The Role of Strength and Accuracy in Petanque Shooting Numbers: A Systematic Review

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Abstract: The purpose of this study was to determine how the role of strength and accuracy in the shooting number of petanque sport can provide accuracy in petanque sport shooting techniques. This review study followed PRISMA standards for systematic reviews and meta-analyses. Studies had to be published within the previous five years, from January 2021 to July 2024. This review consisted of seven studies. In four research articles, it focused on the role of strength on petanque shot outcomes. Three articles were about the role of accuracy to improve the accuracy of petanque shots. Conclusions: This article presents how the role of strength and accuracy in petanque shooting helps players achieve more accurate shots. Research has shown that strength and accuracy are related to physical and mental fitness in addition to strength and accuracy. Many studies emphasize how important strength and accuracy are for improving the accuracy of petanque shots.

Keywords : Strength; Accuracy; Shooting; Petanque

INTRODUCTION

Petanque is a sport involving iron and wooden balls, focusing on pointing and shooting techniques(Ismail & Hiskya, 2023). Research has explored various aspects related to petanque, such as the values it instills, including religiosity, honesty, discipline, creativity, and social responsibility(Isdarianti et al., 2022). The study also assessed the physical condition of petanque athletes, revealing differences in strength, balance, flexibility, coordination and endurance between male and female athletes(Mukti et al., 2023). In addition, investigations have investigated interest in petanque among high school students, showing varying levels of intrinsic and extrinsic interest in the sport(Sahruni et al., 2023). The results highlight the need for training and development in this sport, especially in terms of human resources(Yahya Andi Amry, 2021). Collectively, these studies underscore the complexity of petanque as a sport, involving technical skills, mental strategies, physical conditioning, and the need for targeted developmental programs to enhance performance and interest at

various levels(Risanggih et al., 2022). Overall, petanque is emerging as a multifaceted sport that not only involves technical skills but also influences character development, physical fitness, and interests among participants. These studies collectively emphasize the importance of petanque training, development, and skill enhancement.

A method known as systematic literature review is used to analyze, synthesize, and summarize the existing literature on a particular topic(Dwidienawati et al., 2023). This method involves a rigorous and systematic approach to collecting and analyzing data from relevant sources(Moher et al., 2015). A systematic literature review is conducted with the aim of providing a clear and objective picture of the current level of knowledge on a particular topic, finding gaps in the literature, and suggesting research topics that could be conducted in the future(Pinto et al., 2023). Various fields, such as healthcare, psychology, social sciences, and business and management, use this method (Amjad & Fernandes, 2023). Literature reviews are essential in revealing gaps in knowledge, establishing the need for further research, and demonstrating an understanding of current research in a particular area. They offer an overview of the relevant literature, carefully focusing on a particular issue, problem, or time frame, and include descriptions, summaries, and critical evaluations of selected scholarship and research studies(Winchester & Salji, 2016). The purpose of a literature review is to convey established knowledge and ideas on a topic, highlighting their strengths and weaknesses, rather than a descriptive list or series of summaries.

Strength training is an important form of resistance-focused exercise to improve muscle strength, endurance, and sizeIt is recommended by major health organizations for overall fitness and health benefits, with an efficient one-set program for beginners (Sundar Rath, 2018). Various sports incorporate strength training to improve performance, including bodybuilding, weightlifting, athletics and game sports such as petanque(Glaviano et al., 2023). The physical factors that determine performance in the sport of petanque, such as arm muscle strength and hand-eye coordination, underscore the need for a comprehensive training program that addresses these key areas(Agustini et al., 2018). Research shows that strength training can improve insulin sensitivity and lipid profiles in overweight and obese individuals without significantly changing body composition. Therefore, incorporating strength training into a fitness routine can lead to numerous health benefits and improved physical performance across a wide range of sporting disciplines..

Accuracy drills are designed to improve precision in a variety of physical and cognitive domains, as evidenced by research in various fields. In sports and physical activities, hand and finger exercises have been shown to significantly improve accuracy in individuals with no previous shooting experience, suggesting that such

exercises can be beneficial when integrated into technical and mental training programs for shooters. Accuracy training One of the factors that can affect the accuracy of shooting in the sport of petanque so that it is inaccurate and imprecise includes a lack of arm muscle strength and a lack of analyzing biomechanics(Badaru, Kasmad, et al., 2021). The results of the study where accuracy is the ability of an athlete to direct the ball to the intended target or target with a good and perfect landing(Istikomah, 2023). Accuracy in the biomechanical analysis approach is closely related to the accuracy of the shooting point distance and shot power, because of one's ability to control free movement towards a target

Over the years, many studies have made progress in improving accuracy in the sport of petanque. Including research into developing a specialized petanque sport shooting practice model for beginners, incorporating 10 practice models validated through expert justification tests, aimed at improving shooting accuracy(Badaru, Hasmyati, et al., 2021). Other studies have also developed practice models for pointing skills, which have proven effective in improving athletes' performance in pointing, as evidenced by significant differences in pre-test and post-test results(Pelana et al., 2021). Including a shooting skill training model for the sport of petanque (Sutrisna et al., 2018).

The main purpose of learning about the role of strength and accuracy in the throwing numbers of the sport of petanque petanque is to know the strength and accuracy of throwing so that errors in movement and ball motion will produce ideal movements and create athletes who have a chance to become champions, especially in matches. Petanque is a type of sport where people strive to achieve the best balance and accuracy. This means that the throw must be done correctly to achieve a certain goal. The character of petanque sports usually requires precision; anyone who wants to play, no matter age, position, or gender, is allowed to play this sport. In accordance with the main purpose of the sport of petanque, enter this category to achieve the highest level of precision.

METHOD

The words “Petanque Shooting power” and “Petanque Shooting accuracy” were searched for in articles published from Sinta (Science and Technology Index) and Scopus Collection (Science Citation Index Expanded. Social Science Citation Index. Arts & Humanities Sams Citation Index) from 2021 to 2024. As shown in the flow chart (Figure 1), a total sample of 7 articles was obtained from a total of 127 articles by following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines(Moher et al., 2015) during identification, suitability screening, and inclusion phases

The following variables were taken into account in the literature review (a) annual trend of articles published between 2021 and 2024 (b) distribution of publicationsı institutions of first authors (c) number of authors (d) field of study (training, health, other education management or mixed) (e) type of study (experimental, descriptive correlational, longitudinal) and (1) average number of citations per article Statistical Analysis

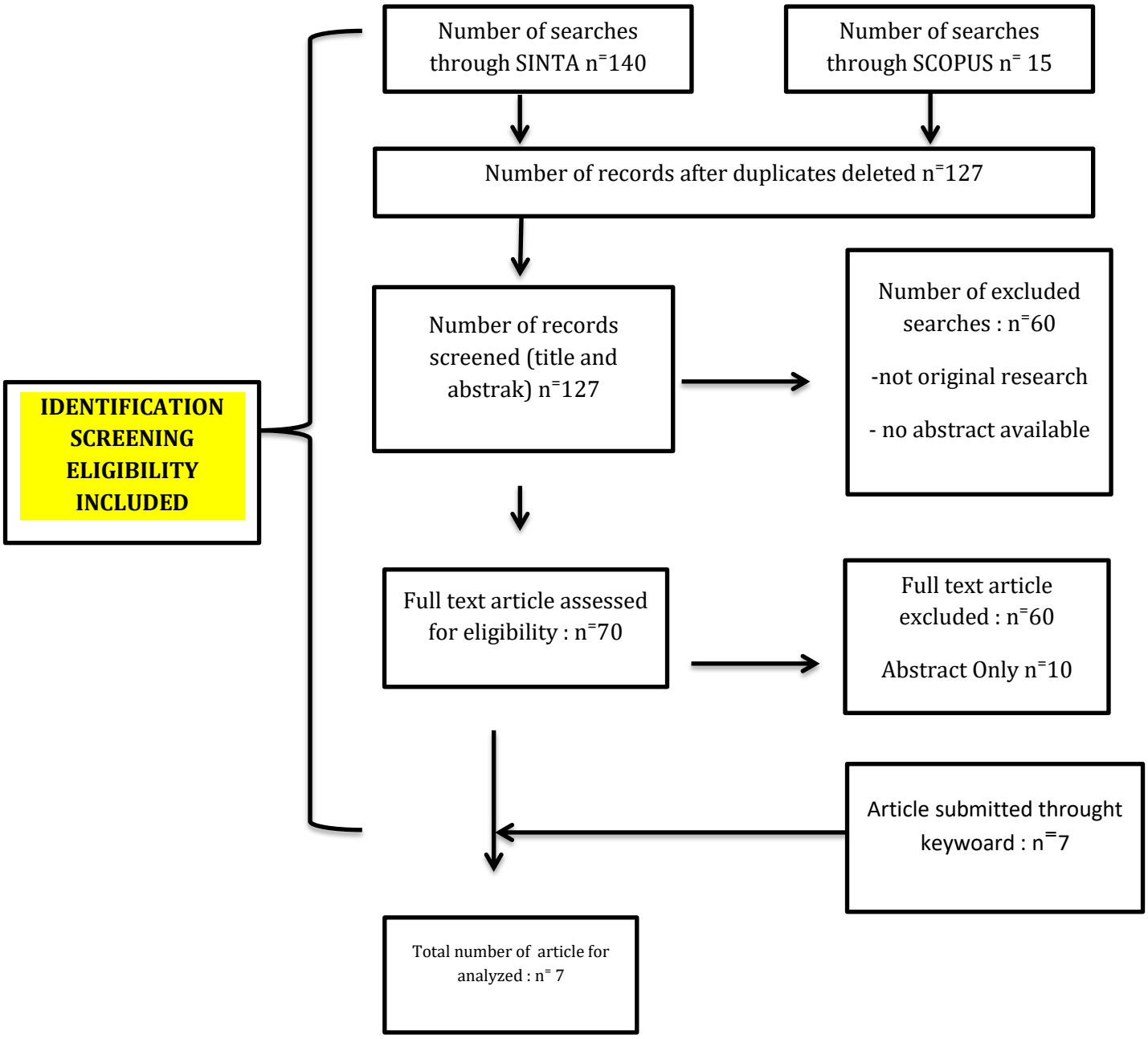

Figure 1. Step-by-step literature search strategy process using PRISMA flow chart

Preferred were the article title abstract and keywords as this was enough to create seven reliable articles that could be used for further research. This review study only included publicly accessible articles as the authors did not want to exclude anyone who could not access their research. All relevant studies that addressed the following topics were selected based on the following inclusion and exclusion criteria:

RESULT

Table 1. Change in Number of Publications per Year

Year of Publication	Number of Articles	Percentage
2021	50	50%
2022	10	8 %
2023	30	20%
2024	37	22%
Total	137	100%

Various time periods can be seen in the evolution of the number of publications seen in the table above, First there has been a marked increase in scientific output from 2021 (50 articles). Then in the following year there was a decrease in 2022 (10 articles), in the following year there was an increase in 2023 (30 articles) and in the following year 2024 (37 articles). This resulted in a final sample of 7 relevant articles. Specifically, 4 articles focused on strength against petanque shot outcomes and 3 articles on accuracy to improve petanque shot precision.

Table 2. The role of strength on petanque shot results

Author	Objective	Sample	Methods	Results
(Ashari & Apriani, 2023)	Used to determine the relationship between height and arm muscle strength training on Petanque shooting results.	n/a (unknown)	Correlational	The relationship between height and arm muscle strength to the accuracy of Petanque Shooting with a large relationship between variables of 36%, while the rest is

				influenced by other factors such as endurance, leg length, leg muscle strength, and other physical conditions in petanque sports.
(Alpen, 2023)	Knowing the correlation between arm muscle strength and accuracy of shooting results	14 student athletes	Correlation Method	optimizing the training of petanque athletes by considering arm muscle strength to improve shooting accuracy
(Sukawi et al., 2021)	Knowing how much influence hand muscle strength, muscle endurance and balance have on the accuracy of shooting Petanque games.	10 respondents	Experimental study	The provision of hand muscle strength training, muscle endurance and balance is effective in improving the results of shooting accuracy in the sport of petanque.
(Chandra Triadi, 2021)	Knowing the contribution of arm muscle explosive power and arm muscle strength to Petanque shooting ability.	16 students	Descriptive quantitative correlational study analysis	Petanque games that use hands as the main tool, arm muscle strength affects the course of the game.

Table 3. The role of accuracy on petanque shot results

Author	Objective	Sample	Methods	Results
(Phytanza et al., 2022)	determine the effect of accuracy training on the results of	20 athletes	Quantitative research	accuracy significantly impacts shooting results, demonstrating the effectiveness of

	shooting games of petanque athletes			targeted training programs
(Barokah & Nurhidayat, 2022)	Determine the effect of Modified Shooting Kits on Increase Shooting	15 student athletes	quasi-experimental research	the use of modified tools showed a significant improvement in shot accuracy
(Badaru, Kasmad, et al., 2021)	Knowing which training effect is better, between accuracy training and arm strength training on the results of shooting throws in petanque athletes.	16 athletes	Experimental study	Improving shooting throw skills, it is hoped that by applying it properly during training, it can improve shooting throw skills in the sport of petanque.

DISCUSSION

Based on the strength and accuracy literature on petanque shot precision involves a multifaceted approach, focusing on different aspects of training to improve shooting and pointing skills. Research has shown that strength and accuracy training significantly impacts the shooting outcomes of petanque athletes, with exercises designed to improve precision being particularly effective. However, it was also noted that arm strength training, especially through exercises such as push-ups, can have a more significant effect on shooting outcomes compared to accuracy training alone, demonstrating the importance of physical strength in achieving better shooting performance(Badaru, Kasmad, et al., 2021). Analysis of basic techniques, such as pointing accuracy in a standing position, has been identified as important for optimal performance, suggesting that mastering basic skills is essential for petanque athletes(Irawan et al., 2022). Further studies have explored the effects of wrist flexibility training, arm strength training, and concentration training on shooting outcomes, all of which have been found to significantly affect performance, underscoring the diverse nature of the skills required in petanque(Syahwira et al., 2022).

This comprehensive approach, combining physical strength, technique mastery, mental training, and specialized accuracy drills, forms the basis of effective accuracy training in petanque. Different studies have investigated the variables that

affect petanque shot accuracy. Confidence, concentration, strength and eye-hand coordination are essential for shot accuracy. In addition, it shows that shooting practice with obstacles improves shooting ability(Saifulamri Alkhusaini et al., 2021). Another study also found that modeling petanque shooting drills for beginners was the result, emphasizing the importance of strength and accuracy training to achieve high throws(Badaru, Hasmyati, et al., 2021). Other studies have shown that targeted arm strength training, using resistance bands and splints, significantly improved shot accuracy at 9 meters among petanque athletes(Sukawi et al., 2021). However, the relationship between muscle strength and shooting precision does not only depend on arm strength. A study on petanque athletes at Club Sukabumi showed that while arm muscle strength contributed to shooting accuracy, it only amounted to 16.72%, suggesting that other factors also play an important role(Agustini et al., 2018). The power and accuracy of precision in the sport of pétanque, underlined by numerous studies focusing on technique, training methods and the impact of accuracy on performance.

Shooting in petanque is an important skill for athletes, with various studies highlighting the importance of technique, training methods and physical attributes in improving shooting accuracy. The relationship between physical conditions such as height and arm muscle strength was also explored, revealing a significant contribution to shooting accuracy in petanque, highlighting the multifaceted nature of skill development in this sport(Ashari & Apriani, 2023). The importance of arm muscle strength and accuracy on throwing accuracy was highlighted in a study, reinforcing the importance of physical conditioning and coordination in achieving high levels of accuracy(Sani & Hulfian, 2022). These studies collectively emphasize that both physical and mental training are essential for securing the power and accuracy of petanque shots. Utilizing biomechanics for training allows for intelligent exercise planning to get the best results quickly and safely.

CONCLUSION

Research on strength and accuracy in petanque shooting has shown that various training methods can improve performance and performance. Strengthening core muscles, such as push-ups, can have a more significant effect on performance than strength training. Techniques such as balance, balance, and coordination are also important for optimal performance. Developing a model for strength and accuracy training can improve the accuracy of petanque shots. Research has shown that strength and accuracy are not only related to power and accuracy but also to physical and mental fitness. The importance of strength and accuracy in improving the accuracy of petanque shots is emphasized by various studies.

CONFLICT OF INTEREST

The author(s) declare that they have no conflict of interest

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