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The Complex Effects of Judo Training on Human Physical and Mental Health

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Abstract

This article scientifically analyzes the effects of practicing judo on the human body. During the study, the impact of judo on the cardiovascular system, the musculoskeletal system, and psychological stability was examined. The results show that regular practice of judo not only increases physical strength but also develops resistance to stress.

Keywords: Judo, health, physical education, physiology, cardiovascular system, vestibular apparatus, coordination, psychophysiology, stress resistance, healthy lifestyle, anthropometry.

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1. Introduction

One of the pressing issues in modern sports medicine and valeology is the optimal use of physical education tools in maintaining human health. Judo (Japanese 柔道 — "the gentle way") was founded in 1882 by Jigoro Kano and represents not only a martial art but also a system for physical and spiritual development. The peculiarity of judo training lies in the fact that it engages all muscle groups of the body. The aim of this study is to identify and scientifically substantiate the role of judo elements (falling techniques, holds, and throws) in strengthening health.

What distinguishes judo from other combat sports is its foundation on the principles of "Seiryoku Zenyo" (maximum efficiency with minimum effort) and "Jita Kyoei" (mutual welfare and benefit). Today, judo is recognized not only as an Olympic sport but also as a method for rehabilitation and health improvement. However, comprehensive studies on judo's impact on the body's deep physiological reserves remain a relevant issue.

2. Methods

The study involved 40 students aged 18 to 22. They were divided into two groups:

1. Control group (20 participants): Attended only general physical education classes.
2. Experimental group (20 participants): Engaged in regular judo training three times a week.

During the study, the following methods were used:

- Cardiometry: Measurement of blood pressure and pulse at rest and after physical exertion.
- Spirometry: Determination of lung vital capacity (VC).
- Dynamometry: Assessment of overall muscle tone through measurement of handgrip strength.
- Psychophysiological tests: The "Luscher" and

"Anfimov" charts were used to evaluate attention stability and reaction speed.

3. Results

After six months of observation, significant changes were recorded in the experimental group:

Physiological indicators:

- In judo practitioners, resting heart rate (pulse) decreased on average from 72–75 beats per minute to 60–64 beats per minute (bradycardia — a sign of economical cardiovascular function).
- Lung vital capacity increased by 15–18% compared to the control group.

Parametr	Initial (mean) heart rate	After 6 months	Change (%)
Vital capacity (L)	3.5	4.2	+20%
Blood pressure (mmHg)	125/80	115/75	-8% (normalization)
Static balance (s)	12	23	+133%

Biomechanical and Neurological Effects

The falling technique in judo (Ukemi) enhances the sensitivity of the vestibular apparatus. Participants in the experimental group showed results twice as high as the control group in exercises requiring coordination. This indicates that judo training strengthens neural connections between the brain hemispheres.

4. Discussion

The obtained results confirm the complex homeostatic effect of judo on the human body. The practice of randori (free sparring) in judo involves an alternation of anaerobic and aerobic loads, which promotes the body's adaptation to hypoxic (oxygen-deficient) conditions.

From a psychological perspective, the production of endorphins and serotonin during judo training contributes to the reduction of chronic depression. Judo etiquette (bowing and respect for the opponent) fosters the development of emotional intelligence (EQ). A decrease in aggression levels among judo practitioners can be explained by the stabilization of cortisol hormone levels.

Importantly, regular judo practice increases bone tissue density, thereby reducing the risk of osteoporosis in older adults, while in younger individuals it supports proper posture formation and helps prevent scoliosis.

5. Conclusion

The research findings make it possible to recommend judo training not only for achieving sports performance but also as an effective means of restoring and maintaining overall health. Judo:

- Promotes an economical mode of cardiovascular system functioning.
- Maximally develops the vestibular apparatus and balance.
- Enhances psychological stability and cognitive abilities.

Therefore, it is advisable to widely promote this sport as an integral component of a healthy lifestyle.

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