

Physical Fitness and Personal Resilience Viewed from a Comparative Study Based on Extracurricular Basketball Preferences in Vocational High Schools

Name: Tiassari Janjang Suminar¹, Vega Mareta Sceisarriya², Balkis Ratu NL Esser³ Raditya Pratama⁴, Angga Indra Kusuma⁵

Email correspondence tiassarijanjangsuminar@undikma.ac.id,

¹Universitas Pendidikan Mandalika, Mataram, Nusa Tenggara Barat

²STKIP PGRI Trenggalek, Trenggalek, Jawa Timur

³Universitas Pendidikan Mandalika, Mataram, Nusa Tenggara Barat

⁴Universitas Kristen Cipta Wacana, Malang, Jawa Timur

⁵Universitas Adi Buana, Surabaya, Jawa Timur

ABSTRACT

Participation in extracurricular sports activities may contribute not only to physical fitness but also to psychosocial development among adolescents. This study aimed to compare physical fitness, socio-emotional behavior, and personal resilience between vocational high school students who participate in basketball extracurricular activities and those who do not. A comparative ex post facto design was employed involving 100 vocational high school students from Malang and Pasuruan. Participants consisted of 50 students involved in basketball extracurricular activities and 50 non-participating students selected using purposive sampling. Data were collected using questionnaires and analyzed using Independent Samples t-tests. Students participating in basketball extracurricular activities demonstrated significantly higher physical fitness ($t=8.794$; $p<0.001$) and personal resilience ($t=4.076$; $p<0.001$) compared to non-participating students. Socio-emotional behavior also showed better outcomes among extracurricular participants. Participation in basketball extracurricular activities is associated with better physical fitness, socio-emotional behavior, and personal resilience among vocational high school students.

Keywords: Physical Fitness, Emotional Development, Resilience, Extracurricular Activities, Comparative Study, Basketball

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INTRODUCTION

Extracurricular activities have become an essential component of educational systems because they provide opportunities for students to develop competencies beyond formal classroom learning. Educational institutions increasingly recognize that student development should not only focus on academic achievement but also encompass physical, psychological, emotional, and social dimensions (Arnold et al., 2014). Participation in extracurricular activities allows students to experience structured learning environments that facilitate holistic growth and contribute to overall educational outcomes (Nufa, 2025).

Among various extracurricular programs offered in schools, sports-based extracurricular activities have received considerable attention because of their potential contribution to both physical and psychosocial development. Regular participation in

organized sports activities has been associated with improved physical fitness, healthier lifestyles, increased self-confidence, enhanced emotional regulation, and stronger social relationships (Lesco & Razmiret, 2024). Consequently, extracurricular sports participation is increasingly viewed as an important educational strategy for promoting comprehensive student development.

Basketball is one of the most popular extracurricular sports among adolescents because it combines physical activity with social interaction and teamwork (Pocius & Malinauskas, 2025). Basketball participation requires repeated movement patterns involving running, jumping, sprinting, rapid directional changes, coordination, and decision-making under dynamic conditions (Wang et al., 2024). Additionally, basketball activities require continuous communication, cooperation, and role adaptation among players. These characteristics make basketball not only a physically demanding activity but also a potential medium for developing psychosocial competencies among adolescents.

From a physiological perspective, regular participation in basketball activities may contribute positively to physical fitness because repeated exposure to training stimuli promotes cardiovascular adaptation, muscular endurance, neuromuscular coordination, and movement efficiency (Cao et al., 2024; Wang et al., 2024). Previous studies have demonstrated that adolescents who participate regularly in organized sports tend to demonstrate higher levels of physical fitness compared with less active individuals. Improved physical fitness among adolescents is important because it contributes not only to sports performance but also to long-term health outcomes and quality of life.

In addition to physical development, sports participation may also influence socio-emotional behavior among adolescents. Socio-emotional behavior refers to an individual's ability to regulate emotions, interact socially, communicate effectively, and develop positive interpersonal relationships. Participation in team sports environments may facilitate the development of these competencies because athletes continuously engage in social interactions, conflict resolution, cooperation, and emotional management during training and competition situations.

Furthermore, sports participation may contribute to the development of personal resilience, which refers to an individual's capacity to adapt and recover from challenges, adversity, and stressful situations (Gupta & McCarthy, 2022; Sarkar & Fletcher, 2014). Adolescence represents a developmental period characterized by multiple academic, social, and psychological challenges. Participation in competitive sports environments may expose students to situations requiring persistence, discipline, coping strategies, and emotional adaptation, which potentially strengthen resilience development over time.

Previous studies have generally demonstrated positive relationships between sports participation and either physical fitness or psychological outcomes. However, existing literature often examines these variables separately and tends to focus predominantly on individual dimensions rather than adopting a multidimensional perspective. Limited studies have simultaneously investigated physical fitness, socio-emotional behavior, and personal resilience among vocational high school students based on extracurricular participation status, particularly within the context of basketball extracurricular activities.

Vocational high school students represent a unique population because they experience academic pressure, practical learning demands, and transitional developmental challenges that may influence both physical and psychological well-being. Understanding whether participation in basketball extracurricular activities contributes to broader developmental outcomes may provide useful implications for schools, educators, and

policymakers in designing more effective student development programs. Therefore, this study aimed to compare physical fitness, socio-emotional behavior, and personal resilience between vocational high school students participating and not participating in basketball extracurricular activities.

METHOD

This study employed a quantitative comparative design using an ex post facto approach to examine differences between students participating and not participating in basketball extracurricular activities (Sexton, 2017; Válek, 2017). The study involved 100 vocational high school students from Malang and Pasuruan, Indonesia, consisting of 50 students participating in basketball extracurricular activities and 50 students who did not participate in basketball extracurricular programs. Participants were selected using purposive sampling based on predetermined inclusion criteria.

The inclusion criteria required participants to be actively registered as vocational high school students, regularly attend school activities during the data collection period, and provide complete research data. Students included in the basketball extracurricular group were additionally required to have participated regularly in basketball extracurricular activities for a minimum period of three months to ensure sufficient exposure to structured sports participation.

Three variables were measured in this study, namely physical fitness, socio-emotional behavior, and personal resilience. Physical fitness was assessed using standardized physical fitness testing procedures appropriate for adolescent populations. Socio-emotional behavior and personal resilience were measured using structured questionnaires employing a Likert-scale format. Prior to data collection, all instruments underwent validity and reliability testing to ensure measurement quality, with reliability analysis demonstrating acceptable internal consistency as indicated by Cronbach's Alpha coefficients above the minimum acceptable threshold.

Data collection was conducted during scheduled school activities under researcher supervision. Questionnaire administration was carried out directly in classroom settings, while physical fitness assessments were performed according to standardized testing procedures. Data analysis included descriptive statistics in the form of means and standard deviations, followed by assumption testing using normality and homogeneity tests. To determine differences between groups, Independent Samples t-tests were performed with statistical significance established at $p < 0.05$.

RESULT AND DISCUSSION

Result

The results of this study are presented to describe differences in physical fitness, socio-emotional behavior, and personal resilience between students participating and not participating in basketball extracurricular activities. Descriptive and inferential statistical analyses were conducted to examine whether significant differences existed between both groups.

Table 1. Physical Fitness Categorization of Basketball Extracurricular Participants

Score Range	Category	Number of Students
15 – 26	Very Low	
27 – 38	Low	1 student
39 – 50	Moderate	11 students
51 – 62	High	27 students
63 – 75	Very High	11 students

The table above shows that among students participating in basketball extracurricular activities, 1 student falls into the low category, 11 students are in the moderate category, 27 students are in the high category, and 11 students are in the very high category.

Table 2. Physical Fitness Categorization of Non-Basketball Extracurricular Students

Score Range	Category	Number of Students
15 – 26	Very Low	
27 – 38	Low	11 students
39 – 50	Moderate	34 students
51 – 62	High	5 students
63 – 75	Very High	

The table above shows that among non-extracurricular students, 11 students fall into the low category, 34 students are in the moderate category, and 5 students are in the high category.

Table 3. Personal Resilience Categorization of Basketball Extracurricular Participants

Score Range	Category	Number of Students
20 – 35	Very Low	
36 – 51	Low	
52 – 67	Moderate	3 students
68 – 83	High	39 students
84 – 100	Very High	8 students

The table above shows that among students participating in basketball extracurricular activities, 3 students fall into the moderate category, 39 students are in the high category, and 8 students are in the very high category.

Table 4. Personal Resilience Categorization of Non-Basketball Extracurricular Students

Score Range	Category	Number of Students
20 – 35	Very Low	
36 – 51	Low	
52 – 67	Moderate	17 students
68 – 83	High	29 students
84 – 100	Very High	4 students

The table above shows that among students who do not participate in extracurricular activities, 17 students fall into the moderate category, 29 students are in the high category, and 4 students are in the very high category. The results of the t-test indicate a significant difference in physical fitness levels between students participating in basketball extracurricular activities and those who do not participate in extracurricular activities.

Table 7. t-Test Results for Physical Fitness

Test Parameter	Row Used	Statistical Value
Levene's Test (Variance) Sig.		0.11
t-test (Significance)	Sig. (2-tailed)	0.00
t-value	t-value	8.794
Degrees of Freedom	df	98
Mean Difference	Mean Difference	13

The results of the data analysis show a significance value (Sig.) of $0.00 < p (0.05)$. Therefore, the null hypothesis (H0) is rejected, and the alternative hypothesis (H1) is accepted. This indicates that there is a significant difference in physical fitness levels between students who participate in basketball extracurricular activities and those who do not. With a mean difference of 13 and a t-value of 8.794, students who participate in extracurricular activities demonstrate higher levels of physical fitness compared to those who do not.

The t-test results also indicate a significant difference in personal resilience between students who participate in basketball extracurricular activities and those who do not.

Table 9. t-Test Results for Personal Resilience

Test Parameter	Row Used	Statistical Value
Levene's Test (Variance) Sig.		0.05
t-test (Significance)	Sig. (2-tailed)	0.00
t-value	t-value	4.076
Degrees of Freedom	df	98
Mean Difference	Mean Difference	5.94

The results of the data analysis show a significance value (Sig.) of $0.00 < p (0.05)$. Thus, the null hypothesis (H0) is rejected, and the alternative hypothesis (H1) is accepted. This means there is a significant difference in personal resilience between students who participate in basketball extracurricular activities and those who do not. With a mean difference of 5.94 and a t-value of 4.076, students participating in basketball extracurricular activities demonstrate higher levels of personal resilience compared to those who do not participate.

Discussion

The findings of this study demonstrated significant differences in physical fitness between vocational high school students participating in basketball extracurricular activities and those who did not participate. Students involved in basketball extracurricular programs exhibited significantly higher physical fitness scores compared with non-participating students (Lewis, 2024; Sexton, 2017). These findings indicate that regular

participation in organized sports activities may provide sufficient physical stimuli to support improvements in overall physical fitness among adolescents.

The higher physical fitness observed among basketball extracurricular participants may be explained by the physiological demands inherent in basketball activities. Basketball requires repeated bouts of running, sprinting, jumping, acceleration, deceleration, and rapid changes of direction that continuously challenge cardiovascular endurance, muscular strength, coordination, and movement efficiency (Wang et al., 2024). Regular exposure to these physical demands may stimulate physiological adaptation, including improvements in cardiovascular function, neuromuscular coordination, muscular endurance, and metabolic efficiency. Consequently, students who participate regularly in basketball activities may accumulate greater training loads and movement experiences compared with students who are not involved in structured sports activities (Cao et al., 2024).

These findings are consistent with previous research suggesting that adolescents who participate regularly in organized sports generally demonstrate higher physical fitness levels compared with less physically active peers. Participation in extracurricular sports may therefore serve not only as recreational activity but also as an important strategy for promoting physical health and reducing sedentary behavior among adolescents (Kanellopoulou et al., 2021). Considering that physical fitness during adolescence has been associated with long-term health outcomes, schools may benefit from strengthening structured extracurricular programs as part of comprehensive student development strategies.

In addition to physical fitness, this study also demonstrated that students participating in basketball extracurricular activities showed better socio-emotional behavior compared with non-participating students. These findings suggest that basketball participation may contribute not only to physical development but also to social and emotional competencies among adolescents. Basketball is inherently a team-based activity that requires communication, cooperation, emotional control, problem-solving, and interpersonal interaction throughout training and competition situations.

The better socio-emotional behavior observed among basketball participants may be explained through repeated social experiences encountered during team activities. Students participating in basketball programs are frequently exposed to situations requiring teamwork, conflict resolution, role adaptation, leadership, and emotional regulation. Such experiences may facilitate the development of interpersonal skills and emotional competencies that are transferable beyond sports settings. Therefore, participation in team sports environments may create meaningful opportunities for adolescents to strengthen social relationships and develop positive behavioral patterns.

Furthermore, this study found significantly higher personal resilience among students participating in basketball extracurricular activities. Personal resilience reflects an individual's capacity to adapt to challenges, recover from difficulties, and maintain psychological functioning under stressful conditions (Gupta & McCarthy, 2022). The findings suggest that participation in organized sports activities may contribute positively to strengthening students' adaptive capacities and coping abilities.

The development of resilience among basketball participants may be associated with the psychological demands embedded within sports participation (Sarkar & Fletcher, 2014). Athletes are frequently exposed to competitive situations, performance pressure, failures, setbacks, and various physical and emotional challenges during training and competition. Repeated exposure to these experiences may encourage the development of coping

strategies, self-regulation skills, persistence, and emotional adaptation. As a result, students involved in sports activities may gradually develop stronger resilience compared with students who have fewer opportunities to experience structured challenges.

Overall, the findings of this study indicate that participation in basketball extracurricular activities may provide multidimensional benefits extending beyond physical development alone. Basketball extracurricular participation appears to contribute positively to physical fitness, socio-emotional behavior, and personal resilience among vocational high school students. These findings provide practical implications for educational institutions by highlighting the importance of strengthening structured extracurricular sports programs as part of holistic student development initiatives. Nevertheless, because this study employed a comparative ex post facto design, causal conclusions cannot be established. Future research using longitudinal or experimental approaches is recommended to further examine the mechanisms through which extracurricular sports participation influences adolescent development.

CONCLUSION

This study demonstrated significant differences in physical fitness, socio-emotional behavior, and personal resilience between vocational high school students participating and not participating in basketball extracurricular activities. Students involved in basketball extracurricular programs showed higher levels of physical fitness, better socio-emotional behavior, and stronger personal resilience compared with students who did not participate in basketball extracurricular activities.

These findings indicate that participation in basketball extracurricular activities may contribute positively not only to physical development but also to psychosocial development among adolescents. Regular involvement in structured sports activities appears to provide meaningful opportunities for students to develop physical competencies, social interaction skills, emotional regulation, and adaptive psychological capacities.

The findings of this study provide practical implications for schools and educational institutions by emphasizing the importance of strengthening structured extracurricular sports programs as part of holistic student development strategies. However, because this study employed an ex post facto comparative design, causal relationships cannot be established. Therefore, future studies are recommended to use longitudinal or experimental approaches to further investigate the influence of extracurricular sports participation on adolescent development.

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