Methods for developing the physical qualities of adolescent female volleyball players

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Abstract
This article addresses the issues of improving the physical conditioning of adolescent female volleyball players. The main objective of the study is to examine the developmental state of key physical qualities—such as strength, speed, agility, endurance, and flexibility—in adolescent female volleyball players, and to identify effective methods and means for their development. The research process employed methods such as analysis of scientific and methodological literature, pedagogical observation, surveys, pedagogical experimentation, and analysis of results. Based on the survey findings, the attitudes of adolescent female volleyball players toward developing physical qualities, their interest in training, and the effectiveness of various exercise types were studied. The study results demonstrated the advisability of using a comprehensive approach that integrates game-based, team, and individual exercises for developing physical qualities, organizing training sessions regularly, and gradually increasing workloads in accordance with the athletes' age and individual characteristics. The findings are of practical significance for enhancing the physical conditioning of adolescent female volleyball players, enabling the effective execution of technical-tactical actions, and improving athletic performance.
Keywords: adolescent female volleyball players, volleyball, physical training, physical qualities, strength, speed, agility, endurance, flexibility, specialized exercises, training process, pedagogical experiment, sports mastery.

Introduction

Today, developing the sport of volleyball among youth, selecting talented athletes, and enhancing their sports mastery are among the key tasks in the field of physical culture and sports. The widespread engagement of adolescent girls in volleyball, the formation of a healthy lifestyle, and the enhancement of their physical fitness levels are particularly significant. As volleyball is characterized by high motor activity, speed, and a variety of technical and tactical actions, it requires athletes to have a sufficient level of general and specialized physical training.

The adolescent period is characterized by the rapid growth and development of the organism. During this period, the scientifically and methodologically sound and consistent development of fundamental physical qualities such as strength, speed, agility, flexibility, and endurance creates an important foundation for achieving high sports results in the future. Sufficient development of these physical qualities in female volleyball players enables the effective execution of technical skills such as jumping, setting and receiving the ball, performing attack hits, blocking, and moving quickly on the court.

However, setting training loads for adolescent athletes without considering their age, physical development, and individual characteristics can lead to counterproductive results and negatively impact their physical development. Therefore, it is an important scientific and practical task to identify effective tools and methods for developing physical qualities during training, select exercises appropriate for the athletes' age and individual capabilities, and rationally distribute training loads.

In particular, developing a set of special exercises aimed at the comprehensive development of physical qualities in adolescent female volleyball players, consistently integrating it into the training process, and practically substantiating its effectiveness are urgent priorities. Such an approach not only serves to improve the general and special physical preparedness of young volleyball players but also facilitates the effective mastery of technical and tactical skills, expands motor capabilities during gameplay, and improves athletic performance. At the same time, the harmonious development of physical qualities is also a crucial factor in shaping adolescent girls into healthy, active, and well-rounded individuals.

Therefore, the scientific study of effective ways to develop the physical qualities of adolescent female volleyball players, the assessment of their physical fitness levels, the selection of exercises and methods appropriate for their age and individual characteristics, and their effective integration into the volleyball training process are among today's pressing scientific, methodological, and practical issues.

Aimof the research: To study the physical fitness level of adolescent female volleyball players, to identify tools and methods aimed at the effective development of key physical qualities such as strength, speed, agility, flexibility, and endurance, to scientifically and practically substantiate their effectiveness, and to implement them into the volleyball training process.

To study the physical fitness status of adolescent female volleyball players and to identify effective exercises aimed at developing the qualities of strength, speed, agility, endurance, and flexibility.

To develop a methodology for the effective implementation of the selected exercises into the volleyball training process, to determine the effectiveness of their application, and based on the results obtained, to develop practical recommendations for improving the physical fitness of adolescent female volleyball players.

Methods

The research process utilized methods of scientific and methodological literature analysis, pedagogical observation, questionnaires, pedagogical experimentation, and mathematical-statistical and comparative analysis of the obtained results.

Results and discussion

During the study, a questionnaire was used to determine the level of physical preparedness, interest in training, and attitude toward the development of physical qualities among adolescent female volleyball players. The questionnaire was administered to adolescent girls who regularly play volleyball to examine their level of activity during training and their attitude toward physical preparedness.

The questionnaire included questions related to the athletes' attitude toward training, the duration and regularity of training sessions, their interest in performing physical exercises, as well as their perceived need to develop qualities such as strength, speed, agility, endurance, and flexibility. Additionally, the survey identified which types of physical exercises pose the most difficulty for athletes during volleyball training, which exercises they are most interested in performing, and which training formats they consider most effective for developing physical qualities.

The data obtained from the questionnaire provided valuable insights into the physical fitness of adolescent female volleyball players and their attitude toward the training process. Based on these results, it was determined that exercises aimed at developing physical qualities should be selected taking into account the individual capabilities and needs of young athletes, and that these exercises must be systematically incorporated into volleyball training sessions.

The questionnaire results provided important data for assessing the physical fitness level of adolescent female volleyball players, evaluating their attitude toward the training process, and identifying their needs. The responses were summarized, expressed as percentages, and comparatively analyzed. The analysis revealed certain differences in the development of physical qualities among the players, highlighting the need to more broadly include special

Fig 1.

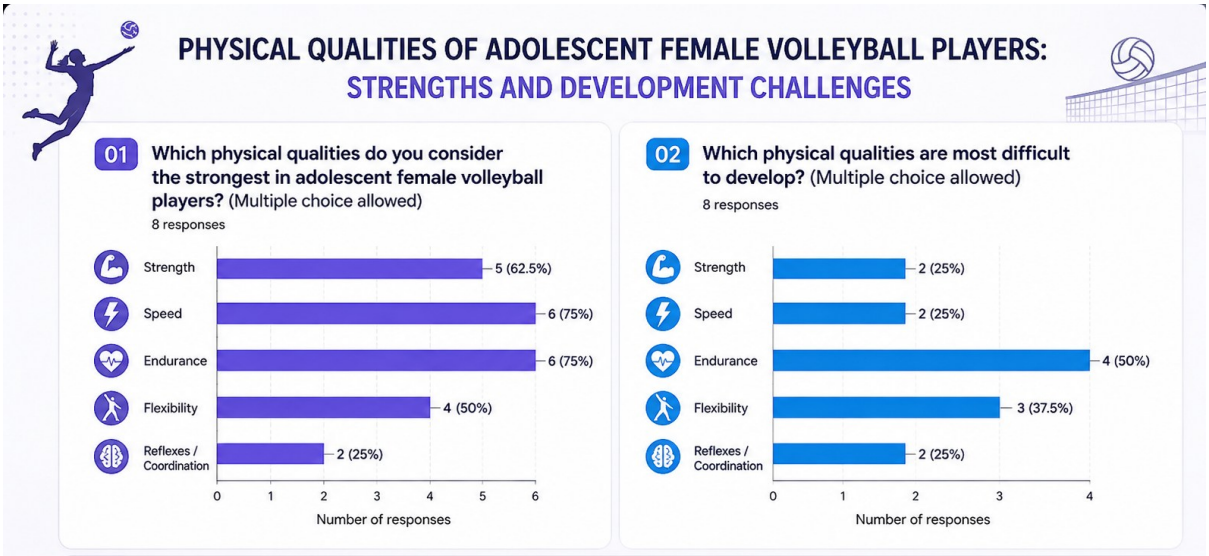
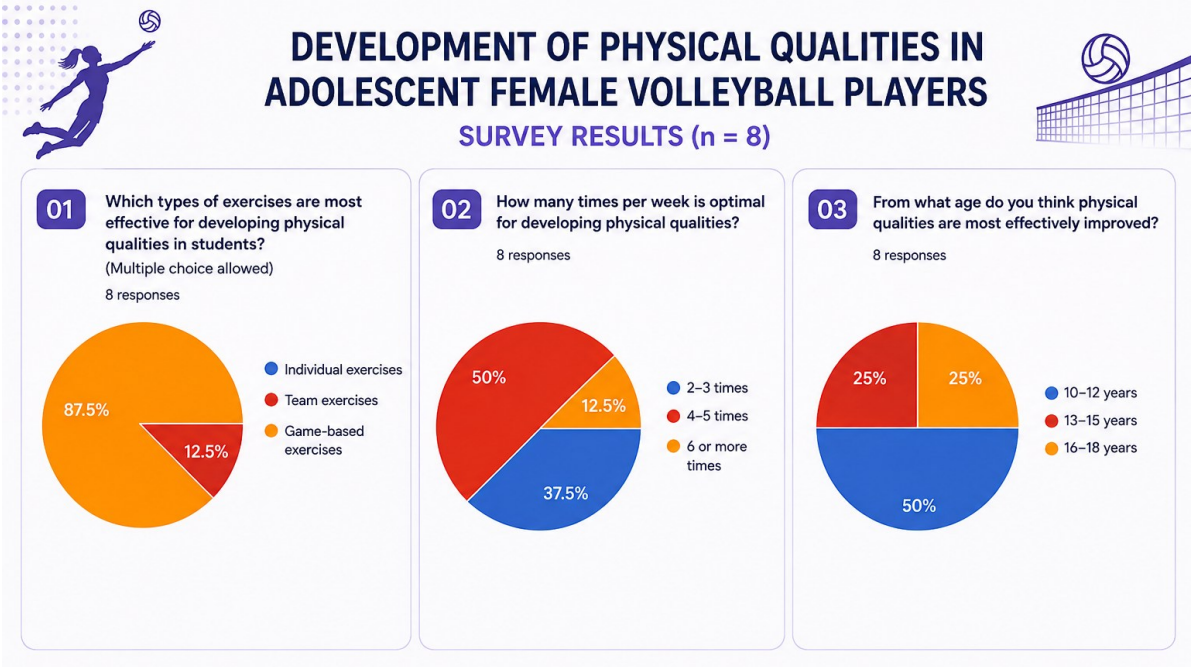


Fig 2.



exercises aimed at developing strength, speed, agility, endurance, and flexibility in their training regimen.

Furthermore, the results indicated the importance of selecting exercises based on the athletes' age and individual characteristics, rationally distributing training loads, and adapting exercise formats to match the athletes' interests and level of preparedness.

The questionnaire results substantively enriched the practical part of the study, enabling a direct examination of adolescent female volleyball players' needs for physical training, their interest in practices, and their attitudes toward developing physical qualities. Based on this data, relevant conclusions were drawn regarding the selection of exercises aimed at improving the training process and fostering the comprehensive development of physical qualities.

Questionnaire Content. Stemming from the research objective, the following questions were utilized to determine the attitudes of adolescent female volleyball players toward the training process, their level of physical fitness, and their perceived need for developing physical qualities.

The survey results identified the relatively well-developed physical qualities of the adolescent female volleyball players, the qualities that proved difficult to develop, and the types of exercises deemed effective for their improvement. According to the participants, using game based and team exercises is highly effective for developing physical qualities. Such exercises not only increase athletes' interest in training but also help develop skills in active movement, quick decision-making, and teamwork.

The questionnaire results showed that the regular organization of training—specifically, the systematic performance of physical exercises several times a week—has a positive effect on the consistent development of physical qualities. Furthermore, adolescence is a period of rapid physical development, and the targeted, scientifically-based cultivation of physical qualities at this stage creates a vital foundation for future athletic activity. Overall, the questionnaire results demonstrated the need to organize training regularly and consistently, in accordance with the athletes' age and individual characteristics.

Conclusion

The results of the study showed that developing the physical qualities of adolescent female volleyball players is one of the most important components of sports training. In volleyball, a sufficient level of development in physical qualities such as strength, speed, agility, endurance, and flexibility is instrumental in executing high-quality technical and tactical actions, adapting quickly to game situations, and enhancing overall athletic performance.

The study, based on an analysis of scientific and methodological literature and the re-

sults of a questionnaire, determined that physical qualities during adolescence can be effectively developed through regular, consistent, and scientifically-grounded training sessions. In this process, it is crucial to consider the athletes' age-related characteristics, level of physical preparedness, and individual capabilities. Gradually increasing training loads, selecting appropriate exercises, and applying them using various methods can enhance the effectiveness of physical training.

The questionnaire results indicated the suitability of a comprehensive approach that combines game-based, team, and individual exercises for developing the physical qualities of adolescent female volleyball players. Game-based exercises increase athletes' interest and active participation in training, while team exercises improve cooperation, quick movement, and motor skills. Individual exercises, in turn, make it possible to identify specific shortcomings in each athlete's physical preparedness and to organize training sessions aimed at addressing them.

Furthermore, it was determined that the consistency of training is a crucial factor in developing physical qualities. Systematically performing exercises helps to increase the body's functional capabilities, improve motor coordination, and effectively execute technical movements specific to volleyball. Particularly during adolescence, the targeted development of physical qualities creates a solid foundation for enhancing sports mastery and achieving high results in the future.

In general, to improve the physical fitness of adolescent female volleyball players, it is advisable to use a system of exercises aimed at the comprehensive development of strength, speed, agility, endurance, and flexibility during the training process. When selecting exercises, it is necessary to consider the athletes' age, physical fitness level, and individual characteristics, organize the training sessions to be engaging and regular, and rationally distribute the workload.

Based on the research findings, it can be concluded that developing physical qualities through properly and systematically organized training is of great importance for improving the general and special physical fitness of adolescent female volleyball players, expanding their technical and tactical capabilities, and enhancing their athletic performance.

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