

# Sedentary Lifestyle in the Elderly and its Association with the Development of Cerebrovascular Disease

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## Abstract

Sedentary lifestyles have become a common practice due to an increase in their incidence and prevalence. This emerging public health problem affects large sectors of the population, and due to its high frequency and its status as a risk factor for different diseases, it is the leading cause of death in several countries. It is therefore of utmost importance to determine the relationship between sedentary lifestyles and cerebrovascular diseases, to analyze their approach and to understand how these diseases can be corrected and prevented through physical activity and a good balanced diet.

**Keywords:** Sedentary; Ayurveda; Cerebrovascular Disease; Mental disabilities; Physical activity

Cerebrovascular accidents, given the disabilities they can generate, hinder the daily functions of these patients, especially if we are talking about a population that already has limitations generated by advanced age. One of the reasons that generates this problematic characteristic of the human being, is the environment, since nowadays the cities are not designed with the purpose of generating an active life to the elderly, which generates that these every day are more sedentary and, on the other hand, The rapid advance of technology and the ease of acquiring prepared foods explain the spread of the obesity epidemic in the countries together with the lack of physical activity on the part of older adults. Likewise, other factors are associated to the constant lack of activity in older adults, such as the large amount of time they spend in front of the television and the high consumption of snacks. It is important to highlight the benefits of physical activity, since it improves the cardiovascular system and is characterized as an essential factor of health and well-being, related to a healthy lifestyle [2].

## Introduction

Sedentary lifestyle is described as the origin of multiple diseases at a systematic level, as well as cerebrovascular accidents also known as strokes or ictus, which has generated a remarkable development in recent years positioning itself as a worldwide problem given the degree of mortality associated with this pathology, especially in older adults, which can generate physical and mental disabilities. On average, every 45 seconds someone suffers a stroke and every 3 minutes 1 person dies. Globally, there has been an impressive increase of 25% in the number of stroke cases among people aged 20 to 74 years in the last 20 years, representing 31% of the total number of strokes in this group, compared to 25% before 1990, according to a first comprehensive and comparable analysis of the regional and country burden of stroke between 1990 and 2010, making older adults a high-risk population for this pathology [1].

## Materials and Methods

A bibliographic search was carried out since January 2016 in the virtual databases, ncbi, Lilacs, pubmed, biomed central, science direct, among others, using the mesh descriptors: "sedentary lifestyle, disease, cerebrovascular, older adult" and its equivalents in English: "sedentary lifestyle, disease, cerebrovascular, older adult". A search criterion was established for language, thus choosing articles in Spanish and English. The search time interval was from 2016 to 2022. Those articles containing information on sedentary lifestyle in the older adult and its association with the development of cerebrovascular disease were selected. A total of 130 articles were obtained in all the databases consulted, from which they were filtered taking into account the inclusion and exclusion criteria and 38 articles were obtained with all the requirements posed above [3].

## Sedentary

A sedentary lifestyle is when little or no exercise or cardiovascular physical activity is performed, Sedentary lifestyle is defined as activities associated with energy expenditure < 1.5 METs (MET=basal metabolic equivalent; 1MET≈3.5 mlO<sub>2</sub>/kg/min) this could be added to the lack of time of individuals, the development of technology, since, thanks to the development of new methods of entertainment; smart phones, video game consoles, both adult and young people intervene much of their time in such activities which reduces the time invested in sports practices and physical activities. It can be deduced that one of the reasons why people do not engage in physical activity or invest their leisure time in entertaining and healthy things at the same time is by choice, since there are too many sports programs that allow determining the time spent in such activity or how many kilometers walked, as well as the implementation of applications that recreationally encourage users. Sedentary lifestyle is considered the disease of the century due to all the diseases that tend to be triggered by the daily practice of this, in fact, according to WHO (World Health Organization) at least 60% of the population lives a sedentary life, without physical activity depending on the age range in which it is and the condition of each person [4].

Due to the lifestyle imposed by modern societies, the percentage of people who do not do any type of exercise is becoming higher and higher, and this number is much higher in the case of older adults. Sedentary lifestyles are considered a global problem and some of the causes are the following:

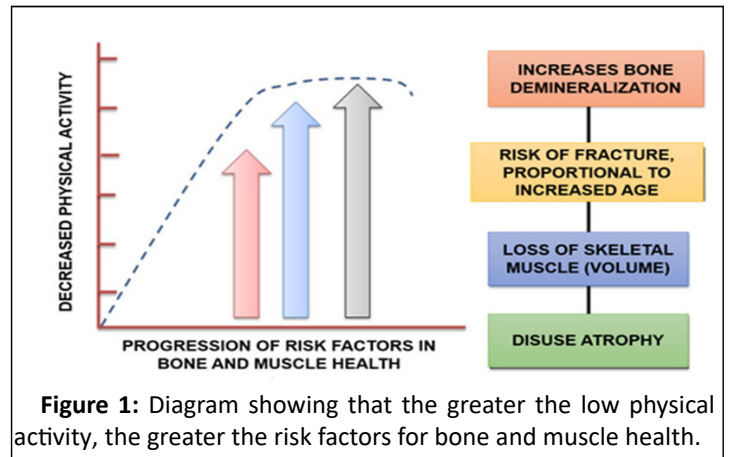
- Disinterest in practicing any sport
- Little need for physical exercise
- Use of passive means of transportation
- Overpopulation in large cities
- Poverty
- Criminality
- High traffic density

In relation to the above, sedentary lifestyles are associated with unhealthy habits and caloric diets, leading to an increase in several diseases such as high blood pressure, diabetes, anxiety, obesity, heart attacks, increased cholesterol, stroke, among others. Physical exercise is extremely important from the early

**Table 1:** Among the most predominant risk factors.

Age	Cerebrovascular disease can occur at any age, but is more prevalent in people over 60 years of age, and increases with age.
Genre	Estrogens play a protective role in women, yet when women enter menopause they are at the same risk as men.
Race	It has been shown that african americans, hispanics and asians are more likely to develop a stroke.
Genetic factor	Studies have shown that the offspring of people who have suffered a stroke are 1.5 times more likely to develop a stroke.

stages of life, as it helps to maintain an adequate bone mass in adulthood, it is very important to keep in mind that bone fragility due to demineralization is progressive as age advances and this can cause serious problems such as osteoarticular diseases or fractures, there is clear evidence that a sedentary lifestyle should be prevented (Figure 1) [5].



**Figure 1:** Diagram showing that the greater the low physical activity, the greater the risk factors for bone and muscle health.

## Results

### Risk factors associated with stroke mortality

Sedentary lifestyle is associated with several cardiovascular diseases, including a series of modifiable, non-modifiable, and new risk factors. These cause changes at the endothelial level, resulting in endothelial diffusion, which participates in the regulation of vascular tone, nutrient supply, detritus removal, inflammation, thrombosis and coagulation. It also facilitates the production of paracrine and anticrime mediators, including prostaglandins, hyperpolarizing factors, among others [6].

Different studies have shown sedentary lifestyle as a predetermining risk factor for the development of cerebrovascular disease, as mentioned by researcher jinobel perez among the population studied, sedentary lifestyle was identified as a risk factor in 61.5% of elderly patients, followed by arterial hypertension and diabetes mellitus (Tables 1 and 2).

**Table 2:** Among the modifiable, non-modifiable and new risk factors.

Not modifiable	Modifiable	New
Age	Arterial hypertension	Atheromatosis aortic arch
Sex	Diabetes	Atrial septal aneurysm
Race	Smoking	Patent foramen ovale
Heritage	Obesity -overweight	Headbands
-	Dyslipidemia	Slow flow in cardiac
-	Metabolic syndrome	cavities
-	Cardiac arrhythmias	Migraine
-	Coronary heart disease	-
-	Oral contraceptives	-
-	Psychoactive drugs	-

### Sedentary lifestyle as a predictor associated with cerebrovascular disease

It is of great importance to mention that cardiovascular diseases such as hypertension, cerebrovascular accidents, ischemic heart disease, among others, are the acquired consequence of the previous exposure to certain behaviors, such as inadequate nutrition, high alcohol consumption, and inefficient physical activity, among others.

Other factors such as HT, obesity, and diabetes mellitus also play a role; however, in people who are physically active, diastolic pressure frequently decreases, improving differential blood pressure in hypertensive patients. To date, it has not been possible to quantify the relationship between these diseases and physical activity, but the evidence shows a favorable response as an antithrombotic element, an increase in myocardial vascularization and an improvement in the stability of the heart's electrical impulses [7].

### Recommended level of physical activity for older adults

Older adults, due to their age, should strengthen their cardiorespiratory and muscular functions, as well as their bone mass through physical exercise. Physical activity represents a benefit against cognitive and motor deterioration, as well as helps to improve mood and avoid depression in the elderly, therefore, the recommendation for them is to be active an average of 30 minutes per day. Physical activity should be practiced constantly and made part of the daily routine, trying to make it as fun and entertaining as possible [8].

It is important to mention that exercise should be according to the possibilities of people, without leaving aside the motivation to increase their effort. For older adults, 4 different types of routines are recommended, which include resistance exercises that help to improve the health of the heart and

cardiorespiratory system; aerobic exercises such as walking, swimming and jogging [9].

It should be emphasized that the exercises should not cause respiratory difficulty or dizziness, strengthening exercises should fortify older adults and promote muscle development. Equally important are the balance exercises as this helps to prevent falls, perform exercises such as standing on one foot and then on the other performing several series of this, it is also recommended to perform stretching exercises for at least 20 minutes 2 to 3 times a week, to keep the body energetic and malleable [10].

### Physical activity as a health protector

Physical activity contributes greatly to a better quality of life and to the prevention of various types of diseases. In recent decades, scientific data has been compiled on the protective effects of exercise both in healthy individuals and in patients with cardiovascular diseases, thanks to the large amount of energy used during exercise [11].

### Discussion

Cerebrovascular diseases predominate at older ages and are the third leading cause of death in developed countries. It affects about 5% of the population over 65 years of age and represents between 9% and 10% of all deaths from all causes; among those who survive, half or more are left with some sequelae. In the study by Robinson Ramirez, FT and collaborators, an association was found between sedentary lifestyle and the presence of several cardiovascular risk factors (hypertriglyceridemia, central obesity and general obesity) [12].

This is consistent with other studies, such as that of Yussuf et al. who found that in women with BMI>28.2 and in sedentary men with BMI>28.6, the increased risk of presenting a first cerebrovascular event was 1.44 times compared to women with BMI<22.7 and physically active men with BMI<22.5. In an

investigation conducted by Berenguer Guarnaluses and Perez Ramos on stroke risk factors over a biennium, the following risk factors associated with the occurrence of cerebrovascular disease were identified: age, Arterial Hypertension (AHT), obesity, sedentary lifestyle, and dyslipidemia. Smoking increases the relative risk of ischemic CVD to 1.56 in men and 1.86 in women, and sedentary behaviors are also associated with the disease [13].

According to the regular practice of physical activity has been shown to reduce the risk of developing cerebrovascular disease in general. Cerebrovascular disease predominates in older age groups and is the third leading cause of death in developed countries. It affects about 5% of the population over 65 years of age and accounts for 9 to 10% of all deaths from all causes; among those who survive, half or more are left with some sequelae. In the study by Robinson Ramirez, FT and collaborators, an association was found between sedentary lifestyle and the presence of several cardiovascular risk factors (hypertriglyceridemia, central obesity and general obesity) [14].

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In an investigation conducted by Berenguer Guarnaluses and Pérez Ramos on risk factors for stroke during a biennium, the following risk factors associated with the onset of cerebrovascular disease were identified: Age, Arterial Hypertension (AHT) and hypertension (hypertension). It affects about 5% of the population over 65 years of age and represents between 9% and 10% of all deaths from all causes; among those who survive, half or more are left with some sequelae. In the study by Robinson Ramirez, FT and collaborators, an association was found between sedentary lifestyle and the presence of several cardiovascular risk factors (hypertriglyceridemia, central obesity and general obesity) [16].

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activity has been shown to reduce the risk of developing cerebrovascular disease in general [18].

## Conclusion

It is well known that a sedentary lifestyle is an important predictor that establishes pathophysiological conditions related to the lack of physical exercise which generates lower strength, smaller muscle size, increases insulin resistance and reduces cardiac performance, increasing the cardiovascular risk of developing cardiovascular diseases. Maintaining a sedentary lifestyle becomes a major health problem as it is considered one of the causes for which people decrease their quality of life in various aspects, it is recommended to perform physical activity and eat a balanced diet to improve their health by reducing the time in activities of low energy cost.

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