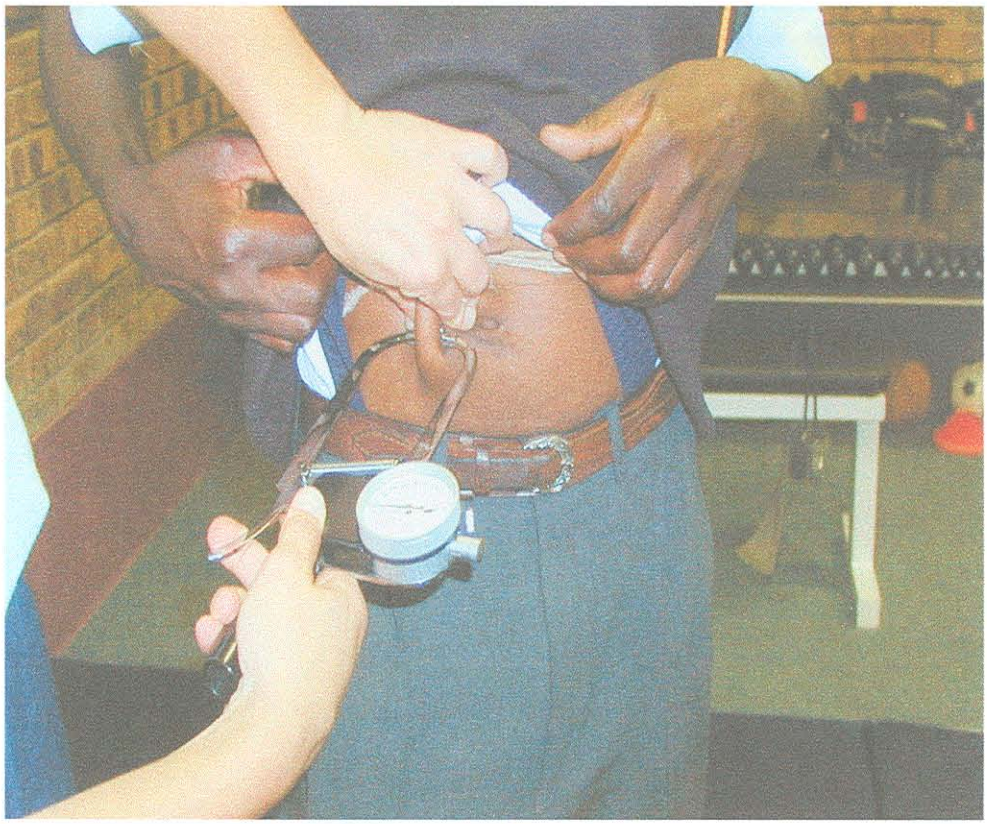

Figure 9: Abdominal measurement.

Thigh

A vertical fold on the anterior midline of the thigh, midway between the proximal border of the patella and the inguinal crease (hip) (fig. 10).

Figure 10: Thigh measurement.

d) *Physical fitness*: A 3-min. submaximal step test was used to determine the subject's physical fitness level. The subject's heart rate was taken immediately after exercise for 15 seconds (fig. 11).

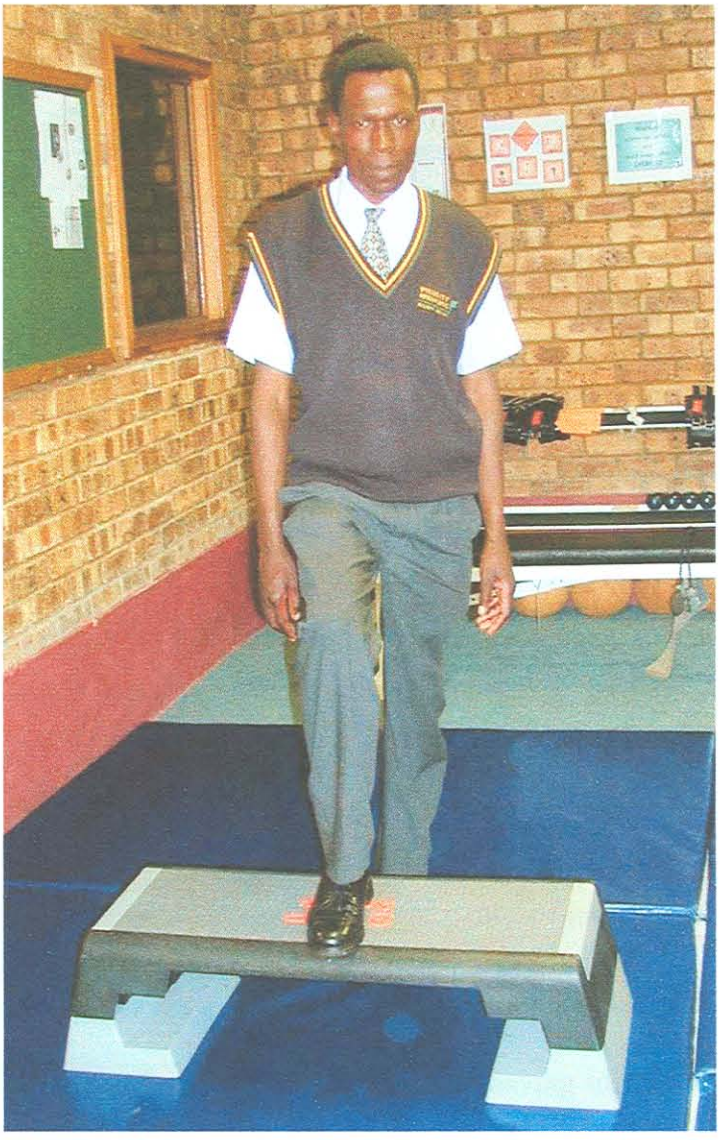

Figure 11: Fitness test.

Data concerning the subjects' medical and health status, sick leave and absenteeism, was gathered as follow:

f) *Medical and health habits questionnaire*: To be eligible for the physical and clinical screenings, each subject completed a medical and health habits questionnaire in order to determine their medical and health status (appendix B).

f) *Medical records*: The subject's medical records at the medical centre were used to obtain absenteeism and sick leave data.

3.3 STUDY DESIGN

This study was a typical experimental epidemiological study where an intervention (6-month physical wellness programme) was evaluated. It coincided with findings by Walter & Hart (1990) that listed the following relevant and important research areas that lend themselves to the application of a pyramidal hierarchy of epidemiological research strategies:

"1. Estimation of the prevalence and severity of injury and/or fatalities in the populations of exercising individuals and sportsmen - such as evaluating the type and frequency of musculoskeletal injury.

2. Identification of risk factors and high risk participants - such as studying the relationship of training and equipment to the injury rate, or intrinsic factors which may be predicative of injury; and finally

3. Development of preventative interventions - where having identified significant risk factors, modifications to reduce of morbidity or mortality are considered.

Epidemiological approaches can thus be classified into two categories: observational and experimental where the last mentioned typically entails the systematic evaluation of an intervention or preventative measure, by way of a randomised controlled trial (Van Heerden, 1996).

A true pre-test - post-test stratified randomised groups experimental design was adopted (Thomas & Nelson, 1990). The design was labelled as follows:

R	O1	T	O2
R	O3		O4

R: Stratified random assignment of subjects to groups.

O: Observation of test (subscripts refer to the order of testing; i.e. O1 is first time a test is given and O2 the second).

T: Treatment is applied; a blank space means that the group is a control.

The major purpose of this type of design was to determine the amount of change produced by the intervention (in this case the 6-month physical wellness programme), that is, did the experimental group change more than the control group. This design threatened internal validity of testing, but the threat was controlled, as the comparison of O3 and O4 in the control group includes the testing effect as well as the comparison of O1 to O2 in the experimental group. Thus, although the testing effect could not be evaluated, it was controlled (Thomas & Nelson, 1990).

Sick leave and absenteeism data were compared before intervention (6-months retrospectively) and during intervention (6-months prospectively).

3.4 MEASUREMENTS

Baseline and post-intervention data were compared. Evaluations done by the biokineticist and occupational health nurse included a physical and clinical screening as well as a medical and health habits questionnaire. The occupational health nurse did the clinical measurement of the participant's blood pressure and the biokineticist did the physical assessment of the participants flexibility, physical fitness (3 min. step test) and fat percentage (3 skinfold measurements). Sick leave and absenteeism data were obtained from the participant's medical files at the medical centre.

3.5 INTERVENTION PROGRAMME

The duration of the intervention programme was 6 months and started immediately after completion of the pre-test. The initial health education session was led by the occupational health nurse making him- or herself available for further consultation, if needed, on health concerns such as smoking cessation, diet, stress management and AIDS. At that time, the participants were informed of the findings and the level of their physical status. Any abnormalities or risk factors present were discussed and corrective measures were outlined. The multidisciplinary team was available for the duration of the study to deal with any health-related problem that might arise. Participants diagnosed with hypertension during the initial physical evaluation and health education session were advised to visit the medical centre once a week to have their blood pressure screened by the occupational health nurse for the remainder of the 6-month intervention programme.

A programme of gradually increasing cardiovascular/aerobic-, anaerobic- and stretching exercises, tailored to the individual's history and level of fitness, was prescribed. See appendix C for the prescribed exercise card. Each patient's programme was written on a programme card, with the re-evaluation date stipulated. The major emphasis was placed on improved cardiorespiratory fitness. The participants had the option to choose from four easy accessible types of cardiovascular exercise (cycling, walking, soccer and jogging). The reason for this was that their personal circumstances could impede them from having access to specialised exercise equipment. Almost the entire participants lived in the local single quarters, far from town, with no sport or recreational facilities close by. The anaerobic or strengthening exercises consisted of exercises where they could train against there own body resistance (sit-ups, push-ups, hip flexion, knee flexion, calf raises, tricep extension and hiplifts). Once again the reason for this was to make the programme as cheap and accessible possible for the participants which suited their personal circumstances. Each exercise session included a warm-up and cool-down phase where basic stretching exercises were performed (quadriceps-, hamstring stretching and a shoulder stretch). See appendix C for the prescribed stretching exercises. Each participant was asked to make a commitment to exercise at least three times a week with

a rest day in between, for a minimum period of 20 minutes, at a medium intensity for a duration of six months. Subjects assessed at high risk or with cardiovascular disease under a physician's care required clearance from their corporate physician.

The participant's exercise intensity was increased during the follow-up sessions 6 weeks after the initial physical screening/evaluation and immediately after the 12 weeks post-testing session. For the duration of the study the intensity of the participants' exercise programme was increased after every 6 week follow-up session, and another 6 weeks after each post-testing session. Feedback on each individual's results was given by the biokineticist immediately after completion of the physical and clinical screenings. Any complaints or adverse symptoms were evaluated and continuous participation was encouraged.

During the first week after the initial screening, a wellness workshop addressing all the wellness dimensions (social, spiritual, physical, occupational, environmental, emotional and intellectual) was presented to the participants. It formed part of the experimental group's intervention programme.

Exercise was performed on and off the premises. All activities were done in the employees' own time, outside of their flexible work schedule. The company offered no incentives for participation in the programme.

3.6 DATA PROCESSING AND STATISTICAL ANALYSIS

In any study where one uses subjects and the data obtained from these subjects is statistically analysed, it is important that the number of subjects and representative nature of the sample are taken into consideration. (Chen, 1991).

Ordinal data resulting from the questionnaire and some portions of the clinical examination was categorised into frequencies of findings. Differences between sets of ordinal data were evaluated using the Mann-Whitney U-test. Where the data was of a

ratio or interval nature, significant differences between the experimental and control group were evaluated by using an independent t-test (Thomas & Nelson, 1991). Due to the size of the two groups, it was decided to also report the ratio and interval data by using the Mann-Whitney U-test for two independent groups. Although this non-parametric statistical test is less powerful than the parametric independent t-test, it was chosen because it does not rely on parameter and/or distribution assumptions (Howell, 1992).

To determine whether significant relationships existed between the various aspects of the medical and health habits questionnaire and the number of absenteeism and sick leave days, cross-tabulations were used. Additional Chi-square tests were performed in order to determine whether the relationships between variables were statistically significant or not. Nsick tests were performed to determine the relationship between stress, low back pain, P C stress, sick leave and absenteeism.

Statistical analysis of the data also comprised of descriptive summary statistics (mean and standard deviations).

In all statistical analysis, the 95% level of confidence ($p \leq 0,05$) was applied as the minimum to interpret significant differences among sets of data (Thomas & Nelson, 1990). Computations to determine standard descriptive statistics (mean and standard deviation) and analysis of variance (t-test) and non-parametric analysis (Mann-Whitney U-test) were performed using the SPSS for MS Windows release 6.1.

CHAPTER 4

RESULTS AND DISCUSSION

The results of this study are displayed in tabular and graphic form in tables 7 - 10 and figures 12 - 19 respectively. In order to determine whether changes in the clinical and physical evaluation occurred due to the intervention the following procedures were followed for all measurements:

a. T-tests for independent groups were done to determine whether statistically significant differences existed between the experimental and control group prior to the intervention at the pre-test phase. It was done in order to determine whether significant differences existed between the mean scores on all variables tested.

b. T-tests for independent groups were repeated to determine whether statistically significant differences existed between the mean post-test scores for these same variables. This analysis was done to determine whether statistically significant differences existed between the mean scores of control and experimental groups after the intervention took place.

c. Lastly, t-tests for dependent groups were performed to determine whether changes took place within the same group from the pre-test to the post-test phase.

The non-parametric equivalent was performed for each of these tests in the form of Mann-Whitney U-test and Wilcoxon signed ranks test.. The results of the non-parametric

analysis confirmed the results of the t-tests in all instances - therefore only the results of the t-tests will be reported. The results of all analyses are summarised in tables 7 and 8.

4.1 CLINICAL AND PHYSICAL EVALUATION

4.1.1 BLOOD PRESSURE

No statistically significant difference was found between the mean blood pressure scores of the experimental and control group in the pre-test as well as the post test phase. However, there was a statistically significant difference between the pre-test and post-test systolic blood pressure mean scores of the experimental group (fig. 12). The systolic blood pressure of the experimental group decreased significantly from a mean score of 136 to 127. The improvement in the experimental group was statistically significant on the 5% level of significance ($p \leq 0,05$) with the dependant t-test as seen in table 8. These improvements support findings by Dreyer & Strydom who reported significant improvements ($p \leq 0,05$) in systolic as well as diastolic blood pressure with a corporate fitness programme. This is further supported by Harvey et al. (1993) who reported a decrease of 1,8% in high blood pressure in a period over five years where the impact of a wellness programme was studied.

According to Borhani (1977), any programme that reduces blood pressure would reduce the risk of arteroschlerotic heart disease and thus sick leave and absenteeism.

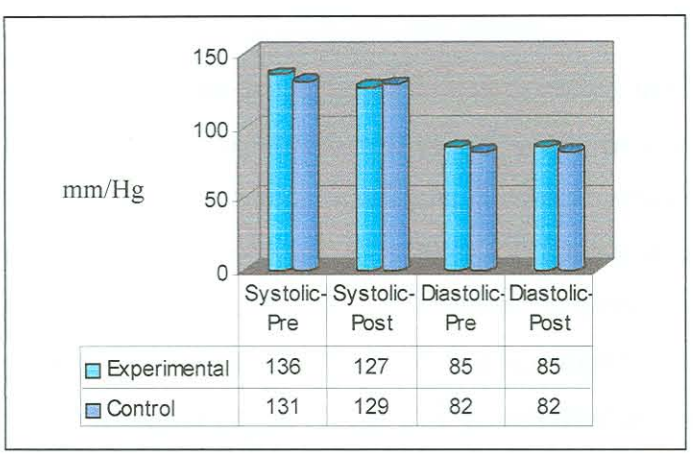

Figure 12: Blood Pressure.

4.1.2 FAT PERCENTAGE

There was no statistically significant differences between the fat percentage of the experimental and control group on the pre- as well as the post-test. Dreyer & Strydom (1993) recorded with their corporate fitness programme a significant improvement ($p \leq 0,05$) in the fat percentage of executive employees over a study period of six months. As noted in figure 13, the fat percentage of the experimental group decreased when compared to the controls, whose fat percentage increased. The differences were, however, not statistically significant ($p \geq 0,05$). This can be due to the fact that almost all these employees have all their meals at the local canteen where unhealthy foods high in fat and carbohydrates are served.

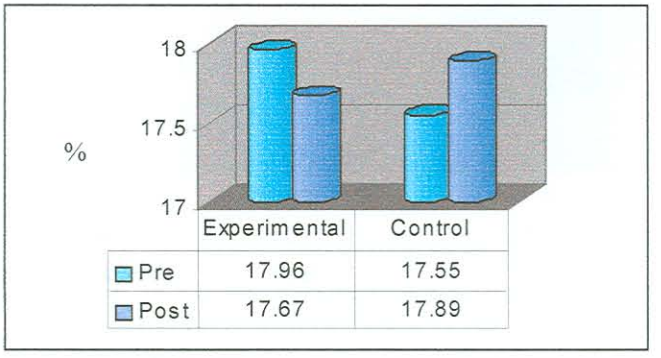

Figure 13: Fat Percentage.

4.1.3 FITNESS

As seen in figure 14 an improvement occurred in the fitness level of the experimental group compared to the control group where no change occurred. The difference was however not statistically significant. However, results from Bowne et al. (1984) recorded a significant improvement in physical fitness due to an industrial physical fitness programme over a period of five years. A worksite health promotion programme over one year by Blair et al. (1986) resulted in a significant improvement in fitness levels. The results from Blair et al. (1986) further indicated an average of 1,25 days less absenteeism

and suggests that this reduction was due to the work site health promotion programme that is positively associated with an improvement in fitness levels.

The improvement in the fitness level of the experimental group could have been statistically significant if the intervention period were longer than six months as indicated by the above mentioned studies from Bowne et al. (1984) and Blair et al. (1986). No statistically significant differences were found between the experimental and control group on the pre- as well as the post-test.

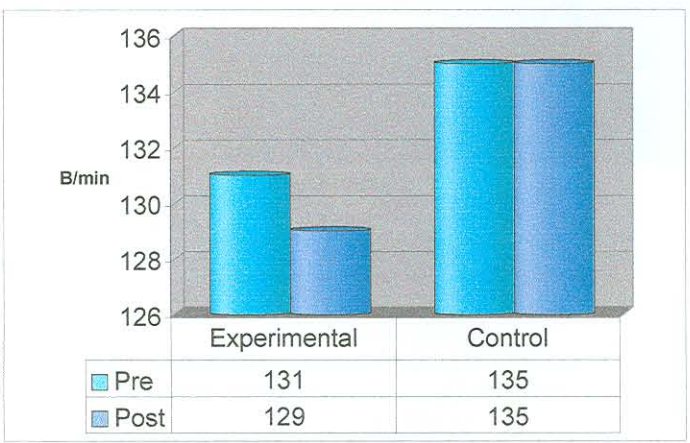

Figure 14: Fitness.

4.1.4 FLEXIBILITY

The positive impact of a physical wellness programme on hamstring and lower back flexibility can contribute to less short-term lower back pain (LBP) absenteeism due to the high correlation between LBP and tight hamstrings (Shephard, 1986).

No statistically significant difference was found between the mean flexibility scores of the experimental and control groups on the pre-test. However, a statistically significant difference was found for the post-test results where the experimental group's flexibility score was significantly higher than the control group. This difference was significant on the level $p \leq 0{,}001$. As noted in table 7 & 8 and figure 15, there was an increase in

hamstring and low back flexibility in the experimental group compared to a decrease in the control group. T-tests for dependent samples indicated that a statistically significant improvement occurred in the mean flexibility score of the experimental group. This improvement was statistically significant on the level $p \leq 0{,}001$. This is supported by a study from Blair et al. (1986) who noted a significant improvement in hamstring flexibility as well as a decrease in LBP due to a worksite health promotion programme.

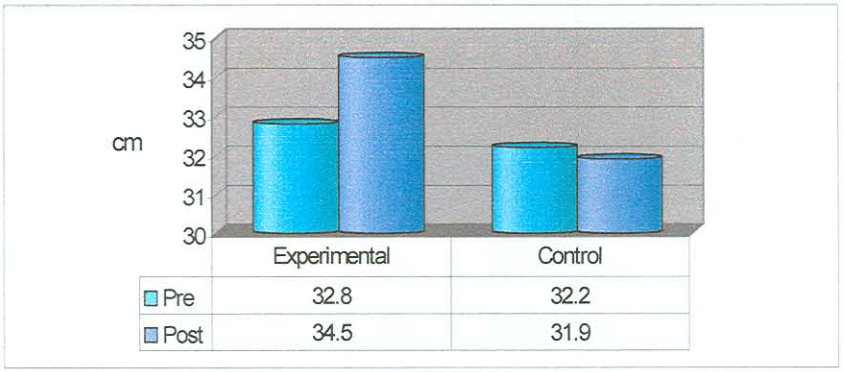

Figure 15: Flexibility.

Table 7: Results of tests for significant differences between experimental and control group on pre- and post test (Independent samples t-tests).

Variables tested differences that took place - gain score) CLINICAL AND PHYSICAL DATA	Experimental X ± SD	Control X ± SD	Statistical significance	
			t-test value	Significance
PRE-TEST				
Blood Pressure - systolic	136 ± 26,84	131 ± 20,14	0,858	NS p > 0,05
- diastolic	84 ± 17,36	82 ± 13,82	0,773	NS p > 0,05
Fat Percentage	17,95 ± 5,01	17,67 ± 5,32	0,225	NS p > 0,05
Fitness	1,23 ± 0,56	1,21 ± 0,48	0,160	NS p > 0,05
Flexibility	32,82 ± 9,10	32,17 ± 8,05	0,310	NS p ≤ 0,001
POST-TEST				
Blood Pressure - systolic	127 ± 19,94	129 ± 19,72	-0,397	NS p > 0,05
- diastolic	85 ± 12,08	82 ± 14,32	1,226	NS p > 0,05
Fat Percentage	17,55 ± 4,71	17,89 ± 5,46	-0,273	NS p > 0,05
Fitness	1,23 ± 0,50	1,18 ± 0,46	0,422	NS p > 0,05
Flexibility	34,5 ± 8,22	31,88 ± 8,30	1,305	*** p ≤ 0,001
Gain Flexibility	1,67 ± 3,00	-0,32 ± 1,49	3,479	*** p ≤ 0,001

- Positive change + Mean
- Negative change – Mean

Table 8: Results of tests for statistically significant differences between the pre- and post-test scores within groups (Dependent samples t-test).

Variables Tested	Experimental group				Control group			
	X	± SD	T-value	Significance	X	± SD	T-value	Significance
CLINICAL AND PHYSICAL DATA								
Blood Pressure – systolic								
(pre-test)	135	26,85	**2,037**	** $p \leq 0,05$	130	20,15	**0,958**	NS $p > 0,05$
(post test)	127	19,94			129	19,72		
diastolic								
(pre-test)	85	17,37	**-0,247**	NS $p > 0,05$	82	13,82	**0,301**	NS $p > 0,05$
(post test)	85	12,08			82	14,32		
Fat Percentage								
(pre test)	17,96	5,02	**1,18**	NS $p > 0,05$	17,67	5,32	**-1,257**	NS $p > 0,05$
(post-test)	17,55	4,71			17,88	5,46		
Fitness								
(pre-test)	1,23	0,57	**0,000**	NS $p > 0,05$	1,21	0,48	**1,000**	NS $p > 0,05$
(post-test)	1,23	0,50			1,18	0,46		
Flexibility								
(pre-test)	32,82	9,10	**-3,256**	** $p \leq 0,001$	32,17	8,05	**1,068**	NS $p > 0,05$
(post-test)	34,50	8,23			31,88	8,30		

- Positive change + Mean
- Negative change – Mean

4.2 MEDICAL AND HEALTH HABITS QUESTIONNAIRE

4.2.1 STRESS

Dreyer & Strydom (1993) recorded with their corporate fitness programme over a six-month period that 44,6% of the respondents indicated an improvement in stress levels. Pretorius et al. (1989) supports this in a three-month study. They noted that respondents with a tendency for high stress levels that participated in a physical exercise programme presented with different prolactin-, cortisol- and testosterone levels with regards to physical and cognitive stress situations compared to a control group. The experimental group that followed a physical exercise programme tended to regard any stress situation as a challenge compared to the control group who tended to perceive the situation as a huge threat. As noted in figure 16 there was a decrease in the stress levels of the experimental group compared to an increase in the stress levels of the control group. This improvement was however not statistically significant, but could be due to the fact that the worker's unions forced their employees to partake in major strikes and "no-work, no-pay" applied, possibly resulting in an increase in stress levels.

High stress levels indirectly impose huge financial burdens on companies as confirmed by Berry (1981) where the implementation of an employee assistance programme resulted in a 60% decrease in sick leave over a period of one year. As noted in table 9 there was a statistical relationship between the respondent's experiencing of stress and the number of day's sick leave and absenteeism. Regardless of whether the respondent's indicated that they experience stress or not, the majority of them in both cases had between 0 and 7 days sick leave.

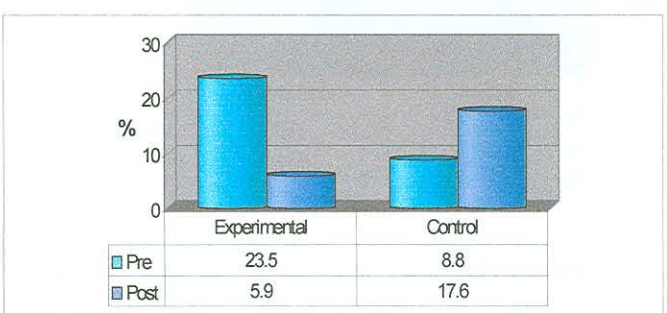

Figure 16: Stress – questionnaire.

4.2.2 LOWER BACK PAIN (LBP)

In chapter 2 a decrease in LBP due to IBM's Plan for Life was mentioned (Beck, 1982). As noted in figure 17, there was a decrease in LBP in the experimental group compared to an increase in low back pain in the control group. This improvement was however not statistically significant and can be contributed to the fact that the employees perform physical labour that constantly imposes additional strains on the LBP. Shi (1993) supports this in an one-year injury prevention programme amongst physical labourers in parks, recreation and public works where a modest decline in back pain prevalence rates occurred.

According to Thomas (1983), 66% of back injuries that happened at the Liberty Mutual Insurance company could have been prevented if the employees had been physically fit. This resulted in more sick leave being taken.

As noted in table 9, before the implementation of the intervention programme, 11% of the respondents from the experimental group had more than 16 sick leave and absenteeism days compared to nil sick leave and absenteeism days (0%) after the intervention (table 9). All the respondents who indicated that they did not experience LBP were absent or sick 0 - 7 days in six months. However, 27,8% of the respondents who indicated that they did experience low back pain were absent or sick for more than 8 days (table 9).

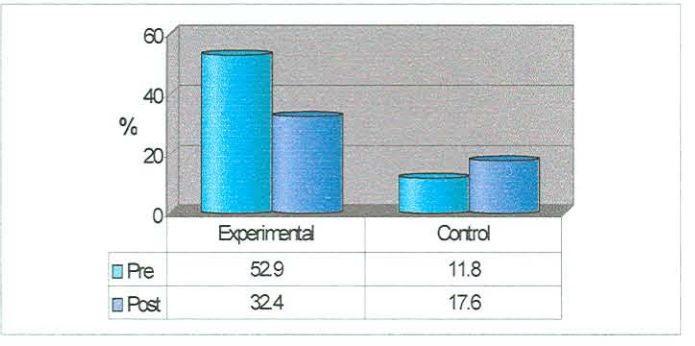

Figure 17: Lower back pain – questionnaire.

4.2.3 PERSONAL COMPUTER (PC) STRESS

As noted in figure 18, there was a decrease in P C stress in the experimental group compared to an increase in P C stress in the control group. The improvement was again not statistically significant and could be due to the fact that the employees performed physical labour and not sedentary, stationary and computer related work. Hardly any of the respondents experienced typical personal computer stress symptoms, namely red and sore eyes, stiff neck and shoulder muscles, as well as headaches. The findings in table 9 are interesting however: almost all the respondents who experienced P C stress were ill or absent for not longer than 8 days.

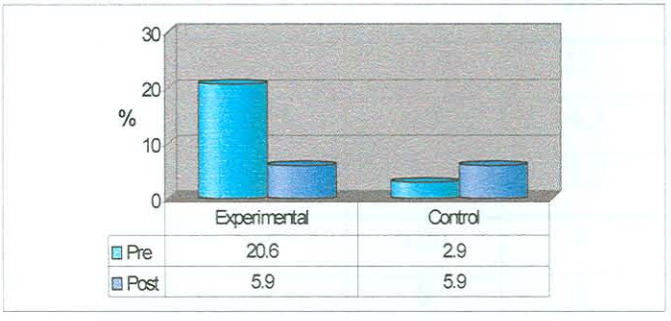

Figure 18: P C stress – questionnaire.

Table 9: Relationship between stress, lower back pain, P C stress, sick leave and absenteeism.

Variables tested	Experimental		Control		NSICK
	Pre (%)	Post (%)	Pre (%)	Post (%)	Sick leave & Absenteeism (days)
Stress	87,5	100	12	83,3	0 - 7
	0	0	0	16,7	8 -15
	12,5	0	88	0	> 16
Low back pain	72,2	90,9	12	66,7	0 - 7
	16,7	9,1	14,3	16,7	8 -15
	11,1	0	73,7	16,7	> 16
PC stress	100	100	4	100	0 - 7
	0	0	0	0	8 -15
	0	0	94	0	> 16

4.3 SICK LEAVE AND ABSENTEEISM DATA

As noted in figure 19 and table 10, the experimental group' s sick leave and absenteeism days improved significantly ($p \leq 0,01$) compared to the control group (6,3 days to 1,4 days in the experimental group compared to 4,9 days to 4,6 days in the control group). These differences were due to the implementation of the physical wellness programme. This is supported by similar findings from Richardson (1974). He compared the absence and sick leave days of an exercise and non-exercise group and found that during the six months before the programme started, the difference in the average number of sick leave days per person between the groups was 1,08 days. As it continued, the exercise group missed an average of 2,5 days' work compared to the 4,4 days missed by the non-exercisers. According to Keelor (1974), the introduction of an employee fitness programme by Goodyear in Narrköping, Sweden, caused a decrease in absenteeism of

nearly 50%. Pravosudov (1976) referred to a study by Zholdak, Vasiyeva and Malova who found that those who are physically inactive are ill five to eight times more often than those who exercise.

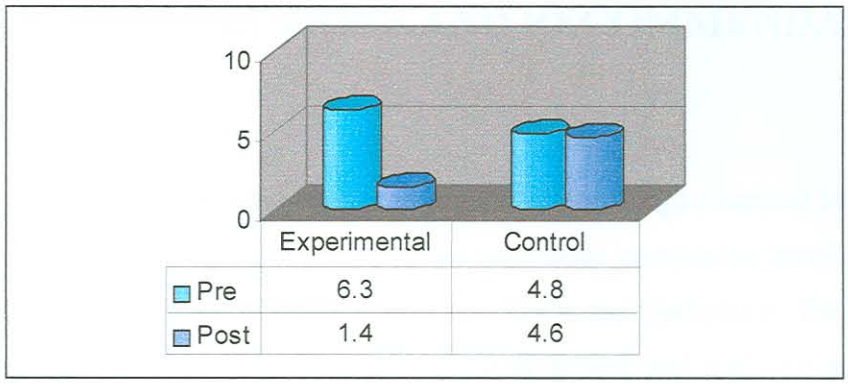

Figure 19: Differences in mean number of sick leave and absenteeism in days.

Table 10: Sick leave and absenteeism data.

Variables tested differences that took place - t-test	**Experimental X ± SD**	**Control X ± SD**	**t-test value (independent)**	**df (degree of freedom)**	**Signif. (2-tailed)**
SICK LEAVE & ABSENTEEISM DATA					
* Pre	6,3 ± 15,35	4,9 ± 5,70	0,523	66	NS $p > 0,05$
* Post	1,4 ± 3,31	4,6 ± 6,03	-2,690	66	** $p < 0,01$

- Positive change + Mean
- Negative change – Mean

* Pre – 6 months retrospective before intervention programme.

* Post – 6 months prospective during intervention programme.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

It is a fact that sick leave and absenteeism impose huge financial burdens on companies (Gettman, 1986). Due to this, more and more companies have come to realise the importance of physical wellness programmes in the workplace. Overseas companies are reporting that their investments in physical fitness and wellness programmes for their employees have not only resulted in helping to improve the health of their employees, but the return on their investment had been as increase in productivity and a decrease in medical costs, due to less sick leave and absenteeism. Studies by Linden, 1969, Cox et al., 1981; Baun et al., 1986; support this. Berry (1981) goes further by stating that it is imperative for companies to conduct physical wellness programmes at the workplace. The significant benefits to a company conducting programmes conducive to improving health are a decrease in health care costs, reduction in absenteeism, reduction in turnover of employees, increase in employee productivity, an increase in employee coping capability and an increase in employee fitness. Such benefits are necessary to affecting overall reduction in the complex and escalating health care bill for companies.

Out of the abovementioned it is clear that the benefits and advantages of overseas companies conducting physical wellness programmes are abundant. Unfortunately existing research is limited by the fact that to date no attempt has been made to analyse the impact of a worksite physical wellness programme on absenteeism and sick leave in any South African company. This is supported by Dreyer (1996) who revealed that to date there is no concrete empirical evidence that corporate based wellness programmes show a cost-benefit to South African companies due to lower medical costs imposed by sick leave and absenteeism. The closest you will get to South African studies similar to the findings done overseas are a study by Strydom et al. (1985). They studied the effect of a 24-week training programme on some physical, physiological and biochemical

parameters among executives in the South African motor industry. Dreyer and Strydom (1992) evaluated in their study the physically, physiologically and personally experienced advantages of an executive fitness programme. Significant improvements ($p \leq 0,05$) occurred in systolic and diastolic blood pressure, abdominal strength, sit-and-reach flexibility and percentage body fat. Some employees perceived benefits that could have an influence on the company's productivity and health care costs, while 41,6% indicated that their job performance and attitude towards their work improved. Forty-four percent of the employees felt that they could manage work pressure and stress better and 79,4% of the executives also felt that such a programme was cost effective for the company. The abovementioned study indicated that an executive fitness programme may have a positive effect on health-related fitness. When literature is studied one is led to ask whether or not, and to what extent a physical wellness programme would have an impact on absenteeism and sick leave among black African men.

The subjects that participated in this study were 68 black African males performing physical labour. The subjects were stratified randomly assigned to either a control group or an experimental group. The controls were matched in age, gender and occupation. The experimental group was exposed to a 6-month intervention programme (physical wellness programme), while the control group subjects were requested to continue with their present lifestyles. A pre-evaluation as well as a post-evaluation took place to determine the extent of change produced by the physical wellness programme, compared to that of the control group (see Study design - 3.3). The evaluation commenced with an initial health education session and the completion of a medical and health habits questionnaire (see appendix B) that led into the physical evaluation, which consisted out of the following:

(i) Clinical and physical data
(ii) Medical and health habits questionnaire
(iii) Sick leave and absenteeism data

The specific tests carried out under each of these evaluations are discussed under Procedures (3.2) in Chapter 3.

To recapitulate, the scope of research undertaken was delimited to an experimental epidemiological study. The study was directed primarily towards understanding the impact of a physical wellness programme on sick leave and absenteeism in black African men. The secondary aim focused on whether a physical wellness programme would have a positive effect on health-related fitness. After the intervention of the 6-month physical wellness programme, and in the light of the results discussed in Chapter 4, the conclusions and recommendations are presented accordingly:

The positive change produced by the implementation of the 6-month worksite physical wellness programme was significant ($p \leq 0,05$) compared to the control group in most parameters tested. Statistically significant differences were apparent in the systolic blood pressure ($p \leq 0,05$) and hamstring and lower back flexibility ($p \leq 0,001$) during the **clinical and physical evaluation**. Although positive changes occurred in fat percentage and fitness, these changes were not significant ($p \geq 0,05$).

Although the response to all three questions in the **medical and health habits questionnaire** indicated a positive change, these changes were not significant in terms of Stress ($p \geq 0,05$), Lower back pain ($p \geq 0,05$) and Personal computer stress ($p \geq 0,05$).

Finally, in the **sick leave and absenteeism days** the parameters indicated statistically significant changes ($p \leq 0,01$).

Due to the significant positive changes in the clinical/physical data and in the sick leave/absenteeism data, the two hypotheses of this study can thus be accepted. It is also significant to note that there was a definite decrease in sick leave and absenteeism, which are surely the most important economical indicator for South African companies implementing worksite physical wellness programmes. This study supports similar findings by other authors (Linden, 1969, Cox et al., 1981, Shepard, 1982, Song, 1982,

Baun et al., 1986, Blair et al., 1986, Cole, 1987; Warner, 1990;) who found a reduction in sick leave and absenteeism due to the impact of a worksite physical wellness programme. This study further supports findings by Gettman (1986) that less sick leave and absenteeism resulting in lower financial expenses with a positive effect on company's entire health bill. This study also supports the work of Dreyer and Strydom (1992) who found that an onsite fitness programme had a positive effect on health-related fitness.

The setting in which the physical wellness programme was performed was significant. As mentioned in the study, the employees' personal circumstances only allowed them to partake in "home-based" type exercises after working hours. This in itself made the programme very cost-effective, because the employees did not have to pay membership fees at an exercise club and the company did not lose money due to the fact that the exercises were performed after working hours. The company was saved the expenses of establishing and maintaining a fully equipped gym. The fact that no external reinforcements, like incentives were used for motivational purposes made the programme even more cost-effective. This is supported by Danielson and Danielson (1979), two behavioural psychologists who argued that after some unspecified period, the rewards of exercise became internalised, and it is was consequently no longer necessary to provide external reinforcements in order to sustain participation. Biokineticists consider exercises as the cornerstone of their treatment using a Biokinetic practice setting where exercises are performed under direct supervision of a Biokineticist. It is therefore significant that a "home-based" exercise programme had a positive impact on people's health-related fitness. Using the latest information available, this study is the first controlled study using a "home-based" exercise programme evaluating the impact of a physical wellness programme on absenteeism, sick leave and health-related fitness. This study serves to confirm that medical care is not a substitute for self-care, rather it is a supplement to self-care, a complement, that collectively we as a society erroneously chose to elevate to the status of alternative. The further execution of the physical wellness programme was also practical and cost effective, making use of the onsite multidisciplinary team members (Medical practitioner, Occupational health nurse, Psychologist, Wellness practitioner and Biokineticist). It is further significant to note the

evaluation methods used in the study. Field tests were used to determine the employee's physical and health status. No expensive evaluation equipment was used.

The whole execution of the physical wellness programme in this study is thus functional and obtainable for the Biokineticist who needs some guidelines in the implementation of an onsite physical wellness programme.

Although the hypotheses of this study have been successfully completed, it would be presumptuous to expect that these are the only justifiable hypotheses and that this study cannot be improved upon. The following recommendations are thus made to expand on the knowledge on the impact of a worksite physical wellness programme on absenteeism, sick leave and health-related fitness.

- Although the 6–month period was significant, the belief is held that more significant results can be obtained over longer periods. According to Lusk (1997), the evaluation period should be long enough to reasonably expect change in behaviour or biological measures, with periodic measures to document effects and recidivism. Much more information is needed regarding interventions necessary to maintain the desired effects.

- To achieve the most benefit, multiple-focused health promotion programmes should be offered, as several studies reported carryover effects on change in a specific behaviour from participation in programmes directed toward changing behaviour.

- To add to the previous point, although no studies of integrated physical wellness programmes and occupational health and safety programmes were reported, there is rationale to support their synergistic effects, and they should be affected and evaluated.

- Few programmes determine their foci based upon assessment of the needs of their employee group. Programmes should be based on the characteristics and interests of the recipients, as the programmes will be better received and achieve greater success.

- More research is needed to determine what needs to be done in order to help black African men to make the necessary health expected lifestyle changes that coincides with their unique culture.

- A sound, comprehensive assessment of workplace physical wellness programme economics considering all of the economic parameters involved in sick leave and absenteeism, including health care costs, life insurance, short- and long-term disability, workers' compensation, sick leave and absenteeism pay, turnover, productivity and pensions need to be researched. Is the intervention programme "profitable," a "bottom line" success?

- To add to the previous point, the implications in later years, as well as in the near term, should be evaluated for all of these variables.

- The cost-effective analysis and cost-benefit analysis of a worksite physical wellness programme need to be researched.

- Futhermore, research is needed to determine the effect of a physical wellness programme on intangibles, including such items as employee morale, company image and the inherent value of better employee health for example the value to employees themselves and to society, beyond the contributions to the economic concerns listed first.

- Further research is needed concerning the success of physical wellness programmes that leads to an older workforce, one that, simply by virtue of its age, is likely to experience the infirmities associated with greater age. This in turn can translate into higher eventual health care costs and disability payments. The success of wellness

programmes in increasing life expectancy may lead to more workers living well into retirement; thereby increasing companies' pension obligations.

- Biokineticists have a contribution to make to the research area of onsite physical wellness programmes and could increase their involvement by linking with occupational health nurses practising in the worksite to conduct studies in wellness programmes.

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APPENDIX A

INFORMED CONSENT

I,_____have completed the
(full name of prospective participant)
questionnaire and understand all the questions. I have had the opportunity to discuss all unclear aspects with the Biokineticist. I hereby give my permission to be evaluated and agree to follow the prescribed exercise programme.

I further agree that I or any of my relatives, executor, administrator or legal representatives will not impose any claim against the biokineticist or practice, except in case of negligence or malpractice by the biokineticist.

I understand I am using the facilities and equipment at my own risk.

_____ _____
Signature of prospective participant **Date**

_____ _____
Signature of witness **Date**

APPENDIX B

PERSONAL INFORMATION SHEET

Unique no: _____ **Date:** _____
Name: _____
Department: _____ **Tel. no:** _____
Age: _____

MEDICAL AND HEALTH HABITS QUESTIONNAIRE

(Encircle the applicable answer)

1. **Do you suffer from any injuries?** Y/N _____
2. **Do you take medication on a regular basis?** Y/N _____
3. **Do you have high blood pressure?** Y/N _____
4. **Do you exercise regularly?** Y/N _____
5. **Do you smoke?** Y/N _____
6. **Do you often experience stress?** Y/N _____
7. **Do you suffer from low back pain?** Y/N _____
8. **Do you experience PC (personal computer) stress?** Y/N _____
9. **Do you eat three balanced meals a day?** Y/N _____

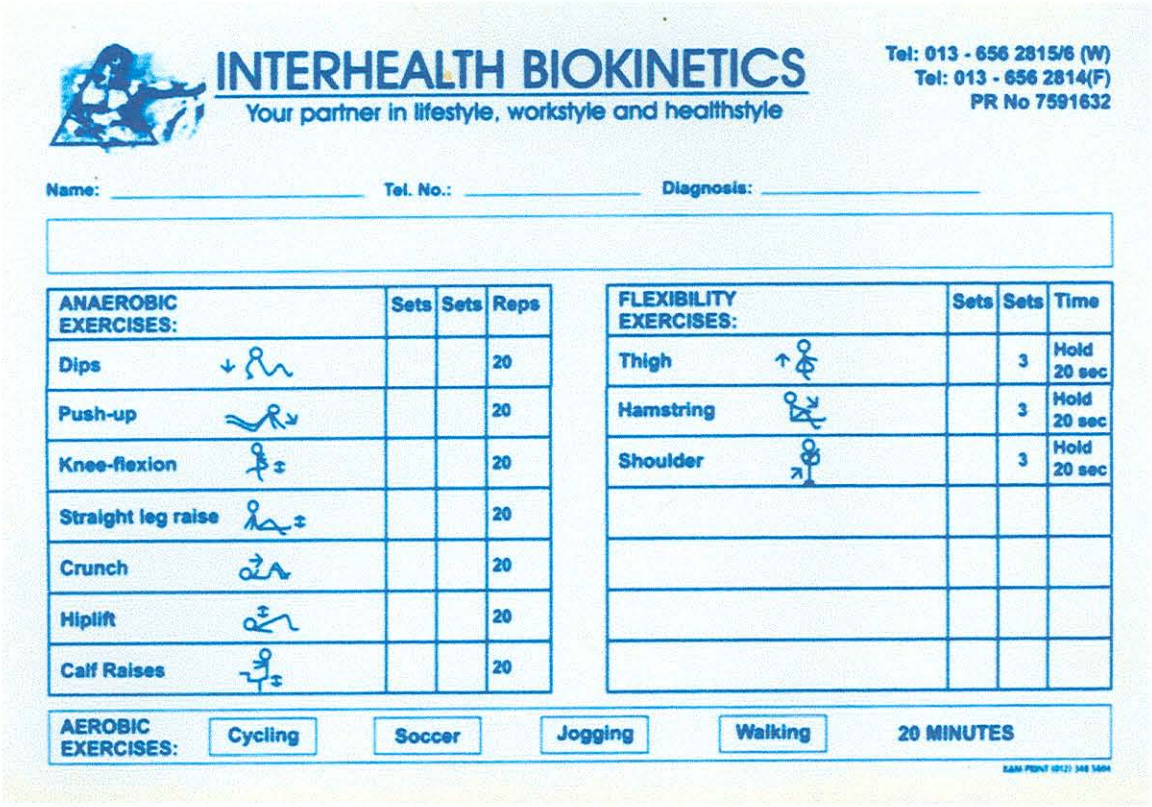
PRACTICAL EVALUATIONS

Blood pressure	G A P	_____	**mm/Hg**
Fitness	G A P	_____	**b/min.**
Fat percentage	G A P	_____	**%**
Flexibility	G A P	_____	**cm.**

GOOD AVERAGE POOR

APPENDIX C

Biokinetic exercise card



INTERHEALTH BIOKINETICS

Your partner in lifestyle, workstyle and healthstyle

Tel: 013 - 656 2815/6 (W)
Tel: 013 - 656 2814(F)
PR No 7591632

Name: _____ Tel. No.: _____ Diagnosis: _____

ANAEROBIC EXERCISES:	Sets	Sets	Reps
Dips			20
Push-up			20
Knee-flexion			20
Straight leg raise			20
Crunch			20
Hiplift			20
Calf Raises			20

FLEXIBILITY EXERCISES:	Sets	Sets	Time
Thigh		3	Hold 20 sec
Hamstring		3	Hold 20 sec
Shoulder		3	Hold 20 sec

AEROBIC EXERCISES: Cycling | Soccer | Jogging | Walking | 20 MINUTES