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The effects of various teaching approach in the physical education student on the performance of volleyball skill: systematic review

Wpływ różnych metod nauczania na umiejętności gry w siatkówkę u uczniów wychowania fizycznego: przegląd systematyczny

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Abstract

Implementing a Volleyball Learning Model from a young age is a strategic approach to enhance long-term achievements in the sport. Purpose: This study aims to explore the impact of various teaching and learning approaches on enhancing students' volleyball skills. Methods: The Preferred Reporting Items for Systematic Reviews (PRISMA) statements were determined using keywords related to volleyball skills, physical education, and teaching approaches. The following four databases were used: PubMed, Web of Science, SPORTDiscus, and Scopus. A comprehensive strategy is used to assess the quality effectiveness of each article in this review. The population discussed in this study is the potential of various types of physical education learning approaches in improving volleyball skills. The exclusion criteria for this study included articles from databases that were not current. Result: We identified 363 articles and selected 9 based on criteria such as alignment with research objectives, topic relevance, sample size, research protocol, and results. The results of this study explain various teaching approaches to improve volleyball games performance, namely in terms of technical ability. This study shows the effectiveness of various teaching approaches to improve the performance of secondary school children's volleyball games.

Keywords

teaching approach, performance, volleyball

Streszczenie

Wprowadzenie modelu nauczania siatkówki od najmłodszych lat jest strategicznym podejściem, mającym na celu zwiększenie długoterminowych osiągnięć w tej dyscyplinie sportu. Cel: Celem badania jest zbadanie wpływu różnorodnych metod nauczania i uczenia się na rozwój umiejętności gry w siatkówkę u uczniów. Metody: Do określenia oświadczeń Preferred Reporting Items for Systematic Reviews (PRISMA) użyto słów kluczowych związanych z umiejętnościami gry w siatkówkę, wychowaniem fizycznym oraz metodami nauczania. Wykorzystano następujące cztery bazy danych: PubMed, Web of Science, SPORTDiscus i Scopus. Zastosowano kompleksową strategię oceny skuteczności jakościowej każdego artykułu w niniejszym przeglądzie. Populację omawianą w tym badaniu stanowi potencjał różnych typów podejść do nauczania wychowania fizycznego w doskonaleniu umiejętności gry w siatkówkę. Kryteria wykluczenia dla tego badania obejmowały artykuły z baz danych, które nie były aktualne. Wynik: Zidentyfikowano 363 artykuły i wybrano 9 na podstawie kryteriów takich jak zgodność z celami badawczymi, relewancja tematu, wielkość próby, protokół badawczy i wyniki. Wyniki tego badania wyjaśniają różne metody nauczania mające na celu poprawę wydajności gry w siatkówkę, a mianowicie pod kątem zdolności technicznych. Badanie to pokazuje skuteczność różnych metod nauczania w poprawie wyników gry w siatkówkę u dzieci w szkole średniej.

Słowa kluczowe

metoda nauczania, wydajność, siatkówka

Introduction

Developing and maintaining strategies for Physical Education (PE), especially in teaching volleyball, are obligatory tasks and challenges for coaches, parents, organizations, and other stakeholders in sports achievements. Training at an early age (multilateral) is the main foundation of the long-term sports training system [1]–[4]. PE is a learning method that aims to help students improve their motor skills, social, emotional skills, and sports skill through physical activity [5]. PE is also important in assisting individuals in developing personality [6], [7]. Besides, affective, cognitive, and psychomotor skills can be improved through PE with physical exercise. Moreover, physical activity in PE will help accelerate growth [8].

If the training is carried out based on systematic organization of scientific and logistical training methodologies, the training will be of higher quality, more effective, and easier preparation for sports substitutes [9–11]. The development of young athlete activities and experience is a key factor in athlete success [11–16]. The creativity of the physical education (PE) teaching approach in sport is an early-stage approach and very important for the early stages of the child's talent development process, namely, at childhood or during multilateral development [2], [17, 18].

PE teachers have an important role and responsibility for choosing appropriate learning programs for the environment so that students can achieve and demonstrate knowledge, movement skills, attitudes to engage in lifelong physical activity, and specifically in volleyball learning [19–23]. Students' self-efficacy will increase when they acquire new skills and play games, specifically in volleyball. Besides, it motivated them to acquire other skills in other ways. Therefore, PE teachers must optimize innovation in learning to motivate students to obtain other skills or in the different sports you want to focus on.

Volleyball is one of the most interesting sports for students. A special approach is therefore needed to improve the volleyball skills of physical education teachers for students [23, 24]. Previous research related to various kinds of teaching volleyball methods to improve technical abilities/skills described the advantages and disadvantages of each method. Many studies have been conducted regarding PE teaching approach. Those studies focused on game modifications, techniques, tactics when performing sports, and problem-solving [25–28]. Students will experience obstacles in participating in sports activities, even though they are adults, if not through a good PE program [29, 30]. In addition, there has been a lot of research on strategies for creating learning programs by paying attention to the substance in the cognitive, psychomotor, and affective aspects of learning [31–34]. It is considering that earlier teaching and learning activities was traditional, where games were usually inserted at the end of learning activities. Therefore, continuous practice and lack of novelty made students bored [25].

Therefore, some game-based learning can improve fitness, skills, coordination and decision-making in PE and sports teaching/coaching, which includes techniques and tactics of learning through games that have been carried out to improve volleyball performance [5, 24, 35, 36]. There are various kinds of PE teaching approaches, for example, Teaching Games for Understanding (TGfU) which has become an alternative to traditional learning-oriented [26]. TGfU helps students understand the material provided, increasing motivation, physical activity level, en-

joyment, and engagement in learning techniques of volleyball [37, 38]. This model includes modified games to encourage students to make decisions and active learning processes with problem-solving strategies [39]. Students will have comfort, understanding, and high motivation towards what they learned, for example, TGfU in learning volleyball [27].

Even though volleyball is a team sport, volleyball requires an increase in individual technical abilities [40]. At least, they must master overhead pass, forehand pass, and serve as basic techniques in the game. Without this fundamental skill, the game cannot be done effectively. Apart from that, some must-know practical methods in volleyball are as follows: complete training of movement techniques, teaching movement techniques in parts, management style, moving exhibition style, method of repetition, complication method, how to play the game when tired, game style, competition style, combined style, combined method, this workout is circular fashion [41]. It is significant when a trainer or teacher determines the training menu, management, and process [2, 42].

Meanwhile, several factors can improve: the volleyball players' technical skills, physical condition/physical quality, having high-level skills, mastering all techniques while playing, being stable in performing technical movements in any changing both external and internal conditions, high professionalism in volleyball, good in decision making, can be as effective as possible in maximizing one's potential, ensuring body functions are at the highest level to increase at each stage of training load [43]. In addition, there are factors that become key elements for a coach to improve overall ability in volleyball, such as learning action decision techniques, strengthening techniques in simple environments, strengthening techniques in complex conditions, and having perfect skills in the game.

Based on the various publications reviewed, there is no recent research in the form of a systematic review to determine an effective learning program to improve students' basic volleyball skills. From the various literature information related to the PE teaching approaches to volleyball performance above, a complete description of the advantages of each of the PE teaching approaches has not been found, specifically in volleyball performance/technique. Therefore, this research aims to find out the influence information about the various PE teaching approaches in volleyball that have been carried out.

Material and methods

Study design

To carry out this final systematic review study, the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) were used [44].

Search strategy

Nine authors carried out this research. PubMed, Scopus, SPORT-Discus, Web of Science databases were used. The initial search will be carried out in May 2022. The following keywords are used: “volleyball skill”, “physical education”, “pedagogical approach”, “volleyball game”, “student”. Search patterns are combined using two Boolean operators (AND/OR). In addition, references to previous systematic reviews linked to this review are done manually and exhaustively.

Eligibility criteria

Inclusion and exclusion criteria are shown in Table 1.

Table 1. Inclusion and exclusion criteria

Criteria	Type	Definition
Inclusion Criteria	Study Participant/population Intervention Comparison/control Outcome	Research & Development, quantitative research, quasi experimental design, pre-test/post-test design, action research Another teaching program, without combining
Exclusion Criteria		Research using drugs Conferences, theses, books, expert opinions, national journal articles

Screening proses

Articles retrieved from various databases were entered into the Rayyan QCRI application. References detected as duplicates are eliminated. Subsequently, a full assessment was carried out to assess the eligibility criteria.

Instrument

Based on the background of the problem and previous ground theory, this study uses the literature review method with a comprehensive strategy, namely, searching for sources/papers in the journal database. The research journal databases used in this study are Pubmed, Scopus, Google Scholar, Web of Science, and Embase. The inclusion criteria in this study are articles published in international journals in the last six years since 2022. The journal articles discussed are related to various teaching approaches to volleyball technical performance, while the exclusion criteria were local journals that were not

reputable. The keywords used in this study are teaching, learning, and volleyball performance. There were 15 articles about this topic. However, only nine articles were analyzed for the suitability of the topics studied, sample size, research protocol, and results of each article.

Data analysis

Each of the articles analyzed is classified into predetermined aspects and categories. This is based on the information shared by the authors, both in the abstract and in the conclusions. The results of this investigation are interpreted, resulting in a gap analysis which is the most important part of this finding.

Result

Article selection

The initial search obtained 363 articles, which indicated duplicates of 152 articles. All articles can be presented in Figure 1.

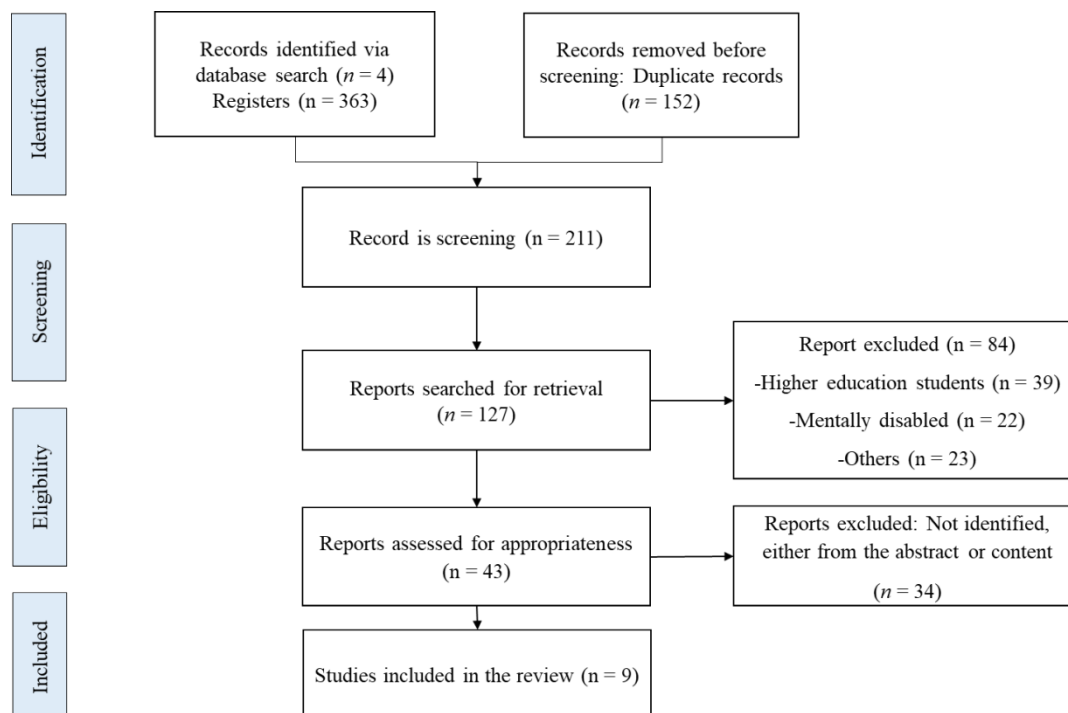


Figure 1. Flow chart for systematic: PRISMA flow diagram

Table 1. Characteristics of articles

Author	Sample characteristics	Study design	Protocol	Result
[27]	54 student (18 girls), 28 people (age = 15.5 + 0.7 years old) participated in this study	Experimental	Teaching Games for Understanding (TGfU)	TGfU With 12 lessons can improve volleyball skills.
[17]	126 students (high school student)	The Mix methods approach with a quasi-experimental pre-test/post-test design	Decision making, skill execution, game performance, game involvement, and game knowledge	After 12 weeks, the improvement was not significant for students with low skills. Grouping strategies are not recommended unless there are individuals who are already experts in the group to improve game performance and knowledge.
[20]	25 students (aged between 16 and 17 years old).	Insider action-research	Play activities	The use of a combination of learning models can improve a good environment. In addition, an emphasis on specificity can enhance a good classroom environment (e.g., the Step-Game Approach for non-invasion games).
[45]	20 males (12-14 years old)	Experimental	Intensive dan extensive service	It is proven that extensive has the most significant effect.
[46]	53 secondary school students Mage = 15.50, SD age = 0.57)	Experimental	Hybrid Teaching Games for Understanding (TGfU)	The Hybrid TGfU/SE unit was highly effective for all genders, although the effect was more significant for women.
[47]	284 Spanish secondary PE student	Experimental	Flipped Classroom	It is useful, however, very useful for policy makers to promote the integration of digital technologies with the aim of enhancing teaching and learning activities
[48]	Seven and 10 boys, age 11.8	Experimental	Hybrid sport education-step-game-approach	Significant in improving low technical abilities in volleyball.
[49]	Experimental group (n = 15). Control group (n = 15), Aged 16-17 years old	Experimental Research &	The acute effect between verbal instruction and video modeling	Verbal instruction and video modelling are both effective in order to improve the underhand volleyball serve among volleyball players.
[50]	252 elementary school students	Development	Character habituation (discipline, hard work, and collaboration	Learning model for mini-volleyball games has adequate content validity, greater than 0.82. Effective in order to improve volleyball technique and character habituation.

Based on the table above, this study found various approaches to learning volleyball through PE to improve performance or technique in playing volleyball. Some of these results have their respective advantages individually and in teams. Therefore, they can be theories that can be considered by PE teachers as the basis for programs to teach in schools.

Discussions

The present systematic review was design to the effect of information about various teaching and learning approaches to increase volleyball skills' student in PE. PE is a significant component of all existing education systems. It

can improve health, physical fitness, and psychological aspects through physical activity [3, 10, 51, 52]. When connected to games, this subject will have various complex elements that will increase these needs. A lesson will be successful if the teacher can make students responsible for what is taught. Persuasive sentences from the teacher are essential before learning to increase responsibility and motivation in student learning. Therefore, a teacher must be prepared by doing short greetings and arranging the time for discussion at the beginning before learning. The main results of theses studies were that various teaching and learning approaches by PE increased volleyball skills' students.

Until now, learning that has the most direct and strategic influence on the development of volleyball skills has not been found. However, every lesson has its contribution, such as every technique in carrying out technical movements in volleyball. A good teaching approach is teaching that includes every element of skill in volleyball. In addition, the teaching approach must be under the teaching principles of training for each group of age, including at the multilateral stage.

In this study of literature studies, research conducted by Batez et al. (2021) states that TGfU with a short-term lesson, namely 12 lessons, improves volleyball technical skills. Moreover, the output emphasizes enjoyment during class compared to classes with traditional teaching approach. It is consistent with previous research explaining that TGfU significantly contributes to various class subjects, especially related to elements of motivation [26, 37, 53]. Considering that the risk of injury to children will increase if there is psychological pressure, the TGfU can be a solution because the presence of TGfU can increase motivation and enjoyment in students.

On the other hand, research conducted by Mahedero et al. (2021) states that students with mini-volleyball learning have a significant effect on children's competence in games and are more knowledgeable about techniques, know the game (sports rules), tactical awareness, and general game knowledge. In addition, the use of hybrid sports education can help students with an internal approach to the teacher, thereby gaining the advantage of being open to problems faced by students and increasing student responsibility [20]. Subsequent research uses intensive and extensive learning methods. Besides, both extensive and intensive are effective in increasing performance by 10.43%. However, intensive training has a lower effect than extensive training, namely 4.30% [45]. In addition, subsequent research explains that using hybrid season learning produces significant results in volleyball learning, with indicators, 1) a unique and effective internal structure; 2) increased student responsibility in each lesson; 3) ability to adapt to lesson plans, and other needs; 4) obtain a combination of higher supportive interventions [46]. Meanwhile, in another study, the Hybrid combination of sports education had a significant effect based on the results of the pretest and post-test of boys and girls with 35 lessons of volleyball in 7 weeks [48].

Various method of learning approaches by PE such as TGfU, Decision making, skill execution, game performance, play activities, intensive and extensive methods, hybrid TGfU, flipped classroom, hybrid sport education step-game-approach, and habituation method, increased volleyball skills' students. Fundamental volleyball movement with an experiential game approach has proven to be a suitable for elementary school students in improving volleyball skills [54]. Even so, several methods can be used in conditions of experience and higher age of the student, for example decision making, skill execution, game performance, game involvement, and game knowledge learning. Grouping strategies are not recommended unless there are individuals who are already experts in the group to improve game performance and knowledge. Furthermore, the mini volleyball model has also been proven to improve not only volleyball skills but also discipline, cooperation, and hard work in elementary school students [50].

Conclusion

Various learning approaches each contributed uniquely to the performance or technique in volleyball. After all the treatments/teaching approach carried out, the most prominent teaching method has not been found since each lesson has a specific contribution to improving volleyball performance. Nevertheless, there were many contributions of each methods approach, such as in improving technique, top passing, bottom passing, and other techniques. In addition, findings in this study explain that basic technical aspects, game rules, responsibilities, and student competencies are indeed required. We recommend that teachers determine learning with specific goals based on each element of volleyball performance that will be improved. Thus, it would be better to use a combination of learning with two or more approaches that can be done to learn complex volleyball skills. In addition, enjoyment is needed, especially during the multilateral age stage. The fun during studying is beneficial in some lessons, such as reducing sports injuries.

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