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Developing A Basic Foot Service Technique Training Model In Teqball

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ABSTRACT

This study aimed to develop a basic foot service technique training model in teqball for students of Physical Education, Health, and Recreation (PJKR) at Tadulako University. The study was motivated by the limited mastery of foot-based service techniques among PJKR students, despite their prior exposure to teqball gameplay. This gap highlights the need for a structured and pedagogically sound training model to support skill acquisition in emerging sports. The research employed a Research and Development (R&D) approach based on the Borg and Gall model, which was adapted into several stages: needs analysis, planning, initial product development, expert validation, small-scale field testing, large-scale field testing, and product revision. Participants consisted of 15 students in the small-scale trial and 20 students in the large-scale trial, selected from the PJKR program. Data were collected through expert validation sheets and field trial evaluations to assess the feasibility, practicality, and effectiveness of the developed model. The results of expert validation indicated that the model achieved feasibility scores of 71% from coach expert 1, 96% from coach expert 2, and 94% from a learning expert, all categorized as highly feasible. Furthermore, the small-scale trial yielded a feasibility score of 84%, while the large scale trial showed an improved score of 92%, indicating very high feasibility and acceptance. These findings demonstrate that the developed training model meets both conceptual and empirical criteria and is suitable for use as a structured training guideline to enhance basic foot service skills in teqball. The study is expected to contribute to the development of teqball training and education, particularly in Central Sulawesi.

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D. Manuscript preparation;
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INTRODUCTION

Sports development is a strategic component of human resource development in developing countries, including Indonesia. Sport not only serves as a means of improving physical and mental health, but also as a vehicle for character building, sportsmanship, discipline, and social intelligence, which directly contribute to the quality of the younger generation. In this context, educational and competitive sports play a crucial role in creating an active, healthy, and competitive society (Rusdin et al., 2022; Khairuddin,

2020). Along with global developments, the dynamics of sports in Indonesia are also marked by the emergence of new sports, requiring adaptations to adequate coaching, learning, and scientific research systems.

One rapidly growing sport is teqball, a ball game combining the principles of soccer and table tennis, played on a curved table and prohibiting the use of hands. Teqball originated in Europe and has experienced significant global expansion in the past decade, reaching over 150 countries across multiple continents (Lili, 2020; Antal, 2023). The game's innovative, relatively safe characteristics, and its demands for motor coordination, technical precision, and quick decision-making make teqball a relevant development as a competitive and educational sport across all ages (Wang, 2020; Lea, 2021).

In Indonesia, interest in teqball is showing an increasing trend, but developments in technical quality and coaching remain uneven across regions. In some areas, including Central Sulawesi, teqball is a relatively new sport, only recently formally introduced through sports organizations. This situation raises major issues such as limited understanding of basic techniques, a lack of structured training models, and low academic literacy related to teqball learning and skill development, particularly among aspiring sports educators.

International literature shows that teqball has been studied primarily in terms of its historical development, game regulations, and potential physical and cognitive benefits. Wang (2020) and Somkin (2020) emphasized that the curved table design creates a consistent ball bounce pattern, thereby increasing the need for motor control, coordination, and technical accuracy. Other research highlights that teqball is relatively safe because it minimizes physical contact between players, potentially reducing the risk of injury compared to conventional ball games (Lea, 2021).

In the realm of sports coaching and learning, recent studies emphasize the importance of mastering basic techniques as a foundation for long-term performance. Serving is positioned as a crucial initial skill because it determines the rhythm of the game, the opportunity to score points, and strategic control from the start of the rally (Abdillah & Irawan, 2023; Achmad et al., 2019). In the context of foot-based games like teqball, variations in serving using the inside, instep, and outside of the foot are indicators of complex technical skills and require structured and repeated practice.

However, most existing research focuses on established sports such as soccer, futsal, or table tennis, while specific empirical studies on basic teqball techniques—particularly serving using the feet remain very limited, particularly in the context of physical education and the initial development of athletes or sports students in Indonesia.

Based on a literature review, there is a clear research gap between the rapid development of teqball globally and the limited empirical studies at the national and regional levels. First, research on teqball in Indonesia is still dominated by descriptive studies on the introduction of the sport and its organization, without delving into the technical aspects of skill learning in depth. Second, studies on serving technique—as a fundamental skill are still rare, even though serving directly contributes to game effectiveness and point scoring.

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Preliminary survey findings among Physical Education, Health, and Recreation students indicate that although most students are familiar with teqball in general, they do not yet understand the specific basic techniques. Interestingly, more than 70% of respondents expressed a high need and interest in learning the basic technique of serving using the feet. This fact indicates a clear need for a systematic, contextualized, and student-specific teqball serving learning and training model that is tailored to the characteristics of future sports educators.

Thus, the research gap lies in the lack of a structured teqball serving learning or training model, based on the needs of sports students, and supported by a scientific approach.

Based on these issues and gaps, this study aims to examine and develop students' understanding of basic foot-based serving techniques in teqball. Specifically, this research aims to analyze learning needs, strengthen understanding of service techniques in accordance with game regulations, and provide a conceptual foundation for developing an effective and applicable teqball service training model.

The novelty of this research lies in its focus, which specifically positions foot-based teqball serving techniques as the primary object within the context of physical education and early development, rather than solely at the elite athlete level. Furthermore, this study integrates perspectives on sports learning, student motivation, and the characteristics of this new sport, which is still developing in Indonesia. With this approach, the research results are expected to not only contribute to the enrichment of the teqball scientific literature but also serve as a practical reference for lecturers, coaches, and stakeholders in accelerating the sustainable development of teqball at the regional and national levels.

METHODS

This study used a Research and Development (R&D) approach to develop and test the effectiveness of a learning product, namely a basic foot-based service technique training model in teqball for Physical Education, Health, and Recreation (PJKR) students. The R&D approach was chosen because it is relevant for producing applicable, valid, and contextual learning products tailored to user needs, as recommended in research on physical education and sports development (Borg & Gall, 1983; Sugiyono, 2019; Winarno, 2020).

The development model used adapts Borg and Gall's simplified steps to suit the characteristics of sports research, including: (1) needs analysis, (2) initial product design, (3) expert validation, (4) product revision, (5) small-scale trials, (6) further revisions, and (7) large-scale trials. This simplification of the steps aligns with modern R&D practices that emphasize efficiency, flexibility, and targeted accuracy in the context of physical education (Branch, 2018; Richey & Klein, 2014).

The needs analysis phase was conducted through field observations and an initial survey of PJKR students to identify their level of understanding, technical difficulty, and learning interest in teqball foot-based serving techniques. Needs analysis is a crucial foundation in developing a training model to ensure the resulting product is truly relevant to student characteristics and the demands of modern sports learning (Needs Analysis Approach) (Reeves, 2017; Casey et al., 2021).

The product design phase focused on developing a teqball serving training model based on the principles of biomechanics, structured repetition, and training progression. The training model was designed to include variations of serves using the inside of the foot, the instep, and the outside of the foot, in accordance with the official teqball regulations established by FITEQ (2020). This approach aligns with literature emphasizing the importance of sport-specific training to effectively improve technical skills (Bompa & Buzzichelli, 2019; Lesmana, 2019).

The expert validation phase involved physical education experts and teqball coaches to assess the appropriateness of the content, clarity of instructions, exercise safety, and alignment with learning objectives. Expert validation is a crucial step in R&D research to ensure the construct and content validity of the product before implementation with research subjects (Akker et al., 2016; Sugiyono, 2021).

The product trial phase was conducted in stages. The small-scale trial involved 15 PJKR students, while the large-scale trial involved 20 PJKR students from Tadulako University. Subjects were randomly selected, considering similarities in academic background and level of teqball experience. The trials aimed to observe the implementation of the training model, student responses, and the model's initial effectiveness in improving service understanding and skills. This phased trial approach aligns with developmental research practices in physical education, which emphasize reflective processes and continuous improvement (Thomas et al., 2015; Kirk, 2019).

The research took place at the Tadulako University field site in East Palu, Palu City, Central Sulawesi, taking into account the availability of facilities and the safety of the training sessions. The data obtained were analyzed using descriptive-qualitative and simple quantitative methods to support product revision decisions. The resulting training model is expected to be practical, effective, and suitable for implementation in teqball instruction for PJKR students.

RESULTS AND DISCUSSION

Result

The results of the data analysis were used to conduct research and determine whether a product was feasible for development. The analysis revealed data from two expert trainers, one learning expert, and field trial data. The needs analysis conducted by the researchers, students from the PJKR Department of Tadulako University, indicated a need for and agreement with the research to create a basic footwork training model for Teqball.

The validation data from the expert trainers and learning experts are described in the following table:

Table 1.
Results of the Validation Test of Expert Trainer 1, Expert Trainer 2 and Learning Expert

No	Expert	%	Category
1	Trainer Expert 1	71 %	Very Eligible
2	Trainer Expert 2	96 %	Very Eligible
3	Learning Expert	94 %	Very Eligible
	Sum and Average	**87 %**	**Very Eligible**

Based on expert validation by Trainer 1, the product developed received a score of 71%. This assessment covered various aspects related to the training model used in the product. Based on expert validation by Trainer 2, the product developed received a score of 96%. This assessment covered various aspects related to the training model used in the product. The assessment by the learning expert showed a score of 94%. This assessment covered the learning aspects contained in the product developed. The learning expert provided positive feedback on the outputs of this study.

The assessments conducted by expert trainers 1, 2, and the learning expert indicated that the developed product had high validity and was suitable for field testing. This assessment demonstrated that the product was of good quality and met the standards expected by industry experts. It is expected that this product will maximize its benefits during field testing by making various improvements as suggested.

The data from the small and large group trials are described in the following table:

Table 2.
Results of Small and Large Group Trials

No	Experts	%	Category
1	Small Group Test	75 %	Very Eligible
2	Large Group Test	77 %	Very Eligible
	Number and Average	**76 %**	**Very Eligible**

The results of the small-group trial indicated that the product implemented in the development phase achieved a score of 84%, conducted by 15 PJKR students at Tadulako University. This indicates that the product is valid and can be continued for large-group trials.

Furthermore, in the large-group trial phase involving 20 PJKR students at Tadulako University, the product achieved even better results, with a percentage of 92%. This score indicates that the product can be used in foot-based serve training in Teqball.

Discussion

The trial results indicate that the developed model for basic foot-based serving techniques in teqball has a high level of feasibility and acceptance among Tadulako University's Physical Education (PJKR) students. In the small-group trial phase, the product achieved a feasibility score of 84%, indicating that the training model met the criteria for content validity, clarity of instructions, and implementation in a physical education learning context. This finding aligns with the principles of development research, which state that a feasibility score above 80% indicates a product that is suitable for use with minor revisions before wider implementation (Akker et al., 2016; Sugiyono, 2021).

The improved results in the large-group trial phase, with a score reaching 92%, demonstrate that the training model is not only conceptually valid but also increasingly effective and practical when applied to a larger number of participants. This improvement indicates positive student adaptation to the training structure, service variations, and movement progression outlined in the model. Empirically, this phenomenon supports the view that training models designed based on user needs and tested in stages tend to yield higher effectiveness upon subsequent implementation (Richey & Klein, 2014; Branch, 2018).

From a sports skills learning perspective, serving is a fundamental skill that plays a strategic role in controlling the start of play and creating a competitive advantage. In teqball, serving with the feet demands high levels of coordination, body balance, ball control, and directional accuracy. The results of this study corroborate previous findings that structured, sport-specific technical training contributes significantly to improving students' understanding and technical skills (Bompa & Buzzichelli, 2019; Lesmana, 2019).

The high feasibility scores in the large-group trial also indicate that PJKR students are able to accept and understand the developed training model. This is important considering that PJKR students are positioned not only as learners but also as future educators and coaches who will transfer sports knowledge and skills to the wider community. Physical education literature emphasizes that effective learning models must be applicable, easily replicated, and relevant to the field context in order to have a long-term impact on the quality of sports learning (Kirk, 2019; Casey et al., 2021).

In terms of game regulations, the developed training model has been adapted to the official teqball rules established by FITEQ, specifically regarding serving procedures, body positioning, and movement restrictions. Adherence to these regulations is crucial in ensuring the technical validity of the training while minimizing the risk of movement errors and injury (FITEQ, 2020; Lea, 2021). Aligning the training to the game rules also supports more authentic and contextual learning, as recommended in modern sports pedagogy approaches (Thorpe et al., 2016; Harvey & Jarrett, 2014).

Beyond the technical aspects, the success of this training model is also inseparable from the motivational dimension. Students responded positively to the variety of serving drills using the inside, instep, and outside of the foot. Sports psychology literature suggests that training variation and clarity of movement objectives can increase intrinsic motivation, active engagement, and training sustainability (Ryan & Deci, 2017; Syaukani et al., 2020). Thus, the developed training model serves not only as a means of skill improvement but also as a motivational stimulus in teqball learning.

Overall, the results of this study strengthen the argument that developing a training model for basic teqball serving techniques based on R&D research is an appropriate approach to address the needs of new sports learning in higher education settings. These findings align with recent studies that emphasize the importance of innovative training models in emerging sports to accelerate the development process and improve the quality of basic performance of novice athletes (Antal, 2023; Wang, 2020).

Therefore, the developed training model can be recommended as an alternative for teaching teqball serving techniques.

CONCLUSION

This study concludes that a training model for basic foot-based serving techniques in teqball, developed through a Research and Development (R&D) approach, has proven valid, practical, and effective for application to Physical Education, Health, and Recreation (PJKR) students. Conceptually, the development of this training model stems

from the real needs of learning a new sport that demands mastery of specific, progressive techniques, and aligns with official teqball regulations. The integration of sport-specific training principles, movement biomechanics, and variations in foot-based serving provides a strong theoretical foundation for improving students' technical skills.

Empirically, the trial results showed that the training model achieved a feasibility rating of 84% in small-group trials and increased to 92% in large-group trials, indicating excellent acceptance and implementation. This improved score confirms that the training model is increasingly effective when applied on a broader scale and is able to systematically support the understanding and mastery of teqball serving techniques.

Therefore, this training model not only contributes to the development of PJKR students' serving skills but also has practical implications as a reference for initial teqball learning and coaching in higher education settings. In the future, this model has the potential to be further developed in the context of young athletes and achievement coaching.

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Finally, the author hopes that the results of this study can provide a real contribution to the development of physical education science and teqball sports development in Indonesia.

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