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## THE INFLUENCE OF THE PRACTICE OF BADUANJIN QIGONG ON THE PHYSICAL CONDITION OF STUDENTS

The article presents information on the influence of Baduanjin Qigong practice on the physical condition of practitioners based on a review and generalization of scientific research data. A variant of a comprehensive assessment of the influence of Baduanjin Qigong practice on the physical condition of the body is proposed as a comprehensive approach to solving the problem of adaptation of Chinese students when studying at a university in the Republic of Belarus to improve health and learning efficiency.

**Keywords:** Baduanjin Qigong practice; physical condition; Chinese students; adaptation; studying; the Republic of Belarus.

## ВЛИЯНИЕ ПРАКТИКИ БАДУАНЬЦЗИНЬ ЦИГУН НА ФИЗИЧЕСКОЕ СОСТОЯНИЕ СТУДЕНТОВ

В статье на основе обзора и обобщения данных научных исследований представлена информация о влиянии практики Бадуаньцзинь цигун на физическое состояние занимающихся. Предлагается вариант комплексной оценки влияния практики Бадуаньцзинь цигун на физическое состояние организма как комплексный подход к решению проблемы адаптации китайских студентов при обучении в вузе Республики Беларусь для улучшения здоровья и эффективности обучения.

**Ключевые слова:** практика Бадуаньцзинь цигун; физическое состояние; китайские студенты; адаптация; обучение; Республика Беларусь.

### Introduction.

Modern globalization of education provides future students with ample opportunities for professional and personal development through the choice of country and future profession. For example, today a significant number of direct cooperation agreements have been signed between educational institutions of the Republic of Belarus and the People's Republic of China, within the framework of which bilateral scientific and educational projects and academic exchanges are implemented. It should be noted that in the process of studying, due to significant geographical and climatic differences between the countries, Chinese students face numerous difficulties in adapting to living conditions in Belarus, which affect their quality of life and the effectiveness of their studies. Therefore, it is important to search for means and methods that increase the adaptability of

Chinese students to the conditions of study in Belarus. One of the well-known and traditional methods of health improvement in China are various practices, one of which is Baduanjin Qigong. It is known that traditional gymnastics, which is not just physical exercise, but a comprehensive approach to health and well-being, has a positive effect on the human body and improves the quality of life. Therefore, an analytical review of scientific sources of information devoted to the study of the influence of the practice of Baduanjin qigong on the physical condition of the body can become a theoretical basis for solving the problem of accelerating the adaptation of Chinese students to the educational environment in the Republic of Belarus.

**The purpose of the study.** Systematization of the results of modern research aimed at a comprehensive study of the influence of Baduanjin Qigong on the physical condition

of a person to substantiate the relevance of using the practice to correct the physical condition of Chinese students during their studies in the Republic of Belarus.

**Research methods.** Analysis of scientific sources of information devoted to the study of the influence of Baduanjin Qigong practice on the physical condition of a person.

**Research results.** The relevance of the research of the influence of Baduanjin Qigong on individual health should begin with the historical and theoretical background of the practice. Baduanjin Qigong, one of the most common forms of Chinese Qigong exercises, is known for its simplicity and effectiveness in improving health and fitness. It has a rich history that dates back to the Song Dynasty, although some elements may be traced back even further. The practice consists of a series of 8 separate exercises, each focusing on a different physical area and aspect of Qi energy [1].

The theoretical foundation of Baduanjin Qigong lies in Traditional Chinese Medicine (TCM) principles, emphasizing the balance and flow of Qi energy in the body. This practice is rooted in the concept of harmonizing yin and yang, and it integrates the mind, body, and spirit in its execution. Each movement in Baduanjin Qigong is designed to stimulate specific meridians or energy pathways in the body, thereby enhancing Qi flow and promoting overall health. Baduanjin Qigong has been subject to various interpretations and modifications over the centuries. However, its core principles remain centered on breathing, mental concentration, and fluid, graceful movements. Regular practice is believed to improve muscle strength and flexibility, enhance respiratory and cardiovascular function, and promote mental peace and clarity [1]. Over time, Baduanjin Qigong has gained global recognition for its health benefits, leading to numerous scientific studies exploring its impact on various health conditions. This ancient practice has

transcended its traditional roots, becoming a part of holistic health and wellness routines worldwide, appreciated for both its simplicity and profound benefits.

**Basic theories and principles of Baduanjin Qigong practice** are guided by the theory of Yin and Yang, emphasizing the harmony between yin and yang, the human body, and nature, as well as the coordination between the inner self and the external form. This exercise method combines “regulating the heart”, “regulating the breath”, and “regulating movement” to channel Qi through meridians, nourishing the limbs and body, thus preventing and treating diseases and strengthening the body.

**Yin-Yang Philosophy:** Yin-Yang is a fundamental concept in ancient Chinese philosophy and plays a crucial role in the formation of Traditional Chinese Medicine (TCM) theories. Baduanjin Qigong movements combine dynamic (Yang) and static (Yin) elements. The beginning and ending postures are different from the rest, with the former focusing on nourishing Yin and the latter on Yang. The practice balances Yin and Yang throughout the body [1, 2].

**Preventive Health Concept:** regular practice of Baduanjin Qigong can improve Qi and blood circulation and relax the muscles and meridians. By enhancing the body's positive energy, it helps to resist negative influences, aiming for preventive health care. [1, 2].

**Holistic Approach: Central to Baduanjin Qigong** is the idea of achieving harmony between humans and nature, aligning with the TCM belief of integrating the five organs through the meridian system. This holistic approach ensures smooth Qi and blood flow in the body and harmonizes humans with their natural environment.

The Health Baduanjin Qigong primarily focuses on guiding physical movements, complemented by regulating breath and spirit, working from the exterior to the

interior. It aims to unblock the body's meridians, harmonize the internal organs, and strengthen muscles and bones. This process leads to a state where the form is correct and complete, energy is abundant, and the spirit is enriched, thus achieving health enhancement and disease prevention [1, 2]. There is an analysis of the individual techniques of Baduanjin Qigong practice [1–4]:

**1 exercise “Two Hands Hold up the Heavens to Regulate the Sanjiao”.** The exercise in Baduanjin Qigong involves a series of movements designed to harmonize the body's three energy centers, or Sanjiao. This exercise integrates the principles of guiding the mind to control the body and using the breath to lead the movements. It aims to enhance the flow of Qi, improve energy levels, and ensure overall health. Emphasis is placed on the unity of body, breath, and mind, achieving a harmonious state of physical and mental well-being.

**2 exercise “Drawing the Bow to Shoot the Eagle”.** This exercise in Baduanjin Qigong involves a series of movements that symbolically mimic archery. Practicing this exercise enhances the flow of Qi, improves flexibility, and strengthens muscles, promoting overall health and well-being.

**3 exercise “Regulating the Spleen and Stomach by Lifting a Single Hand”**

The exercise involves a sequence of movements aimed at stimulating the meridians and regulating the flow of Qi, balancing between relaxation and tension, focusing on the direction of the flow of Qi throughout the body.

**4 exercise “Wise Owl Gazes Backward”.** The Baduanjin Qigong exercise involves movements to relax the neck, shoulders and back. This exercise stimulates key acupuncture points along the Du meridian and the bladder meridian, improving the function of the internal organs. It focuses on promoting the circulation of Qi and

blood, aiming to prevent and treat conditions described in TCM as the “five exhaustions and seven injuries”.

**5 exercise “Sway the Head and Shake the Tail to Remove Heart Fire”.** The exercise involves a series of movements aimed at balancing the body's energy. This exercise is designed to regulate the heart fire by strengthening the kidney yin and controlling excess energy. This practice uses the principles of meridians, the five elements and their interrelationships to achieve the intended health benefits.

**6 exercise “Two Hands Hold the Feet to Strengthen the Kidneys and Waist”.** The exercise stimulates the spine and stretches the back muscles, improving kidney function and relieving back discomfort, improves kidney function and strengthens the waist muscles.

**7 exercise “Clench the Fists and Glare Fiercely (or Angrily)”.** The exercise is aimed at improving liver function and regulating the flow of Qi. This movement is believed to stimulate liver Qi, helping with emotional balance and physical vitality.

**8 exercise “Bouncing on the Toes to Eliminate Diseases”.** The exercise involves a simple yet effective movement of lifting and lowering the heels. This action is believed to stimulate the Baihui point on the crown of the head and the spine, promoting the flow of Qi and blood throughout the body. The gentle bouncing motion is aimed at increasing the body's yang energy and improving overall health, potentially helping to prevent and alleviate various diseases.

Baduanjin Qigong exercises therefore combine physical movements, breath control and mental concentration based on the principles of traditional Chinese medicine. The practice of Baduanjin Qigong promotes overall well-being, strengthens the body, increases flexibility and helps in reducing stress and preventing disease. The exercises embody a holistic approach to health, uniting

the mind and body to achieve harmony and vitality [3, 4].

### **Impact of Baduanjin Qigong practice on individual human health**

The impact of Baduanjin Qigong on individual health, as evidenced by various studies, is multifaceted. The health benefits of Baduanjin Qigong exercise on the human cardiorespiratory system are defined as follows: improvement in oxygen consumption and cardiopulmonary function, increase cardiorespiratory endurance, improve lung function, significantly reduces systolic and diastolic blood pressure and resting heart rate; increase intensity energy, expenditure and tolerance in exercise [3–5]. Taken together, these studies highlight the significance of Baduanjin Qigong exercise in improving the functional state of the cardiorespiratory system, which is crucial for high physical performance of the human body.

The effect of Baduanjin Qigong exercises on the health of the human circulatory system is manifested in the form of a decrease in the level of blood glucose, total cholesterol, triglycerides, low-density lipoprotein cholesterol levels in plasma, and elevates plasma high-density lipoprotein cholesterol [4–5]. It has been also established that Baduanjin Qigong practice improve motor function flexibility, sensitivity, and muscle strength; lower limb proprioception function and explosive force, balance function, sensorimotor function of lower extremities, gait [6–8].

Some studies collectively indicate that Baduanjin Qigong exercises has a significant positive impact on cognitive function, particularly in improving memory, attention and executive functions, and global cognitive abilities, making it a potentially beneficial practice for individuals with high level of stress or those seeking to enhance cognitive abilities [9–11]. Also, there are some studies proved that Baduanjin Qigong exercise has a significant positive impact on

mood, particularly in reducing symptoms of depression and anxiety, improving psychological well-being, and enhancing overall mental health [12, 13].

**The relevance of monitoring students' physical conditions in the context of Baduanjin Qigong practice.** In the context of teaching Baduanjin Qigong exercises, monitoring physical conditions involves a dual approach that combines pedagogical control with biomedical monitoring. This integrated strategy is designed to meet the unique requirements of Baduanjin Qigong, a traditional practice that combines physical postures, breathing techniques, and mental focus. The pedagogical aspect encompasses observing and assessing the correct execution of movements, alignment, and technique, ensuring that participants receive the intended physical and mental benefits. Biomedical monitoring, on the other hand, delves into the physiological effects, tracking vital signs and overall physical responses to exercise. This integrated approach ensures a balanced and effective training practice that is consistent with the holistic nature of Baduanjin Qigong.

Pedagogical control in Baduanjin Qigong training extends beyond mere movement execution to encompass a holistic understanding of the exercise principles and objectives. It involves a nuanced evaluation of how well participants integrate the physical movements with breath control and mental concentration, key elements in Traditional Chinese Medicine. Trainers assess and provide feedback on posture, alignment, and the fluidity of movements, ensuring that exercises are executed with precision and mindfulness. This detailed observation helps in identifying areas where participants might struggle, such as maintaining balance or coordinating breath with movement, enabling targeted instructions for improvement.

In Baduanjin Qigong training, the emphasis is on improving the flexibility

and balance of practitioners, which requires regular assessment of these physical qualities. Assessing the level of flexibility development in practitioners includes a comprehensive assessment of their ability to perform exercises with the correct form and range of motion: analysis of joint mobility, muscle elasticity and maintaining posture during practice. The assessment of balance in Baduanjin Qigong practitioners is comprehensive, assessing the ability to maintain stability in static positions and during dynamic movements. By closely monitoring and guiding each participant, trainers can ensure that the practice of Baduanjin Qigong is not only physically beneficial but also mentally and spiritually enriching, embodying the practices philosophy of harmonizing body and mind [2, 5].

**Biomedical monitoring** in Baduanjin Qigong exercise training involves detailed analysis of physiological responses, which is critical to adapting and optimizing the practice to the individual needs of the practitioner. The “biomedical monitoring” aspect of Baduanjin Qigong exercises refers to how traditional Chinese qigong practice influences and regulates the body’s various functional systems.

Currently, it has become possible to conduct a comprehensive assessment of the functional state of those practicing Baduanjin Qigong using innovative research technologies. For example, to conduct an express assessment of the functional state of students in the conditions of any training sessions, it is effective to use modern medical diagnostic devices and methods, such as AMP (non-invasive blood analyzer “AMP” Biopromin) to monitor and analyze the effects of Baduanjin Qigong practice [13]. Here are several reasons to use the AMP to check the effects of Baduanjin Qigong practice on a person’s physical condition. Firstly, the device allows you to obtain 131 vital parameters of the human body within 180–720 seconds without drawing blood:

general blood test and biochemical blood parameters; the state and nature of metabolic disorders; the type of blood circulation and the nature of myocardial blood supply disorders; functional hemodynamics; energy balance; water-electrolyte metabolism and compensatory capabilities of the body. Secondly, using the AMP tools in this way can provide a more scientific and quantitative understanding of how Baduanjin Qigong affects health and well-being, bridging the gap between traditional practices and modern medical science. Based on the results of the biomedical control, it is possible to individualize the practice sessions.

To assess the indicators of long-term adaptation of the body of practitioners, it is advisable to calculate quantitative indices: endurance coefficient (EC) – endurance of the cardiovascular system; adaptive potential of the circulatory system (AP) according to Baevsky; vegetative index of Kerdo (VKI) – qualitative assessment of the functional state of the autonomic nervous system; physical condition index (PCI) according to Pirogova; life index (VI) [14].

Evaluation of the results of these studies allows us to determine the dynamics of functional changes and the nature of long-term adaptation of the students’ body, which is formed during Baduanjin Qigong classes. Thus, implementation of systematic pedagogical control and biomedical monitoring using innovative research technologies and methods applicable in the context of classes allows us to quickly assess the effectiveness of the influence of Baduanjin Qigong practice on the physical condition of those practicing.

### Conclusions

By examining the numerous results of modern research on Baduanjin Qigong practice conducted using innovative technologies, it has been found that it is the basis for other traditional Chinese health practices, and has positive physiological



and psychological effect on human health (improving cardiovascular function, increasing respiratory efficiency, muscle strength and flexibility; reducing stress levels and improving cognitive abilities). Such a comprehensive health effect of a traditional practice with centuries of origin, emphasizes the continued relevance and adaptability of Baduanjin Qigong practice for the educational environment.

Moreover, the results of the review of scientific studies strongly support the potential of Baduanjin Qigong practice as an effective low-intensity exercise program to promote holistic fitness improvement. Thus, Baduanjin Qigong practice can become a valuable addition to regular physical activity, supporting the overall health and well-being of Chinese students during their studies in the Republic of Belarus.

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