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ORIGINAL ARTICLE

Effect of aerobic exercises on students' physical health indicators

L'effet de l'exercice aérobique sur les indicateurs de la santé des étudiants

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Summary

Objectives. – The purpose of this research was to explore the impact of 12-week aerobic exercises on both weight index and indicators of cardiovascular endurance. An increasingly passive life-style of students has led to a growth in health related disorders. Complex aerobic exercises are regarded as a kind of activity affecting youth physical health.

Equipment and methods. – Maximum heart rate and maximum oxygen consumption were measured. Participants included 1180 17–21 aged students from five universities in Anqing and Hefei municipalities, China. Cardiovascular endurance indicators were defined by the using Quinn steps exercise. Each student stepped up and down for about 5 minutes and after that heart beats were measured for about 20 seconds from the carotid region. Students' health indicators were defined twice before and after the exercises.

Results. – MHR decreased to 159.8 bpm for boys (from 164.1 bpm) and 160.2 bpm for girls (164.8 bpm at the beginning of the experiment). As for VO₂max, it increased by 1.4 (from 43.6 to 45) and 2.1 (from 41.6 to 43.7) mL/kg/min for boys and girls respectively.

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MOTS CLÉS

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L'anthropométrie ;
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l'endurance
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Résumé

Objectif. – Le but de cet article était d'étudier l'effet de 12 semaines d'aérobic à l'indice de la masse du corps et les indicateurs de l'endurance cardio-vasculaire. La répartition de la mode de vie passive chez les jeunes conduit à une augmentation des problèmes de santé. Les exercices aérobics complets sont considérés par les scientifiques comme l'un des types d'exercice qui affectent activement la santé physique des jeunes.

Méthodes. – La fréquence cardiaque maximale et la consommation d'oxygène ont été mesurés. L'échantillon comprenait 1180 élèves âgés de 17–21 ans à partir de 5 universités à Anqing et de la municipalité de Hefei, en Chine. Les indicateurs d'endurance cardiovasculaire ont été définis par l'exercice d'étapes Quinn. Chaque étudiant a progressé pendant environ 5 minutes et après que les battements cardiaques ont été mesurés pendant environ 20 secondes de la région carotidienne. Les indicateurs de santé des élèves ont été définis deux fois avant et après les exercices.

Résultats. – La fréquence cardiaque a diminué à 159,8 bpm pour les garçons (de 164,1 bpm) et 160,2 pour les filles (164,8 bpm au début de l'expérience). En ce qui concerne le VO2max, il a augmenté de 1,4 (de 43,6 à 45) et 2,1 (de 41,6 à 43,7) mL/kg/min chez les garçons et les filles.

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1. Introduction

Physical inactivity is the greatest health problem in today's society, which increases with age [1]. At the same time, the spread of harmful habits [2], emotional imbalance and low level of physical self-perceptions influence the rate of physical and emotional problems among the young people [3]. In this regard, there is a need to determine the efficient measures for youth physical activity (PA) growth.

Structured, regular and temperate physical activity is considered as the way to improve fitness level and general productivity [4]. It was established that physical exercises can alleviate the risks associated with being overweight or obese [5] and influence the decrease the probability of cancer, hypertension and coronary heart disease [6].

Moreover, the level of physical inactivity is related to the increase in the incidence of arthritis [7] and sexual dysfunction [8].

Besides the direct physical-health advantages, participation in exercise programs enhances mental activity [9] and moral development [10] as well as effect emotional well-being [11]. Thus, PA improves mood [12] and reduces symptoms of depression and anxiety [13].

We understand aerobics as a complex of physical exercises of low to high intensity that requires oxygen for prolonged periods. As a result, there are advantageous changes that occur in the lungs, the heart and vascular system [14]:

- higher endurance during intense physical activity because of blood volume increase;
- lungs volume increase;
- cardiac muscle strength;
- HDL level increase (the ratio of total cholesterol to HDL decrease reduces the risk of atherosclerosis);

- emotional stress overcoming;
- productivity increase.

In addition, the implementation of 10-week aerobic-exercise program proved the effectiveness in the treatment of chronic fatigue syndrome. The experiment showed significantly improved mood profiles; contributed the reduction of pain-medication prescription and fewer physical-therapy referrals, as well as improvement in work functioning [15].

Pilates as a kind of aerobics increases core strength and returns the natural flexibility of the spine and limbs returns [16]. In contrast, Taiji Quan as a low-impact, moderate-intensity aerobic exercise shows improvements in immune function [17]. But there is apropos little work on the effectiveness of multipurpose aerobic exercises on the functional systems of human body.

We can point out it's a widespread assumption that physical inactivity is more common for highly developed countries [18]. This position can be explained by the impact of technological improvements, screen time increasing and sedentary work [19].

However, it doesn't exclude the relevance of raised issue for developing countries. Most deaths there have behavioral causes exacerbated by national policy, failures of health service delivery systems, and poor level of social education, including low promotion of healthy lifestyles [20].

Special attention ought to be given to youth whereas multiple changes taking place during puberty often get many young people confused, perplexed, and emotionally unstable. Furthermore, the formation of basic attitudes occurs during this period [21].

Therefore, the purpose of this study is to examine the impact of 12-week aerobic exercises on youth physical health.

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