The relationships between leisure-time physical activity and health related parameters in executive employees of selected African countries

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The relationships between leisure-time physical activity and health related parameters in executive employees of selected African countries

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DECLARATION

The co-authors of the article which form part of this dissertation, Prof. Andries Monyeki (supervisor), Prof. Gert Strydom (co-supervisor) and Prof. Lateef Amusa (co-supervisor) hereby give permission to the candidate Ms. Meriam Mohlala to include the article as part of the Masters dissertation. The contribution of the co-authors was limited to their professional advice and guidance as study leaders towards the completion of the study.

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ABSTRACT

Leisure-time physical inactivity is a global public health concern affecting all people in different walks of life, including employees. This inactivity is associated with chronic diseases of lifestyle as well as low work capacity. The purpose of this study was two-fold: to determine leisure-time physical activity (LTPAI), coronary risk- (CRI), health status (HSI) and lifestyle (LSI) indexes of some executive employees in selected African countries; and to determine the effect of leisure-time physical activity (LTPA) on the coronary risk-, health status- and lifestyle- indexes of some executive employees in selected African countries.A cross-sectional study design was followed on a group of 156 (mean age 41.22±10.17) executive employees. Participants were grouped according to age (<35 years; 36–46 years and > 46 years). Standardized questionnaires were used to collect data. Out of 156 participants in the study, 43% occupied top level management and 57% middle level management positions. When data were analyzed according to age groups, 31% and 69% in the less than 35 years age group were in the top and the middle level management, respectively. In the age group 36 to 46 years of age, 47% were in the top level of management and 52.8% middle level management. With regard to LTPA, top level managers (71.6%) scored low LTPA as compared to middle level managers (62.9%). Top level managers scored higher percentages (14.9%) for developing the risk of coronary heart disease. The results show a negative effect of physical activity on selected health parameters, with significant negative relationships between low LTPA and daily lifestyle index ($r= -0.52$; $p=0.01$), and moderate LTPA and daily lifestyle index ($r= -0.71$; $p<0.001$) for middle managers. It can be concluded that both top and middle level managers exhibited low LTPA and high risk for developing coronary heart disease. It was apparent that the managers in low LTPA are prone to bad stages of life style, health status and coronary risk- indexes compared to the ones with moderate and high LTPA. Additionally, low and moderate LTPA inversely affected selected health parameters of executive employees. No significant association was found for high LTPA with selected health parameters. The study therefore recommends a strategic intervention programme geared towards improving the present state of affairs among the managers in the corporate environment.

Key words: Leisure-time physical activity, physical activity index, health and wellness, coronary heart disease, executive employees

OPSOMMING

Fisieke onaktiwiteit gedurende die vryetyd is ’n globale gesondheidsprobleem wat mense op alle vlakke beïnvloed – insluitend werknemers. Sodanige fisieke onaktiwiteit word geassosieer met kroniese leefstyl siektes asook ’n lae werksvermoë. Die doel van hierdie studie was tweeledig, naamlik; om die vryetyd fisieke aktiwiteit-, koronêre risiko-, gesondheidstatus- en leefstyl-indeks van uitvoerende amptenare in enkele geselekteerde Afrika lande te bepaal, asook om die invloed van vryetyd fisieke aktiwiteit op die koronêre risiko-, gesondheidstatus- en leefstyl-indekse van uitvoerende amptenare in genoemde lande te ondersoek. ’n Dwarsdeursnit studie-ontwerp wat ’n groep van 156 beskikbare uitvoerende amptenare insluit (ouderdom$\bar{x}$ = 41.22 $\pm$ 10.17 jaar), is in die studie gebruik. Deelnemers is op grond van ouderdom in 3 groepe verdeel te wete; < 35 jaar; 36 – 46 jaar en > 46 jaar. Gestandiseerde vraelyste is gebruik om die inligting van deelnemers te bekom. Van die deelnemers was 43% topvlak bestuurslui, terwyl 57% middelvlak bestuurders was. Met ontleding van die data is aangetoon dat 31% en 68.6% van diegene in die <35 jarige groep in die top- en middelvlak bestuursposisies respektiewelik was. In die ouderdomsgroep 36 – 46 jaar was 47% in die topvlak terwyl 52.8% in die middelvlak bestuur was. Wat die vryetyd fisieke aktiwiteitsindeks betref, was 71.6% van topvlak bestuurders in die lae kategorie teenoor die 62.9% van die middelvlak bestuur, terwyl 14.9% van die topvlak bestuurders ’n hoër risiko om koronêre hartsiektes te ontwikkel vertoon het. Die resultate vertoon ’n negatiewe verhouding met die bepaalde gesondheidskonstrukte, met betekenisvolle negatiewe verwantskappe tussen ’n lae vryetyd fisieke aktiwiteit en daaglikse leefstylindeks (r = −0.52; p= 0.01) en matige vryetyd fisieke aktiwitweit en daaglikse leefstyl indeks (r = −0.71; p= 0.0001) vir middelvlak bestuurders. Dit het ook geblyk dat beide top- en middelvlak bestuurders ’n lae fisieke aktiwiteitindeks asook ’n hoë risiko vir die ontwikkeling van koronêre hartsiekte toon. Dit is verder ook aangedui dat bestuurders in die lae vryetyd fisieke aktiwiteit indeks in die swak kategorie ten opsigte van daaglikse leefstyl-, gesondheidstatus- en koronêre risiko-indeks sorteer, in vergelyking met diegene in die matige en hoë indekse ten opsigte van vryetyd fisieke aktiwiteit. Dit blyk ook verder dat vryetyd fisieke aktiwiteit ’n negatiewe verhouding met die geselekteerde gesondheidskonstrukte by die uitvoerende

bestuurslui vertoon. Op grond van die resultate behoort strategiese intervensie programme in plek gestel word ten einde die huidige welstand van bestuurslui in die korporatiewe omgewing te verbeter.

Sleutelwoorde: Vryetyd fisieke aktiwiteit, fisieke aktiwiteitindeks, gesondheid en welstand, koronêre hartsiekte, uitvoerende amptenare.

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List of Abbreviations

ACSM	American College of Sports Medicine
CHD	Coronary Heart Disease
CRI	Coronary Risk Index
e.g.	Exempli gratia (for example)
et al	*et alii* (and others)
HSI	Health Status Index
i.e.	*idest* (that is)
LSI	Lifestyle Status Index
LTPA	Leisure – Time Physical Activity
LTPAI	Leisure-Time Physical Activity Index
PA	Physical activity
PAI	Physical Activity Index
USA	United States of America
WHO	World Health Organization

List of Symbols

%	percentage
*****	significant
<	smaller than
>	greater than
≤	small or equal to
≥	greater of equal to
-	minus
+	plus
=	equals
±	plus, minus

Conference presentations

Topic: Leisure time physical activity and some health parameters among executive employees in selected African countries.

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CHAPTER 1: Problem statement, objectives, hypothesis and structure of the dissertation

1.1 INTRODUCTION

Physical inactivity is a global public health concern affecting all people in different walks of life, including employees (Lee & Paffenbarger, 2000:293-299; Allman-Farinelli *et al.,* 2010:14). In industrialized countries, modern technology has largely eliminated the need for physical exertion on the job, in the home, and for transportation (Haskell, 1996:37-51). This is further confirmed in a research conducted by Dreyer (1996:131) in South Africa, that modernising, technological growth and competition causes a stressful and often inactive environment among executive employees. Dreyer and Strydom (1994:1) revealed that only 3% of South African executives are physically active at work whereas 14.3% participate in adequate leisure-time activities to ensure health benefits.

1.2 PROBLEM STATEMENT

Research document by Physical Activity Guidelines Advisory Committee (2008) indicated that physically active people have higher levels of health-related fitness, lower risk profiles for the development of numerous clinical conditions and lower rates of chronic diseases, as compared to their less active counterparts. Furthermore, it was indicated that physically active adults have lower rates of all-cause mortality, coronary heart disease, stroke, type 2 diabetes, colon cancer, breast cancer, depression, hypertension and metabolic syndrome (Pronk & Kottke, 2009:316-321). A dose-response relationship between physical activity can favorably alter blood lipids when certain thresholds are met (Durstine *et al.,* 2003:369).

Kawada and Suzuki (2008:397-403) have reported that white collar workers' lifestyles are more irregular because of their long commutes, long working hours, skipping of meals and dining with colleagues, than those of subjects in other ranks. Coopoo (2006: 27-29) alluded to the fact that the chronic health problems often seen in industries and companies are directly related to risk factors, such as high cholesterol levels, poor eating habits, physical inactivity, smoking and alcohol abuse;

consequently resulting to the development of chronic diseases such as diabetes, coronary heart disease, hypertension, stroke and obesity. In some occupations, workers are faced amongst others, with physical and psychological stress that may impact negatively on health and performance at work. Research (Burton *et al.,* 1999:863-877; Burton *et al.,* 2001:64-71; Bunn *et al.,* 2005:941-955) has linked poor health status with higher direct health care costs, lower work output (e.g. presenteeism), higher rates of disability, absenteeism, workers' compensation claims and injury in the company.

Physical inactivity has been hypothesized as a contributor to the development of coronary heart disease (Blair *et al.,* 1995:1093; Strydom *et al.,* 1998:125; Erikssen, 2001:571). Strydom *et al.*(1998:125) study involving South African executives from the mining, construction, steel, motor and financial industries indicated a very high prevalence of four primary risk factors of coronary heart disease, viz. elevated cholesterol, smoking, hypertension and physical inactivity. Sundquist *et al.* (2005:219-225) analyse the long term effects of physical activity on the incidence of coronary heart disease and found that the risk for coronary heart disease decreased with increased leisure time physical activity. Several studies (Lee *et al*., 2001:1447 - 1457; Tanasescu *et al.,* 2002:1994 -2000; Manson *et al.* 2002:716 -725) showed a reduction in coronary heart disease risk factors as a result of increased physical activity.

Swanepoel (2001:100) indicated that 75.6 % of executives do not apply the basic principles of a healthy lifestyle as outlined by Belloc and Breslow(1972:46-64). This non-application can be partially attributable to the worker's lifestyles that are more irregular because of their long commutes, long working hours, skipping of meals, and dining with colleagues (Kawada & Suzuki, 2008:397-403). Another major problem for executives is to establish a balance between their work, family and relaxation (Uys & Coetzee; 1989:4).

Regular physical activity has been found to be a key contributor to healthy lifestyle (Frankish *et al.,* 1998:287-301). Reducing or preventing health risks, increases a person's productivity and reduces absenteeism, disability and future health care utilization (Musich *et al.*, 2003:393-399). Therefore, it is important for companies to understand that the risk status of their employees are not static, because a low risk individual today can become of high risk tomorrow (Edington, 2001:341–349; Musich *et al.,* 2003:393-399). Musich *et al.* (2003:393) reported that annually 2% to 4% of employees migrate to a higher risk category if not properly managed. As such, it is important to identify and manage the health risk in the person at the right time (Edington, 2000:6-9).

Physical activity during leisure-time has a potential to contribute significantly to physical, social and emotional well-being (Russell & Jamieson, 2008:3-13). In addition, there is a positive association between physical activity and productivity and between regular onsite exercise and productivity (Coulson *et al.,* 2008:176-197). Incidental physical activity at work (e.g. standing at desks), exercise, sport and leisure time physical activity were measured, a positive association between activity and physical self-worth, job satisfaction and emotional well-being were indicated (Coulson *et al.,* 2008:176-197). Yet, whilst these associations are well documented, the effect of leisure time physical activity and some health parameters in executive employees in selected African countries remain unclear and often anecdotal. Compared to other affluent countries, limited studies which addressthis phenomenon concerning African employees are scanty.

The executive employees are sparse in Africa and the working conditions in Africa may differ from other countries. Given this, and the established links between physical activity and productivity at the workplace (Schultz & Edington, 2007:547). As such examining the relationship between LTPA and health related parameters among executive employees in an African setting are worthwhile. It is envisaged that the findings from the study would be useful to companies in helping them to manage the valuable sources of high skilled manpower. It would inform the companies health risk profile and policy, thus timely intervention strategies could be as well as

empower the employees with knowledge to take self-responsibility for their health. The following research questions are posed: (a) What does the leisure- time physical activity-, coronary risk-, health status- and lifestyle profiles of executive employees in selected African countries look like? (b) What are the effects of LTPA on the coronary risk-, health status- and lifestyle indexes of executive employees in selected African countries?

The answers to these research questions will be very important to companies in order to manage the valuable sources of highly skilled manpower by knowing the companies' health risk profile, so that timely intervention strategies could be put in place as well as to empower the employees with knowledge to take self-responsibility for their health. In addition, the study will provide Biokineticists with valuable knowledge regarding the employees' health status and as such enable them to design strategic programmes for intervention.

1.3 OBJECTIVES

The objectives of this study were:

i. To determine leisure-time physical activity-, coronary risk-, health status- and lifestyle profiles of executive employees in selected African countries.
ii. To examine the relationshipbetween leisure-time physical activity (LTPA) andthe coronary risk-, health status- and lifestyle indexes of executive employees in selected African countries.

1.4 HYPOTHESES

The hypotheses for this study were:

(i) The leisure-time physical activity, coronary risk-, health status- and lifestyle profiles of some executive employees in selected African countries can be ranked in the poor category.

(ii) Low Leisure-time physical activity will have a significant relationship with the coronary risk- health status - and lifestyle status of executive employees in selected African countries.

1.5 STRUCTURE OF THE DISSERTATION

The dissertation is presented in an article format as approved by the North-West University. The content of the dissertation is as follows:

Chapter 1: Problem statement, objectives, hypothesis and structure of the dissertation.

Chapter 2: Leisure-time physical activity and health parameters of employees in the corporate environment: a Literature review. The references in Chapters 1 and 2 will be prepared in accordance with the guidelines proposed by the North-West University.(See Appendix B).

Chapter 3: Article 1: The relationship between leisure-time physical activity and health related parameters in executive employees of selected African countries: The manuscript will be prepared for publication in the *African Journal of Physical, Health Education, Recreation and Dance.* The references will be prepared in accordance with the guidelines proposed by the African Journal of Physical, Health, Education, Recreation and Dance (See Appendix B).

Chapter 4: Summary, Conclusion, Limitations and Recommendations. The references of this chapter will be prepared in accordance with the guidelines proposed by the North-West University.

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CHAPTER 2: LEISURE–TIME PHYSICAL ACTIVITY AND SOME HEALTH RELATED CONSEQUENCES IN EXECUTIVE EMPLOYEES: A Literature Review

2.1 INTRODUCTION

Research has revealed a significant relationship between regular leisure-time physical activity with health and the total well-being in free living people as well as executive employees in the corporate environment (Musich *et al.,* 2003:393-399).It is reported that employees in the corporate world, more especially the executives are more confined to their day- to- day office work with less participation in leisure-time physical activity (Kawada & Suzuki, 2008:397-403).As such, the amount of work on the executive employee possess more serious challenges to their total personal well-being which are found to be associated inter alia, with reduced work productivity and an increase in health risk factors (Dreyer, Strydom& Van der Merwe, 1996:457-465).

Physical activity is a broad term used to define any bodily movement produced by the skeletal muscles that results in energy expenditure and produces progressive health benefits (WHO, 2010). Physical activity includes occupational work, chores, leisure activity, sports play and exercise that are planned for fitness or health purposes (U.S. Department of Health and Human Services, 1996:20).

The relationship between physical activity and health is well known, dating back to the 5th century BC, where Hippocrates stated that “eating alone will not keep a man well; he must also take exercise, for food and exercise…work together to produce health” (Jones, 1952). For the purpose of this study leisure-time physical activity (LTPA) as a component of physical activity will be used as a central focus.

Epidemiological studies indicate that regular leisure-time physical activity is associated with reduced risk of developing cardiovascular disease, type 2 diabetes, and several types of cancers (Lee *et al.,* 2000:981-996; Stampfer *et al.,* 2003:16-22; Sallis, 2009:3-4). Furthermore, regular participation in leisure-time physical activity is reported to have a significant role in the reduction of depression, anxiety, improve mood and psychological health and enhance the ability to perform daily tasks (U.S. Department of Health and Human Services, 1996). The purpose of this chapter therefore, is to provide a literature review on the leisure-time physical activity, factors contributing towards the lack of leisure-time physical activity in the executive employees in the corporate world, benefits which can be achieved through regular participation in leisure-time physical activity and the consequences of lack of regular

leisure-time physical activity among executive employees in the corporate environment.

2.2 LEISURE-TIME PHYSICAL ACTIVITY (LTPA)

Leisure-time physical activity (LTPA) is the term used to distinguish physical activity (PA) undertaken during non-working time, from physical activity undertaken as part of a person's occupation (Jose & Hansen, 2009:192). As such, regular leisure-time physical activity is regarded as an important behaviour for promoting health, postponing or preventing musculoskeletal disorders such as mechanical low back pain, neck and shoulder pain and decreasing the risk of developing coronary heart disease, hypertension, diabetes, osteoporosis, obesity and colon cancers (Vuori, 1995:276-285; Jones *et al.,* 1998:285-289). Promotion of leisure-time physical activity is recognized as an important component in health prevention policies (Vuillemin, 2005:562-569).

Current leisure-time physical activity recommendations for the general population in order to improve general health are that all adults should accumulate at least 30-minutes of moderate- intensity physical activity on most, and preferably all, days of the week (Pate *et al.,* 1995:402-407). Studies have revealed a significant association between recommended leisure-time physical activity andimproved health-related quality of life (Brown *et al.,* 2003:520-528; Brown *et al.,* 2004:890-896).

Regular leisure-time physical activity increases exercise capacity and plays a role in both primary and secondary prevention of cardiovascular disease (Smith *et al.,* 1995: 2-4). Physical activity increases cardiovascular functional capacity and decreases myocardial oxygen demand at any level of physical activity in apparently healthy persons as well as in most subjects with cardiovascular disease, and is required to maintain these training effects (Fletcher *et al.,* 1996:857-862). In a study of middle and older aged men and women, increasing levels of leisure-time physical activity, was strongly associated with all-causes of mortality and cardiovascular disease events, with approximately 30% of lower risk in the most active group compared with those who were inactive (Khaw *et al.,* 2006:1038). The study further revealed that increasing leisure- time physical activity was associated with lower levels of known

cardiovascular risk factors including hypertension, hypercholesterolemia, diabetes, and smoking prevalence (Khaw *et al.,* 2006: 1038).

Studies that followed large groups of individuals for many years revealed that physical activity also has a preventative effect for a number of non-cardiovascular chronic diseases, such as non–insulin-dependent diabetes, hypertension, osteoporosis and colon cancers (US Public Health Service, 1996). Furthermore, physical activity is also associated with a number of physiological benefits such as improvement in muscular function and strength, improvement in maximal oxygen consumption (the body's ability to utilize oxygen), and as one's ability to transport and use of oxygen improves, regular daily activities can be performed with less fatigue. In addition, it promotes weight reduction and can help reduce blood pressure (Hagberg, 1990:455-465; Braith *et al.,* 1994:1124-1128). A study in Canada, reported that men and women who were at least moderately active during leisure-time were more likely to rate their health excellent or very good (rather than good, fair or poor). Furthermore, they reported lower levels of stress, were less likely to report high blood pressure, and were less likely to be overweight or obese (Gilmour, 2007:45-66).

In diabetic patients, regular physical activity favourably affects the body's ability to use insulin to control glucose levels in the blood (Myers, 2003:e2-e5). Regular physical activity can lower the triglyceride level in the blood, and can raise the high-density lipoprotein level (HDL) (Biggerstaff & Wooten, 2009:262). Regardless of the body of research revealing positive benefits, associated with leisure-time physical activity towards healthy lifestyle (Pate *et al.,* 1995:402-407), leisure-time physical inactivity remains a major health problem.

Leisure-time physical activity does not take into account energy expended in usual daily activities, at work or for transportation. In a study of 341 males and 620 females, it was revealed that occupational and leisure-time physical activities are considered to provide similar health benefits. The study also revealed that in a dose-response manner, occupational physical activity increased the risk for long- term sickness absence (LTSA), while leisure-time physical activity decreased the risk for LTSA (Holtermann *et al.,* 2011:291-295). The health benefits of leisure time physical activity are accrued in a dose-dependent manner, and early adaptations in the

transition from sedentary living to becoming moderately active, seem to have effects on risk reduction for chronic diseases of lifestyle in both men and women (Bouchard, 2001:S347-350; Haskell, 2001:S454-458). Lahti *et al. (*2010:246-250) suggests that vigorous activity may be more beneficial than moderate activity in maintaining physical health functioning. Evidence suggests that higher intensity activity provides additional reduction in the mortality risk compared to lower intensity activity (Physical Activity Guidelines Advisory Committee, 2008). Other investigations have indicated that a volume of physical activity that is about half of what is currently recommended, may be sufficient (Lee & Skerrett, 2001:S459-71), particularly for people who are extremely deconditioned or are frail, even in the presence of some of the primary cardiovascular risk factors (Blair *et al.,* 2001:S379-99).

In a study among male office workers, it was revealed that vigorous physical activity participation, defined as requiring an energy expenditure of 31.5kJ per minute, was associated with a substantially lower mortality rate than was seen in men who did not participate in vigorous exercise (Morris*et al.,* 1980:1207-210). Regular physical activity protects against mortality from coronary heart disease and from all–cause morbidity (Paffenbarger & Lee, 1998:S31-45), this was demonstrated in the Harvard Alumni health study that even moderate physical activity can protect against premature mortality among men of all ages from 45 to 90. Thus, sufficient intensity, frequency and duration of physical activity are likely to be beneficial for maintaining good health and functioning.

2.2.1 ASSESSMENT OF LEISURE-TIME PHYSICAL ACTIVITY

Several techniques for assessing leisure-time physical activity are available and can be grouped into two broad categories: subjective, which includes observation and questionnaire (including activity diaries, recall questionnaire and interview) andobjective, which includes physiological indices such as heart rate (HR), calorimetry, the doubly-labelled water (DLW) method and electronic motion sensors (Westerterp, 1999:45-46). Each of these methods has its strengths and limitations in assessing leisure-time physical activity. The assessment technique applied must be socially acceptable, should not be a burden to the participant and should influence

the individual's physical activity pattern minimally (Amstrong & Welsman, 2006:1067-1068).

The frequency, intensity, duration and the mode of activity are monitored to be able to quantify physical activity level as accurately as possible (Amstrong & Welsman, 2006:1067-1068). According to Kruger *et al.* (2006:1143), physical activity is assessed from the tasks performed during identifiable segments of daily life or measurement of the occurrence of the activity during non-working hours. The physical activity behaviors are assessed to monitor the status of important health related behaviors, to determine trends and appropriately allocate resources and to evaluate programmes or policy effectiveness (Tudor-Locke *et al.,* 2003:194).

2.2.1.1 *Doubly Labeled Water*

Doubly labeled water has been found to be the most precise method to measure energy expenditure and is regarded as the "golden standard" for the validation of other instruments measuring physical activity (Warms, 2006:79). This method involves the administration of an oral dose of water containing specific isotopes of hydrogen and oxygen per kilogram body mass. The amount of isotopes measured in excreted urine after a twenty four hour period is equivalent to the amount of metabolic carbon dioxide removed by the body. The metabolic carbon dioxide is then used to estimate the energy expenditure (Warms, 2006:80).The doubly labeled water method is expensive and has limited applicability, does not provide the type, pattern, frequency, intensity and duration of physical activity carried out during the day and is not feasible for large populations due to financial costs.

2.2.1.2 *Electronic Motion Sensors*

Electronic motion sensorsinclude devices such as pedometers and accelerometers (Tudor-Locke *et al.,* 2002). These devices are developed in response to the lack of reliability of self-report measures, intrusiveness of direct observation and the complexity of heart rate monitoring (Puyau *et al.,* 2002:152). Pedometers and accelerometers are affordable and good enough to measure physical activity, specifically ambulatory habitual physical activity (Tudor-Locke & Meyers, 2001:92). These are usually worn on the waist where vertical motion occurs (Coleman *et al.,* 1999:9; Tudor-Locke & Meyers, 2001:92).

2.2.1.3 *Questionnaires*

A questionnaire is the most useful method to estimate physical activity and is reliable during large epidemiological studies (Mota *et al.,* 2002:111). There is a variety of questionnaires to record physical activity, *inter alia* World Health Organization (WHO) questionnaires, self-reported activity log books and other lesser known questionnaires (Mota *et al.,* 2002:111). In particular, they are probably most effective for assessing easily-recalled, structured and time-delineated activities such as participation in sport and routine activities such as walking to work (Warms, 2006: 80). This method is inexpensive, simple and brief (Martinez-Gonzalez *et al.,* 2005:921).

Participants report about the intensity of the physical activity, the frequency of vigorous physical activity, the hours spent on vigorous physical activity, the average duration of a physical activity session and the participation in an organized physical activity (Yang *et al.,* 2010:370). The information is then coded for inactivity or very low activity (= 1), moderate activity (=2) to regular or vigorous activity (= 3) and then computed to form a physical activity index with a total score ranging from 5 to 15 (Yang *et al.,* 2010:370). In a study by Halldin *et al*. (2007:349-357) participants were instructed to classify themselves into one of the four groups, where group one was those with low physical activity suggesting a sedentary lifestyle with less than 2 hours of light physical activity per week (e.g. walking, cycling), group two were light physical activity (generally without sweating) at least 2 hour per week (e.g. walking to and from work, cycling, gardening), group three suggesting moderate physical activity viz., regular activity 1- 2 times per week, at least 30 minutes each time (e.g. jogging, swimming, tennis, badminton).The last group was those with a high physical activity level, indulging in intensive regular activity more than 2 times per week, at least 30 minutes each time (e.g. running, swimming, tennis, aerobics, or other strain exercises). Work related physical activity was classified in the questionnaire as mainly sedentary/ physically very light, half work day sedentary/ physically light, less than half work day sedentary/ physically intense, and active/ physically strenuous (Halldin *et al.,* 2007:351).

2.3 THE LEVEL OF LEISURE-TIME PHYSICAL ACTIVITY OF THE EMPLOYEE

During the course of the last century, major changes in life-style have had a profound impact on patterns of energy expenditure and physical activity in both developed and developing countries (Livingstone *et al.,* 2003). With modern technology and increased affluence, there have been changes in the type of occupation in which workers are employed from 'high activity' to 'low activity' occupations and the work environment that contemporary workers experience within a given occupation may now involve more sedentary times than previously (Brownson *et al.,* 2005:422; Allman-Farinelli *et al.,* 2010:1). These however, are attributed to increased mechanization in the workplace that has markedly reduced the need for moderate and high-intensity activity, to the extent that >80% of the men and >90% of the women are now engaged in sedentary occupations (Brownson *et al.,* 2005:422). Labor-saving devices and systems in the work environment play a role in reducing the overall amount of muscular work and increased the sedentary time (Bouchard, Blair & Haskell, 2007:15). They further reported television, video games, and domestic labor-saving devices contributing to increased sedentary time (Bouchard, Blair & Haskell, 2007:15). The levels of the effects of these changes from different world settings are briefly presented as follows:

In *England,* *Fentem and Walker (1995: 58- 76)* study on both leisure and occupational activity habits from the Allied Dubar National Fitness Survey and the Health Education Authority National Survey of Activity and Health revealed that men (29%) and women (28%) could not meet 30 minutes period of moderate intensity activity per week; and was classified as having a sedentary lifestyle. A further 36% of the men and 24% of the women were regularly active at moderate intensity (active for at least 30 min per occasion on five or more occasions per week in the previous 4 weeks), while only 16% of the men and 5% of the women were vigorously physically active.

In *the USA,* physical activity surveillance data on the National Health Interview Survey (US Department of Health and Human Services, 1996; Jones *et al.,* 1998);

the Behavioral Risk Factor Surveillance System (Remington *et al.,* 1988:368; Centers for Disease Control, 1995); the National Health and Nutrition Examination Survey (Crespo *et al.,* 1996:95) reported inactivity as a major public health concern. These studies reported the prevalence of sedentarism to be 23-40% among US adults with regard to leisure-time physical activity. For example, in the 1998 Behavioral Risk Factor Surveillance System, it was indicated that 30% of the adults were inactive during leisure- time, a further 43% participate in some form of activity, but of insufficient intensity to achieve a health benefit, leaving 27% who were physically active at recommended levels (Macera & Pratt, 2000:100). Similar to the data from England, about 13% of the adults meet the recommended levels of physical activity for the promotion of cardiovascular fitness (≥20 min of vigorous intensity physical activity three or more times per week).

A study in ***Finland***, revealed that 50% of the adult population were at least moderately active, while 15% are classified as highly active (Stephens & Caspersen, 1994:206). Further, it was also suggested that the energy demands of occupation activity declined by 225KJ/day between the years 1982 to 1992 (Fogelholm *et al.,* 1996:1099).

In a study in ***Australia*** on158 middle-aged women, it was found that those with no LTPA and most occupational sitting had lowest number of daily steps and higher BMI (Tudor-Locke *et al.,* 2009: 59).

In ***South Africa***, it was indicated that one third of the population does not meet the CDC/ACSM recommendation for health enhancing physical activity (30 minutes of moderate intensity on most but preferably all days of the week) and nearly half were inactive (Lambert & Kolbe-Alexandra, 2006:24). Further, in a study by Dreyer (1996: 116), it was revealed that 29.9% of executive employees were totally inactive. Three percent (3%) of South African executives were physically active at work and participated in adequate leisure time activities to ensure optimum health (Dreyer &Strydom, 1994:1). A study by Cook *et al.* (2011:619-625) indicates that among 508

females and 267 males,approximately 95% of participants were Institute of Medicine (IOM)-compliant of ≥21 kcal/kg/week and ≥3 kcal/kg/day for 7 days/week and 51% participants were compliant to the ACSM of achieving ≥10 000 steps/day on 4–7 days guidelines. Compliance with recommendations of the IOM (≥21 kcal/kg/week and ≥3 kcal/kg/day for 7 days/week) or ACSM (≥7.5 to <21 kcal/kg/week and ≥1.5 kcal/kg/day for ≥5 days/week) guideline was associated with an 87% and a 49% reduced risk of obesity, respectively (Cook *et al.,* 2011:619-625). These studies highlighted a growing trend of non-active leisure pursuits and low levels of physical activity amongst adults.

2.4 FACTORS CONTRIBUTING TOWARDS THE LACK OF LEISURE-TIME PHYSICAL ACTIVITY IN EXECUTIVE EMPLOYEES IN THE CORPORATE ENVIRONMENT

Leisure-time physical activity is important in improving health status in human population (Bouchard *et al.,* 2007:15). Regardless of the positive benefits of regular participation, most people do not participate in regular physical activity, executive employees included. Executive employee's lifestyle maybe more irregular because of their long commutes, long working hours, skipping of meals and dining with colleagues, than those of lower ranking employees (Kawada & Suzuki, 2008:397-403). In some occupations, workers are faced amongst others, with physical and psychological stress that may impact negatively on their health and performance at work.

Studies have revealed the importance of regular leisure-time physical activity among employees (Goetzel *et al.,* 1998:843-854; Burton *et al.,* 2001:64-71; Edington, 2001: 341-349; Bunn *et al.,* 2005:941-955). Regardless of these findings, executive employees do not adequately participate in regular leisure-time physical activity. There are a number of barriers associated with the lack of leisure-time physical activity. A barrier is described as one's opinion of the tangible and psychological costs of the advised or recommended action (Glanz, 1998:78). Chinn *et al.* (1999:191-192) explained thatbarriers to leisure-time physical activity could either be "internal" or "external", where internal barriers such as lack of motivation or lack of leisure-time are more common among executive employees, while "external" barriers

such as lack of money, lack of transport or illness/disability are more common in the lower class. Dishman (1994:406) opinioned that factors such as demographic variables, knowledge, attitudes and beliefs about physical activity are barriers to leisure-time physical activity. Furthermore, other studies have shown low leisure-time physical activity to be strongly associated with low income (Johansson *et al.,* 1988:8-19; Steenland, 1992:94-99), low education (Fletcher & Hirdes, 1996:136-150; Yusuf *et al.,* 1996: 1321-1326; Sternfeld *et al.,* 1999:313-323), and low socioeconomic status (Blanksby *et al.,* 1996:101-112; Shinew *et al.,* 1996:219-232; Mensink *et al.,* 1997:771-778).In addition, stress and time pressure were found to be more common barriers in executive employees (Zuzanek *et al.,* 1998:253-275).

2.5 BENEFITS WHICH CAN BE ACHIEVED THROUGH REGULAR LEISURE-TIME PHYSICAL ACTIVITY PARTICIPATION

The hypothesis that leisure-time physical activity promotes health and longevity is not new. A number of studies have generally accepted the view that leisure-time physical activity confers benefits to psycho-social health, functional ability and general quality of life (Powell & Pratt, 1996:126-127). It has been reported that regular participation in physical activity is related to the reduced risk of coronary heart disease (Batty & Lee, 2004:1089-1090) and some cancers (Batty & Thune, 2000:1424-1425). Moreover, a report in Science Daily of 2005 indicated that it takes something as simple as running, swimming or heavy gardening during leisure time to reduce your risk of stroke (Science Daily, 2005).In addition, the Science Daily report indicated that walking or biking to and from work for up to 29 minutes a day may also reduce the risk of strokes caused by a blood clot (ischemic stroke).

Given the irregular lifestyles of executive employees caused by long commutes and long working hours (Kawada & Suzuki, 2008:397-403), executive employees can benefit from regular participation in leisure time physical activity. Benefits for regular participation in leisure-time physical activity among employees can be two-fold: Individually, employees may gain a level of vitality, quality of life, and freedom from pain and suffering associated with disease (Edington, 2006:425), while the company on the other hand may gain healthier employees, reduced health care costs and higher productivity (Burton, 2004:S38-S45).

Employees who participate in regular leisure-time physical activity are more independent, have lower medical care costs, greater energy and vitality and increased life and job satisfaction (Musich *et al.,* 2003:393-399), while companies/ organizations they work in will gain healthier, productive workforce and have lower direct and indirect health related costs. Studies have found that health risks account for at least 25% to 30% of excess medical costs (Wright *et al.,* 2004: 937- 945). Ten factors (smoking, body weight, exercise, alcohol use, driving habits, eating habits, stress, mental health, cholesterol and blood pressure) were studied, and it was found that smokers had annual claims that were 31% higher than those of non-smokers; persons with elevated risk for obesity used hospital admissions 143% more frequent than their low risk peers, and persons with poor diet had medical costs 41% higher than those with good diet (Anderson *et al.,* 1995).

In a company which is self-insured, one heart attack may cost in excess of $100,000 in the US (Fabius & Glave Frazee, 2009: 27). In another study examining the relationship between physical activity and health care costs by different weight groups, it was found that the moderately active (1-2 times per week) and very active (3+ times per week) employees had approximately $250 less health care costs annually than sedentary employees (0 times per week) across all weight categories (Wang *et al.,* 2004: 428-436). They further estimated a maximum possible saving of 1.5% of the total health care costs if all obese sedentary employees would adapt a physically active lifestyle (Wang *et al.,* 2004: 428-436).

The study by Lahti *et al.* (2010:246-250) suggested that leisure-time physical activity supports good physical health functioning among middle aged employees. In an analysis of the National Health Interview Survey (NHIS), it was reported that for 20,766 employed adult Americans aged 18 years and older, approximately one third reported an adequate level of leisure time physical activity (National Health Interview Survey, 1990:420- 424). In a study of 134,072 Canadian employeesworking full-time during the past 12 months (Ratzalaff *et al.,* 2007), it was found that being physically active during leisure-time was protective against repetitive strain injury.

Reducing or preventing health risks, increases an employee's productivity, reduces absenteeism, disability, and future health care utilization (Munich *et al.,* 2003:393-

399). In a study by Burton *et al.* (2006:252-263), it was shown that employees who reduced their risk, showed improved productivity whereas those who gained risks or remained at high risk status, showed deterioration in productivity. The largest source of productivity loss is attributed to common diseases that are comparatively inexpensive to treat medically (e.g. migraines, depression and back conditions) (Leutzinger, 2009:117), than to conditions that are more expensive such as heart disease, diabetes and cancers (Leutzinger *et al.,* 2004). Presenteeism and absenteeism are the two main components related to health related productivity. Presenteeism describes how productive an employee is while at work and it is related to the quality and quantity of work done by the employee (i.e. number of errors or mistakes made at work, low work quality, and related tasks performed at work) (Lynch, 2003:9-13). The costs of presenteeism have been found to be significantly higher than absenteeism costs (Leutzinger *et al.,* 2004). About 478 million workdays were lost across the United States due to 55 million employees reporting that they were unable to concentrate at work or generate desired work output due to personal depression or an episode of a family member (Davis *et al.,* 2005: 1-5).

Absenteeism is defined as the amount of missed work time or a paid absence, (Leutzinger, 2009:117). In 2003, missed workdays due to illness among workers totaled 407 million workdays (Davis *et al.,* 2005: 1-5). Leutzinger (2009:118) reported lifestyle risks contribution to presenteeism or absenteeism and further explained that these also affect personal health. Lifestyle risks such as smoking, alcohol abuse, physical inactivity contribute to the development of chronic disease such as heart diseases, diabetes, stroke and cancer, and can also lead to presenteeism and absenteeism among employees (Davis *et al.,* 2005: 1-5). In another study determining the relationship between change in health risks and change in productivity, it was found that individuals who reduced one health risk, improved their presenteeism by 9% and reduced risk for good health by 2%.It was also concluded that reduction in health risks are associated with positive changes in work productivity (Pelletier *et al.,* 2004: 746-754).

It is important for companies to understand that the risk status of their employees is not static, because a low risk individual today can become high risk tomorrow (Edington, 2001:341-349). This is also shown by Musich *et al.* (2003:393-399) in his

model of distribution and migration of employees according to the number of risks and the costs thereof. The model shows that an employee can migrate from a low risk (0-2 risks) to a moderate risk (3-4 risks), and eventually to high risk (5 or more risks) if an intervention to help lower the risks is not in place. The model also explains that the focus of health and wellness should not be on employees with high risk only, but to employees generally. Furthermore, it was also indicated that the rate of progression from one level to another, provided that no intervention is done, could be 2 - 4 % of the employees (Musich *et al.,* 2003:393-399).

Due to the sedentary nature of most jobs and increasing risk, executive employees should not only be encouraged to engage in regular physical activity, but they should also be encouraged to make small changes in their daily activity viz., parking their cars further away from the office, getting off the bus a few stops early or walking to work and taking the stairs instead of the elevator or escalator, by so doing will immediately increase their motivation of doing walking activity. As it is being recommended by the ACSM that walking to work can be associated with improved health.

2.6 CONSEQUENCES OF THE LACK OF REGULAR LEISURE-TIME PHYSICAL ACTIVITY IN EXECUTIVE EMPLOYEES IN CORPORATE WORLD

Executives of any company are the most valuable group of the workforce because of the direct influence they have on the functioning of the company (Kaplan, 1997:14-19), but their lifestyle and working environments in most cases are not conducive to good quality of health. A typical employee lifestyle includes sitting at a desk, in meetings, in cars, and in airplanes most of the day with mobile phones and e-mails to ensure workflow and communication, as well as having the closest parking spots to their convenience, in order to save time and ensure better productivity (McDowell-Larsen, 2001:1-2). In addition, Kerin and Dawson (2004:1-7) identified extended working hours among executive employees. The long hours of sitting or standing at work have been significantly associated with the risk of obesity, which is associated with hypertension, CVD etc. (Hu *et al.,* 2003). As such, the health of an executive employee can be affected if not properly managed (Edington, 2000:6-9).

The executive employee's biggest problem is to establish a balance between work, family and relaxation (Dreyer & Strydom, 1994:11). Work related competition, labour problems and long working hours are some of the problems causing stress and other health problems among the executive employees (Rothnie-Jones, 1996:7; Corbin *et al.,* 2000: 369). Maruyama and Morimoto (1996:353) revealed a positive relationship between long working hours, coronary heart disease, stress, fatigue, depression and work dissatisfaction, these can damage productivity significantly when they are viewed cumulatively across an employee population (Edington & Burton, 2003: 140-152; Burton *et al.,* 2004: s38-s45).

In the corporate environment, research has linked poor health status to higher direct health care costs, lower work output (e.g. presenteeism), higher rates of disability, higher absenteeism, higher workers compensation and higher rate of injuries (Goetzel *et al.,* 1998:843-854; Burton *et al.,* 2001:64-71; Edington, 2001:341- 349; Bunn *et al.,* 2005:941-955). Presenteeism is a relatively new concept in the workplace health, which is viewed as not simply the opposite of absenteeism but rather a reduced ability to work productively (Hemp, 2004:51). For instance, compared to a healthy person, an employee in poor health is more likely to be absent from work and less productive while on duty (presenteeism or health- related performance reduction) (Loeppke *et al.,* 2010:275-284).

Health conditions are associated with on-job productivity loss and presenteeism is a major component of the total employer cost of these conditions (Schultz *et al.,* 2009:365-378). An unhealthy lifestyle comprises of smoking, alcohol abuse, a diet rich in saturated fats and LDL-C, too little leisure time physical activity and abuseof calming products and drugs- with resultant chronic diseases (Corbin *et al.,* 2000:354). A study by Goetzel (2009:37-41) among employees in the USA, showed increased presenteeism with cigarette, alcohol use and poor emotional health in both men and women. The company incurs extra costs as a result of increased absenteeism, employee turnover, medical care, safety incidents and production errors (Kerin & Dawson, 2004:1-7). In a survey done on employees in De Beers Benefits Society (DBBS), South Africa in 2004, it was revealed that chronic medication liability, cost the company 8.4 million rand in 2004 (Stadler, 2006: 28).

Several studies indicated that the financial impact of employee's absenteeism and decreased productivity due to poor health is more costly compared to medical and pharmacy claims costs alone (Edington & Burton, 2003:40-152; Loeppke & Hymel, 2006:533-537; Loeppke *et al.,* 2007:712-721). In a study done on workers with diabetes, an average loss of 8.3 days from work annually, versus 1.7 days among those with no chronic conditions was reported (American Diabetes Association, 1998). Sixty percent (60%) of productivity loss from employees suffering from migraines has been attributed to reduced efficiency at work (Burton *et al.,* 2004:812-817). Workers with flu-like illness reported reduced effectiveness at work for 3.5 days after onset (Keech *et al.,* 1998:85-90). Low back pain and arthritis were associated with low physical functioning and mental/ interpersonal functioning (Burton, 2004: 538-545). Work stress is also associated with reduced activities at work and taking at least one disability day (Park, 2007:5-7). According to a study of more than 3 000 employees in the USA, it was revealed that the more chronic medical conditions a person has the higher the probability of absenteeism or presenteeism (Kessler *et al.,* 2001:218-225).

However, the health care cost situation is to a great extent the result of a growing health crisis from an unmitigated growth in the burden of personal risks leading to chronic illness (Loeppke *et al.,* 2010:275-284). In the US, 75% of health care cost stems from preventable chronic conditions such as heart disease, cancer, stroke, chronic obstructive pulmonary disease (bronchitis, emphysema), and diabetes (US Department of Health and Human Services, 2011). The burden may be prevented in part by addressing certain lifestyle risk factors, including healthy nutrition, regular physical activity and refrain from smoking (Bradshaw *et al.,* 2003:682-688).

2.6CHAPTER SUMMARY

From the reviewed literature it was clear that leisure-time physical inactivity was associated with risk factors for heart diseases amongst executive employees. It was also indicated that physical inactivity was associated amongst other factors with cigarette smoking, high blood pressure or high cholesterol levels which are known risk factors for heart disease. The reviewed studies attributed trends of reduced leisure-time physical activity at work to advent of modern electronic equipment and

computers. In the corporate world, physical inactivity may result in poor health status which is linked to higher health care costs, lower work output (presenteeism), higher rates of disability, higher absenteeism, higher workers compensation and higher rate of injuries. In the reviewed literature it was also found that there are several techniques for assessing leisure-time physical activity which are subjective; these include observation and questionnaire (including activity diaries, recall questionnaires and interviews); objective, which includes physiological indices such as heart rate (HR), calorimetry, the doubly-labeled water (DLW) method and electronic motion sensors. Despite, well established benefits of leisure-time physical activity from the reviewed literature, physical inactivity appeared to bea major worldwide problem. Previous studies have identified a host of social contextual barriers to physical activity, emerging from a range of individual, social, and physical environmental sources. Lack of discretionary time or lack of time (common among executive employees) amongst others was found to contribute to leisure-time physical inactivity.

Studies have examined sedentary lifestyle and associated factors at the population level; however few have approached the subjects from the occupational standpoint. These studies were done in affluent countries, and a few in African countries. Africa is developing rapidly, and the risk of chronic diseases as a result of leisure-time physical inactivity is increasing. Employees become more confined to their work to keep up with the fast growing economy and the demands of the industry. The increase in marketplace competition results in a more stressful worksite. As such, it was apparent from the reviewed literature that more studies investigating leisure-time physical activity among employees in Africa are needed.

The next chapter, (Chapter 3) consists of an independent research article which integrated the information from the reviewed literature in the problem statement. Chapter 4is based on the summary, recommendations and conclusions.

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CHAPTER 3: THE RELATIONSHIP BETWEEN LEISURE-TIME PHYSICAL ACTIVITY AND HEALTH RELATED PARAMETERS IN EXECUTIVE EMPLOYEES OF SELECTED AFRICAN COUNTRIES

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The relationship between leisure-time physical activity and health related parameters in executive employees of selected African countries

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Abstract

Leisure-time physical inactivity is a global public health concern affecting all people in different walks of life, including employees. This inactivity is associated with chronic diseases of lifestyle as well as low work capacity. The purpose of this study were twofold: to determine leisure-time physical activity- (LTPA), coronary risk-, health- and lifestyle profiles of some executive employees in selected African countries; and to determine the relationship between leisure-time physical activity and health related parameters in executive employees of selected African countries. A cross-sectional study design was used on a group of 156 (mean age 41.22±10.17 years) available executive employees. Participants were grouped according to age (<35 years; 36–46 years and > 46 years). Standardised questionnaires were used to collect data. Out of the156 participants in the study, 42.9% occupied top level management and 57.1% middle level management posts. When data were analysed according to age groups, 31% and 68.6% in the less than 35 years age group were in the top and the middle levels management respectively. In the age group 36 to 46 years of age 47% occupied the top level management posts and 52.8% occupied the middle level management positions. With regard to LTPA, top level managers (71.6%) scored low LTPA compared to middle level managers (62.9%). Top level managers scored higher percentages (14.9%) for developing the risk of coronary

heart diseases. The results show a negative relationship between physical activity and selected health parameters, with significant negative relationships between low LTPA and daily habitual index ($r= -0.52$; $p=0.01$), and moderate LTPA and daily habitual index ($r= -0.71$; $p<0.001$) for middle level managers. It can be concluded that both top and middle level managers exhibited low LTPA and high risk for developing coronary heart disease. It was apparent that the managers in low LTPA are prone to bad stages of life style, health status and coronary risk- indexes compared to the ones with moderate and high LTPA. Additionally, low and moderate LTPA inversely affected selected health parameters of executive employees. No significant association was found for high LTPA with selected health parameters. The study therefore recommends a strategic intervention programme geared towards improving the present state of affairs among the managers in the corporate environment.

Key words: Leisure-time physical activity, physical activity, health and wellness, coronary heart disease, executive employees

Introduction

Several researchers have revealed a global increase in mortality rates attributable to chronic diseases, viz: coronary artery disease, diabetes and hypertension (Murry & Lopez, 1997; Bradshaw, Groenewald, Laubscher, Nannan, Nojilana, Norman, Pieterse, Schneider, Timæus, Dorrington & Johnson, 2003). However, this burden may be prevented, in part, by addressing certain lifestyle risk factors, including healthy dietary practices, regular physical activity and refraining from smoking (Mills, 2005).

Physical activity is widely recognised as a key health behaviour, associated with reduced all-cause of morbidity and mortality, as well as chronic diseases of lifestyle (Lambert & Kolbe-Alexander, 2006). Substantial research demonstrating the significant positive association of exercise and health, encouraged the Centre for Disease Control (CDC) to publish recommendations that people should accumulate 30 minutes of exercise most days of the week (Pate, Pratt & Blair, 1995). It has been revealed that the associated health benefits of physical activity accrue in a dose-dependent manner, and early adaptations in the transition from sedentary living to becoming moderately active, seem to have the greatest effect on risk reduction for chronic diseases of lifestyle in both men and women (Bouchard, 2001; Haskell, 2001). Generally, the health benefits of physical activity increases with increasing frequency, duration and intensity of exercise (Bouchard & Katzmarzyk, 2010).

Regardless of recommendations, physical inactivity still remains a major public health concern. In companies, executive employees' lifestyles are more unbalanced due to factors such as long commutes, long working hours, skipping of meals and dining with colleagues, than employees in other ranks (Kawada & Suzuki, 2008). As such, the unbalanced lifestyle is found to be associated with physical and psychological stress that may impact negatively on health and performance at work. Furthermore, these lifestyles put executive employees at risk for developing chronic diseases of lifestyle (Bradshaw, 1997). Coopoo (2006) alluded that the chronic health problems in industries/companies are directly related to risk factors, such as high cholesterol level, poor eating habits, physical inactivity, smoking and alcohol abuse; which are associated with chronic diseases of lifestyle, like diabetes, coronary heart disease, hypertension, stroke and obesity. Researchers (Burton,

Conti, Chen & Edington, 1999; Burton, Conti, Chen, Schultz & Edington, 2001; Bunn, Pikelny, Paralkar, Slavin, Borden & Allen, 2005) have also linked poor health status with higher direct health care costs, lower work output (e.g. presenteeism), higher rates of disability, higher absenteeism, higher workers' compensation and higher rates of injury in the company. Yet, whilst these associations are well documented, the effect of leisure-time physical activity and some health parameters in executive employees in selected African countries remain unclear and often anecdotal. Given this, and the established links between physical activity and productivity at workplace (Schultz & Edington, 2007), more research in this area, especially in Africa is therefore of paramount importance. The purpose of this study was twofold: to determine leisure-time physical activity (LTPA) - coronary risk-, health-, and lifestyle status of some executive employees in selected African countries; as well as the relationship between leisure-time physical activity and health related parameters in these cohorts.

Methodology

Research design

The study was based on cross-sectional design on an available population from selected African countries. This study used the protocol of the South African National Games and Leisure Activities (SANGALA)(Dreyer &Strydom, 1994) which was initiated by the National Government, Department of Sport and Recreation of South Africa in 1995. The initiative was supported by the Heart Foundation of South Africa, International Institute for Health Promotion as well as the African Association for Health, Physical Education, Recreation and Dance (AFAHPER-SD). After the SANGALA study was completed in South Africa, it was expanded to involve more African countries in 2002 to 2006.

Participants

A total number of 156 participants were purposively recruited from the available population to participate in the study. The participants comprised of the middle and top level employees with age ranging from 35 years and above (mean age: 41.2±10.1 years). Participants were recruited from the following African countries

namely: Botswana, Kenya and Nigeria. Nigeria is located on the Western part of Africa while Botswana represents Central Africa and Kenya the East of Africa. Nigeria further represents the most populous Black Country in Africa; Botswana represents an emerging democracy and economy while Kenya represents a success story in sport. These features are bound to influence the lifestyles of the citizens of these countries.

Measuring Instruments

The **physical activity questionnaire of Sharkey** (1997) was used to determine the leisure-time physical activity index (LTPAI) of the participants. The training principles namely frequency, duration and intensity were reported by each respondent retrospectively and these were used to determine the LTPAI. Respondents were then classified into low active (LTPAI ≤ 16), moderate active (LTPAI 17- 44) and high active group (LTPAI ≥45) (Swanepoel, 2001).

The **lifestyle questionnaire of Belloc and Breslow** (1972) was used to determine the lifestyle index (LSI) of the respondents. This questionnaire is based on the 7 basic healthy lifestyles as described by Belloc and Breslow (1972). The respondents indicated which of the following lifestyles they were following namely, not smoking, moderate physical activity 2-3 times per week, moderate or no alcohol intake, 7-8 hours' sleep per night, manage a moderate body weight, eat breakfast daily and taking 3 meals per day. For the purpose of this study the respondents were classified as those following a poor lifestyle (<3), moderate (4-5) and good lifestyle (>6) (Kriel, 2004).

The **health status** index (HSI) of the participants was determined by using the illness rating scale of Wyler, Masuda and Holmes (1968). This scale inquires about the various illnesses the participant contracted in the past 12 months. The scale utilises a list of 126 illnesses which are noted according to the seriousness of the illness, range from the least dangerous (e.g. dandruff=1) to the most serious and life threatening condition (e.g. leukemia=126). Respondents presenting a value of ≥295 were classified as having poor health status, while those showing an index of 135-

295 and ≤134 were classified as having moderate and good health respectively (Boshoff, 2000).

The coronary risk index (CRI) questionnaire of Bjürstrom and Alexiou (1978) was used to determine the risk of the participants to develop coronary heart disease. This questionnaire contains statements on 14 risk factors which carry a certain weight depending on the presence or severity of the risk factor. For instance non-smoking is weighted 0 while smoking more than 30 cigarettes per week is weighted 10. The weight of the 14 risk factors are calculated and express a coronary risk index (CRI). A total CRI of ≤21 is described as a low risk, while indices of 22-30 and ≥ 31 were described as moderate and high risk respectively.

Procedures

The African Association for Health, Physical Education, Recreation, Sport and Dance (AFAHPER-SD) infrastructure was used to distribute the questionnaires in each of the selected countries. After negotiating with the President of AAHPERD-SD, contact persons were identified in the selected countries and the questionnaires were posted to them. Follow-up letters were sent to the contacts in order to motivate them for the purpose of data collection. They received detailed instructions on administration and data handling.

Statistical analysis

The SPSS version 18.0 (SPSS, Inc., Chicago) was used for data analysis. Descriptive statistics (i.e. frequencies for percentages (%)) were used to determine the leisure-time physical activity index, CRI, LSI and health profiles of the participants. Frequencies and percentages were used to determine the profile, and correlations coefficients were calculated to determine the relationship between the participants' leisure-time physical activity- (LTPA), coronary risk-, health status- and lifestyle indexes. Statistical significant levels were set at $p \leq 0.05$.

Results

The results show that out of 156 executive employees, 43% are in top management whilst 57% were in middle management level. When data was analysed according to age groups, 31% and 68.6% in the less than 35 years age group were in the top and the middle levels management respectively. In the age group 36 to 46 years of age, 47% occupied the top level of management while 52.8% occupied the middle level management. For the age group older than 46, the percentage was 50% each for both top and middle levels of management.

Figure 1 represents age differences of top and middle management levels. There were 31.4% and 68.6% of top and middle management levels respectively who were aged below 35 years. Another 47.2% and 52.8% of top and middle management levels were between ages 36 and 45. The 46 years and above were 50% top and 50% middle management levels.

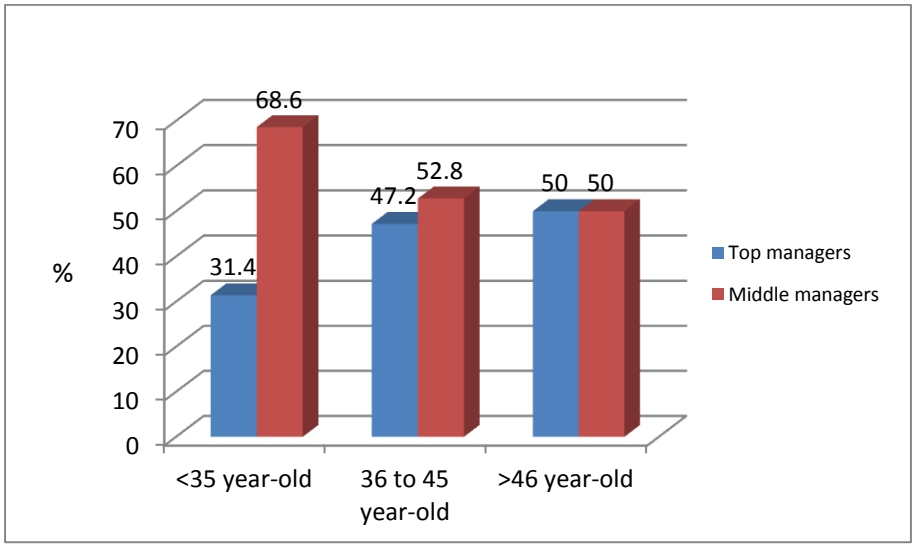

Figure 1: Age differences according to top and middle management levels

Table 1 presents LTPA profile for top and middle executive management levels by age categories. The results show that executive employees in the top management level (71.6%) and middle management level (62.9%) fell in the low physical activity

category. The results also showed that the moderately active category of 25.4% and 27.0% for the top and middle management employees respectively. There were only 3% of top management level and 10.1% of middle management level who were highly active.

Table 1: Leisure-time physical activity profile of the top and middle management level employees in selected African countries

	Top Management level		Middle Management level	
	n	%	n	%
Low activity (Physical activity index= < 16)	48	71.6	56	62.9
Moderately active (Physical activity index between 17-44)	17	25.4	24	27.0
Highly active (Physical activity index >45)	2	3.0	9	10.1
Total	67	100.0	89	100.0

In Table 2, the results show that 35.8% of the executive employees in the top management positions can be classified as having a moderate risk for developing CHD while 14.9% are in the high risk for developing CHD. The results also show that 12.4% of middle management level was at high risk for developing CHD, while 34.8% and 52.8% were in moderate and low risk respectively.

Table 2: Coronary risk index for the top and middle management levels of employees in selected African countries

	Top Management level		Middle Management level	
	n	%	n	%
Low risk for developing CRI (Index=<21 index)	32	47.8	47	52.8
Moderate risk for developing CRI (Index=22 to 30 index)	24	35.8	31	34.8
High risk for developing CRI (Index=>31 index)	10	14.9	11	12.4
Total	67	100.0	89	100.0

Table 3 shows that 56.7% employees in the top management level were in good health status, while 26.9% and 16.4% were in moderate and poor health status respectively. It is also shown that 49.4% and 39.3% of middle management level employees were in good and moderate health status respectively. The 2.2% of middle management level were in poor health status.

Table 3: Health status index for the top and middle management level s of employees in selected African countries

	Top Management level		Middle Management level	
	n	**%**	**n**	**%**
Good and healthy (Index=<134 scores)	38	56.7	44	49.4
Moderately healthy (Index=135 to 294 scores)	18	26.9	35	39.3
Poor health (Unhealthy)(Index=>295 scores)	11	16.4	8	9.0
Missing	-	-	2	2.2
Total	67	100.0	89	100.0

In Table 4, 29.9% employees in the middle management level reported a bad lifestyle, while 25.8% showed a fair lifestyle, with 44.9% showing a good lifestyle. There were 40.3% of top management employees who reported a good lifestyle, while 32.8% and 26.9% in middle management level reported a fair and bad lifestyle respectively.

Table 4: Lifestyle index for the top and middle management levels of employees in selected African countries

	Top Management level		Middle Management level	
	n	**%**	**n**	**%**
Bad	18	26.9	26	29.2
Fair	22	32.8	23	25.8
Good	27	40.3	40	44.9
Total	67	100.0	89	100.0

In Table 5, the results show that top level employees who were highly physically active reported a bad and fair lifestyle index respectively, while 55.5% in middle management level who were highly active showed a good lifestyle index. There were 46.4% and 37.5% of middle management employee who were low and moderate physically active had a good lifestyle index compared to the 41.7% and 41.1% of the top management level employees respectively.

Table 5: Lifestyle index in relationship with the physical activity of employees in selected African countries

Top level Management							**Middle level Management**					
	Low LTPAI		**Moderate LTPAI**		**High LTPAI**		**Low LTPAI**		**Moderate LTPAI**		**High LTPAI**	
	n	%	n	%	n	%	n	%	n	%	n	%
Bad	12	25	5	29.4	1	50.0	16	28.6	7	29.2	3	33.3
Fair	16	33.3	5	29.4	1	50.0	14	25.0	8	33.3	1	11.1
Good	20	41.7	7	41.1	-	-	26	46.4	9	37.5	5	55.5
Total	48	100.0	17	100.0	2	100.0	56	100.0	24	100.0	9	100.0

Table 6 shows 50% of top management level who reported a low physical activity index had a low risk for developing CHD, while 33.3% and 14.6% were at moderate and high risk respectively. The results also show that 41.2% of top management level employees who reported moderate physical activity were at a moderate risk for developing CHD, while the other 41.2% and 17.6% were at moderate and high risk respectively. With the highly active category, the results revealed that 50% were at low risk for developing CHD, while the other 50% were at a moderate risk for developing CHD. The results show that 53.6% of the employees who reported a low physical activity level were in low risk for developing CHD, while 30.4% and 16.1% were in moderate and high risk for developing CHD respectively. The 37.5% who reported moderate physical activity in middle management employees were at a low risk for developing CHD as compared to 54.2% and 8.3% who were at a moderate and high risk for developing CHD. The middle management employees who reported high activity levels were 88.9% and 11.1% who reported a low and moderate risk for developing CHD respectively.

Table 6: Coronary heart disease risk in relationship with the physical activity index of employees in selected African countries

	Top Management level						Middle Management level					
	Low LTPAI		Moderate LTPAI		High LTPAI		Low LTPAI		Moderate LTPAI		High LTPAI	
	n	%	n	%	n	%	N	%	n	%	n	%
Risk of developing CHD(Low CRI)(Index=-<21)	24	50.0	7	41.2	1	50.0	30	53.6	9	37.5	8	88.9
Risk of developing CHD(Moderate) (Index= 22 to 30)	16	33.3	7	41.2	1	50.0	17	30.4	13	54.2	1	11.1
High Risk for developing CHD (Index=>31)	7	14.6	3	17.6	-	-	9	16.1	2	8.3	-	-
Missing	1	2.1	-	-	-	-	-	-	-	-	-	-
Total	48	100.0	17	100.0	2	100.0	56	100.0	24	100.0	9	100.0

Table 7 shows that 62.5% of the top management employees who reported low physical activity showed a good health status, compared to 25% and 12.5% who were in moderate and poor health status respectively. While 41.2% of those who reported a moderate physical activity showed a good health status, compared to 29.4% and 29.4% who were at a moderate and poor health status respectively. There were also 50% who reported high activity levels who were in a good health status and another 50% who were moderately healthy. The results also show that 44.6% of the middle management employees who reported a low physical activity had a good health status compared with 44.6% and 7.1% who showed a moderate and poor health status respectively. In the case of middle management employees 16.7%, 29.9% and 54.2% who reported a moderate physical activity level showed a poor, moderate and good health status respectively. There were 66.7% of the middle management employees who were highly active, reported a good health status, while 33.3% reported a moderate health status.

Table 7: Health status index in relationship with the physical activity index of executive employees in selected African countries

	Top level Management						Middle level Management					
	Low LTPAI		Moderate LTPAI		High LTPAI		Low LTPAI		Moderate LTPAI		High LTPAI	
	n	%	N	%	n	%	n	%	n	%	n	%
Good and Healthy (Index < 134)	30	62.5	7	41.2	1	50.0	25	44.6	13	54.2	6	66.7
Moderately Healthy (Index 135 to 294)	12	25.0	5	29.4	1	50.0	25	44.6	7	29.2	3	33.3
Poor Health (Unhealthy)(Index >295)	6	12.5	5	29.4	-	-	4	7.1	4	16.7	-	-
Total	48	100.0	17	100.0	2	100.0	54	96.4	24	100.0	9	100.0

Tables 8 and 9 present the results on the relationship between selected health parameters and leisure-time physical activity for different age categories of the top and middle managers respectively. The results show that leisure-time physical activity index was negatively correlated with selected health parameters in almost all categories for both top and middle level managers. Significant negative relationships were found between life style and low LTPAI (r= -0.52; p=0.01), and moderate LTPAI (r= -0.71; p<0.001).

Table 8: Leisure-time physical activity index and health parameters of top level managers

	Low LTPAI						Moderate LTPAI						LTHigh PAI					
Age group	<35 (n= 14)		36 to 45 (n=16)		>46 (n=17)		<35 (n= 1)		36 to 45 (n=16)		>46 (n=9		<35 (n= 14)		36 to 45 (n=1)		>46 (n=1)	
	r	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*
LSI	-.17	.56	.34	.18	-.20	.43	-	-	-.49	.26	-.17	.67	-	-	-	-	-	-
HSI	-.08	.78	-.08	.76	.28	.28	-	-	.20	.67	.43	.25	-	-	-	-	-	-
CRI	-.18	.54	.02	.94	-.14	.59	-	-	.51	.24	.24	.53	-	-	-	-	-	-

LSI= life style index; HSI=health status index; CRI= coronary risk index

Table 9: Leisure-time physical activity index and health parameters of middle level managers

	Low LTPAI						Moderate LTPAI						High LTPAI					
Age group	<35 (n= 24)		36 to 45 (n=15)		>46 (n=17)		<35 (n= 6)		36 to 45 (n=11)		>46 (n=7)		<35 (n= 5)		36 to 45 (n=1)		>46 (n=1)	
	r	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*
LSI	.07	.69	-.08	.79	-.52*	.03	.16	.76	-.74**	.01	.11	.81	.52	.37	-	-	-	-
HSI	.29	.18	-.26	.34	-.07	.78	-.50	.31	-.23	.49	.09	.84	-.69	.20	-	-	-	-
CRI	-.01	.96	-.20	.48	-.06	.81	-.53	.28	.15	.65	.38	.40	.22	.73	-	-	-	-

LSI= life style index; HSI=health status index; CRI= coronary risk index, *p<0.01; **p<0.001

Discussion

The purpose of this study were two-fold: to determine leisure-time physical activity-(LTPA), coronary risk,- health- and lifestyle profiles of some executive employees in selected African countries; and the relationship between leisure-time physical activity and health related parameters in executive employees of selected African countries.The results show that both the top and middle level managers were reported low participation in leisure-time physical activity. The results also show that the top level managers were prone to a high risk of developing coronary heart disease, together with a poor lifestyle and health status index. Furthermore, the results show that both the top and middle level managers who reported low participation in leisure-time physical activity had bad lifestyle index, poor health status and high risk of developing coronary heart disease compared to those in the moderate and high LTPA. Additionally, LTPA had an inverse effect on selected health parameters of executive employees.

From the results of the study, it appears that the executive employees in selected African countries reported low leisure-time physical activity level, which corresponds with a similar study among employees of a financial institution in South Africa

(Labuschagne, Strydom & Wilders, 2007). In a Behavioural Risk Factor Surveillance System among the US adults, it was indicated that 30% of adults were inactive during leisure time (Macera & Pratt, 2000). The present results show that the top level managers were also in a high risk for developing coronary heart disease. As such this is a worrisome concern since it is found that about 200,000 deaths each year were associated with coronary heart disease, colon cancer, type 2 diabetes and physical inactivity (Powell & Blair, 1994). Furthermore, leisure-time spent sitting (≥6 hours per day vs. <3 hours per day) was associated with 34% and 17% increased risk of death among women and men respectively (Patel, Peterson, Dai, Brennan, Redberg, Anderson, Brindis, & Douglas, 2010). Consequently, it is been stated that chronic heart diseases as a result of inactivity may lead to presenteeism that prevent optimal functioning, performance and productivity of employees' at work (Burton, Pransky, Conti, Chen & Edington, 2004).

Both top and middle management level employees with low LTPA portrayed a bad LSI, HSI and increased risk of developing CHD. In a study by Swanepoel (2001) it was found that 77% of South African high level employees do not follow the most basic lifestyle habits (don't smoke, follow moderate physical activity 2 to 3 times per week, moderate alcohol intake, 7 to 8 hour of sleep per night, maintain a moderate body weight, eat breakfast daily and take at least 3 meals per day at regular intervals).

The results show that 41.9% of employees in both top and middle management level who have a low LTPAI achieved a poor HSI. The results concur with the study by Shehu, Abdullahi and Adeyeke, (2010), in which it was revealed that health problems suffered by people are significantly related to physical inactivity. Physical activity has been found to have a potential to improve the health and well- being of employees. This is emphasised in a study by Lahti, Laaksonen, Lahelma and Rahkonen (2010) suggesting that leisure-time physical activity supports good physical health functioning among middle aged employees. A poor health employee compared to an employee in good health is more likely to be absent from work and less productive

while on the job (presenteeism or health- related performance reduction) (Loeppke, Edington & Bég, 2010).

The present study showed a negative correlation between physical activity and selected health parameters (lifestyle-, health status- and coronary heart disease risk), where significant negative relationships were found between daily habits and low LTPA (r = -0, 52; p = 0, 01) and moderate LTPA (r = -0, 71; p< 0,001). This denotes that employees who showed a moderate and low LTPA had bad life style habits. The result concurs with the reports of studies by Paffenbarger, Hyde, Wing, Lee, Jung and Kampert (1993), were increased risk of death was associated with the presence of each of the five adverse personal characteristics -- sedentary living, cigarette smoking, hypertension, overweight for height (a high body-mass index), and early parental death - with adjustments for differences in age and in each of the other four characteristics. Some researchers have established that physical activity level, physical fitness, and other modifiable lifestyle characteristics may influence the risk of chronic disease and premature death (Paffenbarger, Brand, Sholtz & Jung, 1978; Leon, Connett, Jacobs, Rauramaa, 1987). Studies have revealed that intensive multiple interventions such as smoking cessation, blood lipid reduction, weight control, and physical activity significantly decreased rate of progression and, in some cases, led to regression in the severity of atherosclerotic lesions in persons with coronary disease (Gould, Ornish, Kirkeeide, Brown, Stuart, Buchi, Billings, Armstrong, Ports & Scherwitz, 1992; Haskell *et al.,* 1994).

Limitations of the study

The major limitation in this study has been on few selected African countries. Therefore it does not permit generalisation of the results the whole African continent. In addition, the cross-sectional nature of the study might in one way or the other have affected the present results in some health parameters which are found to develop over a period of time as such a follow-up study is required. As a result of these factors, caution is required in the interpretation of the results.

Conclusion

It can be concluded that both top and middle level managers exhibited low LTPA and may be prone to high risk for developing coronary heart disease. It was also clear that the managers in the low LTPA reported poor lifestyle, health status and coronary risk indexes as compared to the ones in moderate and high LTPA. Additionally, low and moderate levels of LTPA inversely affected selected health parameters of executive employees. No significant association was found for high LTPA with selected health parameters. As such, the results recommend a strategic intervention programme geared towards improving the present state of affairs among the executive managers in the corporate environment.

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CHAPTER 4: SUMMARY, CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

4.1SUMMARY

Chapter 1 provides the outline of the problem statement that underlies the research questions, objectives and hypothesis that form the basis of this dissertation. The objectives that were set in Chapter 1 were; firstly, to determine leisure-time physical activity-, coronary risk-, health status and lifestyle index of some executive employees in selected African countries; and secondly to examine the relationship between leisure-time physical activity and abovementioned health related parameters in executive employees of selected African countries. In addition, Chapter 1 ends with an outlay of the structure of the dissertation.

Chapter 2 presents a literature study on leisure–time physical activity (LTPA) and some health related consequences in executive employees. The literature review focused on leisure-time physical activity, the assessment of leisure-time physical activity, the level of leisure-time physical activity among executive employees, barriers to leisure- time physical activity, the benefits that can be achieved from participation and the consequences of not participating. From the reviewed literature it was clear that physical activity is beneficial to everyone in all walks of life. This led tothe Centres for Disease Control and Prevention (CDC) and the American College of Sports Medicine (ACSM) in 1995 to issue a public health recommendation that "Every US adult should accumulate 30 min or more of moderateintensity physical activity on most, preferably all, days of the week" (Pate *et al.,* 1995: 402-407). Regular physical activity has thus been regarded as an important component of a healthy lifestyle (Sesso *et al.,* 2000: 975). Furthermore, regular participation in leisure-time physical activity is reported to have a significant role in the reduction of depression, anxiety, improve mood and psychological health, and enhance the ability to perform daily tasks (U.S. Department of Health and Human Services, 1996). Studies have revealed that a significant association exists between recommended leisure-time physical activity and improved health-related quality of life (Brown *et al.,* 2003:520-528; Brown *et al.,* 2004:890-896). Given these salutogenic effects of regular leisure- time physical activity, people still do not participate in leisure- time physical activity, executive employees included. In South Africa, it was indicated that one third of the population does not meet the CDC/ACSM recommendations for

health enhancing physical activity (30 minutes of moderate intensity on most, but preferably all days of the week) and nearly half were inactive (Lambert & Kolbe-Alexander, 2006:24). In a study by Dreyer (1996: 116), it was revealed that 29.9% of executive employees were totally inactive. In the corporate world, researches have linked poor health to higher direct health costs, lower work output, higher rates of disability, higher absenteeism and higher rates of injury (Musich *et al.,* 2003: 395). In a study by Burton *et al.* (2006:252-263), it was shown that employees who reduced their risk, showed improved productivity whereas those who gained risks or remained at high risk status, showed deterioration in productivity. The largest source of productivity loss is attributed to common diseases that are comparatively inexpensive to treat medically (e.g. migraines, depression, and back conditions) (Leutzinger, 2009:117), than to conditions that are more expensive such as heart disease, diabetes and cancers (Leutzinger *et al.,* 2004).

Previous studies have identified a host of social contextual barriers to physical activity, emerging from a range of individual, social, and physical environmental sources. Chinn *et al.* (1999:191-192) explained that barriersto leisure-time physical activity could either be “internal” or “external”, where internal barriers such as lack of motivation or lack of leisure-time are more common among executive employees, while “external” barriers such as lack of money, lack of transport or illness/disability are more common in the lower class. In the reviewed literature it was also clear that there are several techniques for assessing leisure-time physical activity which could be subjective, by means of observation and questionnaire (including activity diaries, recall questionnaires, interviews) or objective, by means of physiological indices such as heart rate (HR), calorimetry, the doubly-labelled water (DLW) method and electronic motion sensors.

The chapter ends with the summary.

Chapter 3 was presented in the form of a research article. The literature review, method of research, research design, results, discussion and conclusion were presented in the article. The title of the article is as follows:

“The relationship between leisure-time physical activity and health related parameters in executive employees of selected African countries”

4.2CONCLUSIONS

The conclusions drawn from this research are in accordance with the hypotheses set in Chapter 1.

Hypothesis 1: The leisure time physical activity-, coronary risk-, health status- and lifestyle profiles of executive employees in selected African countries falls in the poor category.

Descriptive statistics (mean, minimum, maximum and standard deviation) were used to determine the leisure- time physical activity and health profiles of the participants. Frequencies and percentages were used to determine profiles of the participants' leisure-time physical activity (LTPA), coronary risk- health status- and lifestyle status. Out of 156 participants in the study 42.9% occupied top level management and 57.1% middle level management. With regard to LTPA, it was clear that the executive employees (especially top level management) were physically inactive during leisure-time. The top level employees were also found to be at high risk for developing coronary heart disease as compared to the middle level management. The study also indicated that the middle level employees had a bad lifestyle as compared with the top level management; and the top level employees were in poor health status.The results showed that 44.9% and 40.3% of top and middle level employees were having a good lifestyle. There were 52.8% who were at low risk for developing CHD,while 49.4% and 56.7% of middle and top management respectively were having a good health status. Given these findings pertaining to hypothesis 1, it could be stated that hypothesis 1 is partially accepted.Hypothesis 1 can therefore be partially accepted.

Hypothesis 2:Low Leisure-time physical activity will have a significantrelationship with the coronary risk- health status- and lifestyle status of executive employees in selected African countries.

The results show that leisure-time physical activity index was negatively correlated with selected health parameters in almost all categories for both top and middle level managers. Significant negative relationships were found between lifestyle and low LTPA ($r= -0.52$; $p=0.01$), and moderate LTPA ($r= -0.71$; $p<0.001$).However, no

significant relationship was found between coronary risk, health status and low LTPA. Hypothesis 2 can therefore be partially accepted.

4.3LIMITATIONS

The present study has several limitations which should be noted when interpreting the results and which could be overcome in future research.

The few available research studies investigating leisure-time physical activity (LTPA) and health aspects in executive employee in Africa was a limitation of the study. The inability to attract large participants results to small sample. The reason could be that executive employees did not have enough time to complete the questionnaire resulting to incomplete questionnaires. These may possibly be remedied by developing questionnaires that are concise and easy to complete.

4.4FUTURE RESEARCH

From this study, it appears that there is a specific need for further research on the following aspects to expand on the knowledge regarding the effects of leisure- time physical activity (LTPA) on health related parameters in executive employees of selected African countries.

- More research studies in the area of LTPA and health aspects in executive employees in Africa are urgently require.
- Further research involving larger participants focusing on comparing the effects of on-job physical activity and leisure- time physical activity on health parameters among African executive employees is needed.
- Research should also be focused on developing intervention programmes that will instil regular participation among African executive employees addressing the common barriers to participation.

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APPENDICES

APPENDIX A

GUIDELINES FOR AUTHORS

The African Journal for Physical, Health Education, Recreation and Dance (AJPHERD) is a peer-reviewed journal established to:

i) Provide a forum for physical educators, health educators, specialists in human movement studies and dance, as well as other sport-related professionals in Africa, the opportunity to report their research findings based on African settings and experiences, and also to exchange ideas among themselves,

ii) Afford the professionals and other interested individuals in these disciplines the opportunity to learn more about the practice of the disciplines in different parts of the continent,

iii) Create awareness in the rest of the world about the professional practice in the disciplines in Africa.

GENERAL POLICY

AJPHERD publishes research papers that contribute to knowledge and practice, and also develops theory either as new information, reviews, confirmation of previous findings, application of new teaching/coaching techniques and research notes. Letters to the editor relating to the materials previously published in AJPHERD could be submitted within 3 months after publication of the article in question. Such letter will be referred to the corresponding author and both the letter and response will be published concurrently in a subsequent issue of the journal.

Manuscripts are considered for publication in AJPHERD based on the understanding that they have not been published or submitted for publication in any other journal. In submitting papers for publication, corresponding authors should make such declarations. Where part of a paper has been published or presented at congresses,

seminars or symposia, reference to that publication should be made in the acknowledgement section of the manuscript.

AJPHERD is published quarterly, i.e. in March, June, September and December. Supplements/Special editions are also published periodically.

SUBMISSION OF MANUSCRIPT

Three copies of original manuscript and all correspondence should be addressed to the Editor-In-Chief:

Professor L. O. Amusa

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Articles can also be submitted electronically, i.e. via e-mail attachment. However, the corresponding author should ensure that such articles are virus free. AJPHERD reviewing process normally takes 4-6 weeks and authors will be advised about the decision on submitted manuscripts within 60 days. In order to ensure anonymity during the reviewing process authors are requested to avoid self-referencing or keep it to the barest minimum.

PREPARATION OF MANUSCRIPT

Manuscripts should be type written in fluent English (using 12-point Times New Roman font and 1½ line-spacing) on one side of whiteA4-sized paper justified fully with 3cm margin on all sides. *Guidelines for Authors* 317

In preparing manuscripts, MS-Word, Office 98 or Office 2000 for Windows should be used. Length of manuscripts should not normally exceed 12 printed pages (including tables, figures, references, etc.). For articles exceeding 10 typed pages US$ 10.0 is charged per every extra page. Longer manuscripts may be accepted for publication as supplements or special research reviews. Authors will be requested to pay a publication charge of US$ 350.0 to defray the very high cost of publication. The pages of manuscripts must be numbered sequentially beginning with the title page. The presentation format should be consistent with the guidelines in the publication format of the American Psychological Association (APA) (4th edition).

Title page:

The title page of the manuscript should contain the following information:

Concise and informative title.

Author(s') name(s) with first and middle initials. Authors' highest qualifications and main area of research specialisation should be provided.

Author(s') institutional addresses, including telephone and fax numbers.

Corresponding author's contact details, including e-mail address.

A short running title of not more than 6 words.

Abstract

An abstract of 200-250 words is required with up to a maximum of 5 words provided below the abstract. Abstract must be typed on a separate page using single line spacing, with the purpose of the study, methods, major results and conclusions concisely presented. Abbreviations should either be defined or excluded.

Text

Text should carry the following designated headings: Introduction, materials and methods, results, discussion, acknowledgement, references and appendices (if appropriate).

Introduction

The introduction should start on a new page and in addition to comprehensively giving the background of the study should clearly state the problem and purpose of the study. Authors should cite relevant references to support the basis of the study. A concise but informative and critical literature review is required.

Materials and Methods

This section should provide sufficient and relevant information regarding study participants, instrumentation, research design, validity and reliability estimates, data collection procedures, statistical methods and data analysis techniques used. Qualitative research techniques are also acceptable.

Results

Findings should be presented precisely and clearly. Tables and figures must be presented separately or at the end of the manuscript and their appropriate locations in the text indicated. The results section should not contain materials that are appropriate for presentation under the discussion section. Formulas, units and quantities should be expressed in the *systeme*318 *Guidelines for Authors*

internationale (SI) units. Colour printing of figures and tables is expensive and could be done upon request authors' expense.

Discussion

The discussion section should reflect only important aspects of the study and its major conclusions. Information presented in the results section should not be repeated under the discussion. Relevant references should be cited in order to justify the findings of the study. Overall, the discussion should be critical and tactfully written.

References

The American Psychological Association (APA) format should be used for referencing. Only references cited in the text should be alphabetically listed in the reference section at the end of the article. References should not be numbered either in the text or in the reference list.

Authors are advised to consider the following examples in referencing:

Examples of citations in body of the text:-

For one or two authors; Kruger (2003) and Travill and Lloyd (1998). These references should be cited as follows when indicated at the end of a statement: (Kruger, 2003); (Travill& Lloyd, 1998).

For three or more authors cited for the first time in the text; Monyeki, Brits, Mantsena and Toriola (2002) or when cited at the end of a statement as in the preceding example; (Monyeki, Brits, Mantsena&Toriola, 2002). For subsequent citations of the same reference it suffices to cite this particular reference as: Monyeki et al. (2002).

Multiple references when cited in the body of the text should be listed chronologically in ascending order, i.e. starting with the oldest reference. These should be separated with semi colons. For example, (Tom, 1982; McDaniels&Jooste, 1990; van Heerden, 2001; de Ridder et al., 2003).

Reference List

In compiling the reference list at the end of the text the following examples for journal references, chapter from a book, book publication and electronic citations should be considered:

Examples of onejournal references:

Journal references should include the surname and initials of the author(s), year of publication, title of paper, name of the journal in which the paper has been published, volume and number of journal issue and page numbers.

For one author: McDonald, A.K. (1999). Youth sports in Africa: A review of programmes in selected countries. *International Journal of Youth Sports*, 1(4), 102-117.

For two authors: Johnson, A.G. &O'Kefee, L.M. (2003). Analysis of performance factors in provincial table tennis players. *Journal of Sport Performance*, 2(3), 12-31.

For multiple authors: Kemper, G.A., McPherson, A.B., Toledo, I. & Abdullah, I.I. (1996). Kinematic analysis of forehand smash in badminton.*Science of Racket Sports*, 24(2), 99-112.

Examples of book references: *Guidelines for Authors* 319

Book references should specify the surname and initials of the author(s), year of publication of the book, title, edition, page numbers written in brackets, city where book was published and name of publishers. Chapter references should include the name(s) of the editor(s) and other specific information provided in the third example below:

For authored references: Amusa, L.O. &Toriola, A.L. (2003). *Foundations of Sport Science* (1st ed.) (pp. 39-45). Mokopane, South Africa: Dynasty Printers.

For edited references: Amusa, L.O. and Toriola, A.L. (Eds.) (2003). *Contemporary Issues in Physical Education and Sports* (2nd ed.) (pp. 20-24). Mokopane, South Africa: Dynasty Printers.

For chapter references in a book: Adams, L.L. &Neveling, I.A. (2004). Body fat characteristics of sumo wrestlers. In J.K. Manny and F.O. Boyd (Eds.), *Advances in Kinanthropometry*(pp. 21-29). Johannesburg, South Africa: The Publishers Company Ltd.

Example of electronic references:

Electronic sources should be easily accessible. Details of Internet website links should also be provided fully. Consider the following example:

Wilson, G.A. (1997). Does sport sponsorship have a direct effect on product sales? *The Cyber-Journal of Sport Marketing (online*), October, 1(4), at http://www.cad.gu.au/cjsm/wilson.html. February 1997.

PROOFREADING

Manuscript accepted for publication may be returned to the author(s) for final correction and proofreading. Corrected proofs should be returned to the Editor-In-Chief within one week of receipt. Minor editorial corrections are handled by AJPHERD.

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APPENDIX B

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Physical Activity, Sport and Recreation
Tel: (018) 2991821
Fax: (018) 285 6025
E-Mail :Hanlie.moss@nwu.ac.za

Dear Sir/ Madam

INVITATION TO PARTICIPATE IN A RESEARCH PROJECT (The effects of leisure time physical activity (LTPA) on health related parameters in executive employees of selected African countries)

The SANGALA programs were initiated by the former Minister of Sport and Recreation of the South African Government, Min. Steve Tshwete in 1996. SANGALA stands for South African National Games and Leisure Activities. This national effort was directed to various populations in order to increase physical activity amongst the general population aiming to enhance health and quality of life. The corporate SANGALA was directed to middle and senior level of employees in the South African industry.

The South African Association for Biokinetics where asked to take responsibility for the programme which consisted of two parts, namely:

1. The dissemination of health and wellness information- focusing mainly on the role which physical activity can play.
2. Research component- where information are collected from companies' middle and top level management regarding the following:
    - Demographic information
    - Physical activity participation
    - Information on lifestyle
    - Coronary risk profile
    - Illness rating scale (indicating the health status)
    - Stress symptoms
    - Emotional wellbeing
    - Happiness, wellbeing and quality of life
    - Company culture.

The project is now extended to other African countries. In this regard, your participation in this project will be highly appreciated.

Yours sincerely

M. Mohlala

Centre for Biokinetics, Recreation and Sport Science

Thohoyandou

South Africa

0950

APPENDIX C

Informed consent form

Part 1

1. School/ institution:

   …….....

2. Title of project:……

   …….

3. Full names, surname and qualifications of project leader:

   ……

   ……

4. Position of project leader *(professor, lecturer, researcher etc.)*

   ……

5. Full names, surname and qualifications of supervisor:

   ……

   ……

6. Aim of this project:

   ……

   ……

   ……

   ……

7. Explanation of the nature of all procedures, including identification of new procedures:

   ……

   ……

   ……

   ……

8. Description of the nature of discomfort or hazards of probable permanent consequences for the subjects which may be associated with the project:

   ……

   ……

   ……

   ……

9. Precautions taken to protect the subjects:

……
……
……
……

10. Description of the benefits which may be expected from this project:

……
……
……
……
……

Signature:…… Date:……

Project leader

Part 2

You are invited to participate in a research project as described in part 1 of this document. It is important that you read and understand the following general principles, which apply to all participants in our research project:

1. Participation in this project is voluntary
2. You are free to withdraw from the project at any stage without having to explain the reasons for your withdrawal. However, we would like to request that you would rather not withdraw without a thorough consideration of your decision, since it may have an effect on the statistical reliability of the results of the project.
3. The nature of the project, possible risk factors, factors which may cause discomfort, the expected benefits to the subjects and the known and the most probable permanent consequences which may follow from your participation in this project, are discussed in part 1 of this document.
4. You are encouraged to ask questions at any stage about the project and procedures to the project leader or personnel, who will readily give information. They will discuss all procedures with you.

5. If you are minor we need a written approval of your parent or guardian before you may participate.

Part 3

Consent

Title of the project:

……
……
……
……

I, the undersigned …… (*Full names*) read/ listened to the information on the project in part 1 and part 2 of this document and I declare that I understand the information. I had the opportunity to discuss aspects of the project with the project leader and I declare that I participate in the project as a volunteer. I hereby give my consent to be a subject in this project.

Signature of the subject:……..

Signed
at……..on…….

Witnesses

1. ……..
2. ……..

Appendix D

AFRICA WELLNESS RESEARCH PROJECT

QUESTIONNAIRE

AFRICA INTERNATIONAL EXECUTIVE WELLNESS RESEARCH PROJECT

The purpose of the project is to give you the opportunity to have your health and lifestyle assessed. The feedback that you are going to receive will help you to identify you health and lifestyle risks. It is also aimed at imporving your health knowledge and helping you manage your health risks.

All information regarding this project is strictly confidential

1. Demographic information

1.1 Surname: Initials:

Gender: Male 2 Female 1
Mark appropriate box with ✓

1.2 What was your age at your last birthday? (Full years)

1.3 Name of your company:

1.4 Your residential address:

1.5 What is your current job description?

Management level: Top level 1 Middle level 2

Race / Ethnic group*:

Religious group*:

* For the purpose of this study, this information is needed to determine the origin of certain dietry and lifestyle practices/patterns.

Mark the appropriate box with a ✓

1.6 What is your company's primary field of activity? ☐

Civil service	1
Motor industry	2
Steel and engineering	3
Finance	4
Academic	5
Building industry	6
Mining	7
Electricity	8
Other: ***Please indicate***	9

1.7 How long have you been in your current position? ☐

< 6 months	1
6 – 12 months	2
1 – 2 years	3
2 – 5 years	4
5 – 10 years	5
> 10 years	6

1.8 In your opinion, are you sufficiently educated/trained to do your current job efficiently? ☐

Not at all	1
To a certain extent	2
Definitely	3

c1.9 What is your highest academic qualifications? ☐

Grade 11	1
Grade 12	2
Diploma (1 year study)	3
Diploma (2 year study)	4
Diploma (3 year study)	5
Diploma (> 3 year study)	6
Degree (3 year study)	7
Post-graduate degree (Hons., M.A., M.Sc., etc.)	8
3 year and diploma	9
Other	10

1.10 What is your nationality? ☐

Mark the appropriate box with a ✓

2. Physical activity index

2.1 **Do you participate in sport or any other kind of physical activity or physical recreation on a regular basis?** ☐

Yes* 1 No 2

* **If yes,** please complete the table below. Please indicate how tired you get from participating **(intensity)**, for how long you participate **(duration)** and how many times you participate per week **(frequency)**.

Example:

Walking		✓					✓						✓		

Summer															
Activity	**Intensity**					**Duration**				**Frequency**					
	1 = Not tired	**2** = Slightly tired	**3** = Tired	**4** = Very tired	**5** = Exhausted	**1** = < 10 min	**2** = 10 - 19 min	**3** = 20 - 30 min	**4** = > 30 min	**1** = 1 x month	**2** = few times/month	**3** = 1 - 2 x week	**4** = 3 - 5 x week	**5** = Almost daily	
	1	2	3	4	5	1	2	3	4	1	2	3	4	5	
Winter															

Mark the appropriate box with a ✓

3. Lifestyle

3.1 Daily habits

For each of the following statements mark the choice (Yes or No) that indicates your habits.

	Yes	No	
1. Do you eat 3 meals a day at regular times with no in-between snacking?	1	0	
2. Do you eat breakfast every day?	1	0	
3. Do you participate in moderate exercise two or three times a week?	1	0	
4. Do you get adequate sleep (7 – 8 hours a night)?	1	0	
5. Are you a non-smoker*?	1	0	
6. Have you been able to maintain your body weight at a moderate level during the last 10 years?	1	0	
7. Do you consume little or no alcohol?	1	0	

* For the purpose of this study, ex-smokers who have stopped smoking for more than 1 year qualify as non-smokers.

3.2 Nutritional evaluation

3.2.1 Eating behaviour pattern

Indicate if the following is a reflection of your eating behaviour (Sometimes or Never).

	1 = Sometimes	2 = Never
1. Have you ever been on a weight reduction diet?		
2. When watching TV, do you usually snack on different snack foods?		
3. Do you tend to eat when you are bored?		
4. Is your appetite usually reduced when you are emotionally upset?		
5. Have you ever used appetite suppressants to help you control your weight?		
6. Do you usually have cravings for starchy or sugary foods?		
7. Do you tend to eat less when under stress?		
8. Do you usually choose rich or creamy foods?		
9. Do you tend to eat more when emotionally upset?		
10. Do you usually wake up at night for something to eat?		

Mark the appropriate box with a ✓

3.2.2 Weekly food intake

Indicate how often you eat the following foods:

	< 1 per week	1 - 3 per week	> 3 per week
	1	2	3
1. Dark green and leafy vegetables, e.g. spinach, green beans, peas, etc.			
2. Dark yellow and orange vegetables and fruit, e.g. pumpkin, carrots and paw paw.			
3. Citrus fruits, e.g. orange, grapefruit, lemon, etc.			
4. Eggs			
5. Red meat, e.g. beef, pork, mutton, veal, etc.			
6. Fish or chicken			
7. Broccoli, cabbage, brussels sprouts, cauliflower			
8. Dairy products like cheese, milk and yoghurt			
9. Legumes, lentils, dried beans and baked beans			
10. Snack foods, e.g. chips, nuts, biltong, pies, etc.			
11. Sweets, chocolates, cakes, sweetened cooldrinks, sweet biscuits			

Mark the appropriate box with a ✓

4. Illness and coronary risk profile

4.1 Risk factors for coronary heart disease

Complete the table below by marking the appropriate space. Read from left to right.

Age	10 – 20 years	1	21 – 30 years	2	31 – 40 years	3	41 – 50 years	4	51 – 60 years	6	61+ years	8	
Hereditary*: Parents and family	No family history of CVD	1	1 with CVD over 60 yrs	2	2 with CVD over 60 yrs	3	1 death from CVD under 60 yrs	4	2 deaths from CVD under 60 yrs	6	3 deaths from CVD under 60 yrs	7	
Weight	5 kg under standard weight	0	Standard weight	1	5 – 10 kg overweight	2	11 – 15 kg overweight	3	16 – 20 kg overweight	5	21+ kg overweight	7	
Smoking	No smoking	0	Occasional cigar/pipe	1	< 10 cigarettes per day	2	11 – 20 cigarettes per day	4	21 – 30 cigarettes per day	6	> 30 cigarettes per day	10	
Exercise	Intensive occupational and recreational exercise	0	Moderate occupational and recreational exercise	1	Sedentary occupational and intensive recreation	2	Sedentary occupation and moderate recreation	4	Sedentary occupation and light recreation	6	Sedentary occupation and no exercise or recreation	8	
Cholesterol	< 5.2 mmol.ℓ^{-1}	1	Don't know	2	5.2 – 6.0 mmol.ℓ^{-1}	3	6.1 – 6.6 mmol.ℓ^{-1}	4	6.7 – 7.3 mmol.ℓ^{-1}	5	7.4+ mmol.ℓ^{-1}	7	
Systolic bloodpressure	111 – 130 mm Hg.	0	131 – 140 mm Hg.	1	Don't know	2	141 – 160 mm Hg.	3	161 – 180 mm Hg.	5	> 180 mm Hg.	7	
Diastolic bloodpressure	80 – 85 mm Hg.	0	86 – 90 mm Hg.	1	Don't know	2	91 – 95 mm Hg.	4	96 – 100 mm Hg.	7	> 101 mm Hg.	9	
Gender	Female	1	Female over 45 yrs	2	Male	4	Bald male	5	Bald, short male	6	Bald, short, stocky male	7	
Stress	No stress	1	Occasional mild stress	2	Frequent mild stress	3	Frequent moderate stress	4	Frequent high stress	5	Constant high stress	7	
Present CVD* symptoms	None	0	Occasional tachycardia** and/or irregular rhythm	2	Frequent tachycardia** and /or irregular rhythm	4	Dyspnea on exertion***	6	Occasional angina***	8	Frequent angina****	10	
Past personal history of CVD*	Completely benign	0	CVD symptoms not medically confirmed	2	History of CVD symptoms, examined by doctor	4	Mild CVD, no present symptoms	6	CVD under symptoms	8	Hospitalised for CVD	10	
Diabetes	No family history	0	Positive family history	1	Diagnosed pre-diabetic	3	Diabetes: dietary control	5	Diabetes: oral control	7	Diabetes: insulin control	9	
Gout	No family history	0	Family history	1	Elevated uric acid. No symptoms.	2	New onset gout: early detected	3	Repeated chromic gouty attacks	5	Gout with renal and ostea complications	8	

* CVD = Cardiovascular disease (example: heart disease, heart attack, bypass, etc.)
** Tachycardia = Fast heartbeat (e.g. seen in normal persons after climbing stairs)
*** Dyspnea = Difficulty in breathing ("out of breath").
**** Agina = Pain in the chest

Circle the number/s

4.2 Illness rating scale

Circle the number indicating all the illnesses that you have experienced during the last year.

1. Dandruff
2. Warts
3. Cold sore, cancer sore
4. Corns
5. Hiccups
6. Bad breath
7. Sty
8. Common cold
9. Farsightedness
10. Nosebleed
11. Sore throat
12. Nearsightedness
13. Sunburn
14. Constipation
15. Astigmatism
16. Laryngitis
17. Ringworm
18. Headache
19. Scabies
20. Boils
21. Heartburn
22. Acne
23. Abscessed tooth
24. Colour blindness
25. Tonsillitis
26. Diarrhoea
27. Carbuncle
28. Chickenpox
29. Menopause
30. Mumps
31. Dizziness
32. Sinus infection
33. Bed sores
34. Increased menstrual flow
35. Fainting
36. Measles
37. Painful menstruation
38. Infection of middle ear
39. Varicose veins
40. Psoriasis
41. No menstruation
42. Hemorrhoids
43. Hay fever
44. Low blood pressure
45. Eczema
46. Drug allergy
47. Bronchitis
48. Hyperventilation
49. Shingles
50. Glandular fever
51. Infected eye
52. Bursitis
53. Whooping cough
54. Lumbago
55. Fibroids of the uterus
56. Migraine
57. Hernia
58. Frostbite
59. Goitre
60. Abortion
61. Ovarian cyst
62. Heatstroke
63. Gonorrhoea
64. Irregular heart beats
65. Overweight
66. Anemia
67. Anxiety reaction
68. Gout
69. Snake bite
70. Appendicitis
71. Pneumonia
72. Depression
73. Frigidity
74. Burns
75. Kidney infection
76. Inability for sexual intercourse
77. Hyperthyroid
78. Asthma
79. Glaucoma
80. Sexual deviation
81. Gallstones
82. Arthritis
83. Starvation
84. Syphilis
85. Accidental poisoning
86. Slipped disk
87. Hepatitis
88. Kidney stones
89. Peptic ulcer
90. Pancreatitis
91. High blood pressure
92. Smallpox
93. Deafness
94. Collapsed lung
95. Shark bite
96. Epilepsy
97. Chest pain
98. Nervous breakdown
99. Diabetes
100. Blood clot in blood vessels
101. Hardening of the arteries
102. Emphysema
103. Tuberculosis
104. Alcoholism
105. Drug addiction
106. Coma
107. Cirrhosis of the liver
108. Parkinson's disease
109. Blindness
110. Mental retardation
111. Blood clot in the lung
112. Manic depressive psychosis
113. Stroke
114. Schizophrenia
115. Muscular dystrophy
116. Congenital heart defects
117. Tumor in the spinal cord
118. Cerebral palsy
119. Heart failure
120. Heart attack
121. Brain infection
122. Multiple sclerosis
123. Bleeding in brain
124. Uremia
125. Cancer
126. Leukemia

Mark the appropriate box with a ✓

5. Stress

Indicate how your behaviour matches the following statements.

	Often	A few times a month	Rarely
	2	1	0
1. I have indigestion			
2. I have difficulty finding enough time to relax			
3. I smoke when I feel tense			
4. I sleep badly			
5. I find it difficult to concentrate on what I am doing because of worrying about other things			
6. I feel anxious			
7. I eat more when I a anxious			
8. I have headaches			
9. People at work make me feel tense			
10. I have aches and pains in my neck or shoulders			
11. Even if I find time, it is hard for me to relax			
12. People at home make me feel tense			
13. I drink alcoholic beverages when I feel tense			
14. My day is made up of may deadlines			
15. I can't turn off my thoughts for long enough at night or weekends to feel relaxed/refreshed the next day			
16. I take tranquillisers (or drugs) to relax			
17. I feel my heart beating fast			
18. My legs feel wobbly			
19. I perspire without even exercising			
20. I get angry/irritated quickly			
21. I am impatient and become frustrated with others			
22. I do things in a hurry			
23. I talk quickly			
24. I worry that there are so many things that I can do nothing about			
25. I cannot sit still for long			

Mark the appropriate box with a ✓

6. Emotional well-being

How often do you have any of the following experiences? Please use the following scale.

	Never 1	Once 2	Rarely 3	Sometimes 4	Often 5	Usually 6	Always 7
1. Being tired							
2. Feeling depressed							
3. Having a good day							
4. Being physically exhausted							
5. Being emotionally exhausted							
6. Being happy							
7. Feeling "wiped out"							
8. Feeling burnout"							
9. Being unhappy							
10. Feeling rundown							
11. Feeling trapped							
12. Feeling worthless							
13. Being weary							
14. Being troubled							
15. Feeling disillusioned and resentful about people							
16. Feeling weak							
17. Feeling hopeless							
18. Feeling rejected							
19. Feeling optimistic							
20. Feeling energetic							
21. Feeling anxious							

32 – B = C ÷ A = D/21

32 - ☐ = ☐ ÷ ☐ = ☐/21

Mark the appropriate box with a ✓

7. Happiness, well-being and quality of life

Read each statement and decide how often the feeling was present over the past few weeks. Please use the following response scale.

	Not at all 1	Occasionally 2	Sometimes 3	Often 4	All the time 5
1. My life is on the right track					
2. I wish I could change some part of my life					
3. My future looks good					
4. I feel as though the best years of my life are over					
5. I like myself					
6. I feel there must be something wrong with me					
7. I can handle any problem that comes up					
8. I feel like a failure					
9. I feel loved and trusted					
10. I seem to be left alone when I don't want to be					
11. I feel lose to people around me					
12. I have lost interest in other people and don't like them					
13. I feel I can do whatever I want to					
14. My life seems to be in a rut					
15. I have energy to spare					
16. I can't be bothered doing anything					
17. I smile and laugh a lot					
18. Nothing seems very much fun anymore					
19. I think clearly and creatively					
20. My thoughts go round in useless circles					

☐ - ☐ = ☐

Mark the appropriate box with a ✓

8. Company culture

Rate the following statements with regard to the way they match your experience at work each day.

	Doesn't fit my job at all	Fits my job in some way	Fits my job more or less	Strongly fits the way it is at work
	0	1	2	3
1. People feel free to take risks and experiment at work				
2. Creativity is affirmed daily				
3. A few key advisors take responsibility for projects as opposed to the assignment of projects to committees				
4. People feel that they make a powerful difference and are involved in experiences that prove it				
5. Salaries meet basic needs and also provide incentives				
6. People are rewarded and recognized for excellent performance				
7. Conflicts are resolved with win/win solutions or are mediated by non affected third parties				
8. People are constructively confronted when negative behaviour occurs				
9. People avoid blame placing and finger pointing as a method of problem solving				
10. The decision-making process is highly participatory				
11. People emphasize co-operation over competition among members of the organization				
12. People set their own work objectives and work method				
13. People's beliefs are congruent with their actions				
14. People understand how their work relates to the goals or values of the organization				
15. People seek out the ideas and opinions of others				
16. Leaders follow up on problems and new ideas swiftly				
17. Leaders show a balanced concern between the quality of work that has to be done and the people who are doing it.				
18. Leaders are actively involved in providing quality services and they model the behaviour they expect of others				
19. Some meetings focus on nothing but individual and/or group achievements				
20. Support for and caring of associates is strongly emphasized				
21. People are concerned about the success of the work group				
22. The work environment is relaxing and families are included in some of the organization's programmes				
23. Fitness facilities and programmes are available and their use is encouraged				
24. The organization provides the necessary staff, programmes or other resources to assist people under stress or who are experiencing personal problems.				
25. Change and/or efforts focus on measurable results				
26. Quality is something upper management not only talks about but also does something about				
27. Management acts quickly and decisively on quality improvement suggestions				