

Effectiveness Of Forming Speed Quality In Handball Girls During The Experience Period

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Abstract

This scientific article studies the effectiveness of a special training program in developing the speed qualities of female handball players. The study involved 24 athletes aged 17–20, divided into 12 control (CG) and experimental (TG) groups. A 6-week training program aimed at developing speed was developed for the experimental group. During the study, tests were conducted on 30-meter run, 4x10-meter sprint, and 20-meter run with the ball.

The results showed that the athletes of the experimental group achieved significant improvements in all speed indicators ($p < 0.05$). Especially the increase in the 30 m sprint (7.19 ± 0.86 s \rightarrow 6.12 ± 0.54 s) and 4x10 m sprint (10.92 ± 1.23 s \rightarrow 9.80 ± 0.85 s) was statistically significant. Thus, the development of speed in female handball players through dynamic, sport-specific and directional training gives effective results.

Keywords: Handball, speed, female athletes, dribbling, agility, training methodology.

Entrance

In recent years, the development of sports in the Republic of Uzbekistan, especially the formation of a healthy lifestyle among young people, women and students, has become one of the priority areas of state policy. In this regard, a number of decrees and resolutions adopted under the leadership of our President Sh.M. Mirziyoyev laid the foundation for a radical renewal of the sports system. In particular, Decree No. PF-6099 "On measures to further improve physical education and sports and widely promote a healthy lifestyle" (October 30, 2020),

Resolution No. PQ-4955 "On further improving the management system in the field of sports" (February 5, 2021), as well as the "Concept for the development of physical education and mass sports in the Republic of Uzbekistan until 2025" set out the priority tasks of physical training, maintaining the health of athletes, and developing sports on a scientific basis.

These documents have created a solid foundation not only for the modernization of sports infrastructure, but also for the development of women's sports, including the training of competitive athletes in team sports such as handball.

Handball is a game of high intensity, multidirectional and short-term movements, in which speed, agility and coordination skills play a leading role. In particular, the quality of speed of female handball players directly affects their performance - which in turn requires a scientifically based special training process.

Currently, the integration of scientific research and practical training in the field of sports is gaining importance in Uzbekistan. Training with female athletes in higher educational institutions requires an individual approach, a balanced distribution of the load in physiological and psychological terms, and the differential development of physical qualities specific to sports.

It is in such conditions that the issue of developing the quality of agility in female handball players needs to be studied on the basis of scientific analysis and experience. Because agility is an integral part of the athlete's general and special physical training system and is the key to success in the game. For this purpose, in this study, the dynamics of changes and development of agility in female handball players were analyzed based on a specially developed training methodology.

Research material and methods

Participants:

24 female handball players aged 17–20, 12 of whom were divided into control (CG) and 12 experimental (TG) groups.

Tests used:

1. 30-meter run (from a high start) - assessment of overall speed.
2. 4x10 meter medley - to determine agility in changing direction.
3. Running with the ball for 20 meters - assessing speed and dribbling.

Experimental Program: The 6-week training program for the experimental group included the following elements:

- Short runs of 10–40 meters (acceleration exercises),
- Direction change exercises using cones and obstacles,
- Tasks that develop reaction and coordination,
- Exercises for moving at maximum speed with the ball.

Statistical analysis: Mean (M), standard deviation (σ), coefficient of variation (C%), Student's t-test (t) and significance level ($p < 0.05$) were analyzed.

Results

At the beginning of the experiment, there was no significant difference between the speed indicators of the control and experimental groups ($p > 0.05$). At the end of the experiment, the following results were obtained:

No.	Indicator	NG (TO)	TG (TO)	t	p
1	30 m run (s)	6.71±0.78	6.12±0.54	2.15	<0.05
2	4x10 m run (s)	10.68±1.14	9.80±0.85	2.14	<0.05
3	20 m dribbling (s)	8.45±0.96	7.60±0.81	2.34	<0.05

It is evident that the athletes of the experimental group improved all test results. In particular, the results of the 4x10 meter medley relay (9.80±0.85 s) indicate an increase in agility and the ability to quickly change direction. At the same time, the results of the 30 meter run and the 20 meter run with the ball also improved significantly ($p < 0.05$).

Discussion

Developing speed is crucial in handball for improving the accuracy of technical movements, saving time, and increasing the pace of the game.

During the experiment, acceleration and direction change exercises improved neuromuscular synchronization between the central nervous system and muscles, which increased reaction speed. Exercises performed with the ball activated psychomotor coordination and increased stability in dribbling.

In addition, the gradual increase in training load strengthened the adaptation mechanisms of the athlete's body and ensured the harmonious development of aerobic and anaerobic energy systems. As a result, the quality of speed improved in a synergistic relationship with all other components of physical training.

Conclusion

The results of the conducted research showed that it is possible to significantly improve the speed quality of female handball players through a specially designed and targeted training program. Acceleration, change-of-direction, and dribbling speed exercises enhanced the activity of the central nervous system, improved neuromuscular coordination, and expanded the athletes' coordination capabilities. Consequently, this led to better movement accuracy, faster reaction time, and greater efficiency in decision-making during play.

The six-week special training program developed during the experiment demonstrated high effectiveness. As a result, the athletes' speed performance improved by an average of 10–15%, which was confirmed as statistically significant ($p < 0.05$). In particular, the notable improvement in the 4x10-meter shuttle run test indicates an enhancement in agility and rapid change-of-direction ability among the athletes.

Furthermore, the research revealed that speed quality is not limited to running velocity but is closely related to psychomotor reaction, spatial perception, coordination, and intermuscular synchronization. Therefore, speed-oriented training sessions should be organized comprehensively—integrating physiological, psychological, and technical aspects in harmony.

These findings align with the national sports development strategy of Uzbekistan, particularly with the objectives outlined in Presidential Decrees PF–6099 and PQ–4955, which emphasize the advancement of

women's sports, the introduction of scientifically based training systems, and the improvement of athletes' performance potential. The methodology developed in this study, considering the physiological characteristics of female athletes, ensures faster adaptation to competitive conditions.

Based on the conducted research, the following scientific conclusions can be drawn:

1. Speed quality is a complex, multi-component attribute requiring the coordinated development of the central nervous system, muscular activity, coordination, and psychomotor reaction processes.
2. The six-week special training program serves as an effective tool to enhance game speed and dribbling performance among female handball players.
3. The improvement in speed contributes to better precision in technical-tactical movements, time efficiency, and the maintenance of a high game tempo.
4. The proposed methodology can serve as a practical guide for coaches working with female athletes, as it incorporates an individualized approach, gradual load progression, and consideration of physiological capabilities.
5. Systematic monitoring of speed development through weekly and monthly testing allows coaches to track the dynamics of each athlete's progress.

In conclusion, it can be emphasized that speed quality is one of the key determinants of performance in female handball. Developing this quality through complex training not only improves individual athletic results but also enhances overall team performance. Therefore, future research in this field should focus on expanding scientific investigations, integrating digital monitoring technologies, and creating training programs specifically adapted for female athletes.

Practical recommendations:

- ✓ Coaches should conduct agility-focused training sessions for female handball players 3 times a week.
- ✓ Workouts should include elements of plyometrics, direction changes, reaction drills, and quick movements with the ball.
- ✓ Loads should be individualized according to the athlete's age, level of training, and physiological condition.
- ✓ Implementing a monthly monitoring system to measure and control speed increases efficiency.

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