

DEVELOPING SPEED IN 13-14 YEAR OLD STUDENTS USING THE CIRCULAR TRAINING METHOD DURING VOLLEYBALL SECTION CLASSES

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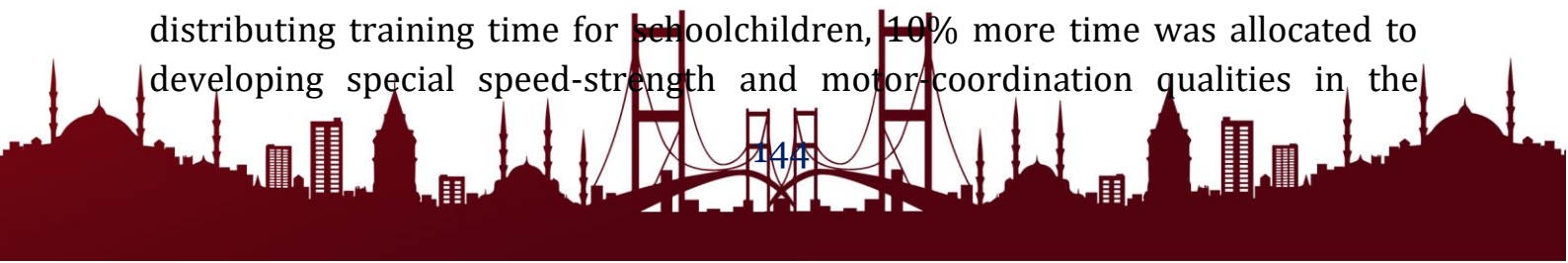
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According to medical and biological research, the process of developing motor abilities occurs in the final years of college and during the period of study at institutes and universities. Therefore, the development of speed-strength abilities and strength endurance requires the use of the most appropriate system for organizing training segments during practical classes and preparation. It also necessitates the use of the most effective means and methods aimed at increasing strength abilities in young people, taking into account their age and level of motor preparedness.

Numerous factors influence the health status of the growing generation: medical-biological, social, ecological, economic, and others. In recent years, there has been a declining trend in children's health. Many school students have been completely exempted from physical education classes or have strict limitations on engaging in sports. Against this backdrop, the issue of properly planning and conducting training sessions remains crucial. To address this, physical education teachers successfully utilize the circuit training method, which contributes not only to the general and physical development of high school students but also to their successful mastery of all sections of the curriculum. The specific direction of circuit training, the set of exercises included in it, and the regulation of workload depend on the sensitive periods of student development. However, there is still a lack of complete clarity regarding the effectiveness of using the circuit method in developing physical qualities of 13-14-year-old school students during school volleyball club sessions.

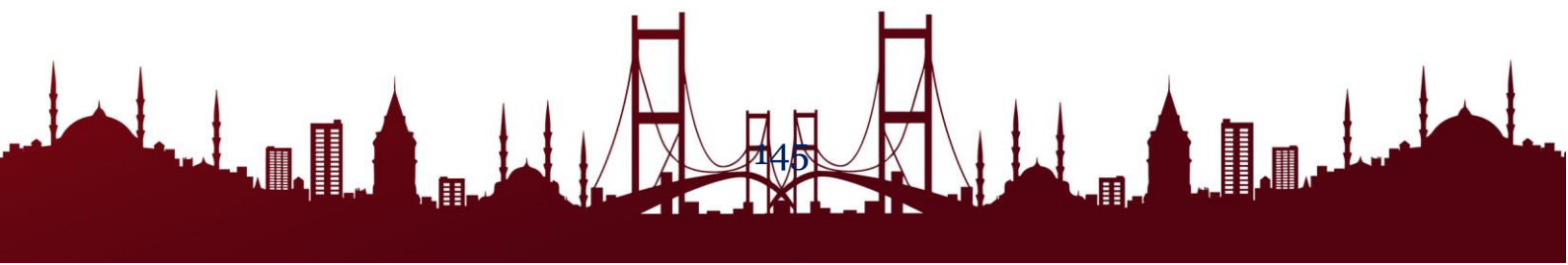
The distinctive features of conducting volleyball sectional classes for students in the experimental group are as follows. Specifically, the foundation for developing motor skills and abilities of schoolchildren can be the specialized exercise sets of the circuit training method, developed during the research. These are based on various complexes of plyometric and acrobatic exercises and integrated training for the period of maximum steroidogenesis in the middle pubertal stage. With a variable approach to planning the training load and distributing training time for schoolchildren, 10% more time was allocated to developing special speed-strength and motor-coordination qualities in the



experimental group subjects compared to the control group. In the experimental group, 50% of the total time was allocated to technical-tactical and integrated training, and the same amount of time to general physical training (GPT), while in the control group, 60% of the total time was allocated to technical-tactical and integrated training and 40% to GPT. The main part of the section, conducted based on the proposed circuit training methodology, had an interconnected direction, and three tasks were addressed simultaneously. Particularly, it enabled the development of motor-coordination and speed-strength qualities, and improved the integrated training of 13-14 year old schoolchildren.

Selection of a circuit training method for this age group of students depends on the following aspects. The age of 13-14 is considered a favorable sensitive period for developing speed-strength qualities and coordination. Acrobatic and plyometric exercises complement each other in developing the physical qualities of trainees, increasing the possibilities of rapidly improving physical fitness through acrobatic exercises. During the experiment, a positive dynamic in the elasticity of the ligament apparatus was achieved through acrobatic exercises, and plyometric methods were used to increase the elasticity of muscles and tendons directly during volleyball play. This contributed to the development, dynamics, speed, and maneuverability of volleyball in schoolchildren. Thus, it became possible to achieve success in plyometric vertical jumps, while strengthening the back and abdominal muscles with the help of acrobatics.

Figure 1 shows a set of complex coordination acrobatic and plyometric exercises developed by us for the integrated training of schoolchildren engaged in volleyball. A distinctive feature of these integrally oriented exercises is their combined influence on the technical, physical, and tactical preparedness of the participants. During the study, a phased plan consisting of 27 lessons was developed in the form of a lesson schedule for each individual session.



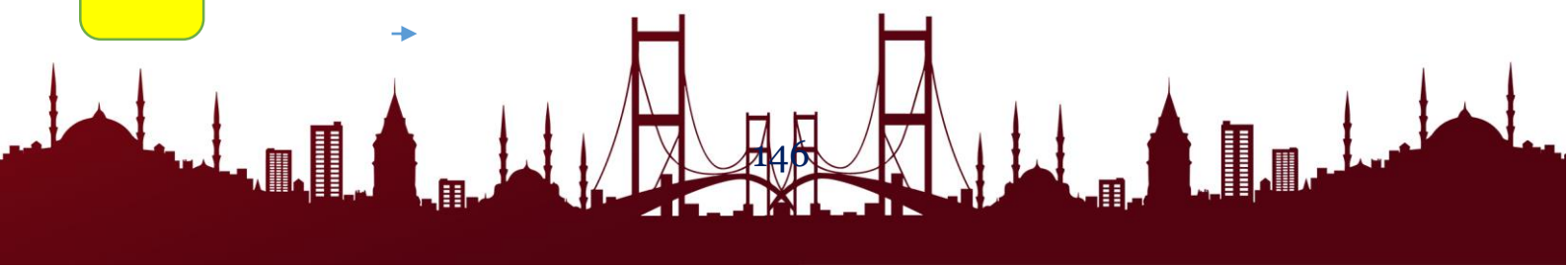
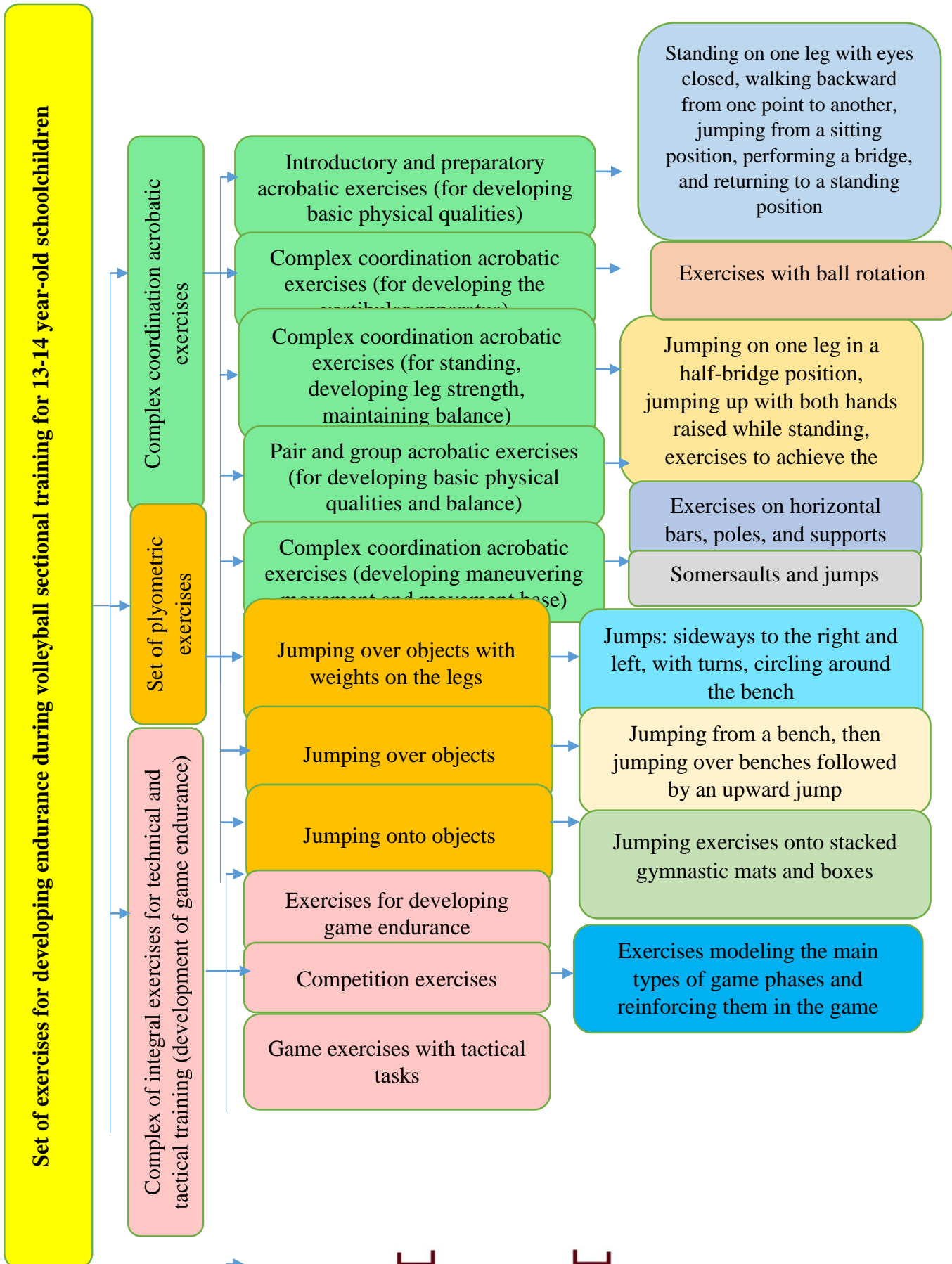
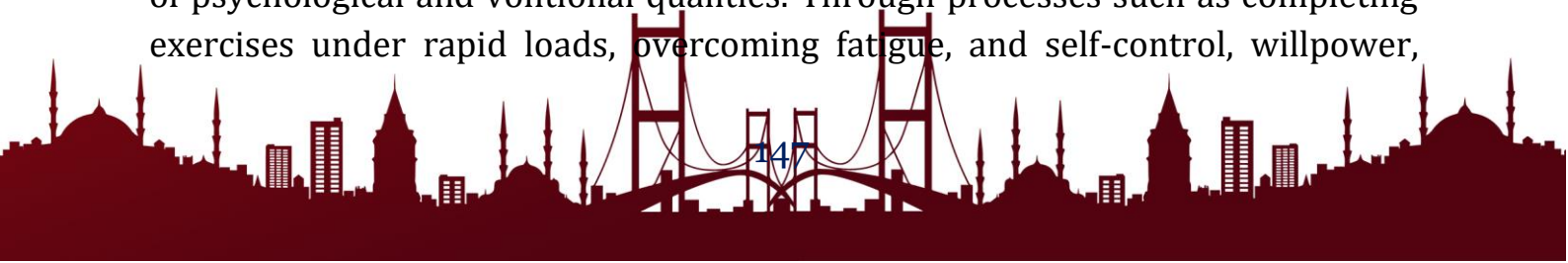


Figure 1. Speed-endurance training exercises for 13-14-year-old volleyball players developmental exercises

During the experiment, the following technical equipment was used: weights for arms and legs weighing 300 g and 500 g respectively, mats, objects of various heights (foam barriers, gymnastic benches with heights of 30, 35 cm, hurdles with heights of 20, 30, 40 cm, 60 cm high track and field hurdles), mini-trampoline, gymnastic springboards, unstable platforms, and exercise balls. The total number of exercises varied from 5 to 10, the duration of the exercises was 3-10 seconds with 5-10 repetitions in one series. The number of series in one training session was 2-4. Rest intervals between series were also determined depending on the workload volume.

By applying the above methodology in volleyball training, the opportunities for the simultaneous development of speed and endurance qualities are expanded. Specifically, the proposed exercises were organized at high intensity with short rest intervals, which helps activate the anaerobic glycolytic energy system. As a result, athletes' ability to quickly initiate movement, repeatedly perform actions in short time intervals, and their level of resistance to fatigue increase. While maintaining the accuracy and speed of movements, the indicators of fatigue resistance improved. Simultaneously, it had a beneficial effect on movement coordination and the activation of reflex responses. Speed-endurance exercises include elements such as reaction speed, sudden turns, and rapid position changes (start-stop, lateral movements), which help develop the harmonious activity of visual, auditory, and kinesthetic analyzers. The athletes' ability to quickly analyze game situations and choose appropriate actions (reactivity) significantly improved. Additionally, qualitative development of game actions was achieved. Repeated performance of speed-endurance exercises increases the stability of technical movements in volleyball, such as receiving, passing, jumping, and blocking. Even with increased fatigue at high speeds, a decrease in technical errors was observed, indicating the methodology's adaptation to game conditions. Furthermore, an improvement in the cardiovascular and respiratory functions of volleyball players was achieved. During the serial performance of rapid loads, a positive increase in functional indicators such as maximum oxygen uptake, heart rate, and recovery rate was noted. This indicates an improvement in the students' level of physical fitness from a functional perspective. It also had a positive impact on the development of psychological and volitional qualities. Through processes such as completing exercises under rapid loads, overcoming fatigue, and self-control, willpower,



determination, and motivation for volleyball increased. Team training also improved mutual trust, social engagement, and a sense of responsibility for the game.

In conclusion, the methodology we developed has served as an effective tool with a theoretical and practical basis for developing speed-endurance qualities in volleyball players. It was determined that this methodology has a direct positive impact on the technical preparation, functional state, and game effectiveness of volleyball players.

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