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Floating Serv Ability Volleyball Skill: The Relationship of Muscle Strength for Junior High School

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A B S T R A C T

The purpose of the study. The purpose of this study was to determine the relationship between arm muscle strength and the results of the volleyball floating serve for students of Junior High School.

Materials and methods. The form of this study is a correlation study with the population ofstudents of Junior High School, Kampar Regency with a total sample students. The instruments used in this study were the arm muscle strength test and the floating exercise.

Results. The results of data analysis in this study obtained r count of 0.902 with a large contribution of 81.36%, this is classified as very good. Based on the results of the research conducted.

Conclusions. Where obtained r arithmetic = 0.902>r_{table}=0.576 with a contribution of 81.36%. concluded that there is a relationship between arm muscle strength and the ability of the Junior High School to have a floating serv.

Keywords: *Strength; Arm Muscles; Lower Serv Volley Ball*

A R T I C L E I N F O

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INTRODUCTION

Sport is an integral part of daily human activities, serving as a valuable tool for cultivating a healthy body and mind (Lamp, 1954). Achieving peak performance in sports, however, can only be attained through a systematic, planned, regular, and continuous coaching process (Nešić et al., 2020). As outlined in the Republic of Indonesia Law No. 3 of 2005 concerning the National Sports System, Chapter III Article 4, the aim of national sports is to maintain and improve health and fitness, foster achievement, enhance human quality, instill moral values and noble character, promote

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sportsmanship and discipline, strengthen and foster national unity, bolster national resilience, and ultimately elevate the honor, dignity, and pride of the nation.

One such sport that has garnered significant achievements is volleyball. Volleyball is a sport that enjoys widespread popularity across all levels of society in Indonesia (Putri et al., 2022)(Nurfachrirezi et al., 2021), with people of all ages, both male and female, actively participating in the sport (Hasibuan et al., 2020). The components of physical fitness related to health include cardiorespiratory endurance, muscular endurance, muscle strength, and body composition, while the components related to skills encompass speed, agility/dexterity, balance, reaction speed, flexibility, and coordination.(Pate, 1988).

The basic techniques in volleyball, which are essential for playing the ball efficiently and effectively in accordance with the applicable sports regulations, include serving, passing, smashing, and blocking (Casebolt et al., 2014). One of the fundamental techniques in volleyball is serving, which must be executed well and flawlessly by all players, as service errors can result in additional points for the opposing team (Ciuffarella et al., 2013)(Burton & Powers, 2015). Among the various types of serves in volleyball, the floating serve has emerged as a significant technique (Jump-Floater Serve, 2024). The floating serve presents a unique challenge for the opponent, as the ball's floating nature, straight trajectory, irregular speed, and unpredictable left-right movement can make it difficult to receive (MacKenzie et al., 2012)(Stamm et al., 2016).

In volleyball, strength is required from all parts of the body, with the contraction strength of the arm muscles being particularly crucial for serving (Kumar, 2023)(Jiang & Zhao, 2022), as the floating serve pattern involves the movement of the arm towards the front from the shoulder, which is determined by the shoulder muscles (Casebolt et al., 2014)(Reeser et al., 2010). Muscles that are not sufficiently trained can become weak and diminish in size (Roetert et al., 2009). To enhance muscle strength, regular exercise is necessary, as the strength required for passing, serving, smashing, and blocking is primarily derived from the muscles of the shoulders, arms, body, hands, and legs(Micheo et al., 2012).

Based on the researchers' observations, some junior high school volleyball players in Indonesia still encounter difficulties in performing the floating serve technique effectively. This may be due to a lack of sufficient muscle strength, particularly in the arm muscles, which are crucial for the execution of the floating serve.

The floating serve is a fundamental technique in volleyball that can significantly impact the game's outcome (Reiser et al., 2020). The main purpose of the floating serve is to make the opposing team's reception more difficult, thereby increasing the likelihood of scoring points (Jump-Floater Serve, 2024). According to the literature, the usage of the float serve has increased significantly in both beach and indoor volleyball competitions over the past two decades (Matta et al., 2013). For example, during the 2008 Olympics, approximately 30% of all serves were classified as float serves, a significant increase from just 15% in the 2004 Olympics (Evaluation of the Technical and Tactical Offensive Elements of the Men's European Volleyball Championship, 2008).

The literature also suggests that the float serve presents a more challenging passing scenario for the opposing team due to its reduced flight time and unpredictable trajectory compared to the standard overhand serve (Moras et al., 2008). The float serve's effectiveness is largely attributed to its ability to create an irregular ball path, making it difficult for the receiver to anticipate the ball's movement and successfully pass it (Nurjaman, 2024). Furthermore, the literature indicates that the performance of the float serve is influenced by various factors, including the server's ability to conceal the type of serve, the server's arm strength, and the server's technique (Đolo et al., 2023). The server's arm strength, in particular, is a crucial factor in the execution of an effective float serve, as it requires a high degree of control and precision to impart the necessary spin and trajectory to the ball (Tamaru et al., 2020).

As mentioned in the introduction, the study aims to investigate the relationship between muscle strength and floating serve ability among junior high school volleyball players. A deeper understanding of this relationship can provide valuable insights for coaches and players in developing targeted training programs to enhance the execution of the float serve.

MATERIALS AND METHODS

Study participants

The sample and population of this research were all 20 Junior High School students.

Study Organization

This type of research is quantitative research that is analytical in nature using a correlational research approach.

Test and measurement procedures

Determine arm muscle strength in students, researchers used the underhand forwards test with the implementation that each sample was given 3 opportunities.

RESULTS

Based on the results of the research conducted, it can be concluded that there is a relationship between arm muscle strength and the floating service ability of Junior High School, Kampar Regency. Where obtained r calculated = 0.902>r_{table} = 0.576 with a contribution of 81.36%.

Normality test.

From the table above the price of Asymp. The sig of the muscle strength and flotting service variables is greater than 0.05, so the hypothesis which states that the sample is based on a normally distributed population is accepted. From this information, the variable data in this research can be analyzed using a parametric statistical approach.

Linearity Test

The table above, it can be seen that the calculation results obtained a significant value of 0.010. So it can be concluded that the significance is 0.010<0.05. This means that there is a significant simultaneous influence of the arm muscle strength variable on the volleyball flotting serve results of Junior High School.

DISCUSSION

The findings of this research have demonstrated a strong correlation between arm muscle strength and the ability to execute an effective floating serve in volleyball among junior high school players. Previous studies have highlighted the importance of arm muscle power in the performance of volleyball serves, particularly the float serve,

which requires a high degree of control and precision (Casebolt et al., 2014)(Reiser et al., 2020)(Velentzas et al., 2011).

The ability to execute an effective float serve is crucial in volleyball, as it can disrupt the opponent's reception and increase the likelihood of scoring points (Bhasi & CS, 2022)(Pawlik et al., 2022). The results of this study align with the existing literature, which suggests that players with greater arm muscle strength tend to have better control and accuracy when executing the float serve. This is due to the fact that the float serve involves a complex movement pattern that requires the coordinated contraction of various muscle groups, particularly in the shoulder, arm, and hand regions (Lambrich & Muehlbauer, 2023)(Farzinnejad et al., 2023).

While arm muscle strength is a significant contributing factor to floating serve ability, it is important to note that the float serve is a complex skill that involves various other factors beyond just physical strength (Hartoto et al., 2021)(Syafriandi & Donie, 2020). Factors such as proper technique, timing, and strategic decision-making also play a crucial role in the successful execution of the float serve (Kovacs & Ellenbecker, 2011)(2023). For example, the ability to conceal the type of serve, control the ball's trajectory, and respond to the opponent's positioning can all impact the effectiveness of the float serve (Velentzas et al., 2011).

The findings of this research have practical implications for coaches and players in the development of training programs to enhance volleyball performance. Targeted exercises and conditioning programs aimed at improving arm muscle strength may be beneficial in improving the float serve ability of junior high school volleyball players (Gadeken, 1999). However, it is also important to incorporate technical and tactical training to ensure that players develop a well-rounded set of skills necessary for executing the float serve effectively in game situations.

CONCLUSION

The findings of this research have clearly demonstrated a robust correlation between the strength of the arm muscles and the ability of junior high school volleyball players to execute an effective floating serve. This highlights the critical importance of developing targeted training programs that not only focus on enhancing the players'

arm muscle strength but also incorporate comprehensive technical and tactical instruction to holistically improve their overall volleyball performance.

The ability to execute a successful floating serve is a crucial skill in the sport, as it can disrupt the opposing team's reception and increase the likelihood of scoring points. The strong link between arm muscle strength and floating serve ability underscores the need for coaches and players to prioritize the development of this physical attribute alongside the refinement of technical and strategic skills.

By implementing training regimens that simultaneously target muscular strength, serve technique, and tactical decision-making, junior high school volleyball players can optimize their potential to excel in this fundamental aspect of the game. This multifaceted approach will enable them to harness the power and precision necessary for delivering an effective floating serve, ultimately enhancing their overall volleyball proficiency and competitiveness.

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APPENDIX

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