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Dr. Jaafar Jabbar Ali
Lectures, Directorate General of Education Karkh II, Ministry of Education, Iraq

Corresponding Author:
Dr. Jaafar Jabbar Ali
Lectures, Directorate General of Education Karkh II, Ministry of Education, Iraq

The effect of a brisk walking training program on heart activity, circulation, and blood pressure in elderly women

Dr. Jaafar Jabbar Ali

Abstract
The purpose of this paper is to identify the impact of the program on some behavioral and psychological phenomena, and identify the program's effect on blood pressure and some heart diseases. The researchers used the experimental method of the equal group with the pre-test and post-test, since this design is well-controlled and suitable for research. A random sample consisting of (10) elderly and retired individuals who do not work or do freelance work and live in one residential area was selected. One of the most important results reached by the researcher is that: The researcher concluded that the walking program had a positive impact on the elderly women members of the sample. He also concluded that the walking program had a positive impact on some functional variables for the sample members. One of the most important recommendations recommended by the researchers is that: The researcher recommends conducting such a study on elderly males. Also recommends conducting similar experiments for elderly people who suffer from chronic diseases of the heart and circulatory system, with regulated doses according to the patient's medical condition.

Keywords: Blood pressure, elderly women, heart activity, circulation, brisk walking training program

Introduction
Heart diseases are considered one of the most common diseases in different societies, and the number of deaths resulting from these diseases exceeds the number of deaths caused by known communicable diseases. This is what many reports from the World Health Organization have stated recently. These facts made Dr. Ivan Giarvas, former head of the cardiovascular disease program at the World Health Organization, to call on health authorities to focus more on preventive medicine rather than curative medicine to preserve people's lives and save money and treatment costs. Dr. Ivan says (there are no vaccines against heart disease, blood pressure, and blood vessels), and the only way is prevention, which is by following a healthy and active lifestyle. Studies of this number have shown that with the increase in life expectancy and the decrease in deaths resulting from communicable diseases, heart, blood pressure, and blood vessel diseases continue to increase and become a major problem. Since the faculties of physical education and sports sciences are the institutions concerned with preparing physical, therapeutic and preventive programs to develop the physical and mental capabilities of students at the level of schools, clubs and training centers of various kinds, therefore we will discuss in this research indicators of blood pressure, heart and circulation (Amrallah Ahmed Al-Basati, 1988) [1] (Shaker, Tuama, & Radhi, 2022) [14] (Shaalan, Aboode, & Radhi, 2022) [13]. In addition, its relationship with physical effort as an important treatment for heart disease, as stated in the World Health Organization report. We will also address the increase in body weight and the increase in lipids as a phenomenon of high probability of developing atherosclerosis and high blood pressure.
Finally, the most important treatment method proposed from our point of view is to practice limited programmed exercise that is appropriate for ages and aging to increase the efficiency of cardiac activity, which is the sport of walking certain distances that is appropriate to the abilities and capabilities of the elderly.

Research problem

Through the researchers' follow-up of people of advanced ages who suffer from various health problems, lack of physical activity, laziness, and inactivity, and that is through their field work in this field, so we wanted to prepare a low-intensity sports program according to the physical ability of the sample members, which is exercise. Walking a specific distance and at the appropriate time for the sample members.

Research objective

The research aims to the following

- The effect of the walking program on the general health and physical activity of certain individuals.
- Identify the program's effect on blood pressure and some heart diseases.
- Identify the impact of the program on some behavioral and psychological phenomena.

Research hypotheses

The researchers assume the following

- The walking program has a positive effect on the sample of elderly women.
- The walking program has a positive effect on some functional variables for the sample members.

Research fields

- **Human field:** Individuals of elderly women aged 65-75 years.
- **Time field:** (3/10/2023) to (1/3/2024).

Define terms

1. Heart rate

The heartbeat is considered an indicator of the health of this muscle. The higher the number of heartbeats (at rest) there is an unhealthy and unnatural situation. Hence, the heartbeat at rest for the average person is (70-80) beats per minute, even if the number of heartbeats in one year has been calculated to be approximately 40 million, and the amount of blood that flows through the veins and arteries every day is equivalent to 15 tons of blood. From all of this we see the amount of load and burden that falls on the heart muscle (Raed Muhammad Mashtat, and *et al*., 2006) [2]. As is known, physical exercise helps develop this muscle by increasing the size of the heart and increasing its capacity, in addition to increasing the thickness of the left ventricle. This leads to increased blood pumping in high quantities despite the decrease in the number of its beats. Therefore, it is not unlikely that we find that the number of heartbeats for an athlete may reach 50 beats/minute or less, and that this is due to the expansion of the heart cavities, which is a positive indicator, of course.

If the beats exceed 85 beats/minute, the condition is called Tachy Cardio, and if they are less than 60 beats/minute, the condition is called Brady Cardio.

The heartbeat is even most of the time, and that irregularity is sometimes not considered a medical condition, but rather a normal condition, as the heart has two types of activity.

A. Electrical Activity

It is the electrical charge that comes to the heart from the central nervous system (CNS), as well as from the Sino Atrial Node, which are developed nerve cells that give self-signals if there is any indication on the heart that will increase the number of heartbeats. The work of this node is more independent in the athlete. Whenever the heart is in a good state of functional efficiency as a result of sports training, the efficiency and work of this node increases and the dependence on the nervous system decreases. As a result of the independence of this node, a state of irregular heartbeat occurs, which is a normal condition and is called (functional irregularity), meaning that this node can do its work (Sata Ismail, 2003) [4].

B. Mechanical Activity

It is the process of contraction and relaxation of the cardiac muscle and pushing blood to parts of the body. The mechanical activity of the heart is considered to depend on the stroke volume or the size of the cardiac muscle, i.e. the increase in the heart cavities, in addition to an increase in the strength of the cardiac muscle. There is a strong relationship between the stroke volume and the pulse rate. An increase in the number of heartbeats is an electrical condition, while an increase in the size of the cardiac muscle is a mechanical condition. In practicing organized sports activities, an increase in the stroke volume occurs, which is a healthy condition, while an increase in the number of heartbeats leads to heart fatigue.

2. Cardiac Output

It is the volume of blood that the heart raises per minute, and it consists of multiplying the volume of one stroke by the number of heartbeats. The cardiac output per minute is about 5 liters/minute, and during exertion it reaches 20-25 liters/minute, while during exertion for athletes it reaches 35-40 liters/minute of blood.

The heartbeat is considered an indicator of the health of this muscle. The higher the number of heartbeats at rest, the more abnormal and unhealthy the situation is. Note that the number of heartbeats at rest for the average person is 70-80 beats/minute, and this means that the number of beats reaches (40) million strokes per year, and over the course of a lifetime, the number becomes very huge, approximately two and a half billion strokes. If we compare the heart muscle with any of the manufactured pumps, for example, if carbon iron is used as a manufacturing material for the pump body or impellers for pumping dilute sulfuric acid, we will find This pump or the metal it is made of will wear out and deteriorate within days.

Another example is if stainless steel is used for the same purpose to pump seawater...it will be consumed and damaged within a few months. So what about the heart? It is a driving pump that works for 60-70 years, which is the approximate lifespan of a person, and it is made of very thin and sensitive fibers and tissues. This is an indicator of the greatness of the Creator, Glory be to Him, the Almighty.

Physical and sporting effort helps to develop this muscle by increasing the size of the heart and increasing the strength and ability of the muscle by increasing the thickness of the left ventricular wall, which leads to increased blood pumping in high quantities despite the decrease in the number of its beats. Therefore, the number of heartbeats for an athlete reaches a low level of 50 to 40 sometimes in some games, and this provides, in the long run, an economy in the consumption of this muscle (Suleiman Ali Hassan, Awatif Ahmed Labib, 1987) [5].

3. Blood pressure

The process of delivering blood to all parts of the body and to the muscles requires pumping force or contraction force, in addition to the resistance of the blood vessel walls. You can get it by.

A. Systolic Blood Pressure

It is the process of blood pressure from the left ventricle to the coronary artery in the form of an arc to reach all parts of the body. It is measured in mm/Hg and in the average person it reaches 120-140 mm/Hg... The force of thrust leads to a sound of blood rushing and colliding with the artery wall. Systolic pressure is low at young ages and tends to rise at older ages (Qasim Hassan Hussein, Mansour Jameel, Muhammad Othman, 1988) [6].

Systolic pressure is affected by factors that lead to its increase, which are

1. Fatigue and high effort.
2. Psychological state (anxiety, nervous tension, fear, etc.).
3. Increased levels of salts in the blood lead to clogged vessels.
4. Aging leads to hardening of the arteries, but this does not help in their elasticity.
5. Increase in the percentage of cholesterol. If the increase is more than the prescribed percentage, which is 140-145 milligrams per mg/100cc, it causes deposits on the walls of the blood vessels and then leads to hardening and does not help with elasticity (Cholesterol comes from animal fats).

Systolic pressure is affected by factors that lead to its decrease, which are

1. Increasing the efficiency of the heart through sports training, especially oxygen sports.
2. Psychological comfort.
3. Sleep.
4. Bleeding leads to a loss of blood.
5. Sudden vasodilatation occurs as a result of a nervous shock, which leads to a decrease in pressure.
6. A woman's blood pressure is lower compared to a man's because her heart is smaller and she loses an amount of blood during the menstrual cycle.

B. Diastolic blood pressure

It occurs as a result of the blood returning to the valve hitting the valve and its passage from the ventricles to the atria. It occurs inside the heart, and it is mostly low pressure, which is between 70-80 mm/Hg. It is characterized by being more stable, and is not greatly affected by physical effort and sports.

When the low pressure reaches 100 mm/Hg, it is preferable to see a doctor

There are three main causes of strokes and angina:

1. High blood sugar (diabetes).
2. High blood pressure.
3. Increased cholesterol levels.

Angina pectoris is a temporary narrowing or blockage of the main artery, i.e. the coronary artery, while stroke is a complete blockage, and is medically called Myocardial Insufficient. These conditions cause the arteries to harden and lose their elasticity, as blood remains in the artery, causing cholesterol deposition, narrowing the opening, and then blocking it. There are factors in the composition of the blood, some of which help clotting and others work the opposite to prevent clotting, and there is a certain balance between them, and any difference results in a state of clotting and blockage in the artery course. Diabetes and high blood pressure are the main causes of severe psychological conditions and emotions.

As for cholesterol disease, its causes are excessive consumption of fatty substances, lack of movement, and prolonged sitting, which leads to an increase in its levels in the blood (Qasim Hassan Hussein, Mansour Jameel, 1988) [7].

Research methodology and Field procedures

Research methodology

The researchers used the experimental method of the equal group with the pre-test and post-test, since this design is well controlled and suitable for research. "The experimental method depends on introducing a dependent variable that is controlled for the specific conditions of an accident and observing the resulting changes in the accident itself and interpreting them." (Suleiman Ali Hassan, Awatif Ahmed Labib, 1987) [5].

Community and sample research

The process of selecting a research sample is one of the most important things in scientific research, as it must represent the original community honestly in order to give accurate and true results about that community and enrich the research with honest scientific information, as "the goal of selecting a research sample is to obtain accurate information about a community because this way the results of the study will be circulated" (Kazem Jaber Amir, 1997) [8]. A random sample consisting of (10) elderly and retired individuals who do not work or do freelance work and live in one residential area was selected. Homogeneity was calculated for the research sample in terms of age, weight, and height. Pre-tests were conducted to measure blood pressure on specific individuals. Then, post-tests were conducted on.

Methods and tools used in the research

Means of collecting information

- Note.
- Personal interviews.

Tools and devices used

- Mercury blood pressure device.
- Medical scale (Chinese-made electronic).
- Plastic measuring tape (30 m).

Walking is a physical activity that provides health, fitness, and enjoyment as a means of prevention

Before practicing any physical activity, a medical examination must be conducted for the purpose of determining the individual's ability to train, the extent of his tolerance for that physical effort, and its suitability for the individual in terms of his age, gender, and fitness. Many experts believe that walking is sometimes better than jogging. The author (Ghazi Yanker) says: You cannot use jogging as a regular exercise throughout your life, as the body is not always prepared to do jogging. In addition, some experiments have shown that those who continue jogging beyond the age of forty or fifty expose themselves to injuries to their knees, ankles, and backs. When a person runs, he puts three or four times his weight on the ground, while a walker puts the same amount of weight or an increase of up to 50% of his weight only. Multiple studies have confirmed that the most important aspect of exercise is not the amount of effort a person puts into the exercise, but rather doing the exercise consistently and continuously, and every person can do walking consistently and easily throughout his life (Mohamed Hassan Allawi, Abu Al-Ala Ahmed Abdel Fattah, 2000) [9] (Muhammad Othman, 1990) [10].

In a study conducted by Dr. Ralph Bagenberger of Stanford University on sixteen thousand college graduates, he found that men who spend between one and seven hours a week in intense physical activity are "much less likely to suffer a heart attack than their more sedentary colleagues," as his study also showed. Their lives will exceed eighty years if they continue their exercises regularly (Marwan Abdel Majeed Ibrahim, 2000) [3].

When a person walks, his weight decreases, his cholesterol decreases, the incidence of high blood pressure decreases, and his aging is delayed, while walking increases strength, flexibility, and balance, strengthens the bones, and increases the ability to stretch. In addition to this, if there are cases of diabetes in the family. Walking helps prevent it (Nahida Abdel-Zahra Al-Asadi, 2004) [12].

Walking is relatively cheap. All an individual needs is good walking shoes, and walking can be done outdoors in almost all types of weather. Many studies have identified the relationship between heart disease and excessive sitting, and for this reason, the sport of jogging and walking has witnessed great demand, as walking has occupied the most popular place among ranks of all ages. The best thing that was said about this is the words of the American philosopher (Henry Thoreau) a hundred years ago that "the fastest traveler is the one who walks on foot," and walking is healthier. A well-known proverb says, "The journey of a thousand miles begins with a single step". In walking, the body is moderate, the head is raised, and the shoulders are slightly back. The step is rather long and the speed is medium, and it is very similar to the method of (military walking). It is preferable to walk daily for about half an hour, in open spaces and in the fresh air. As for people who prefer jogging, they can use the following table to determine the efficiency of their internal equipment for both sexes. The table is taken from Corbin Lindsey 1994.

Table 1: Shows the people who prefer jogging them can use the following table to determine the efficiency of their internal equipment for both sexes

Sex	Age (years)	Distance traveled in meters			
		Excellent	Good	Acceptable	Weak
Males	26-17	2880	2779-2140	2479-2160	2160
	39-27	2550	2559-2320	2319-2080	2080
	49-40	2440	2399-2240	2239-2000	2000
	50 and above	2240	2239-2000	1999-1760	1760
Females	29-17	2320	2319-2000	1999-1840	1840
	39-27	2160	2159-1920	1919-1680	1680
	49-40	2000	1999-1840	1839-1600	1600
	50 and above	1840	1839-1680	1679-1520	1520

The jogging process takes place for period of (12) minutes, and the distance traveled for this period is determined. The above table is used to determine the level of competence of the person, based on which the appropriate training schedule is drawn up for him.

Conclusions and Recommendations

Conclusions

The researcher concluded that the walking program had a positive impact on the elderly women members of the sample. He also concluded that the walking program had a positive impact on some functional variables for the sample members.

Recommendations

The researcher recommends conducting such a study on elderly males. Also recommends conducting similar experiments for elderly people who suffer from chronic diseases of the heart and circulatory system, with regulated doses according to the patient's medical condition.

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