

PHYSICALLY ACTIVE LIFESTYLE AND THE DEVELOPMENT AND SUSTENANCE OF HEALTHY HUMAN AND ECONOMIC RESOURCES

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Abstract

Dedicated participation in leisure / recreational and competitive physical activities have been known to develop the physical fitness and the physical working capacity (PWC) of the individuals concerned. In the same vein, improved physical fitness and PWC lead to improved productivity in any group of people in their various professions. The ultimate goal of any profession is the provision of abundant economic and material benefits through the development of fit and capable human resources. Thus, this paper aims at bringing to the fore the modalities through which a country's human resource can be galvanized into a fit and physically empowered factor of production for the achievement of material and economic prosperity.

INTRODUCTION

A well-known fact for a country to be deemed developed, there must be a favourable inter-play of human and material resources. For development to be sustained, it is also vital that the human and material resources attain a status of proficiency and continuous availability, respectively. Proper or efficient manipulation of the material resources brings about an increment in the economy of a country.

The efficiency of a country's human resources comes from an interaction of numerous factors viz.: formal education, in-service strategy, motivation, experience, good health status, good social security, adequate social amenities, proper family support, to mention but a few. The above factors determine the rate at which the productivity of a work place grows. Kaye and Modise (2000) agreed that a productive and highly motivated workforce is fundamental to achieving sustainable economic diversification.

However, of the factors mentioned above, one that has the greatest potential of affecting all others, is the health of the individual. Health is wealth, and that a healthy mind dwells in a healthy body. If an employee is not healthy, all other factors that make up that human resource are in jeopardy; all skills acquired, all training, experience and motivation of the employee are wasted. No country desires to spend a lot of its fiscal resources developing a work force that would be wasted through poor health. The Botswana National Development Plan (NDP 8) of 1997-2003, for example, focuses on the development of a "... work-force needed for the development of the economy" (Republic of Botswana, 1997:358). All governments want value for their investment in human resources. Hence, the NDP 8 states that "... emphasis will be on quality at all levels, cost recovery and effectiveness...."

(Republic of Botswana, 1997:337). Ideal as these objectives are, if the country does not gear concerted efforts towards the monitoring of the health of its populace, particularly that of its work force, the ideas could just remain a mirage.

In the early 1990's, the United States of America realized the colossal havoc done to its economy by the ill health of its populace. For instance in 1995, the total cost (medical cost and lost productivity) attributable to obesity alone amounted to an estimated \$99 billion (Healthy People 2010, 2000). This led to the formation of a health advising and monitoring organ known as Healthy People 2000. The beneficial result obtained from this effort and following a review of the effects of its campaign on the health of its citizens; particularly the work-force, the previous visionary document was expanded and re-named Healthy People 2010. The extended monitoring organ was for the advancement and consolidation of the health benefits derived from the efforts of the agency that was saddled with monitoring the health of Americans. Today, the American economy stands out as one of the best, if not the best, in the world.

In the Healthy People 2010 document, some leading health indicators, which reflected the major public health concerns in the United States, were identified. Of the ten factors/indicators identified, physical activity status and need by the populace was the first on the list. The other factors included physical activities, overweight and obesity, tobacco use, substance abuse, responsible sexual behaviour, mental health, injury and violence, environmental quality, immunization and access to health care (Healthy People 2010, 2000). It therefore shows the great importance attached to the role of physical activities in the attainment and sustenance of a good health status. The process of selecting the leading health indicators mirrored the collaborative and extensive efforts undertaken to develop Healthy People 2010. The process was led by an inter-agency work-group within the US Department of Health and Human Services (Healthy People 2010, 2000). A report by the Institute of Medicine, American National Academy of Science provided several scientific models on which to support the above set of indicators.

The objective of this paper, therefore, is to examine the nature of ailments that could arise as a result of inactive life-style or with little or no regular performance of physical activities. It also looks at its effects on the growth, development and sustainability of the human and economic resources of a country. Attempts were made at proffering suggestions as to how such debilitating conditions could be prevented and controlled to enable a country achieve a sustained healthy workforce and a vibrant economy.

Health implications of a physically inactive lifestyle

The health implications of a lifestyle of physical inactivity has been widely studied (Boss, 1998; Leaf, Parker & Schaad, 1997; Peel, Utsey & MacGregor, 1999; Shin, 1999; Terenzi, 2000 & Westerterp, 1998). The negative health effects, of a state of sedentariness, on various systems of the body cannot be under-estimated by any

establishment or nation. A lifestyle of physical inactivity has been known to cause debilitating conditions like musculo-tendinous ailments, skeletal problems and cardio-respiratory diseases including coronary heart diseases.

Studies (Katzmarzyk, Malina, Song & Bouchard, 1998; Leaf et al., 1997; Marti, 1991; Mengelkoch, Pollock, Limacher, Graves, Shireman, Riley, Lowenthal & Leon, 1997; Peel et al., 1999; Shin, 1999 & Terenzi, 2000) have shown that one of the first major systems of the human body that succumbs to a lifestyle of inactivity is the cardio-respiratory system. Hence, the cardio-respiratory system has become a major component in the assessment of an individual's physical fitness profile. In individuals living a lifestyle of physical inactivity, Mengelkoch et al. (1997) observed a prevalence of coronary heart disease risk factors like obesity, diabetes, high blood cholesterol level and abnormally high blood pressure. An earlier study by Marti (1991) noted a significantly increased risk of fatal and non-fatal coronary accident following regular physical inactivity in a group of female subjects.

Obesity and overweight are major contributors to many preventable causes of death (Healthy People 2010, 2000). Wilmore and Costill (1994) noted that inactivity was a major cause of obesity in the United States. According to them, inactivity may in fact be a far more significant factor in the development of obesity than overeating. According to the document on Healthy People 2010, overweight and obesity substantially raised the risk of illness from high blood pressure, high cholesterol, type 2 diabetes, heart disease and stroke, gallbladder disease, arthritis, sleep disturbances and problems of breathing and certain types of cancers. It also states that obese individuals may suffer from social stigmatization, discrimination and lowered self-esteem.

Consequent upon a lifestyle of physical inactivity, there is an increase in serum triglycerides (Leaf et al., 1997; Marti, Knobloch, Riesen & Howald, 1991), lipoprotein and apolipoprotein (Marti et al., 1991). These substances settle in the adipocytes, leading to above normal levels of percent body fat (Leaf et al., 1997; Westerterp, 1998) and a problem of weight control (Marti, 1991). The metabolism of apolipoprotein is significant to the pathogenesis of Alzheimer disease (AD) (senile disease complex). Boss (1998) revealed that apolipoprotein E locus (apo E) is associated with variations of age of onset and risk of AD. Formerly believed to occur in persons older than 65 years of age (familial, early onset dementia), AD has now been demonstrated to be one of the most common causes of severe cognitive dysfunction in older persons. Initial clinical manifestation includes forgetfulness, emotional upset or other illnesses. As the disorder advances, memory loss increases as the individual becomes increasingly more forgetful, disoriented and confused. Ability to concentrate declines. Abstraction, problem solving and judgment gradually deteriorate among others. Changes occurring could include decreased oxygen and glucose transport to the brain (Boss, 1998); a situation that could be prevented by regular exercise.

Apart from the possibility of an Alzheimer's disease, obesity can also predispose an individual to diabetes mellitus. Diabetes mellitus has been identified as a leading cause of blindness, heart disease and kidney failure in sedentary individuals (Atkinson & MacLaren, 1994). With physical inactivity, there is a reduced glucose-tolerance and insulin action in individuals (Oshida, Yamanouchi, Hayamizu, Nagasawa, Ohsawa & Sato, 1991).

Physical inactivity has also been found to be the cause of a reduced muscular strength and endurance (Kraemer, Volek, Clark, Gordon, Puhl, Koziris, McBride, Triplett-McBride, Putukian, Newton, Hakkinen, Bush & Sebastianelli, 1999). It also reduces muscular power (Peel et al., 1999) muscle thickness (Kaminsky, Wabbersen & Murphy, 1998; Kraemer, Duncan & Volek, 1998 & Starkey, Pollock, Ishida, Welsch, Brechue, Graves & Feigenbaum, 1996) as well as flexibility (Shin, 1999) further leading to arthritic conditions. Sedentariness also leads to a reduced bone density (Marti, 1991). All these conditions lead to muscular weakness and the inability to sustain a job that requires the use of the muscles of the body.

A lifestyle devoid of regular physical exercise is known to be a precursor to the formation of cancerous cells (Marti, 1991). Cancer is the second leading cause of death in the United States; although it was estimated that it would surpass heart disease as the leading killer by the year 2000 (Jorde, 1998). Some of the major types include breast, colon, prostate and ovarian cancer.

Beneficial effects of a physically active lifestyle

Regular performance of physical activities throughout life is important for maintaining a healthy mind in a healthy body, enhancing psychological well-being and preventing premature deaths (Healthy People 2010, 2000). Regular physical activity is associated with lower death rates for adults of any age; even when only moderate levels of physical activities are performed.

Regular physical activity decreases the risk of death from heart diseases. This fact has been shown very clearly by the results from numerous studies conducted on humans (Katzmarzyk et al., 1998; Leaf et al., 1997; Marti, 1991; Mengelkoch et al., 1997; & Paffenbarger, 1978 & Paffenbarger, Hyde & Wing, 1990). In a longitudinal study by Mengelkoch et al., (1997), data were collected after the first, tenth and twentieth year of participation in an exercise regimen by a group of subjects. Results showed:

The absence of several coronaries heart disease (CHD) risk factors like obesity and diabetes.

That other risk factors such as family history of cardiovascular diseases and abnormal resting ECG remained low. The mean systolic and diastolic blood pressures remained low without medication.

The mean total cholesterol was lower at 10 years (-13% at $p=.005$) and 20 years (-14% at $p=.048$).

Hence, the prevalence of CHD risk factors and mean risk factor values remained low and generally stable in older athletes who had maintained habitual exercise training programme. In regularly exercising women, Marti (1991) observed a significantly reduced risk of fatal and non-fatal coronary event even after menopause had set in. Findings of the positive effects of chronic exercises on body fat, plasma lipids, $VO_2\text{max}$, PWC of individuals, support the call for regular physical activity as mandated by Healthy People 2010 for the reduction in the risk of coronary artery diseases (Healthy People 2010, 2000).

Regardless of menstrual status, the effectiveness of exercise to maintain bone mass throughout life was without question in Marti's (1991) study. It was observed that habitual exercise was associated with increased bone density of the spine both in pre-menopausal and post-menopausal women. Marti (1991) also stated that several controlled training studies suggest that post-menopausal women may at least retard their bone loss with regular aerobic exercise. Healthy People 2010 (2000) and Marti (1991) also state that an athletic lifestyle leads to a reduced risk of cancers of the reproductive system like the breast and colon.

Exercise and training are known to reduce fat mass (Westerterp, 1998). Chronic exercises have been found beneficial in the reduction of plasma triglycerides, percent body fat and body adiposity (Leaf et al., 1997). Supporting these findings, Marti et al., (1991) also found that a continuous exercise programme caused a reduction in triglyceride, lipoprotein and apolipoprotein levels in their subjects; while it was shown that recreational running correlated well with better weight control (Marti, 1991). Also, physical training improves glucose tolerance and insulin action in individuals (Oshida et al., 1991) by their utilization and activation, respectively for training. Supporting the findings of Oshida et al., Healthy People 2010 (2000) and Marti (1991) stated that an athletic lifestyle may be associated with a reduced risk of adult-onset diabetes mellitus through an exercise-induced increase in insulin sensitivity.

There is a significant relationship between activity and health-related physical fitness (Katzmarzyk et al., 1998). The cardio-protective effect of aerobic exercise has not been in question. In the study by Terenzi (2000), results demonstrate that elevated aerobic fitness levels are associated with an augmentation in arterial compliance. These results suggest that enhanced arterial compliance is another beneficial cardio-protective effect associated with aerobic training. Exercise training increases the cardio-respiratory fitness of individuals (Peel et al., 1999). A higher level of physical fitness is associated with a lower risk of subsequently developing hypertension while a moderately intense aerobic exercise is able to reduce blood pressure significantly in hypertensive patients (Marti, 1991).

Shin (1999) has established that even walking exercise programme for the aged (60 – 75 years) improves the aerobic capacity ($VO_2\text{max}$) while Leaf et al., (1997) posit that chronic exercise increases the $VO_2\text{max}$ of individuals thereby improving their

physical working capacities. The individual is then able to work for a long time without undue fatigue.

Physical exercise is increasingly being advocated as a means of maintaining and enhancing good mental health (Raglin, 1990). Supporting Raglin's findings, Van-Boxtel, Paas, Houx, Adam, Teeken and Jolles (1997) found that aerobic fitness leads to improved cognitive processing of information; particularly those requiring relatively large attentional capacity. The above findings are supported by the fact that physical activity is known to stimulate rapid vascularisation of the brain cells – bringing to it massive quantities of oxygen, food nutrients and refreshing the cells by speedily eliminating waste products of cellular metabolism. It is particularly important for Chief Executives of companies and institutions to be alert in their minds and brains in order to take useful decisions that would lead to progress in their establishments. This is because some executive meetings require long hours of extensive reasoning and concentration.

An individual who is committed to a lifestyle of active physical exercise would have the benefit of having an improved muscular power, strength and thickness (Baker & Nance, 1999a & 1999b; Kaminski et al., 1998; Kraemer et al., 1998 & 1999; Starkey, et al., 1996). This is caused by neural, hormonal and muscular adaptations (Tan, 1999). Joint flexibility is also improved (Shin, 1999) as a result of involvement in dynamic exercises.

Implications of the beneficial effects on the development and sustenance of healthy human and economic resources

The main implication of the beneficial effects of a physically active lifestyle is the attainment of a high level of physical fitness. Any country would be proud of a physically fit and vibrant work force. This is because of the following reasons:

Government's expenditure on medical care would be saved and channeled to other areas of need in the economy.

There would be a boost in productivity at the work place; leading to a high gross domestic product (GDP) for the country.

There would be an increased longevity within the working class bracket. Trained personnel and chief executives of various establishments would have many years to serve their country. This would enable government to have value for the huge amount of money spent on training its citizens.

Since the citizens are fit and therefore guaranteed longevity, barring accidents, the high level manpower in the country would be sustained. Also, the increased gross domestic product (GDP) would be improved upon and sustained.

Suggestions for building a physically fit populace and work-force

To attain a state of wellness / fitness for its citizens, the leaders of a country must be visionary in setting up structures that would establish and nurture a culture of

regular participation in physical activity. To achieve this enviable state of fitness, the leaders should:

Set up a solid base of physical education in schools (primary to tertiary levels). By so doing, its enlightened populace, which also forms the cream of those involved with the development and sustenance of the economy, would have acquired a culture of keeping fit through active participation in physical activities. Having participated in sport and games in their institutions, they are very likely to pick up one or more life-time sports which they would be elated to take part in during their leisure hours after a day's work.

They should set up manned playgrounds with adequate gadgets for fitness and leisure pursuits.

They should encourage various establishments to set up recreation houses or sport centers for their employees. This encouragement could be in form of tax rebates.

The leaders must aggressively train various professionals allied to the field of physical education, recreation and sport. They must woo in lots of their citizens into the profession by placing graduands on an attractive special salary structure.

Government should also lift bans on the importation of sports wear and subsidize these wears where necessary.

Governments should fund research works in the area of fitness. An organ should be saddled with the study and implementation of research results for the benefit of the citizenry.

Insurance companies should be made to set out their premiums in line with the fitness statuses of their clients. The fitter an individual, the less expensive their premiums and vice-versa.

Taking a cue from the Healthy People 2010 document, it is recommended that all adults become more active throughout the day and get at least 30 minutes of moderate physical activity most, or preferably all, days of the week.

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