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*Particularities of physical activity as a healthy lifestyle for different sectors
of the population*

*[Particularidades de la actividad física como estilo de vida saludable para diferentes sectores
poblacionales]*

*[Particularidades da atividade física como estilo de vida saudável para diferentes setores
populacionais]*

Joel Blanco Pérez^{1*} , Jesús Antonio Cornejo López 

¹San Ignacio de Loyola University, Lima Peru.

²Independent scholar, Ecuador.

*Author for correspondence: jblancop@usil.edu.pe

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ABSTRACT

Introduction: nowadays, the systematic practice of physical activity is more necessary, since the inadequate use of technology makes people increasingly sedentary and thus affects their health. This is why; international institutions refer to the importance of promoting projects that encourage healthy lifestyles.

Objective: to analyze the different publications referring to the particularities of physical activity as a healthy lifestyle for different sectors of the population.



Materials and methods: in the research, a search was carried out in Scopus, Web of Science and Scielo; b) containing the keywords: physical activity, healthy lifestyle; c) in English and/or Spanish; d) in the period from 2010 to 2023 and e) the type of article was original, review and/or summary of scientific events with a DOI code.

Results: the present results justify the need to stimulate the systematic practice of physical activity as a means for a better healthy lifestyle in different population groups.

Conclusions: it is evident that the scientific literature alludes to the benefits of physical activity, which make it a fundamental means for an adequate lifestyle.

Keywords: physical activity, health, lifestyle.

RESUMEN

Introducción: en la actualidad, la práctica sistemática de actividad física es más necesaria, pues con el uso inadecuado de la tecnología convierte a las personas cada vez más sedentarias y así se ve afectada su salud. Es por ello que las instituciones internacionales hacen referencia a la importancia de fomentar proyectos que incentiven los estilos de vida saludables.

Objetivo: analizar las distintas publicaciones referentes a las particularidades de la actividad física como estilo de vida saludable para diferentes sectores poblacionales.

Materiales y métodos: en la investigación, se realizó una búsqueda en Scopus, Web of Science y Scielo, b) que contengan las palabras claves: Actividad física, estilo de vida saludable, c) en idioma inglés y/o español, d) en el periodo comprendido entre 2010 hasta y 2023 y e) que el tipo de artículo sea original, de revisión y/o resumen de eventos científicos con código DOI.

Resultados: los resultados presentes justifican la necesidad de estimular la práctica sistemática de la actividad física como un medio para un mejor estilo de vida saludable en diferentes grupos poblacionales.

Conclusiones: se evidencia que en la literatura científica se hace alusión a los beneficios de la actividad física, que hacen un medio fundamental para un adecuado estilo de vida.



Palabras clave: actividad física, salud, estilo de vida.

RESUMO

Introdução: atualmente a prática sistemática de atividade física é mais necessária, pois o uso inadequado da tecnologia torna as pessoas cada vez mais sedentárias e com isso sua saúde é afetada. É por isso que as instituições internacionais referem a importância de promover projetos que incentivem estilos de vida saudáveis.

Objetivo: analisar as diferentes publicações referentes às particularidades da atividade física como estilo de vida saudável para diferentes setores populacionais.

Materiais e métodos: na pesquisa foi realizada uma busca nas bases Scopus, Web of Science e Scielo, b) contendo as palavras-chave: Atividade física, estilo de vida saudável, c) em inglês e/ou espanhol, d) no período entre 2010 e 2023 e e) o tipo de artigo é original, revisão e/ou resumo de eventos científicos com código DOI.

Resultados: os presentes resultados justificam a necessidade de estimular a prática sistemática de atividade física como meio para um melhor estilo de vida saudável em diferentes grupos populacionais.

Conclusões: evidencia-se que a literatura científica faz referência aos benefícios da atividade física, o que a torna um meio fundamental para um estilo de vida adequado.

Palavras-chave: atividade física, saúde, estilo de vida.

INTRODUCTION

Modern times have led to the oblivion of self-care, and in this new century, there is still no one who can restore health condition, if it is completely damaged. What must be done is to take care of it and preserve it through physical activity and good habits. This is the medicine we must use.

Physical activity is that which makes the body work harder than normal. The type and amount of physical exercise needed will always depend on the objective of each person, whether they want to lose weight or improve their physique.



The daily chores that include the daily work, family situations and some other scenarios, produce physical and mental exhaustion, leading to paralysis. One exercises less, as one gets older and all these psychological problems become physical detriment.

New technologies have been promoting this situation, causing what is known as the disease of the 21st century the sedentary lifestyle. In addition, obesity has increased among people and diseases such as cardiovascular disease, diabetes, osteoarthritis, high blood pressure and others have increased.

In this regard (Lima, Guerra, Lima, 2015); argues that physical activity directly influences health by reducing heart rate, decreasing the risk of cardiovascular disease and reducing the amount of bone loss associated with age, sarcopenia and osteoporosis. This physical activity helps the body burn calories efficiently, facilitating weight loss and weight maintenance. It increases the basal metabolic rate, reduces appetite and aids in the reduction of body fat.

It is likely that one could live well until 30-35 years of age with bad lifestyle habits. This would result in health disorders and faster aging. Work was done in this direction to avoid this. According to criteria expressed by (Lavielle, Pineda, Jáure, Castillo, 2014), (Roldán, Vergara, Jaramillo, 2022).

The Physical Education teacher must pay attention in his daily class to how he should dose the physical loads. For this purpose, he must take into account a series of elements, such as the origin of the methods, the dosage of the physical loads, the classification, the location of the physical capacities in different moments of the class and the methods.

At the beginning of each exercise, all-metabolic processes begin to work in the production of energy, some produce energy first than others, responding to the speed of ATP in each of the movements. It is good to clarify that when a metabolic process stops producing energy, a process of reestablishing it begins so that when the body needs that type of molecule, it can respond, hence the importance of preparing the systems with an adequate dosage. As stated by (Lima, Guerra, Lima, 2015) (Escalante, 2011).



These explanations make us think that, ultimately, the methods must be aimed at improving the different energy systems, i.e., making metabolic processes more efficient. In this way, physical efforts will be more economical.

Making our physical education classes take into account the differences between them and what a sports training session is would help students obtain or attain knowledge that would allow them to acquire lasting habits in performing physical exercises with the objective of achieving a better quality of life.

A bibliographic search revealed that there has been little systematic research on the coherent articulation between physical activity, healthy lifestyle and population groups. Aspects that justify the need to carry out this updated bibliographic review with the objective of: reviewing and analyzing the different publications referring to the particularities of physical activity as a healthy lifestyle for different population sectors.

DEVELOPMENT

Methodology for information search

In order to ensure methodological rigor to carry out this review, the aspects contained in the update PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement (Page *et al.*, 2021) were applied.

Eligibility criteria

The fundamental information search strategy for this research was based on the following criteria: a) scientific articles included in databases such as Scopus, Web of Science and Scielo; b) containing the keywords: physical activity, healthy lifestyle; c) in English and/or Spanish; d) in the period from 2010 to 2023 and e) the type of article should be original, review and/or summary of scientific events with a DOI code.

Procedure

The review has been elaborated in accordance with the eligibility criteria twice, first for the title and abstract, and second for the full article, where an exhaustive analysis was



carried out on each publication to counteract bias, then a qualitative assessment of the extracted texts was presented in each section of this article.

Following the PRISMA statement (Page *et al.*, 2021), three stages were distinguished in the process of article eligibility: identification, screening and inclusion. The identification stage resulted in 32 articles.

In order to narrow the search and limit access to only those sources of information of interest according to the purpose of the study, the articles were filtered by areas of knowledge of physical activity and health. In which 16 were examined, 14 met the inclusion criteria, 14 were projected, two did not meet the criteria for the date selected for this research and finally 11 remained. Figure 1 presents the flow chart that reflects the process of searching and selecting studies for inclusion in this review (Figure 1).

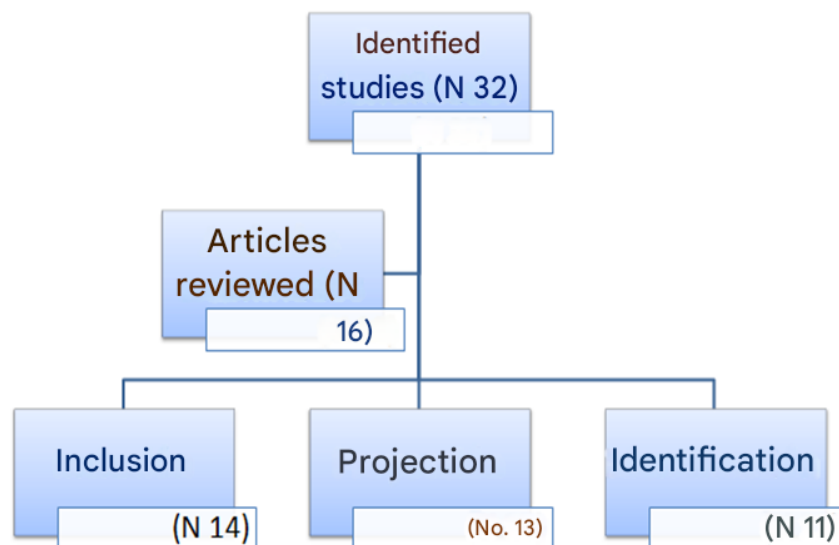


Fig. 1. - Results of the article selection procedure

Phosphagens metabolic process

The release of energy with the rupture of CrP delivers the energy needed to transform ADP into ATP. The enzyme creatine phosphokinase serves as a catalyst. At this time, there is a wide range of muscle possibilities in terms of their capacity. Of speed,



replenishing ATP. The supply of CrP helps the ATP- CrP reaction in muscle cells, according to (Rosales, Orozco, Parreño, Caiza, Barragán, Peralta, 2017).

After a time of 4-5s of maximal effort, ATP decreases and is not replenished, then within 5 or 6 seconds of that effort the CrP supply is almost exhausted, and the slower glycolytic process becomes the main source for ATP replenishment to fuel muscle contractions. These reactions explain why the maximal speed of movements in humans begins to decline after 4 or 5 seconds. Aspects systematized by (Alarcón & Llanos (2022).

It involves the conversion of glycogen into glucose. Glycolysis is a two-phase metabolic process, aerobic and anaerobic, which is composed of two phases, which cannot be separated, as they will always be a single process.

Anaerobic phase: when glucose is broken down, the anaerobic phase of glycolysis is formed. Each glycogen molecule produces two ATP molecules. These are anaerobic processes, which do not require the presence of oxygen. Only two ATP molecules are produced, while the second produces 32. This is necessary in short-duration competition events, where it depends more on the anaerobic phase, since it develops more speed and resistance of this (Rosales, Orozco, Parreño, Caiza, Barragán, Peralta, 2017).

On the other hand, Escalante (2011) states that the higher the deficit of O₂, the higher the level of lactic acid and the lower the possibility of the duration of the effort. Value that ranges between 30 seconds and 2.30 minutes. Aerobic phase: the final products of glycolysis that contain. When oxidation occurs, 36 ATP molecules are replaced. This process is very efficient, since the final waste products are eliminated without causing fatigue.

The work is carried out within the maximum values of O₂ utilization without exceeding 15 % of the O₂ debt. The heart rate is between 160-170 bpm. O₂ is required at 50-65 %. Recovery takes place within 3-6 minutes and the initial energy levels are reached.



Lipid metabolism

When talking about power, this system starts to work maximally between 4-5 minutes from the beginning of the effort, hence the HR behaves from 130 to 150 b/m, and that is to say, it works 40-50 b/m below the limit. It has a demand of =2 from 40 % to 50 %.

The effort lasts more than ten minutes. The duration of the effort is over 10 minutes, and recovery takes 1-2 minutes. To be able to start an activity of the same type, the person must wait between twelve and eighteen hours, depending on the level of preparation of the person, aspects that coincide with what is stated in the scientific literature, such as (Aguilar, Sánchez, Rodríguez, Noack Segovia, Cano, López, Mur, 2014) (Table 1).

Energy systems: anaerobic and aerobic

Metabolic processes: phosphagens, glycolysis and lipids

Table 1. - Comparing with a specific sport, in this case athletics could behave as follows

Career	Metabolic process	Energy system
100 and 200 meters flat	Phosphagens	Anaerobic
400, 800 and 1500 m flat	Glycolysis	Anaerobic-aerobic
5000,10000, marathon	Lipids	Aerobic

Physical exercises have their own classification; in this regard, it could vary according to the criteria of the author that is taken as a reference. For example, there is a classification by the German Kotz, who says that all sports are Speed - strength - resistance, and that its variation is established by the level of each power, (Aguilar, Sánchez, Rodríguez, Noack Segovia, Cano, López, Mur, 2014).

Dosage of physical loads

Having defined the genesis of the methods of physical preparation, it is defined that it is a physical load, according to (Reyes, Nazar, Cigarroa, Zapata, Aguilar, Parra, Albornoz. (2022):



Training load: it can be said that it is the magnitude of physical exercises that provide the possibility of maintaining a certain level of performance. Each component of the load is worked in unison, that is, they are inseparable.

Components of physical loads:

- Volume, intensity and rest.
- Volume: the elements that contain the quantitative part of the load are called (Traction, Km; Kg.).
- Intensity: qualitative element that establishes the relationship with volume.
- Rest: many physical trainers consider it to be of utmost importance. It is used to regulate the load. It is considered to be very important, even more so than the number of exercises and the effort.

To control the dosage of physical loads in a physical activity class, the work with pulse detection is used individually or collectively. In the case of individuals, this control must be carried out depending on the characteristics of the physical loads.

Classification of physical capabilities

To make a classification of physical capacities, we must relate it to what has been worked on, to the origin of the methods, everything that has to do with energy systems and metabolic processes.

Thus, three general physical capacities are distinguished:

Strength, endurance and speed

The development of each of them will be conditioned by a series of elements that must be taken into account, but above all the one that determines it, which is energy. For the present research, we share what was proposed by authors such as (Roldán *et al.*, 2022); (Alarcón, Llanos, 2022), who state that strength is the ability to overcome external resistance, and resist it through muscular efforts.



Types of force:

- Strength endurance, quick strength and maximum strength (overall)

Strength endurance

Ability to resist and oppose fatigue during prolonged work. To measure the maximum working time, it will be applied according to the characteristics of the time to work and the greatest amount of strength work that the person is capable of performing in the set time limit. The volume between 50 and 60 %.

Speed force (quick)

Speed strength is related to the type of work performed, even if one is practicing a sport in each modality. The intensity is high, very fast, the volume is medium and the work time is short.

Example: performing push-ups, planks or push-ups at a maximum intensity level in a short time.

Maximum strength (overall)

It can be part of the diagnosis that can be carried out, to know the state of the students, in order to begin planning the dosage of the loads according to the possibility of each practitioner, from there the physical loads are dosed.

Endurance: according to (Roldán *et al.*, 2022); (Alarcón, Llanos, 2022), it is "the impossibility of continuing to apply optimal strength and speed to technique and tactics for the entire duration of the activity" (p. 16.)

Typology of endurance

Typologically, endurance will be studied as follows:

1. Anaerobic alactacid endurance 1, anaerobic lactacid endurance, aerobic endurance

Anaerobic alactacid endurance 1: short duration, with a time of less than 2 minutes



It is the so-called resistance of force; it is resisted by applying force. It depends on the reserves of phosphagens. Therefore, the greater the phosphagens reserves, the greater the resistance I. Phosphagen reserves are increased by consuming them with short efforts of maximum intensity at long rest intervals, aspects that are shared with what was stated by (Reyes, Nazar, Cigarroa, Zapata, Aguilar, Parra, Albornoz. (2022):

Endurance II: lacticid anaerobic: medium duration, between 2 and 8 minutes.

This is called speed resistance. It is resisting the application of high intensity loads of force.

This endurance depends on withstanding high levels of lacticidemia and eliminating lactic acid during competitive activity.

Endurance III: aerobic; long duration, between 8 and 30 minutes and more than 30 minutes

This type of resistance is considered general resistance and it is necessary for:

- Optimal recovery for high-intensity efforts.
- Collaborate with anaerobic efforts.
- Long-term events.

Speed: it is considered the conditional capacity to perform rapid efforts in a very short time under certain conditions.

Authors such as (Cotignola, Odzak , Franchella , Bisso , Duran, Palencia Vizcarra, Rodríguez, 2023) define it as speed: "the set of functional properties of man that directly and preferably determine the characteristics of the speed of movements, as well as his motor reaction" (p.28)

Types of speed: - speed of translation and speed of reaction.

Translation speed is the speed at which a person moves from one place to another in the shortest possible time.

Reaction speed: ability to respond to a stimulus, whether known or unknown



Effects of physical activity as a healthy lifestyle for different population sectors

In this section we start from the theoretical bases systematized by authors such as: (Ballesteros Dal -Re Saavedra, Pérez, Villar, 2007; (Roldán, Vergara, Jaramillo 2022); on appetite: developing physical activities, doing physical exercises does not cause the appetite to increase, especially if it is done moderately. Researchers suggests that this occurs more frequently in obese people than in those who have an ideal weight.

Body Fat Loss: A person loses 25% of lean body mass and 75% of body fat when losing weight through calorie reduction alone. Calorie level and exercise must be in an appropriate ratio to maintain a desirable weight while maintaining an accepted muscle tone.

The work to achieve weight loss and maintain it should be:

Perform physical exercise at least three times a week. This can be done in one work session or divided into two 15-minute periods during the day. If increased to 4 or 5 times a week, the benefits will be even greater. Physical work should be distributed during the days of the week; they should not be worked on consecutive days.

The heart rate that should be reached during physical activity should be between 60 and 90% of the maximum heart rate.

To calculate the maximum heart rate, you can use the following formula Equation 1:

$$220 \text{ (constant) minus age} = \text{maximal heart rate (1)}$$

For example, a 60-year-old woman exercising at a maximum of 60% should use the following calculation $220 - 60 = 160$ (*maximal heart rate*)

That would be the frequency at which that person should not be ignored as a precaution for his health; however, there is a level of effort above that heart rate which would be the % at which it can develop the exercise, whatever this exercise may be.

Physical activity at 60 to 70 % of maximum heart rate can be done continuously and for a long time. It is good to avoid shortness of breath.



Physical activity performed less than three times a week at less than 60% of maximum heart rate and for less than ten minutes, a day does not contribute to health. If physical activity is stopped, the health benefits are lost. Within 2 to 3 weeks, the health level is reduced, and after 3 to 8 months it is completely lost and the person has to start all over again. Physical activity can help:

- Eliminate calories and reduce body fat
- Reduce appetite.
- Maintain and control weight

Twenty to thirty minutes of continuous aerobic activity, 3 times a week is recommended to achieve weight loss. Examples of physical activity that can be considered aerobic are walking, running, jogging, climbing, swimming, cycling, rowing, cross-country running and jumping rope.

The inability to participate in different sports programs has been an obstacle for asthmatics, both adults and children. It was considered that people with this disease should not take part in sports teams and vigorous activities. Today, with the studies carried out and due care, it is already possible for those affected by exercise-induced asthma and bronchospasm to do any type of exercise, which is beneficial for their health and for their emotional well-being.

The following are 30 important reasons why physical exercise is necessary:

- 1) Decreases the possibility of contracting cardiovascular diseases.
- 2) Lowers blood pressure levels.
- 3) Decreases resting heart rate.
- 4) Increases oxygen consumption.
- 5) Optimizes cardiac blood flow.
- 6) Improves cardiac muscle efficiency.
- 7) Accelerates body metabolism.



- 8) Decreases the risk of brain vascular accidents.
- 9) Increases body muscle mass.
- 10) Improves muscle capillary density.
- 11) Improves physical endurance.
- 12) Increases muscle strength.
- 13) Harmonizes overall body posture.
- 14) Allows the consumption of fats.
- 15) Favors the level of total cholesterol and the ratio between good cholesterol (HDL) and bad cholesterol (LDL).
- 16) Controls glycaemia.
- 17) Prevents and counteracts obesity.
- 18) Increases the level of endorphins, influencing mood.
- 19) Eliminates sleep disorders.
- 20) Connotes an antidepressant effect.
- 21) Eliminates stress.
- 22) Improves interpersonal relationships.
- 23) Decreases the development of venous disorders.
- 24) Promotes immune responses, prevents infections.
- 25) Promotes digestion and proper evacuation of waste
- 26) It contributes to the proper functioning of the joints (ligaments, cartilage, tendons).
- 27) It prevents and counteracts osteoporosis.
- 28) It prevents the appearance of osteoarticular injuries and supports rapid recovery.
- 29) It has a positive influence on longevity.



30) Finally, there is a reason to decide to do physical activity.

Furthermore, it influences different levels of the human organism.

Bone and joint level: it provides improvements in bone composition, increases vascularization and minerals are also favored. It influences the increase in bone mass and strengthens cartilage, ligaments, etc.

Muscle level: muscle proteins increase, muscle fibers are strengthened. There is greater resistance and strength, improved energy activity, better motor coordination, more elasticity.

Cardiovascular level: there is a reinforcement of the heart walls, in addition to increasing muscle mass. The walls of the heart are strengthened and its muscle mass is increased. Red blood cells and all the components that transport blood are helped. There is a decrease in heart rate, thus increasing work capacity.

Respiratory level: By increasing strength, resistance and elasticity in muscles and organs, breathing improves, breathing volume increases and the number of breaths per minute decreases.

Psychosocial level: those who become accustomed to physical activities have a greater and better emotional well-being, helping interactions with society. It relieves tension and reduces stress.

Sedentary lifestyle syndrome is characterized by the combination of poor diet and a sedentary lifestyle; it can lead to obesity, high blood pressure, non- insulin -dependent diabetes, cardiovascular diseases, strokes, retinopathies, and is one of the causes of death most frequently today.

Age should not be associated with a sedentary lifestyle. This is false. Aging is not necessary and it is increasingly common in younger people. It cannot be underestimated that the older you get the more aerobic capacity you have.



The development of cardiovascular diseases is increasingly occurring due to a sedentary lifestyle. It was difficult to prove that this disease could be a risk factor, but it is now accepted in this type of coronary diseases.

Therefore, physical activities is necessary to fight sedentary lifestyle and avoid coronary heart diseases. Everyone should exercises in order to keep the body ready to face any type of disease. Social advances will make people walk less and will move towards a sedentary lifestyle, which is also one of the diseases of the 21st century.

What is most exhausting about leading a sedentary life, it was unimaginable that it could happen, with exercise and through contractions and relaxations of the muscles and of course the secretion of endorphins, it will make us feel better, more active, less tired.

Sedentary lifestyle is related to anxiety and depression. If we feel muscle fatigue after exercising, it is different from feeling fatigue due to a sedentary lifestyle. Aspects that coincide with what was stated by (Guarda, Muñoz, Cortinez, Aguilar, Vargas, 2022).

Asthma is a disorder that affects the lungs and causes a person to have difficulty breathing. This makes daily life difficult, but the truth is that practicing breathing exercises (in addition to the corresponding pharmacological treatment) can be of great help to reduce symptoms and improve the quality of life of these patients.

Physical training programs have been designed for people with asthma with the intention of improving physical fitness, neuromuscular coordination, and self-confidence. Frequent physical activity increases physical fitness and decreases ventilation during mild and moderate exercise, thereby decreasing the likelihood of triggering asthma (Guarda, Muñoz, Cortinez, Aguilar, Vargas, 2022).

If you suffer from asthma, you should perform the following exercises to help you overcome asthma attacks:

- Breathe naturally at the beginning of the exercises.
- Take in are through the nose and exhale through the mouth, calmly and slowly, trying to prolong the exhalation as long as possible.



- If you do it correctly, you should hear a sort of whistling sound on the exhalation.
- This process should be repeated at 15-minute intervals, twice a day.
- It is recommended to perform gymnastic exercises lying down and standing up, these positions favor breathing, since they eliminate the obstruction of the airways.

Asthmatic people can always try these breathing exercises, which, with the help of physical activity and appropriate medical treatment, can greatly help you to cope with the respiratory disorders you suffer from.

When blood pressure goes above the limits considered adequate, then we are in the presence of arterial hypertension. Blood pressure should always have values that are considered optimal according to age and body composition.

In the case of children and adolescents, blood pressure is lower than in adults. This blood pressure is therefore related to body composition. It is also related to other factors such as genetics, excessive salt consumption, obesity or sedentary lifestyle, as mentioned above and of course with the combination of these factors.

Performing physical activity, with proper pulse control of individuals who perform physical exercises, is very beneficial to stabilize high blood pressure. It is especially advisable to walk at a low heart rate.

Cholesterol is one of the most important risk factors for developing coronary heart disease. There is currently a great deal of confusion about whether high cholesterol is really so harmful.

Many people think that laboratories, in their eagerness to sell drugs, attribute greater importance to this factor than it really is. In addition, patients systematically refuse to accept that they will have to take a drug for a long time, (Carcamo, Peña, Cumilef 2022).

Another element to study is how to control cholesterol. This is a fat and is found in two forms, one called bad cholesterol (LDL) and one called good cholesterol (HDL). Through



physical activity and a recommended diet, a balance between the two cholesterols can be achieved.

Ergonomics: it can be defined as the work that is developed to adapt man to the conditions of the workplace; it has even been defined as the professional physical activity, in which physical exercises are performed that support an individual's work.

Example: Ergonomics tips for deskwork

Ergonomic exercises for the office

Recommendations:

- Static posture is the greatest risk of injury.
- It is recommended to spend at least five minutes every hour when operating the machine.
- It should relax the whole body.
- You should incorporate exercises into your daily routine.
- Hand exercises.
- Clench and unclench hands into fists. Shake and stretch fingers. Repeat the exercises three times.
- Back and shoulder exercises.
- Stand up; placing the right hand on the left shoulder and lean, the head back. Repeat with the right shoulder.
- Head and neck exercises. Move the head slowly from side to side, forward and backward. Avoid sudden movements.



CONCLUSIONS

The determination of the theoretical and methodological foundations addressed in the present study allowed us to specify the state of the art of this subject and thus demonstrate the need to promote a healthy lifestyle, which involves the systematic practice of physical activity in different population groups.

It is undeniable that physical exercise is beneficial to overall health. All types of diseases can use physical movements as a palliative. Let us remember that the human body was made to move. Movement helps develop the human organism to improve its physique and health, contributes to emotional well-being, improves lifestyles and of course, all of this will result in a better quality of life.

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The authors declare having competing interests.

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