

ANALYSIS OF PHYSICAL CONDITION QUALITY IN HIGH SCHOOL STUDENTS' FUTSAL EXTRACURRICULAR ACTIVITIES

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Abstract. This study aims to assess the physical fitness levels of futsal athletes participating in extracurricular programs at six high schools in Tangerang City. Using a quantitative research method with a survey and analysis approach, data were collected from 60 students aged 16 to 18 years through purposive and area sampling. Six physical fitness tests were conducted: Sit and Reach (flexibility), Vertical Jump, Triple Hop Jump, Hurdle Jump (power), Illinois Agility Test (speed and agility), and Beep Test (endurance). The average scores of the participants were compared to normative data for both general non-athlete adolescents and trained athletes. Results showed that while the futsal athletes outperformed the general adolescent population in most fitness components, their performance was significantly lower than that of elite athletes, particularly in endurance and lower limb power. The findings indicate a need for improved training programs that emphasize physical conditioning alongside technical and tactical skills. Plyometric exercises, agility drills, and cardiovascular training are recommended to enhance the athletes' physical capacities. This research highlights the importance of balanced training in school sports programs and recommends that coaches incorporate comprehensive fitness training tailored to students' individual needs. Overall, enhancing physical fitness is essential for maximizing the performance and success of young futsal athletes.

Keywords: Futsal, Physical Fitness, Extracurricular, Endurance, Adolescents



INTRODUCTION

The era of globalization is already upon us. Not only is technology evolving, but human physical capabilities must also develop in order to withstand the onslaught of various diseases from the environment (Aven & Zio, 2021). When a person's physical condition is analyzed from a physiological perspective, it refers to their ability to understand how well their body can support and perform daily activities (Rhamadian, 2022). A person's physical condition refers to their ability to carry out activities without experiencing excessive fatigue (Vélez-Santamaría et al., 2023). Good physical condition can have a positive impact on students' thinking, their knowledge, and their insight, which is indirectly reflected in the achievements they have attained (Pujasmara et al., 2024). Physical condition is a unified set of components that cannot be separated in terms of improvement or maintenance (Apriyano et al., 2025; Arifan et al., 2024; Falaahudin et al., 2025). In other words, to improve physical condition, all aspects must be developed. However, prioritization should be based on the state or needs of each aspect and the reasons why those needs are important, as every individual has different goals or objectives (Safitri et al., 2024). If a person's physical condition is fit and healthy, there will be an improvement in the circulatory system and heart function, as well as enhancements in strength, flexibility, stamina, speed, and other components of physical fitness (Atradinal & Ockta, 2024; Saputra et al., 2025). The body's systems will function more efficiently and in a more coordinated manner during activities. Recovery of organs will also occur more quickly after strenuous activities, and the body will respond more rapidly when needed. There are ten components of physical fitness: strength, endurance, muscle power, speed, flexibility, agility, coordination, balance, accuracy, and reaction time (Mahfud & Fahrizqi, 2020).

Exercising regularly can significantly affect a person's physical fitness and directly contribute to various aspects of it. However, exercise should not be done carelessly, the type of activity, safety factors, and equipment used must be appropriate for a person's age (Mardius et al., 2025; Syahrastani et al., 2025). Physical activities should not be performed recklessly; instead, they should be done with proper techniques and according to the correct guidelines (Risma et al., 2025; Saharullah et al., 2024). If you enjoy exercising, you should always consider your age and physical condition in order to stay in control and maintain a healthier body (Rhamadian, 2022). Exercise is a

series of structured and planned movements performed by an individual with the aim of developing and enhancing their functional abilities or for a specific purpose. Sports can be categorized based on their goals or nature, such as competitive sports, recreational sports, health-oriented sports, and educational sports. All types of exercise are beneficial for the body if done correctly and regularly (Soly Deo Hutagalung, 2024). Exercise is commonly defined as an activity that trains both a person's physical and mental aspects, helping to maintain and improve the quality of health for those who exercise regularly. It is generally considered a deliberate activity performed to enhance or preserve physical health. Therefore, the term “exercise” is used to describe a person who performs specific movements regularly (Gumantan et al., 2021).

One way to increase students' interest in exercising is through extracurricular activities. According to Marlya, extracurricular activities are student activities that take place outside the formal teaching and learning program outlined in the curriculum, such as leadership training, art practice, motor skill development, and student coaching activities conducted outside of regular class hours (Wakasito & Wiriawan, 2021). Extracurricular activities are designed to allow students to participate in activities that align with their interests, talents, hobbies, personalities, and creativity. The purpose of extracurricular activities is to enhance students' creativity and interest in developing their potential, whether in the field of sports or the arts (Arifudin, 2022). Because intrakurricular activities are still insufficient in developing students' potential, extracurricular activities should be designed with the purpose of nurturing students' potential rather than for commercial purposes (Shilviana & Hamami, 2020). Although extracurricular activities have existed at every level of education, from elementary school to university, for a long time, their impact on the development of students' talents and skills has not been significant. This is due to poor management of extracurricular activities in schools, which often focus mainly on commercial aspects, ultimately placing a burden on the students (Asikin et al., 2024).

One of the most popular extracurricular sports in schools is futsal. Futsal is a highly favored extracurricular sport among students and is widely recognized in the community. Almost all Indonesians enjoy playing futsal, whether in cities or villages, and across all age groups from teenagers to adults. However, the majority of futsal players are adolescents and adults. This is evidenced by the many futsal clubs in each

city and the local, regional, national, and international tournaments that feature age categories ranging from 16 to 28 years old (Wahyu & Susanto, 2022). Both futsal and soccer are fast-paced and dynamic games. The differences between the two sports lie in the number of players, the size of the ball, the size of the playing field, and some basic techniques (Limbong et al., 2022). Futsal requires speed, strength, and agility. To achieve this level of physical quality, good ball-handling skills and a strong physical condition are essential. To create an impressive futsal game, you must have a good and optimal physical condition, as the game heavily depends on your physical fitness. The better your physical condition, the better your technique will be. Therefore, training methods greatly influence a player's physical condition, and the right methods are necessary to produce players who are physically strong and have athletic bodies (Suwardi, 2023).

Most futsal athletes in school extracurricular programs tend not to focus much on their physical condition; instead, they prioritize the achievements they want to attain. However, one of the key factors supporting those achievements is the physical condition of each athlete. Usually, extracurricular activities in schools focus on training techniques and tactics provided by the coaches, but physical fitness also needs to be trained to strengthen athletes during matches—this includes flexibility, balance, speed, strength, and endurance. As a result, many high school futsal players become exhausted early in the game, and quite a few lack the strength to maintain control of the ball (Syroyyudin et al., 2021). Athletes must have an excellent and good physical condition before starting sports activities to achieve maximum performance. Additionally, physical conditioning training is essential to improve an athlete's performance (Ashfahani, 2020). The most important physical fitness aspects in futsal are endurance, explosive power of the leg muscles, speed, agility, and strength (Andesva et al., 2025).

METHODS

This study uses a quantitative method with a survey and analysis approach. Quantitative research is a type of study that produces findings by using statistical procedures or other measurable methods. The research conducted here is profiling in nature, meaning a comprehensive data examination process to understand the structure, content, relationships, and quality of the data. Data profiling is carried out to ensure that

the collected data is accurate, consistent, and ready for further analysis. Data collection was done using purposive sampling and area sampling techniques. The data were gathered from six schools located in different districts within the city of Tangerang, namely SMAN 2 Tangerang, SMAN 5 Tangerang, SMAN 6 Tangerang, SMAN 8 Tangerang, SMAN 9 Tangerang, and SMAN 11 Tangerang. The population in this study consisted of 60 students who are futsal players participating in the school extracurricular programs, with an average age of 16 to 18 years old. Each school contributed 10 samples. The research instrument measured the physical fitness components of the futsal athletes in each school through six test items. Flexibility was assessed using the Sit and Reach test; speed and agility were measured using the Illinois Agility Test; power was measured with the Vertical Jump, Triple Hop Jump, and Hurdle Jump tests. Endurance was measured using the Beep Test.

After conducting the tests and collecting the data, the results were processed into tables to calculate the averages. These averages represent the physical condition of high school futsal athletes in Tangerang City. The average scores of the extracurricular athletes in Tangerang were then compared with established norms: norms for non-athletes (general adolescents) and norms for adolescent athletes. Finally, the percentage comparisons between extracurricular athletes and non-athletes, as well as between extracurricular athletes and elite athletes, were determined.

RESULTS

The following table 1 presents the results of physical fitness tests conducted on futsal athletes participating in extracurricular programs at six high schools in Tangerang City. The tests measured various components of physical fitness, including flexibility, power, agility, speed, and endurance, using standardized assessments such as the Sit and Reach, Vertical Jump, Triple Hop Jump, Hurdle Jump, Illinois Agility Test, and Beep Test. These results are compared to established norms for both general (non-athlete) adolescents and trained athletes to evaluate the current physical condition of the students. The comparisons help identify strengths and areas that require improvement to optimize athletic performance. The data provide valuable insights into the physical readiness of these students to compete effectively and highlight the need for targeted training programs to enhance their overall fitness levels.

Table 1. Extracurricular Physical Condition Test Results

School	Sit and Reach (cm)	Vertical Jump (cm)	Triple Hop Jump (m)	Hurdle Jump (x)	Illinois Test (sec)	Beep Test (ml)
SMAN 2	16.07	51	R: 6.35 L: 6.28	62	16.37	46.7
SMAN 5	16.09	53	R: 6.48 L: 6.31	81	16.16	41.4
SMAN 6	25.7	56	R: 6.42 L: 6.42	70	17.78	42.2
SMAN 8	19.8	52	R: 5.93 L: 6.01	49	17.15	35.7
SMAN 9	24.3	53	R: 6.19 L: 6.19	67	16.66	43.1
SMAN 11	15.3	48	R: 5.85 L: 5.55	38	16.64	37.0
Average	19.7	43	R: 6.20 L: 6.12	61	16.79	35.0
General	20.3	39	5.83	53	18.2	40.8
Athlete	24.1	74	6.78	104	15.2	59.3

The physical fitness test results in Kota Tangerang were compared to both non-athlete (general) and athlete standards. In the Sit and Reach test, Kota Tangerang reached 97% of the general population's average and only 81.7% of the athlete standard. This indicates a need for improved flexibility training such as static, dynamic, PNF, and ballistic stretching. For the Vertical Jump, Kota Tangerang exceeded the general average by 10% but only reached 58.1% of the athlete benchmark. To enhance lower body power, plyometric exercises such as box jumps, squats, jumping jacks, and burpees are recommended. In the Triple Hop Jump, the city's results were 106% of the general average but still 8.6% below the athlete level.

Strength and balance can be improved through specific plyometric drills like bounding, squats, and jumping routines. The Hurdle Jump results showed Kota Tangerang outperforming the general standard by 15%, yet achieving only 58.6% compared to athletes. Again, consistent lower-body strength training is advised. In the Illinois Agility Test, the performance was 8% faster than the general average but still 9% slower than the athletic standard. This suggests the need for SAQ (Speed, Agility, and Quickness) training, including zigzag cone drills, ladder drills, and T-drills. Lastly, for the Beep Test, which measures cardiovascular endurance, Kota Tangerang reached

only 85.7% of the general average, indicating a noticeable gap. Cardiovascular endurance can be improved with interval running, shuttle runs, and fartlek training.

DISCUSSION

Improving the physical condition of high school futsal athletes is essential to support their performance and success in competitions. Optimal physical fitness influences not only technical and tactical abilities but also endurance and overall capacity to cope with the demands of a fast-paced, high-intensity sport like futsal. The fitness test results from six high schools in Tangerang City reveal that although the futsal players demonstrate better physical fitness than general non-athlete adolescents, they still fall significantly short of the fitness levels exhibited by trained athletes. This gap highlights the urgent need for more structured and comprehensive physical training programs for these young athletes. Futsal is a sport characterized by high-intensity bursts of speed, rapid changes in direction, explosive power, and sustained aerobic effort. According to Sekulic et al (2021) the most critical physical fitness components for futsal performance include endurance, leg muscle explosive power, speed, and agility. Optimal physical condition enhances recovery between plays, reduces injury risk, and allows players to maintain consistent performance throughout the game.

The results align with research by Mendes et al (2022) which emphasized that many young futsal athletes tend to prioritize technical skills and match tactics while neglecting physical conditioning. This imbalance results in early fatigue during matches, decreased ball control, and reduced effectiveness under pressure. Dambroz et al (2022) also highlighted that physical conditioning training is critical to improve an athlete's performance and reduce fatigue, which in turn enhances tactical execution. Moreover, Mart et al (2024) pointed out that regular, planned exercise is necessary not only for physical health but also for mental focus and confidence during competition. This holistic benefit supports the argument for a balanced approach that integrates fitness conditioning alongside skill training in school-based extracurricular programs. The study's findings have several important implications for school sports programs and coaches. First, physical fitness training must be systematically included in futsal extracurricular activities rather than focusing solely on technical and tactical development. Coaches should receive education and resources to implement fitness

conditioning protocols tailored to adolescent athletes' needs. Second, schools should invest in appropriate equipment and facilities to support varied fitness training, such as agility ladders, cones, plyometric boxes, and cardio monitoring tools. This investment is crucial for facilitating comprehensive development and minimizing injury risks. Third, students' individual physical condition profiles should be assessed regularly to create personalized training plans that address their specific weaknesses and optimize their athletic potential. This approach acknowledges the variation in fitness levels and goals among students.

This study has several limitations that should be acknowledged. The sample size was relatively small (60 students from six schools) and limited to a single city, which may reduce the generalizability of the findings to other regions or age groups. The cross-sectional design captures fitness levels at a single point in time without evaluating changes over a training period. Additionally, the study did not account for external factors such as students' nutrition, sleep habits, or prior sports experience, all of which can significantly impact physical fitness. Finally, the reliance on field tests, while practical, may have inherent variability compared to laboratory-based assessments. Future studies should consider longitudinal designs that monitor changes in physical fitness over an entire training season, enabling the evaluation of specific interventions and training programs. Expanding the sample to include a broader geographic and age range would improve the generalizability of findings. Moreover, incorporating qualitative methods such as interviews or surveys could provide insight into students' attitudes, motivation, and barriers to physical conditioning. This holistic understanding could inform the design of more effective, engaging training programs. Investigating the impact of nutrition, psychological support, and recovery protocols alongside physical training could also enrich future research, given the multifaceted nature of athletic performance. Finally, exploring the role of coach education and training program management in extracurricular sports success may yield practical strategies to improve school sports outcomes.

CONCLUSIONS

The study reveals that the physical fitness of futsal extracurricular athletes in Tangerang City schools is better than that of general non-athlete adolescents but still

falls short compared to elite athlete standards. Key physical aspects such as flexibility, lower limb muscle power, speed, agility, and endurance require improvement through structured and consistent training programs. Current training tends to emphasize technical and tactical skills, but this should be balanced with physical conditioning to optimize athlete performance during matches. This research highlights the importance of integrating physical fitness training into futsal extracurricular activities to help athletes achieve maximum performance and reduce early fatigue. Additionally, personalized training plans based on each athlete's physical profile are recommended to enhance training effectiveness. The study also underscores the need for improved facilities and coach education to support comprehensive physical development of young athletes.

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