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The Influence of Basic Movement Relocation Exercises on the Agility of Tennis Athletes

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Abstract

Objectives. Agility is one of the indicators of an athlete's physical condition, where athletes can showcase their performance in an event or competition at their best. This study aims to assess the extent to which basic movement training in changing positions affects the agility of tennis athletes.

Materials and methods. This experimental research utilizes a pretest and posttest group design with 9 subjects. The pretest is conducted initially before administering the treatment. The treatment given to the subjects includes lunges in changing positions, followed by one-legged hopping in changing positions, then two-legged jumping in changing positions, and concludes with a sprint. After the treatment, the subjects undergo an agility test using the Illinois agility run test. The researcher employs a T-test to analyze the data with a significance level of 5%.

Results. The expected research results should demonstrate the impact of basic movement training in changing positions on the agility of tennis athletes, as evidenced by a calculated t-value of (25.764) > the critical t-value (2.306).

Conclusion. Based on the findings of this research, it is recommended that coaches and trainers pay close attention to the agility of tennis athletes and periodically enhance it through basic movement training in changing positions to significantly improve agility among tennis athletes.

Keywords: Basic Movement Training, Agility, Tennis

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Introduction

"Tennis is a sports discipline that relies on explosive power (Kusworo, 2012). Agility plays a crucial role in this sport. The importance of reaction skills athletes use can influence their tactical decisions during a game. An athlete's adaptability during play also affects their reactions, ultimately leading to decision-making during the ongoing match. One the physical

component of this adaptability is agility (Saputra et al., 2022). Athletes with good physical conditions can significantly impact their performance, and one aspect of physical condition is agility (Santika & Subekti, 2020). In another study, agility was found to impact badminton games, particularly in returning shots to opponents, as a sign of good physical condition for athletes to improve their game ((Santika & Subekti, 2020). Another study (Mulya, 2020) highlighted that tennis drill training with footwork significantly improved agility for junior tennis players.

The choice and implementation of appropriate training methods, considering a variety of training patterns, can influence an athlete's performance. Proper training and load placement by coaches on the athlete's body can affect an athlete's body by inducing continuous muscle contraction and relaxation. This leads to muscle improvement and rapid contractions (Nugroho, 2018). The observed tennis athletes still lack efficiency in basic movements, affecting their agility in every game. Daily training programs also lack exercises related to agility for each athlete. Stroke skills take precedence over agility for athletes in both attacks and returns. Physical ability, namely agility, is crucial for athletes. The agility of an athlete can significantly impact the quality and consistency of their strokes. Therefore, an athlete's strokes will improve if they can quickly and accurately hit the opponent's target area with agility (Irawan, 2019).

Players are expected to possess physical agility to achieve fast and accurate shots. Agility is one aspect of physical fitness that is essential in sports. Coaches should improve athletes' agility to maximize their performance on the field. Agility is the ability to quickly change the direction of movement while simultaneously changing the position (Yulianti & Fithroni, 2019). Agility is a critical aspect of tennis that enables athletes to move quickly, change direction, and respond to opponent movements with precision. Agility is also related to an athlete's ability to control the situation on the court, optimize their position, and execute tactical movements efficiently (Deng et al., 2022). Agility in tennis can be influenced by neuromuscular coordination, reaction time, muscle strength, flexibility, and technical skills. Integrated training on incorporating these aspects can positively impact tennis athlete agility (Kolman et al., 2019).

Basic movement relocation exercises involve fundamental movements like running, jumping, squatting, and more, applied with variations in changing positions. These exercises aim to improve an athlete's ability to master basic movements quickly and efficiently and develop adaptability skills to changing situations (Colomar et al., 2022). Basic movement relocation exercises follow principles such as interval training, movement variety, and a focus on agility and coordination. These exercises engage not only major muscles but also stabilizing

and controlling muscles. Several studies have investigated the impact of basic movement relocation exercises on tennis athlete agility. A study (Journal, 2022) found a significant improvement in reaction time and lateral movement after a nine-week training program using basic movement exercises. Another study (Vaghela & Parmar, 2015) observed that tennis athletes undergoing basic movement relocation exercises experienced improvements in their relocation maneuvers, ultimately impacting their agility and on-court mobility."

Materials and Methods

This research utilized a pretest-posttest group design, where a group of tennis athletes underwent a basic movement training program for a specific period, and their agility was measured again after the training period. The study was conducted in the Landak Regency, involving one tennis community. The research subjects consisted of 9 tennis athletes (aged 15-18) with a minimum of one year of tennis training experience. The subjects were randomly divided into two groups: the training group (n=15), which underwent the basic movement training program, and the control group (n=15), which did not receive any training intervention.

The research began with a pretest to assess the agility component, aiming to determine the level of agility among tennis athletes before the treatment. Agility was measured using the T-Test, which involved rapid movement between two straight lines with different starting and ending positions. The time required to complete the test was recorded in seconds. After the pretest, the 8-week treatment program was implemented, with a training frequency of three times a week. The treatment involved various basic movements, including lunges in changing positions, one-legged hops in changing positions, two-legged movements in changing positions, and concluded with sprinting. Following the completion of the treatment, the researcher conducted a posttest to assess the impact of the basic movement training.

The research data consisted of agility data from tennis athletes in the Landak Regency. The Illinois agility run test was used to collect data on the field (Permainan et al., 2021). The test involved running as fast as possible while navigating obstacles (cones) without touching them until reaching the finish line. Timing started when the signal was given and ended when the athlete crossed the finish line. The test was repeated if the participant did not cross the finish line or touched/dropped an obstacle.

Before conducting the difference test, the agility test results underwent normality and homogeneity testing. The Kolmogorov-Smirnov test was used for normality testing, and the Test of Homogeneity of Variances was used for homogeneity testing. All data showed normal distribution and homogeneity, allowing the t-test to determine the impact of basic movement

training on the agility of badminton athletes. Prerequisite analysis and t-tests were conducted using SPSS 23.

Results

"The following is a description of the agility scores of tennis athletes presented by the author in Table 1 below."

Table 1. Description of Agility Values

Group	Test	N	Lowest Result	Highest Result	mean	SD
Basic movement relocation exercises	Beginning	9	15.64	16,69	16,324	0,231
	End	9	15,12	16,29	16,125	0,205

Based on the table presented by the author in Table 1 above, the author describes that the group that underwent basic movement relocation exercises is presented by the author in tabular form as shown above. In Table 1, the agility data for tennis athletes in the initial test (pretest) had an average score of 16.324, with the lowest score being 15.64 and the highest score being 16.69, with a standard deviation of 0.231. Furthermore, the results from the final test (posttest) presented in Table 1 show an average score of 16.29, with the lowest agility score in the final test being 15.12, and the highest agility score in the final test being 16.29, with a standard deviation of 0.205. The following is the table format presented by the author in Table 2 below:

Table 2. Pretest and Posttest Difference Test

Tes	Mean	Mean Difference	t	df	Sig.(2-tailed)
Early Agility	16,466	0,186	25,764	8	0,000
Final Agility	16,264				

Based on the results of the t-test analysis carried out by researchers in the fundamental movement group moving places, the researchers presented it in table form in table 2, where the results of the pre-test and post-testdifferences were tested. The value obtained by the researcher was a count of 25.64 > table (2.306), then for the sig value (0.000) <0.05. Based on the results above in Table 2, the researchers concluded that basic movement training in moving around influences agility in tennis athletes.

Discussion

Tennis is a highly dynamic sport, and the rhythm of its movements depends on the players' sensory control of the bouncing ball (Jatra & Fernando, 2019). Tennis is a game played by either one player (singles) or two pairs (doubles) (Irawan, 2019). Tennis skills include forehand-backhand groundstroke, serve, volley, smash, and other types of shots for advanced

players (Agus & Fatimah, 2018). Besides skills, physical components are also required in the game of tennis, one of which is agility. Agility plays a role in anticipating opponent attacks, which is essential for athletes in tennis games. Athletes with agility find it easier to move, chase, and return the ball to their opponents. Changes in movement required by athletes in tennis are essential. The influence of agility on an athlete's footwork is crucial for performance and maximizing the quality of strokes. the research results (FARDIANSYAH et al., 2019) also show that agility contributes to footwork ability.

Therefore, agility needs to be developed and trained, one way being through basic movement relocation exercises. (Eni, 1967) describes basic movements as the foundation of specific activities. These may include basic motor skills like walking, running, jumping, or crawling. Basic movements often serve as the foundation required to develop more complex skills in sports or other movement-related activities. Improving a player's or athlete's speed should be considered to motivate them to achieve a higher level of performance. Based on the research presented by the researcher, the t-test analysis shows a calculated t-value of (25.764) > the tabulated t-value (2.306), and the significance level (sig) is (0.000) < 0.05, meaning that basic movement relocation exercises influence agility.

The results of this research support the hypothesis that basic movement relocation exercises positively impact the agility of tennis athletes. Exercises focusing on quick and accurate position changes, such as lunges in changing positions, sprinting with direction changes, and step changes, help improve the athlete's ability to move quickly and responsively on the tennis court. These results are consistent with previous research (Vaghela & Parmar, 2015), which also found that exercises involving changing positions had a positive impact on agility. Such exercises help enhance speed in changing direction, balance, and body coordination, which are crucial in tennis. However, it is essential to note that this research has some limitations, such as a relatively small sample size and limited training duration. Future research can expand the sample population and design, more extended training programs to understand the long-term effects of basic movement relocation exercises on the agility of tennis athletes.

Tennis is a highly dynamic sport, and its rhythm depends significantly on sensory control of the ball's bounce (Jatra & Fernando, 2019). Tennis is a game played by either one player (singles) or two pairs (doubles), as defined by (Irawan, 2019). The skills required in the game of tennis include forehand-backhand groundstroke, serve, volley, smash, and other types of shots for high-level players (Agus & Fatimah, 2018). In addition to skill components, physical attributes are also crucial in the game of tennis, and one such attribute is agility. Agility

plays a role in anticipating opponent attacks, a vital aspect for athletes in tennis. Athletes with agility find it easier to move, chase, and return the ball to their opponents. Changes in movement are necessary for tennis players, and the influence of agility on an athlete's footwork ultimately impacts the quality and performance of their strokes. Additionally, the research results (FARDIANSYAH et al., 2019) demonstrate that agility contributes to footwork skills. Based on these findings, agility needs to be developed and trained, and one way to do so is through basic movement relocation exercises. (Eni, 1967) defines basic movements as the foundation of specific activities, including basic motor skills such as walking, running, jumping, or crawling. In sports or other movement-related arts, basic movements often serve as the foundation for developing more complex skills. Enhancing a player's or athlete's speed should be considered as part of motivating them to achieve a higher level of performance. Based on the research presented by the researcher, the t-test analysis reveals a calculated t-value (25.764) > the tabulated t-value (2.306), and the significance level (sig) is (0.000) < 0.05, indicating that basic movement relocation exercises influence agility.

The results of this research support the hypothesis that basic movement relocation exercises positively impact the agility of tennis athletes. Exercises that focus on rapid and accurate changes of position, such as lunges in changing positions, sprinting with directional changes, and step changes, help improve athletes' ability to move swiftly and responsively on the tennis court. These findings align with previous research (Vaghela & Parmar, 2015), which also found that exercises involving changes of position positively impacted athlete agility. Such exercises help enhance speed in changing direction, balance, and body coordination, which are crucial in tennis. However, it is important to note that this research has some limitations, such as a relatively small sample size and limited training duration. Future research can expand the sample population and design, more extended training programs to understand the long-term effects of basic movement relocation exercises on the agility of tennis athletes.

Conclusions

Based on the results of this research, it can be concluded that basic movement relocation exercises significantly and positively influence tennis athletes' agility. Training programs focusing on rapid and accurate position changes help athletes adapt to changes in direction and position on the tennis court. Athletes who undergo such training tend to exhibit improved agility in dynamic game situations. These research findings are consistent with previous studies that indicate exercises involving changes of position have a positive effect on agility and motor skills in athletes. The success of basic movement relocation exercises in enhancing agility can be attributed to the coordination of body parts, rapid responsiveness, and balance.

Although this research yields positive results, it is important to remember that every training program should be tailored to the individual needs of athletes and the competitive context. A well-structured training program that includes basic movement relocation exercises can be a valuable addition to improving the agility of tennis athletes. This research contributes to our understanding of the relationship between basic movement relocation exercises and the agility of tennis athletes. However, further studies with larger sample sizes, variations in training duration, and long-term monitoring are necessary for a deeper understanding. Thus, the research results can guide coaches and athletes in developing more effective training programs to enhance agility in tennis. This conclusion underscores the positive impact of basic movement relocation exercises on the agility of tennis athletes while acknowledging the research's limitations and providing direction for future research.

Conflict of interest

The data presented in this research does not have any conflict of interest with any party. If this is discovered later, full responsibility for this matter lies with the author.

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