AEROBIC EXERCISES AS GOOD PROMOTER OF BODY FITNESS

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A**bstract**
Aerobic exercise which is also called cardiovascular exercise is any sustained, rhythmic activity that affects large muscle groups. Aerobic exercise tasks the lungs and the heart to work harder as the body's need for oxygen is increased. Aerobic exercise is physical exercise of low to moderate intensity activities performed for extended periods of time that depends primarily on aerobic energy generating process. Aerobic exercise is of various types. These includes; running, jogging, stairs climbing, cycling, walking, aerobic dance, water aerobics, yoga, swimming and aerobic gymnastics. Aerobic exercise should involved five to ten minutes warming up at an intensity of 50%-60% maximum heart rate followed by at least 20minutes of exercise at an intensity of 70%-80% of maximum heart rate ending with 5-10 minutes of cooling down at an intensity of 50%-60% of maximum heart rate. Aerobic exercise can improve body functional ability, maintain independence of the body and give good quality of life. These are achieved by engaging in aerobic exercises lowering heart rate and blood pressure, improving body fat and weight control, increasing blood supply to muscles and ability to use oxygen, improving glucose tolerance and improving mental health, reducing stress and lowering incidence of depression. In order to achieve all these, a minimum duration and frequency of exercise of at least thirty minutes should be performed at least three times per week.

Key words: Aerobic, Aerobic exercise, Body fitness, Work out

Introduction

Body fitness is the ability of an individual to cope with the stress of every modern day living. It is also the ability to maintain positive and meaningful social relationships, have a high level of cardiovascular and muscular fitness and a good habit of an active lifestyle. Total body fitness is a state of physical, emotional, social, spiritual, mental and nutritional fitness (Harwood, 2012). Total fitness can also be defined as how well the body performs in each one of the components of physical fitness. Physical fitness is a state of health and well-being, more especially the ability to perform aspects of sports, occupations and daily activities (Centers for Disease Control and Prevention, 2018; Health Galaxy, 2016). It is the condition of the body which enables an individual to use his/her body in activities requiring strength, muscular endurance, cardiovascular endurance, flexibility, coordination, agility, power, balance, speed and accuracy, without undue experience of fatigue and exhaustion. Physical fitness is the ability of

an individual to carry out his daily task successfully without feeling too tired and still have enough energy to attend to other tasks. The five components that make up total fitness are; cardiovascular endurance, muscular strength, muscular endurance, flexibility and body composition.

General fitness as described by Fitness Health (2020) includes incorporating a healthy and nutritious diet, physical activity, rest and mental stability and well-being into ones daily lifestyle. General fitness can be said to be a state of health and well-being while specific fitness is the ability to perform specific aspects of sports or occupations. Physical fitness can prevent or treat many chronic health conditions brought on by unhealthy lifestyle or aging (U.S Department of Health and Human Service Presentation, 2013). Working out (exercise) can help individual to sleep better and to stay healthy. It is important to engage in physical activity in order to keep fit and stay fit. Aerobic exercises can be used to keep the body fit.

The term aerobic simply means living in air. It refers to the use of oxygen to adequately meet energy demands during exercise through aerobic metabolism. Aerobic is referred to as relating to, involving or requiring free oxygen to adequately meet energy demands during exercise (Cooper, 2010; Stephen, 2011; Hallett, 2014). Light-to-moderate intensity activities that are sufficiently supported by aerobic metabolism can be performed for extended periods of time. Aerobic exercise can be designed to be low-intensity so that all carbohydrates are aerobically turned into energy.

Aerobic exercise also called cardiovascular exercise is any sustained, rhythmic activity that affects large muscle groups. Aerobic exercise presses the lungs to work harder as the body's need for oxygen is increased. Wikipedia, the Free Encyclopedia (2012), describe aerobic exercises as physical exercises of relatively low to moderate intensity activities that are rhythmical in nature, using large muscle groups and that can be maintained continuously. Aerobic exercises overload the heart and lungs and cause them to work harder than at rest. It is important for an individual to engage in physical activities one enjoys doing that overload the heart and lungs for a continuous period of time, making the person to enjoy a healthy life. Wikipedia, the Free Encyclopedia (2012) noted that what is generally called aerobic exercise might be better termed "solely aerobic", because it is designed to be low-intensity enough not to generate lactate via pyruvate fermentation, so that all carbohydrate is aerobically turned into energy.

Aerobic exercises can be supported in the body by glycogen reserves, fat reserves or a combination of both depending on the intensity. As the glycogen levels in the muscle begin to fall, glucose is released into the bloodstream by the liver and fat metabolism is increased so that it can fuel the aerobic pathways, burning increased exertion, muscle glycogen is broken down to produce glucose which undergoes glycolysis producing pyruvate which then reacts with oxygen (Krebs cycle) to produce carbon dioxide, water and energy.

Types of Aerobic Exercise

There are various types of aerobic exercises which include; Running and Jogging Fitness, Jump Rope/Skipping rope Exercise, Dance Aerobic, Step Aerobic Exercise, Indoor Cycling and Spinning, Stair Climbing, Fitness Walking, Swimming, Jazzercise Aerobic Fitness, Water Aerobic Fitness, Yoga Exercise, Weight Training for women and Aerobic gymnastics, Jumping jacks, Kick boxing, Circuit training, Rowing, Skating, Stationary bicycle, Treadmill, Indoor rower, Elliptical trainer.

Running and Jogging - are the typical aerobic activities. Running is a way of allowing the body to move rapidly on the feet where the feet are above the ground. Jogging is a form of running or trotting at a slow or gentle pace with less stress on the body to maintain a steady speed for longer periods of time. Running and jogging burn a lot of calories in a short period of time and also very stimulating. Running can be done outdoor or indoor on treadmill.

Walking- Walking can be described as a movement of the body where only one foot at a time have contact with the ground. Walking can be of different kinds such as, trekking, hiking, bushwalking, race walking, beach walking, hill walking, and Nordic walking. Walking can be done indoor on treadmill.

Skipping or Jump Rope Aerobic Exercise - A ropeis theequipment used in the sport of skipping/jump rope. One or more participants jump over a rope swung so that it passes under their feet and over their heads. There are many techniques that can be used in performing skipping. Skipping is similar to jogging or bicycle riding in the use as a cardiovascular workout and production of high intensity level. Thisis a kind of exercise that can be done practically anywhere, at anytime, does not need a lot of instruction time and with simple equipment. Children love jump roping.

Step Aerobic Exercise- This involves stepping up and down on a rectangular,square, or circular platform. The platform is raised 10 – 30 centimeters. Step aerobics keeps the tempo at which the heart pumps high, keeping it fit and making it to stay fit. Thisis one of the most accepted and effective ways of exercising in a class or at home. All that is required is a step and some upbeat music.

Indoor Cycling and Spinning - Cycling can be done indoor and outdoor. This can be done on moving or on stationary cycle. Cycling is one of the most practiced exercise classes at the gymnasium. A 45 minutes class can burn 500 calories or more of a major but low impact workout that suits people of all ages. Other benefits of cycling are the mental aspect, soothing music and encouragement with the benefits of workout in a group of likeminded exercisers.

Dance Aerobics - Aerobic dance is a cardiovascular workout set to music in a group exercise setting. It is a particular type of workout style performed in group setting. Aerobic dance is a cardio-based group exercise class (Wolfe, 2018). In aerobic dance, the body is fully used in rhythmic large muscle movements. The amount of impact of the feet on the floor during aerobic dance, determines its intensity. When one foot is contact with the ground when performing, the aerobic dance is a low-impact exercise. It becomes a high-impact exercise when both feet are off the floor for a short time. In Aerobic dance, participants concentrate on their abilities. An aerobic dance class starts with a warm-up dance of 3-5 minutes, followed with a dance based movements to music for the next 30-45 minutes gradually increasing the (RHR) heart rate (Hallet,2014, Wolfe, 2018). The dance session is ended with a 3-4 minutes cool down followed by stretches. Participants in dance aerobics improve their health in a fun way, lose weight, tone muscles and improve the quality of their life meaningfully.

Examples of aerobic dance are; Jazz exercise, Ballroom dancing, Belly dancing, Masala Bhangra and Pump it up.

Aerobic Exercise Guidelines

Aerobic means “with oxygen” and refers to the use of oxygen in a muscle’s energy generating process. Many types of exercise are aerobic, and by definition are performed at moderate levels of intensity for extended periods of time. Cooper (1968); Felman and Kandola (2019) noted that an effective aerobic exercise should involve 5 – 10 minutes of warming up at an intensity of 50 – 60% of maximum heart rate, followed by at least 20minutes of exercise at an intensity of 70 – 80% of

maximum heart rate, ending with 5 – 10 minutes of cooling down at an intensity of 50 – 60% of maximum heart rate. Rowland (1996) found in his study that, when adult's type training in terms of intensity was performed, VO_2 max improved between 7 and 26%. Exercise intensity is shown in ones breathing and heart rate. Heart rate gives a better understanding of exercise intensity. The higher the exercise intensity one engages in during physical activity, the higher the heart rate.

Heart rate is the number of heart beats per minute while at rest. A normal resting heart rate (RHR) for most adults ranges from 60 to 100 beats per minute. Measuring ones heart rate is an easy way of gauging one's health, as it provides information on how the heart muscle function. A normal RHR can vary from person to person. An unusually high or low resting HR can be a sign of trouble in the body. A RHR that is slower than 60 beats per minute is referred to as bradycardia (slow heart) and a rate that is faster than 100 beats per minute is termed tachycardia (fast heart). A healthy heart rate can vary depending on the situation around. In healthy people, a slower heart rate can be as a result of being physically fit, on a medication, or sleep patterns. A slower HR can indicate a sign of disease including heart attack or other heart disease, infections, and high levels of potassium in the blood. On the other hand, a fast HR in healthy people can be as a result of exercise, being nervous or excited, using a stimulant or being pregnant.

The Harvard Medical School Special Health Report Diseases of the Heart (2019) recommended the use of fingers in checking pulse at the wrist or at the side of the neck. At the wrist, lightly press the index and middle fingers of one hand on the opposite wrist below the base of the thumb. At the neck, lightly press the side of the neck below the jawbone. Count the number of beats in 15 seconds and multiply by four. This gives the resting heart rate.

Heart rate is an important component to monitor during exercise because it is a useful indicator of the intensity of effort and body's physiological adaptation. Heart rate is an important component in cardiovascular fitness assessment and training programmes. It is important to know the target heart rate which is the range of numbers that reflect how fast the heart should be beating when exercising. Individual can monitor heart rate and try to reach this target zone during exercise. The intensity of physical exercise should always be based on an individual's fitness level and goals of the exercise.

Doyle (1998) and Felman and Kandola (2019) recommended the American College of Sport Medicine position stand, 1990 guidelines for aerobic

based on the Recommended Quantity and Quality of Exercise for Developing and Maintaining Cardio-respiratory and Muscular Fitness in Healthy Adults as follows:

Mode: Aerobic Exercise

Frequency: 3 – 5 days per week

Duration: 20 to 60 minutes of continuous aerobic activity.

Intensity: 50 – 85% of maximal aerobic capacity (VO_2 Max), or 50 – 85% of Heart Rate Reserve or 60 – 90% of Maximal Heart Rate

- **Low Intensity:** 35–60% of Heart Rate Reserve, or 60–70% of Heart Rate Reserve.
- **Moderate Intensity:** 60 – 80% of Heart Rate Max, or 60 – 70% of Heart Rate Reserve
- **High intensity:** 80 – 90% of Heart Rate Max, or 70 – 85% of Heart Rate Reserve

How to determine Heart Rate Training Range

The Karvonen formula is recommended to determine heart rate training range. The Karvonen formula is a mathematical formula that helps determine the target heart rate training zone. The formula uses maximum and resting heart rate with the desired training intensity to get the target heart rate. In determining the heart rate training range, measure the resting and maximum heart rate for more accurate results or estimated traditional formula of 220 minus the age can be used for maximum heart rate.

Karvonen fomula;

Target Heart Rate = [(max HR – resting HR) x %Intensity] + resting HR

- Find the Resting Heart Rate (RHR)

HR max = 220 – age

Find the Minimum Heart Rate Training Range

Find the Maximum Heart Rate Training Range

Benefits of Aerobic Exercise

Aerobic capability can be increased by different types of aerobic exercise thereby greatly improving functional ability, maintaining independence and the quality of life. Aerobic exercise of low intensity for over a reasonable period of time such as running, stair climbing, jogging, jumping rope, bicycling and aerobic dance, will help in developing the maximum oxygen up take, coordination and space awareness of an individual. Aerobic exercises will in no small measure help in developing cardio-respiratory endurance, proper functioning of the heart and other related organs.

Among the recognized benefits of performing regular aerobic exercises according to Dolye (1998), Felman and Kandola (2019) are; Lower heart rate and blood pressure at any level of sub maximal exercise, increased threshold for lactic acid accumulation, increased blood supply to muscles and ability to use oxygen, lower resting systolic and diastolic blood pressure in people with high blood pressure, increased HDL cholesterol (the good cholesterol), decreased blood triglycerides and reduced body fat and improved weight control. Other benefits include; improved glucose tolerance and reduced insulin resistance reducing the risk for diabetes and strengthening the muscles involved in respiration, to facilitate the flow of air in and out of the lungs.

Regular performance aerobic exercises also help in strengthening and enlarging the heart muscle, to improve its pumping efficiency and reduce the resting heart rate, known as aerobic conditioning (Felman & Kandola, 2019). There is also improved mental health including reducing stress and lowering the incidence of depression is equally achieved. Energy molecules such as fats and carbohydrates storage increased within the muscle, allowing for increased endurance and body fats are equally burnt while building leaner muscle.

Regular performance of aerobic exercises increase the speed at which aerobic metabolism is activated within muscles, allowing a greater portion of energy produced to be used for intense exercise, thereby preserving intramuscular glycogen. Aerobic exercises also enhance the speed at which muscle recover from high intensity exercise. Participation in regular aerobic exercise make people live longer than those who do not exercise regularly and also help to protect memory, reasoning, judgment and thinking skills in older adults and improve cognitive function in children and young adults(Watts, 2012; Peterson, 2017 & Mayo Clinic Staff, 2020).

All these require a minimum duration and frequency of exercise. At least thirty minutes of moderate-intensity exercises should be performed at least three to five times per week to bring out the expected benefits in the body.

Conclusion

In conclusion, aerobic exercises of low, moderate or high intensity such as running, stair climbing , jogging, jumping rope, cycling, and aerobic dance for considerable period of time will help in developing the maximum oxygen up take of the individual coordination and space awareness. Aerobic exercises regularly and adequately performed will in no small measure help in developing individual

cardio respiratory endurance, proper functioning of the heart and other related organs.

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