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## **Preventing Cardiovascular Disease Risk Factors through Aerobic Exercises (Pp. 459-467)**

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### **Abstract**

*This paper focused on the reduction of cardiovascular disease risk factors, through aerobic exercises. The central argument here is that through exercise there is the tendency for increased strength of the heart muscles. When this is the case, what follows is a reduction in body weight and ultimately less risk on the cardiovascular system. Generally, what could be deduced from the foregoing is the importance of aerobic exercises in the modification of cardiovascular diseases. Notably, such disease risk factors are largely influenced by the individual's lifestyle. The submission in this paper therefore is that one's consciousness of his health status can bring about positive modification of likely risk factors.*

**Key words:** Cardiovascular disease, Risk factor, Aerobic Exercise

### **Introduction**

There has always been several government policies in Nigeria directed at increasing and promoting the well being, development and progress of the populace (Adodo 2008). The seven point agenda of the government of the

Federal Republic of Nigeria is one such policy crafted to deliver the much talked about dividend of democracy. This seven point agenda may well be seen as government's response to global people oriented development issues such as the millennium development goals (MDGs) and the New Partnership for Africa's Development (NEPAD). A factor of development from these global perspectives is the issue of productivity usually expressed as per capital income or Gross National Product (GNP). Therefore, a factor necessary for the actualization of the seven point agenda of government is the level of productivity of the people.

Corbin and others (2002) have shown that a high level of wellness correlates with productivity. Similarly, Aniodo and Nwagu (2007) indicate that "achieving high level of wellness among Nigerians is an effective way of achieving the MDGs and that sport is an excellent important way of doing this". They specifically stated that people operating at a high level of wellness will invariably and favorably be well disposed to perform their duty to the point of being productive and contribute to the achievement of a high GNP.

The issue of wellness is seen readily in the incidence of physical inactivity and the resulting cardiovascular diseases. According to Owie (2007), the incidence of cardiovascular diseases and the attendant risk factors is increasing in many developing nations including Nigeria. Therefore, human potentials necessary for the actualization of the seven point agenda and similar people oriented government policies became endangered species. The level of wellness of the citizens of a nation becomes the barometer with which to measure the societal development and success of programme and strategies designed to increase productivity and development.

Aerobic exercises remain a potent means within the physical activity programme delivery system of developing a healthy citizenry. These exercises use large muscle groups at sustainable intensity for a long time to bring about maximum wellness. It is the focus of this paper to relate participation in aerobic exercise activities to the prevention of cardiovascular disease risk factors so that government's people oriented policies may be achieved.

### **Cardiovascular Disease Risk Factor**

Healthy professionals, generally use the term risk to describe a specific practice or physical characteristics that increases the likelihood of illness or injury. Risk factors may be considered as characteristic indicators present in

a person who is free of the disease but has a statistical likelihood of developing the disease (Owie, 2007).

A cardiovascular disease risk factor is an attribute that a person has or is exposed to that increases the likelihood that he or she will develop some form of heart disease (Raymond, 2007). According to the American Heart Association (2001) people should protect and enhance their heart and health by examining the cardiovascular risk factors that are related to various forms of heart disease. These risk factors can be broadly classified into two groups; namely, Unmodifiable Risk Factor (URF) and Modifiable Risk Factor (MRF). These are risk factors that cannot be controlled (URF) and those that can be controlled (MRF) respectively (Owie 2007). Unmodifiable risk factors include the following: advances in age, gender and heredity.

As one advance in age, so also the heart and its muscles which become weak and flabby without exercise to strengthen and firm it up. Oftentimes, problems appear to be more prevalent among the elderly. This may not be far from the damages that may have occurred in imperceptible stages and accumulated over time. Subsequent as Raymond has asserted, when the heart fails to fulfill its function as a pump, and the ventricles are unable to propel adequate oxygenated blood for the body requirement, congestive heart failure tend to occur.

In terms of gender, even though women have lowered rates of heart disease than men, when they attain the age of menopause their rates of heart disease becomes similar to those of men (Raymond, 2007). Just like the two earlier attributes, heredity cannot be modified. By chance some people are born into families in which heart disease has never been a serious problem; others are born into families in which heart disease is prevalent. These people have every reason to be highly motivated to reduce the risk factor that they can modify (Raymond 2007). The knowledge that these could influence one's health should motivate the person towards taking steps that would bring about positive action. In other words what we do or fail to do have little or no control over these risk factors. However, the extent to which these problems are manifested may be largely dependent on individual responses to issues of everyday living (Owie 2007).

Unlike the foregoing, Modifiable Risk Factors (MRF) are largely influenced by our life styles. These are usually related to issues as physical inactivity, high level of blood cholesterol, high blood pressure, diabetes mellitus,

obesity and overweight. Specifically, one's health-conscious behavior can bring about positive modification of these risk factors as would be examined.

**Physical Inactivity:** According to Raymond (2007), lack of exercise is a significant risk factor for heart disease. In other words, regular aerobic exercises help strengthen the heart muscle, maintain healthy blood vessel and improve the ability of the vascular system to transfer blood and oxygen to all the working part of the body. The implication here is that regular exercises appear to be one important factor which provides some degree of resistance to the vascular degenerative characteristics of coronary heart disease which is the most common cause of death among heart disease patients. To further buttress this view, Haruna (2002), has posited that exercise should be performed regularly and at predetermined frequency. This stems from the argument that exercises lower the overall level of blood cholesterol, enhances weight loss, retains lean muscle mass and encourages the modification of stressful life style. In the same context Dale and Wayne (2003) have affirmed that if people can engage in 20-60 minutes of moderate aerobic activities, three to five times per week, reduction in the risk of heart disease may be achieved.

**High level of blood cholesterol:** Recent findings have revealed that high level of blood cholesterol is one of the major contributors or factors in heart disease and failure. This largely too, emanates from one's diet and life style. This therefore, demands that one needs to be physically active (Kawalshi & Kaftils, 1992 and Raymond 2007). Owie, 2007 suggests three basic ways the level of cholesterol in the blood can be reduced. These include physical activities/exercise, medication and dietary patterns. Essentially, anaerobic exercises help to reduce the level of Low Density Protein (LDL) while raising High Density Low-protein (HDL) to achieve a ratio of 1:4 between HDL and the total cholesterol, considered normal by experts.

**High Blood Pressure:** High blood pressure otherwise called hypertension is one of the cardiovascular disease risk factors that can seriously damage a person's heart and blood vessels. According to Harvard Heart Letter (2002), high blood pressure causes the heart to work harder, eventually causing it to enlarge and become weakened. It thus increases the chances for stroke, heart attacks, congestive heart failure and kidney disease. When blood pressure is present along with other risk factors, the risk for stroke or heart attack is tremendously increased (Raymond, 2007). This silent killer is easy to monitor and can be effectively controlled using a variety of exercises such as

aerobic and anaerobic exercise. Owie (2007) has also suggested three ways in which exercises can positively influence blood pressure. Firstly, he has recognized that peripheral blood vessel pliability allows for easier flow of blood through their lumen. Again, its ability to mediate and influence the rate and level of fat accumulation is also positive. Finally, increasing the number of blood vessels through vascularization helps to provide alternative pathways for blood supply.

Another major contributor of heart diseases is diabetes mellitus. Diabetes mellitus is a debilitating chronic disease that has a significant effect on the human body. Apart from increasing the risk of developing kidney disease, blindness and nerve damage, diabetes increases the likelihood of developing heart and blood vessel diseases (Dale and Wayne, 2003). Specifically, it has been found that cardiovascular damage occurs when diabetes begin to alter normal cholesterol and blood fat level. However, diabetes can also be controlled through weight management, exercise etc. It is however important that this must be done with the approval of the physician while working closely with dietician on food selection and positive eating habit.

Obesity and overweight could also pose risk factors. Simply obesity could be defined as an excessive accumulation of fat. Such weight accumulation becomes abnormal for the age, sex, and body type. In the same vein, Haruna (2002) opined that if energy intake exceeds energy output, the excess energy will be stored mainly as adipose tissue. When this state of affairs is maintained over a period of time, it ultimately leads to obesity. In the opinion of Astrand and Rodahl (1986), obesity is often the result of too little activity rather than over eating. According to Haruna (2002), obesity and overweight constitute two of the most significant health problems in the world today. They are either directly or indirectly associated with a variety of diseases that account for increased mortality rate. Importantly, it has been found that obesity places considerable strain on the heart, and this tends to influence both blood pressure and blood cholesterol level. It also triggers diabetes in predisposed people. In this same context, obesity exposes the individual to a high incidence of arteriosclerosis, hypertension, diabetes and cirrhosis of the liver. Specifically, they are potential benefits that obese people can obtain through a regime of aerobic exercise. These include possible body composition changes, increased aerobic capacity, increased high lipo-protein cholesterol, decreased blood pressure, increased insulin sensitivity, and reduced psychological stress and a total improved sense of well being. There is no gain saying that physical activities which include aerobic exercise

remain one of the easiest and indeed the known method for the reduction of fat in the body.

### **Risk Reduction Strategy**

From the foregoing argument, what can be deduced is that cardiovascular disease has been and would continue to be one prime common cause of death among adults. Against this background, this paper explores possible ways of reducing the risk factors responsible for such conditions. These include:

- (i). **Body Weight Control:** Good health is a notable function of maintained desirable body weight. In this regard, behavior medication towards physical activities and exercises are highly recommended.
- (ii). **Regular Exercises:** The place of regular exercises in the maintenance of functional cardiovascular system cannot be over emphasized. Moderate exercise has been found to increase the body's ability to deliver oxygen to its tissues, thus, reduce the likelihood of developing cardiovascular disease.

Generally, for a proper understanding of this risk reduction strategy, there should be some clarification on the importance of aerobic exercise. Essentially the reasons for aerobic exercises can be grouped into three major categories. These are fitness, weight management and health. Fitness may be one overall reason why people regularly exercise aerobically. Importantly too, aerobic exercise increases the level of fitness, giving the body opportunity to function more efficiently. Another basic reason why most people exercise is to reduce weight or the percentage of body fat to a desirable level or to maintain their present level. Finally according to Hockey (1996), many people who regularly exercise are aware of the health benefits associated with regular exercise and their major objectives is to add years to their life expectancy by reducing the risk of certain diseases.

Generally, other important considerations for regular aerobic exercise as outlined by Hockey (1996) are important changes and results as seen in figure 1.

### **Motivation for Aerobic Exercises**

Oftentimes even when we may be aware of the benefits of aerobic exercises, there is still the need for motivational push. In other words, to achieve an adequate level of physical fitness, and an optimal level of exercise, dedication and motivation are required. The following suggestions by

Hockey (1996) may help a prospective exerciser to make exercise a permanent part of his lifestyle: If a busy schedule limits the amount of time available for exercise, try to build more physical activity into the daily routine. Try to walk or ride a bicycle as frequently as possible instead of driving a car, and climb the stairs rather than use the elevator. Exercises should be scheduled into one's lifestyle just as appointments, classes, etc are scheduled. One's lifestyle is such that he/she frequently just do not have time to exercise, then it may be necessary to get up an hour earlier than normal so as to create time to exercise.

- Try to make exercise enjoyable. It may be necessary to vary routines so that boredom does not set in. For jogging, walking, or cycling, try a different route or stepping machine, watch television as a diversion.
- Try exercising with another person or with a group of persons.

To design an exercise program, one should be able to answer the following questions:

- How often should one exercise?
- How long should each exercise session last?
- How hard should one exercise?
- Which activities should be suited for one?

The answer to each of these questions will vary accordingly to one's overall objective. It is however advisable that anyone who wishes to obtain the maximal health benefits will need to do more exercises than those who exercise to increase the efficiency with which their bodies functions. However, it is also noteworthy that aerobic activity must be continuous. This is in the sense that it involves a large amount of musculature, and results in a heart rate consistently high enough to produce a cardiovascular training effect. Activities that usually meet these criteria are considered to be good aerobic activities. Examples of some good aerobic activities according to Hockey (1996) include, Aerobic dance, Basketball, "Marksball", Bicycling, Cross country race, Handball, Jogging, Rope jumping, Running Soccer, Squash, Stair climbing, Stationary Bicycling, Swimming, walking etc.

### **Conclusion**

From the foregoing position, we can deduce that aerobic exercise or work is an activity that uses large muscle groups at an intensity that can be sustained for a short time in which the body is able to provide sufficient energy. Thus,

aerobic exercises should be used to modify those risk factors that are largely influenced by one's life style and to accept responsibility for one's health conscious behavior in the management of risk factors that are unmodifiable. In doing these, it will certainly help to protect and enhance the cardiovascular system of a people devoted to the actualization of the seven points agenda of government.

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**Figure 1: Changes in the Body resulting from regular Aerobic Exercise**

<b>Changes</b>	<b>Result</b>
Increase in the strength of the heart muscle	An increase in resting stroke volume occurs, which means that the heart beats less frequently in circulating the same amount of blood. This also results in an increased maximal stroke volume, which means that your body is capable of circulating more blood when oxygen is needed by the muscles at a higher rate.
An increase in the number and/or size of the capillaries	A greater exchange of oxygen at the cellular level occurs between the blood and cells. The body is able to use more of the oxygen circulated.
An increase in the amount of haemoglobin	The body can carry more oxygen in the blood to the working muscles.
An increase in amount of oxygen that the body is capable of using ( $VO_{2max}$ )	A person can exercise longer at a higher level before he becomes fatigued.