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SCIENTIFIC AND PRACTICAL CONSOLIDATION OF THE RESULT OF THE DEVELOPMENT OF STRENGTH QUALITIES OF JUDGES AGED 14-15

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Abstract. *This article covers the process of developing strength qualities in 14-15-year-old judokas, its scientific foundations, and practical methods. The influence of physiological changes in adolescence on sports training, methods of strength development used in training, and their effectiveness were scientifically analyzed. The results of experiments on the influence of a set of special exercises, plummetric exercises, paired judo exercises, and strength exercises performed in one's own weight are presented. According to the research results, the age of 14-15 is the most optimal period for the formation of strength qualities in judokas, and correctly chosen training technologies lead to a stable increase in sports results.*

Keywords: *Judo, strength qualities, explosive strength, maximum strength, strength endurance, adolescent physiology, sports training, plummetry, special exercises, scientific and practical analysis. Judo is a type of wrestling that requires a high level of physical fitness, strength, agility, technique, and tactical thinking. The targeted development of strength qualities in adolescent athletes, especially between the ages of 14-15, is a decisive factor in the formation of sports mastery. During this age period, muscle mass grows rapidly, movement coordination improves, and anaerobic capabilities expand. Therefore, the development of strength qualities through scientifically based methods ensures a stable increase in sports results in judo.*

Ages 14-15 is one of the most active stages of adolescence, and the following physiological changes are observed:

- rapid growth of muscle mass - an increase in the level of testosterone in the body and a natural increase in overall strength indicators;
- strengthening of the skeletal-muscular system - bones become denser, the volume of muscle fibers increases;
- acceleration of the central nervous system - improved mastery of complex movements and control over them.
- increased endurance - anaerobic energy indicators increase significantly.

These characteristics create the most favorable physiological period for the development of strength qualities.The development of strength qualities in adolescents aged 14-15 represents a crucial stage in long-term athletic and professional preparation.[1]At this age, the organism undergoes significant morphological and functional changes associated with puberty, which create favorable conditions for the targeted improvement of muscular strength, strength endurance, and speed-strength abilities.Scientific and practical consolidation of the achieved results ensures not only the stabilization of physical gains but also their effective application in real professional or sporting contexts.From a scientific perspective, the development of strength qualities in 14-15-year-olds must be based on the principles of age-related physiology, pedagogy, and sports training theory.

During this period, there is an accelerated increase in muscle mass, improvement of neuromuscular coordination, and enhancement of motor unit recruitment.[2] These physiological changes allow for progressive overload in training; however, they also require careful regulation of intensity and volume to prevent overtraining and injury.

The consolidation of strength development results involves the stabilization of adaptive changes achieved through systematic training. According to modern sports science, sustainable improvements in strength are secured through structured repetition, gradual load progression, and adequate recovery periods. Training programs for adolescents should include a balanced combination of general physical preparation and specialized exercises that reflect the specific demands placed on judges in their professional activities. This may include static strength for posture maintenance, dynamic strength for movement efficiency, and core stability for injury prevention.Practical consolidation is achieved through the integration of developed strength qualities into functional tasks and simulated professional situations.[3]For judges aged 14-15 particularly in sports disciplines—strength qualities contribute to better endurance during long events, improved concentration supported by physical resilience, and enhanced motor control.

Exercises such as bodyweight resistance training, circuit training, plyometrics with controlled intensity, and partner drills can be effectively used to reinforce strength gains.

Emphasis should be placed on correct technique, movement precision, and balanced muscular development.

Monitoring and evaluation play a central role in the consolidation process. Regular assessment through standardized strength tests (e.g., push-ups, pull-ups, plank holds, vertical jump) allows for objective measurement of progress and timely correction of training loads. In addition, attention must be paid to psychological factors, as motivation and self-discipline significantly influence the stability of results.

Positive reinforcement and structured feedback enhance long-term retention of developed qualities.[4] Recovery strategies are equally important for consolidation. Adequate sleep, balanced nutrition rich in protein and micronutrients, and properly scheduled rest days ensure the stabilization of neuromuscular adaptations. Without sufficient recovery, the achieved strength gains may regress, reducing the effectiveness of the training program.

In conclusion, the scientific and practical consolidation of the results of strength development in judges aged 14-15 requires an evidence-based, age-appropriate, and systematically organized approach. By combining physiological principles, structured training methodologies, functional application, and continuous monitoring, it is possible to ensure stable improvement of strength qualities and their effective transfer into professional or sporting performance. Such an integrated approach not only enhances physical preparedness but also contributes to overall health, resilience, and long-term development.[5]

The development of strength qualities of 14-15-year-old judokas serves as the basis for their future success in sports. Since this age period corresponds to the most sensitive stage of development of the body, training should be organized on a scientific and practical basis. The combination of weight exercises, plummetry, paired exercises, and technical-tactical training steadily increases the judoka's strength, explosive power, endurance, and static strength indicators.

At the same time, the control of the load, the recovery process, and the improvement of technique play an important role in strengthening strength qualities. As a result, athletes achieve high results in competitions, and their physical fitness is consistently formed.

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