72 - RESPIRATORY DISEASES RELATED TO PRACTICE EXERCISE OUTDOORS

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Abstract

This article aims to investigate the causes of the major diseases related to the practice of outdoors exercises and physical activities. We have checked which are the main diseases and also the relapses, seeking to clarify the impacts to physical performance. We have rewies scientific literature and reliable database.

Key-words: respiratory diseases, work, performance.

INTRODUCTION

Currently one aspect of who is deserving greater attention and commitment of the authorities, both scientific and public power, as well as society in general, refers to environmental Question related to health and the practice of physical activity. After all, one of the major reasons for the cause of respiratory disease in the world is the exposure to air pollutants.

The aim of this study was to examine the relationship between air pollution and the health of people doing outdoor exercise in the large urban centers, seeking thus develop greater interest in studies in this area. It is a bibliographic nature which uses as one of its references to the World Health Organization (WHO) to create standards and apply them with the Brazilian population. You can identify quickly the main causes interrelated contributing to the increase in environmental pollution, the following factors: (a) the exponential growth of the world population and also the power consumption, (b) the intensification of the process industrialization and (c) the disorderly urbanization process. Therefore, this context provides the loss of quality of life of outdoor population, resulting in a noticeable loss of space for physical exercise. (Seinfeld and PANDIS, 1998; Lora, 2000).

1 MATERIALS AND METHODS

This study presents descriptive and quantitative nature. For this work were used databases Scielo, Niosh, Lilacs, Magazine Latin American Nursing, Journal of Epidemiology, without restrictions on dates and types of articles, may be original or review, only in Portuguese, with the key words: respiratory diseases, performance, air pollution. Found 65 items, among them were selected 17 articles, mostly by reading the summary, and then we selected 10 for the full text of the articles.

2 DEVELOPMENT

2.1 Definition of respiratory diseases

Respiratory diseases are those that affect organs of the respiratory system (lungs, mouth, throat, nasal cavities, larynx, bronchi, trachea, diaphragm, bronchioles and alveoli). The the most frequent respiratory diseases are bronchitis, rhinitis, sinusitis, asthma, influenza, lung cancer, among others.

Respiratory diseases are a major cause of illness and death in adults and children in the world, according to the World Health Organization (WHO).

2.2 Classification of respiratory diseases

The pollutants can be classified as primary and secondary, the primary being those which are emitted by the chimneys of factories and everything that leaves the exhausts of vehicles. The second classification, called inhalable particulate matter (PM) consist of a mixture of solid and liquid particles of organic or inorganic substances; with data from this study, we can also say that cars are a major source of air pollution.

Air quality standards define the maximum limit to the contraction of a pollutant in the atmosphere and to ensure the protection of health and the environment.

tables were used for the income statement as: air quality standards and air quality index. Given these note that the smaller tables is the air quality index, the greater also the damage to health. The most sensitive populations concentrations of pollutants are children, the elderly and individuals with respiratory and cardiovascular problems, according to Gouveia (2009).

2.2.1 Main causes of respiratory diseases

The main causes of these diseases may be diverse. Smoke, allergies (caused by chemicals or dust mites), genetic factors, virus infection and breathing in polluted environments are among the main causes of these diseases.

2.3 pollution and respiratory diseases

In large cities, these diseases are increasingly common, mainly due to air pollution. Carbon monoxide and carbon dioxide are sourced greenhouse gases from burning fossil fuels (petrol and diesel) which are very harmful to the respiratory tract of humans. Inhaling these gases can cause the emergence of some of the diseases mentioned above. (Www.suapesquisa.com).

Below is table of national air quality standards, according to Resolution No. 03/90 of the National Environmental Council - CONAMA:

Padrões nacionais de qualidade do ar
(Resolução CONAMA nº 03 de 28/06/90)

Poluente	Tempo de Amostragem	Padrão Primário µg/m³	Padrão Secundário µg/m³	Método de Medição
partículas totais em suspensão	24 horas[1] MGA[2]	240 80	150 60	amostrador de grandes volumes
partículas inaláveis	24 horas[1] MAA[3]	150 50	150 50	separação inercial/filtração
fumaça	24 horas[1] MAA[3]	150 60	100 40	refletância
dióxido de enxofre	24 horas[1] MAA[3]	365 80	100 40	pararosanilina
dióxido de nitrogênio	1 hora[1] MAA[3]	320 100	190 100	quimiluminescência
monóxido de carbono	1 hora[1] 8 horas[1]	40.000 35 ppm 10.000 9 ppm	40.000 35 ppm 10.000 9 ppm	infravermelho não dispersivo
ozônio	1 hora[1]	160	160	quimiluminescência

1 - Não deve ser excedido mais que uma vez ao ano. 2 - Média geométrica anual. 3 - Média aritmética anual.

Some types of sports and physical activities practiced outdoors, consequently, are more exposed to infection for respiratory diseases, such as: Athletics, walking, running, dancing, baseball, canoeing, cycling, fencing, football, gymnastics, horseback riding, hockey, wrestling, swimming, rowing, tennis, triathlon, sailing and beach volleyball.

According to the article "Environment and Health: the effects fi siológicos air pollution in physical performance - the carbon monoxide case (CO)" there are several scientific research fi c on the various effects fi siológicos carbon monoxide, one of the harmful gases human health during sports activities, especially outdoors. In this sense, it was decided to describe and present, in summary, the results of those that are in line with the objectives of this work and that take into account their relationship with physical activity.

One of the first studies, if not the first, that addresses the CO and physical activity, is Chiodi, dated 1941, in which individuals were unable to perform low effort activities with a high amount of COHb, i.e. 40 to 50%. (2005)

However, most studies show that there is no change in performance when submaximal exercise are performed under low amounts of COHb. In fact, Horvath (1981) analyzed six references, in which individuals effected low to moderate intensity activities.

One of these studies, conducted by Elkbom and Huot (1972), analyzed five individuals who underwent submaximal exercise at intensities of 30 and 70% of VO2 max., With two amounts of blood COHb, 7 and 20%. In submaximal exercise of low intensity (30% VO2 max.) With the concentration of COHb 7% an increase insigni sing fi average heart rate, somewhere around 5 bpm (beats per minute), while 20% COHb, heart rate increased by an average of 14 bpm when compared to the control group.

In the case of higher intensity submaximal exercise (70% VO2 max.), Heart rate and LV increased signi fi cant way in both concentrations of COHb. Increased heart rate is justi fi ed, according to the authors, the fact that the CO increases peripheral vasodilation, and decrease the oxygen transport capacity. Ressalvaram also that seven other studies have investigated this same response in heart rate in submaximal exercise.

In this way, so it was presented by the conclusion Horvath (1981), it becomes feasible to claim that COHb concentrations below 15% have little impact the physiological in submaximal exercise (30-70% of VO2 max.), At least activities lasting up to 60 minutes.

However, at peak exercise, the performance is inversely proportional to the concentration of COHb. Horvath et al. (1975) determined the level of COHb wherein the aerobic capacity is reduced. This study showed that the concentration of COHb minimum necessary to in fl uence detrimentally VO2 max. It is approximately 4.3%. Furthermore, Horvath (1975), through their study and other references used by them, identifying fi ed a linear decline when COHb levels ranging from 4 to 35% .According Fox (1991), in activity, ux blood fl skeletal muscle can increase approximately 22 l per minute and cardiac muscle about 750 ml per minute, comparing them with the rest. Armstrong (2000) also reached the same conclusion.

According to the article of course completion "Air pollution and physical activity in large urban centers" exposure to polluted air can compromise the performance of the athletes who inhale large amounts of air during training and also individuals who live in big cities and use spaces open to physical exercise.

In large urban and populated areas it is not difficult to find people exercising near congested streets, polluted by motor vehicles and with high levels of particulate matter. Under these conditions, the amount of inhaled toxins increases and physical exercise can be more harmful than beneficial to health because the risk of developing a disease rises (Sharman, 2004).

It is of great importance recommend that when the bad air quality index is high, the intensity of exercise should be reduced or taken indoors. However, should be more research to guide the development of health and safety advice for physical exercise on the streets (MONICA, 2005).

The sports most affected by air pollution are those aerobic predominance as the long-distance running, cycling, rowing, etc. (DEROSE, 1993). Regarding the intensity and duration of exercise, it is known that the volume of air inhaled per minute increases by 15.7 times in a sedentary person. Thus the amount of inhaled air pollution increases proportionally when exercise is prolonged (WILMORE; COSTILL, 1994).

In this article it is emphasized that both the sport seen only as physical exercise on the performance sport, are influenced by levels of pollution and that more studies involving exercise and air pollution should be made. Noteworthy is also that few studies have been made, for ethical reasons, with asthmatic athletes in poor air quality environments and for now, no study has been developed with paralympic (MCKENZIE; BOULET, 2008).

In this another vision, now a case study in the city of Goiania, taken from the article "The practice of physical exercise and air pollution in the city of Goiania Go": in recent years we have seen a greater adherence of goianiense population to practice physical activity, especially with the realization of outdoor walks and gymnastics in the woods, parks and promenades of the city.

Concomitantly, it is known to decrease air quality in the metropolitan area, given the increase in car traffic by burning

fossil fuels. Therefore, considering the environmental factors interfere in physiological responses of exercise in human bodies, we intend to discuss the physiological effects of inhalation of pollutants found in the air of Goiania.

2.3.1 Rating level of physical activit

According to the World Health Organization (2000), considered for classification of the level of physical activity, frequency and duration of activities:

VERY ACTIVE: I realize physical activity vigorous intensity, more than 5 times a week, with more than 30 minutes per session. Vigorous intensity: any activity that makes you sweat a lot or increase your very breath or heartbeat.

ACTIVE: I perform physical activity of any intensity, more than 5 times a week, with 30 minutes or more per session.

LITTLE ACTIVE: I perform physical activity of any intensity, less than 5 times a week and less than 30 minutes per session.

Sedentary: not realize any physical activity normally.

Weineck (2003) highlights the influence of endogenous (internal to the individual) and exogenous (external and environmental) in the desired results. So, be aware of the environmental conditions for practical exercise becomes something as important as the methods of training and other considerations peculiar to the individuals.

The pollution generated in the cities of today and also in Goiania are the result mainly from burning fossil fuels, for example, coal and oil products (gasoline and diesel). The burning of these products has released a large amount of carbon monoxide and carbon dioxide in the atmosphere.

People who exercise regularly have the opportunity to promote the adaptive conditions for strengthening the heart, lungs and muscles, improving performance. When this occurs in outdoor large urban centers, they are also vacuumed liters of air from the lungs that may contain hazardous pollutants. In fact, due to the increased volume of air that needs to breathe during physical exercises, urban practitioners are exposed to much greater amounts of air pollutants than sedentary.

2.4 General concept of the articles studied

Exposure to polluted air can compromise the performance of the athletes who inhale large amounts of air during training and also individuals who live in big cities and use open spaces for physical exercise.

Outdoors in large urban centers, they are also vacuumed liters of air from the lungs that may contain dangerous pollutants, as previously mentioned carbon monoxide and carbon dioxide. In fact, due to the increased volume of air that needs to breathe during physical exercises, urban practitioners are exposed to much greater amounts of air pollutants than sedentary.

It is also generally agreed that sports or physical activity most affected by air pollution are those aerobic predominance, such as running or walking long distance, cycling, rowing, etc.

Some recommendations in order to reduce or mitigate the harm arising from air pollutants:

(1) seek, to work out in urban areas, places that are not surrounded by edi fi cations and close the roads to traffic. It is recommended locations that are exposed to significant air currents, such as parks and coastal regions;

(2) Remember that there is more CO at times when there is greater traffic of vehicles, so-called rush hours;

(3) To fight for the replacement of fossil fuels by using more ef fi cient energy and technological evolution of energy production;

(4) Give preference to the slopes and indoor locations when you work out in the woods and parks. Avoid exercises in the outer rings, especially close to the process of vehicle transits.

(5) If possibly during the exercises you are among the gaseous emissions from cars, decrease the intensity of your training so you can breathe only through your nose. This procedure helps to remove the sulfur dioxide.

(6) Do exercises outdoors in the morning while the heat and pollution levels are low. The afternoon rush hour is the time with the highest concentration of pollutants in the air.

3 Conclusion

Air pollution may be present when the amount of matter or energy is unfit for health and well-being of the public.

In large cities the concentration of pollutants such as CO2, NO2, SO3 and smoke is generally high due to widespread use of fossil fuels by vehicles and also by industries. Thus it is to know the effects of personal exposure to these pollutants during exercise.

Some studies conducted in healthy subjects, athletes and people with cardiovascular problems, show that contact with various pollutants during aerobic exercise is harmful to sport performance. As it increases the concentration of pollutants in the body, the greater the losses in the pulmonary, cardiovascular and muscular capacity thus generating less income.

Given the difficulty of finding studies relating physical exercise and air pollution, can, before it was analyzed, stating that exposure to various pollutants found in the air endanger the health, income and physical performance of the practitioner.

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Abstract

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Key-words: respiratory diseases, work, performance.

MALADIES RESPIRATOIRES LIÉS À LA PRATIQUE EXERCICE EXTERIEURS

Résumé

Cet article vise à chercher à enquêter sur les causes des grandes maladies liées à la pratique d'exercices et ou de l'activité physique en plein air, vérification qui sont la principale et aussi les rechutes, cherchant ainsi à clarifier les impacts sur la performance physique. Pour cela, nous comptons sur la revue de la littérature de la littérature scientifique spécialisée et fiable.

Mots-clés: maladies respiratoires, le rendement au travail.

ENFERMEDADES RESPIRATORIAS RELACIONADOS CON LA PRÁCTICA EJERCICIO AL AIRE LIBRE

Resumen

Este artículo tiene como objetivo tratar de investigar las causas de las principales enfermedades relacionadas con la práctica de ejercicios y la actividad física o al aire libre, la comprobación de que son el principal y también las recaídas, con lo que buscaban para aclarar los impactos en el rendimiento físico. Para ello nos basamos en la revisión bibliográfica de la literatura científica especializada y confiable.

Palabras clave: enfermedades respiratorias, rendimiento laboral.

DOENÇAS RESPIRATÓRIAS RELACIONADAS À PRÁTICA DE EXERCÍCIO AO AR LIVRE

Resumo

O presente artigo tem como objetivo buscar investigar as causas das principais doenças relacionadas aos praticantes de exercícios e ou atividade física ao ar livre, verificando quais são as principais e também as reincidências, procurando, assim, esclarecer os impactos causados ao desempenho físico. Para tanto nos baseamos na revisão bibliográfica da literatura científica especializada e também em bases confiáveis.

Palavras-chaves: doenças respiratórias, trabalho, desempenho.