THE EFFECTIVENESS OF USING SPECIAL EXERCISES TO IMPROVE GAME ENDURANCE IN VOLLEYBALL

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Abstract. *This article analyzes the system of special exercises used to help volleyball players maintain a high level of physical and psychological endurance during the game. A set of exercises designed for 15–16-year-old volleyball players was developed and tested to determine its effect on game endurance. The results showed that the regular use of special exercises increased cardiovascular stability, reduced recovery time, and improved in-game performance by 14–18%.*

Keywords: *volleyball, game endurance, special exercises, physical fitness, recovery, competitive activity.*

In volleyball, an athlete's success depends not only on technical and tactical mastery but also on maintaining a high level of physical endurance throughout the match. During the game, players repeatedly perform actions such as sprints, jumps, blocking, setting, and spiking. These require the body to cope with oxygen deficiency, lactic acid accumulation, and mental fatigue. Therefore, developing and enhancing endurance is one of the key goals of the volleyball training process.

According to Ayrapetyans and Pulatov (2012), volleyball endurance is the ability of the body to withstand prolonged physical activity while maintaining optimal performance. The higher this quality, the more stable the player's performance and the fewer technical errors occur during matches.

Ashurkova (2020) also emphasizes that endurance is one of the decisive factors directly affecting competitive performance. Proper planning of special physical exercises and individualized training loads plays a crucial role in its development.

Modern research (Allamuratov, 2010; Boltayev, 2019; Bairbekov, 2022) shows that developing game endurance requires the combined development of aerobic and anaerobic energy systems. This not only strengthens the cardiovascular and respiratory systems but also helps muscles use energy resources more efficiently.

Gaziev (2016) argues that the theoretical foundations of sports training include developing endurance through progressive loading, regulated recovery periods, and the use of psychophysiological adaptation mechanisms.

Based on these perspectives, this study aims to determine the effectiveness of special exercises for improving game endurance in volleyball.

Research Methods

The study involved 12 volleyball players aged 15–16. The research lasted 8 weeks. The experimental group (6 athletes) performed a program including special endurance exercises, while the control group (6 athletes) trained according to the standard volleyball training plan.

Applied exercises:

- Continuous running (12–15 minutes at moderate pace)
- Quick directional movement drills (6×20 meters, 5 sets)
- Jumping combinations (10×10 jumps with short rest)
- "Continue play" situational drills (10 minutes of active game movements)
- Ball passing drills over the net under time pressure (5 minutes, high intensity)

Training sessions were held four times a week. Endurance was assessed using heart rate, recovery time, and the number of actions performed during game simulations.

Results

The following table presents the results of the experimental and control groups:

Indicators	Initial result (beats/min)	After 8 weeks (beats/min)	Improvement (%)
Heart rate (experimental group)	168 ± 4	152 ± 3	9.5
Heart rate (control group)	169 ± 5	163 ± 4	3.5
Recovery time (sec) – experimental	98 ± 6	75 ± 5	23.4
Recovery time (sec) – control	96 ± 5	88 ± 6	8.3
Number of game actions performed	248 ± 12	293 ± 10	18.1

The data show that the experimental group, which used special endurance exercises, demonstrated increased cardiovascular stability, faster recovery, and 18.1% improvement in in-game activity.

Discussion

The obtained results confirm the theoretical concepts proposed by Ayrapetyans and Pulatov (2012), as well as Akulich, Pulatov, and Ashurkova (2023). They emphasized that endurance in volleyball can be effectively developed through carefully managed training loads and a comprehensive system of special exercises.

The improvement observed in the experimental group can be attributed to the exercise system's adaptation to the specific dynamics of volleyball play. These exercises not only enhance muscular endurance but also improve psychological

resilience. Bairbekov (2022) also reported that game endurance develops most effectively through variable training loads reflecting real game conditions.

Conclusion

The study results indicate that the use of special exercises to improve endurance in volleyball players is highly effective. These exercises:

1. Enhance cardiovascular stability;
2. Shorten recovery time;
3. Improve in-game movement efficiency by 14–18%;
4. Increase resistance to fatigue during competition.

Therefore, integrating special endurance-oriented exercises into volleyball training programs is essential for the overall physical and competitive development of players.

References

1. Ayrapetyans, L.R., & Pulatov, A.A. The Theory and Methodology of Volleyball. Textbook. – Tashkent: “Fan va texnologiya”, 2012. – 208 p.

2. Ashurkova, S.F. Theory and Methodology of Volleyball. Textbook. – Tashkent: “O‘zkitobsavdonashriyoti”, 2020. – 526 p.

3. Allamuratov, Sh.I. Physiology and Sports Physiology. – Tashkent: “Turon-Iqbol”, 2010. – 216 p.

4. Bairbekov, M.G. Improving Sports Mastery (Volleyball). Study Guide. – Gulistan, 2022. – 160 p.

5. Goncharova, O.V. Development of Young Athletes’ Physical Abilities. – Tashkent, 2005. – 176 p.

6. Gaziev, N.R. Theoretical Foundations of Sports Training. – Tashkent: Ilmiy texnika axborot press, 2016. – 212 p.

7. Akulich, L.I., Pulatov, A.A., & Ashurkova, S.F. Theory and Methodology of Sports Training in Selected Sports (Volleyball). – Tashkent: “O‘ZKITOBSAVDONASHRIYOTI” NMIU, 2023. – 608 p.