



Journal of Physical Education for Secondary Schools

Journal homepage: <https://ejournal.upi.edu/index.php/JPESS>



The Effect of Basketball Training on Students Physical Fitness: A Systematic Literature Review

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ABSTRACT

Physical fitness is a crucial aspect of life that contributes to an individual's health and quality of life, reflecting not only the ability to perform daily activities without excessive fatigue but also a healthy body condition. Basketball, as a dynamic team sport involving speed, endurance, agility, and coordination, serves as a potential medium for improving students' physical fitness. This study aimed to examine the effect of basketball training on students' physical fitness through a Systematic Literature Review (SLR) approach. Data searches were conducted through Google Scholar using Harzing's Publish or Perish with the keywords "basketball training and physical fitness education" within the 2020-2024 publication period. Articles were limited to those indexed in SINTA and written in Indonesian. Screening was conducted using Covidence, followed by quality assessment to evaluate each article's relevance. From 200 articles identified, six relevant articles were selected after applying inclusion and exclusion criteria. The findings consistently indicated that basketball training, whether through circuit training, game modifications, or regular extracurricular practice, is effective in improving students' physical fitness. However, several studies noted that extracurricular participation alone does not guarantee optimal fitness, as factors such as lifestyle habits, training frequency, and motivation also play significant roles. It can be concluded that basketball training is an effective intervention for enhancing students' physical fitness, and students should be encouraged to adopt healthy lifestyles and maintain regular physical activity.

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ARTICLE INFO

Article History:

Submitted/Received 02 Feb 2026

First Revised 12 Feb 2026

Accepted 01 Apr 2026

First Available online 28 Apr 2026

Publication Date 30 Apr 2026

Keyword:

basketball training,
extracurricular activities,
physical fitness,
students,
systematic literature review.

1. INTRODUCTION

Physical education is an integral part of the educational system aimed at developing physical fitness, motor skills, and positive values such as discipline, sportsmanship, and cooperation (Sayyidah & Nastiti, 2023). Through physical education, students gain not only physical benefits but also improvements in mental and social aspects that support their holistic development. Quality physical education can foster healthy and active lifestyles from an early age, which positively impacts long-term health (Suryadi, 2022). As part of the educational curriculum, physical education focuses not only on physical activity but also teaches life skills such as cooperation, sportsmanship, and discipline. Through various forms of exercise and games, students can develop physical fitness and improve coordination and motor skills useful in daily life (Alamsyah et al., 2022).

Physical fitness is a crucial aspect of life that contributes to an individual's health and quality of life. Physical fitness is not only related to the physical ability to perform daily activities without excessive fatigue but also reflects a healthy and fit body condition (Pranata, 2022). Individuals with good physical fitness tend to be more productive, have high endurance, and are able to carry out activities more optimally. Physical fitness is an important factor in maintaining health and supporting a person's productivity in performing daily activities (Ramadhan & Noordia, 2023). A person with good physical fitness can perform various physical tasks without experiencing excessive fatigue while still having energy for additional activities. Physical fitness encompasses not only physical strength but also aspects of endurance, flexibility, speed, and optimal body coordination (Mahendra & Hidayat, 2020).

Basketball is one of the most popular sports played worldwide, including in Indonesia. This sport is played in teams with the objective of scoring points by shooting the ball into the opponent's hoop (Latar & Tomaso, 2020). Basketball requires not only physical skills such as speed, strength, and agility but also strategy, teamwork, and accuracy in decision-making (Kurnia et al., 2022). Therefore, basketball is a sport that sharpens not only physical abilities but also concentration, communication, and sportsmanship among its players. As a dynamic sport, basketball relies on speed, physical endurance, coordination, and good team strategy (Yanti et al., 2021). In addition to providing physical benefits, basketball contributes to character building, including discipline, teamwork, and the ability to think quickly when making decisions on the court (Endrisman & Jatra, 2022).

2. METHODS

This study employed a Systematic Literature Review (SLR) method. SLR is a methodology used to identify, evaluate, and interpret all available research relevant to a particular research question, topic, or phenomenon of interest (Kitchenham, 2014). The research design used in this study follows the systematic literature review framework, which allows for the evaluation and interpretation of all accessible research relevant to the research question. The steps in conducting a Systematic Literature Review consist of four stages: (1) identification of journals to be included in the meta-analysis; (2) selection, namely quality assessment of research reports; (3) abstraction, involving quantification of results from each study for integration; and (4) analysis, namely the synthesis and reporting of SLR results (Pizard et al., 2021).

In this study, the researcher conducted data searches through the Google Scholar journal portal using the Harzing's Publish or Perish application. Based on the research title "The Effect of Basketball Training on Students' Physical Fitness," the researcher searched

journal data using the keywords “basketball training and physical fitness education” with a specified time range from 2020 to 2024. The selected articles were limited to those indexed in SINTA.

For the screening process, Covidence was used. Covidence is a platform used in evidence-based research for literature screening, study quality assessment, and data collection from various sources. This includes the process of screening registered and excluded articles. The results from Covidence can be used to compile PRISMA reports.

Based on the research topic, the journal data accessed in this study were screened according to the following criteria:

Table 1. Inclusion and Exclusion Criteria

Type	Inclusion	Exclusion
Article Type	Research articles	Research reports (theses, dissertations, seminars)
Language	Indonesian	Languages other than Indonesian
Participants	Primary & secondary school students, teachers	Other than primary & secondary school students, teachers
Year of Publication	2020-2024	Before 2020
Research Variable	Effect of basketball training on students' physical fitness	Unrelated to basketball training and physical fitness
Scope	Physical education	
Index	SINTA	Non-SINTA

The quality assessment in the Systematic Literature Review (SLR) method was conducted using the following criteria: QA1: Are the journals in Indonesian? QA2: Were the journal papers published between 2020 and 2024? QA3: Does the journal address a research problem relevant to this study? QA4: Are the journals full papers?

Table 2. Quality Assessment

NO	Penulis	Judul	Q1	Q2	Q3	Q4	Result
1	(Yuliandra et al., 2023)	Pelatihan Peningkatan Kemampuan Endurance Siswa Ekstrakurikuler Bola Basket SMAN 1 Pringsewu	Y	Y	Y	Y	V
2	(Khairinnisa & Daharis, 2023)	Tingkat Kebugaran Jasmani Pada Siswi Ekstrakurikuler Bola Basket Putri Sman 1 Bukit Batu Kab. Bengkalis	Y	Y	Y	X	X
3	(Iqbal et al., 2023)	Pengaruh Latihan Sirkuit terhadap Tingkat Kebugaran Jasmani Siswa Ekstrakurikuler Bola Basket SMA Negeri 3 Cirebon	Y	Y	Y	Y	V
4	(Putri & Mariati, 2020)	Pengaruh Modifikasi Permainan terhadap Kesegaran Jasmani Siswa Ekstrakurikuler Bola Basket SMA N 15 Padang	Y	Y	Y	Y	V

5	(Setiawan et al., 2022)	Korelasi Status Gizi Dan Aktivitas Fisik Dengan Tingkat Kebugaran Jasmani Mahasiswa	Y	Y	Y	X	X
6	(Bahari et al., 2020)	Analisis Tingkat Kebugaran Jasmani Siswa Kelas Atas Ditinjau dari Keikutsertaan dalam Ekstrakurikuler	Y	Y	Y	Y	V
7	(Irawati et al., 2024)	Tingkat Kebugaran Jasmani Anggota BKMF Bolabasket	Y	Y	X	Y	X
8	(Muh. Syachrul Syamsuddin , Ishak Bachtiar, 2024)	Analisis Tingkat Kesegaran Jasmani Terhadap Keterampilan Bermain Bola Basket Pada Pemain Bola Basket SMA di Kota Makassar	Y	Y	X	Y	X
9	(Purbaningrum & Wisnu, 2020)	Perbandingan Tingkat Kebugaran Jasmani Siswa yang Mengikuti Ekstrakurikuler Bola Basket Putri di SMP Negeri 1 Jatirogo dan SMP Negeri 4 Tuban	Y	Y	Y	Y	V
10	(Setia & Winarno, 2021)	Survei Tingkat Kebugaran Jasmani Tim Bola Basket	Y	Y	X	Y	X
11	(Pratama, 2022)	Tingkat Kesegaran Jasmani Atlet Bola Basket Siswa SMP Negeri 9 Pekanbaru	Y	Y	Y	Y	V
12	(Rizhardi, 2020)	Pengaruh Latihan Ballhandling Terhadap Hasil Dribbling Bola Basket Pada Siswa Eksrakurikuler Smayadika Lubuk Linggau	Y	Y	X	Y	X

Note: ✓ = Relevant journal used in the study; X = Journal not used due to lack of relevance.

Overall, 200 journals were obtained through the search process. After data were selected based on inclusion and exclusion criteria using the keywords “basketball training and physical fitness education” with a time range of 2020 2024, the majority of items were discarded because the articles were not relevant to the research title. From the Quality Assessment (QA) results, six relevant journal articles were identified and subsequently grouped based on the development platform and approach used to answer the research question.

The following is the PRISMA flow diagram that guided this study (Figure 1).

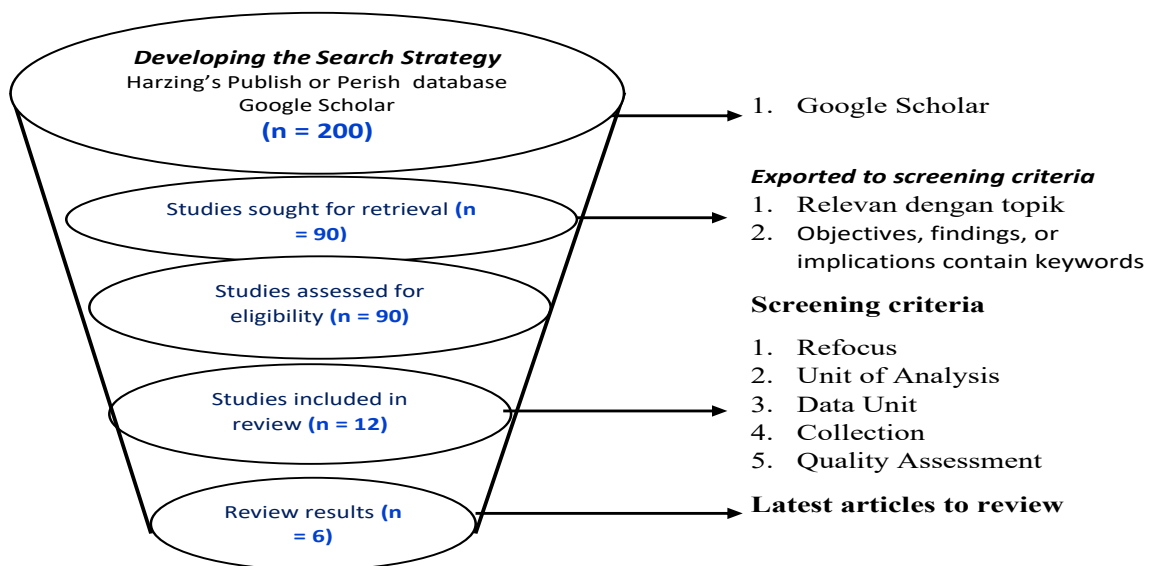


Figure 1. Prisma Flowchart

3. RESULT

Based on the systematic literature review conducted, six articles were deemed suitable for analysis. The articles were retrieved through the designated database (Google Scholar) using the Harzing's Publish or Perish application. Based on the research title "The Effect of Basketball Training on Students' Physical Fitness," the researcher searched journal data using the keywords "basketball training and physical fitness education" with a specified time range from 2020 to 2024. Overall, 200 articles were obtained through the search process, with 90 articles remaining after title screening. After data were selected based on inclusion and exclusion criteria, 12 journal articles were subjected to Quality Assessment (QA). From the QA results, six relevant journal articles were identified and subsequently grouped based on the development platform and approach used to answer the research question.

Table 3. Selected Primary Study

No.	Author/Year	Article Title	Research Method	Results
1	(Yuliandra et al., 2023)	Pelatihan Peningkatan Kemampuan Endurance Siswa Ekstrakurikuler Bola Basket SMAN 1 Pringsewu	Experimental Approach	The training program proved effective in improving students' physical fitness, particularly in endurance. This improvement is expected to be maintained and further developed through regular training to enhance sports performance.

2	(Iqbal et al., 2023)	Pengaruh Latihan Sirkuit terhadap Tingkat Kebugaran Jasmani Siswa Ekstrakurikuler Bola Basket SMA Negeri 3 Cirebon	Quantitative Method	Circuit training combined with basketball training proved effective in improving the physical fitness of basketball extracurricular students at SMAN 3 Cirebon. Circuit training is recommended to be continued and varied with other training methods for more optimal results.
3	(Putri & Mariati, 2020)	Pengaruh Modifikasi Permainan terhadap Kesegaran Jasmani Siswa Ekstrakurikuler Bola Basket SMA N 15 Padang	Quasi-Experimental	Game modifications proved effective in improving the physical fitness of basketball extracurricular students at SMA N 15 Padang. Most students experienced improvement to higher fitness categories after receiving modified game training.
4	(Bahari et al., 2020)	Analisis Tingkat Kebugaran Jasmani Siswa Kelas Atas Ditinjau dari Keikutsertaan dalam Ekstrakurikuler	Descriptive Quantitative	Students participating in sports extracurricular activities had moderate physical fitness levels. This indicates that despite being active in school sports, habits outside school such as lack of additional physical activity and passive lifestyles may affect their fitness levels.
5	(Purbaningrum & Wisnu, 2020)	Perbandingan Tingkat Kebugaran Jasmani Siswa yang Mengikuti Ekstrakurikuler Bola Basket Putri di SMP Negeri 1 Jatirogo dan SMP Negeri 4 Tuban	Descriptive Quantitative	Students at SMP Negeri 1 Jatirogo demonstrated better physical fitness levels compared to those at SMP Negeri 4 Tuban. The difference was likely due to training programs, student discipline, and more regular and consistent training schedules.
6	(Pratama, 2022)	Tingkat Kesegaran Jasmani Atlet Bola Basket Siswa SMP Negeri 9 Pekanbaru	Descriptive Quantitative	The physical fitness level of basketball athletes was in the moderate category. Major weaknesses were observed in aerobic endurance and arm muscle strength, while speed and abdominal muscle strength were adequate. The article recommends increased endurance and muscle strength training.

4. DISCUSSION

The first article, titled “Endurance Improvement Training for Basketball Extracurricular Students at SMAN 1 Pringsewu,” demonstrated that the applied training model successfully

improved students' physical fitness, particularly endurance. Training using interval training and fartlek models proved effective in enhancing the endurance of basketball extracurricular students at SMAN 1 Pringsewu. This endurance improvement is expected to be maintained and continuously developed, thereby contributing to match performance and the achievements of the basketball extracurricular team.

The second article, titled "Effect of Circuit Training on Physical Fitness of Basketball Extracurricular Students at SMAN 3 Cirebon," revealed that prior to circuit training, the physical fitness level of basketball extracurricular students at SMAN 3 Cirebon was in the "poor" category based on pretest results using the Indonesian Physical Fitness Test (TKJI). After undergoing circuit training over 12 sessions, posttest results showed a significant improvement, with students' fitness levels increasing to the "moderate" category, representing a 28.19% improvement. Therefore, circuit training is recommended to be continued and combined with other training methods to optimize the physical fitness of basketball extracurricular students.

The third article, titled "Effect of Game Modifications on Physical Fitness of Basketball Extracurricular Students at SMA N 15 Padang," examined the impact of applying game modifications on the physical fitness levels of students active in basketball extracurricular activities. Based on research results and data analysis, game modifications had a significant effect on improving students' physical fitness. This was demonstrated through improvements in Indonesian Physical Fitness Test (TKJI) scores conducted before and after the game modification treatment. Previously, most students were in the "moderate" to "poor" fitness categories. However, after receiving training with game modifications over several sessions, most students improved to the "good" category, with statistically significant improvements.

The fourth article, titled "Analysis of Physical Fitness Levels of Upper-Grade Students Based on Extracurricular Participation," investigated how participation in sports extracurricular activities affects the physical fitness of upper-grade students at SDN 2 Plemahan. Research results indicated that students participating in sports extracurricular activities still had moderate physical fitness levels. This suggests that although students were active in school sports activities, their physical fitness had not reached optimal levels. Extracurricular participation does not always guarantee good physical fitness, as many other factors influence it, such as lack of physical activity outside school, passive lifestyles, unhealthy eating patterns, and low motivation for exercise.

The fifth article, titled "Comparison of Physical Fitness Levels of Female Basketball Extracurricular Students at SMP Negeri 1 Jatirogo and SMP Negeri 4 Tuban," aimed to determine whether there were differences in physical fitness levels between students from both schools. Research results concluded that there was a significant difference in physical fitness levels between students at SMP Negeri 1 Jatirogo and SMP Negeri 4 Tuban. SMP Negeri 1 Jatirogo had better physical fitness levels, with an average score of 28.52 compared to 25.40 at SMP Negeri 4 Tuban. The main factors causing this difference were differences in training programs, student discipline, and available facilities.

The sixth article, titled "Physical Fitness Level of Basketball Athletes at SMP Negeri 9 Pekanbaru," aimed to determine the physical fitness level of basketball athletes participating in extracurricular activities at the school. Research results showed that most athletes had moderate physical fitness levels, with some still in the "poor" category. Participation in basketball extracurricular activities alone was insufficient to optimally improve physical fitness, as other contributing factors remained, such as insufficient training frequency, low physical endurance, inactive habits outside extracurricular activities, and lack of motivation for exercise. To improve students' physical fitness, more intensive and varied training, healthy

lifestyle habits, and encouragement for students to be more physically active in daily life are needed.

5. CONCLUSION

Based on the review of each article, it can be concluded that basketball training is effective in improving students' physical fitness. In particular, students who participate in sports extracurricular activities demonstrate better physical fitness levels. Furthermore, students should be encouraged to adopt healthy lifestyles and be more physically active in their daily lives. Several articles indicated that some students had poor physical fitness levels; however, after receiving various training interventions, their fitness levels improved to the moderate category. Therefore, students must be motivated to increase their willingness to exercise so that their physical fitness also improves.

6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this manuscript. The research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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