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Study of the Physical Condition of Al-Azhar Pencak Silat Athletes in Kepahiang Regency

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Abstract

Physical condition is a fundamental determinant of athletes' ability to perform effectively during training and competition. However, the physical capacities of athletes at the Al-Azhar Pencak Silat Association in Kepahiang Regency have not been objectively assessed to inform athlete development and performance enhancement. This study aimed to evaluate the physical condition of athletes at the association. A quantitative descriptive approach with a survey design was employed, involving physical testing and measurement. Of the 98 athletes in the study population, 30 were selected through stratified sampling. Cardiovascular endurance, agility, arm muscle strength, and lower-limb explosive power were assessed using the beep test, shuttle run, push-up test, and vertical jump test, respectively. Data were analyzed using frequency distributions and descriptive statistics. The results revealed that the athletes' overall physical condition was classified as moderate, with a mean score of 13.50, indicating that their physical capacities require further improvement. The study concludes that more structured and systematic conditioning is necessary to optimize athletic performance. These findings provide coaches with an empirical basis for evaluating athletes' physical capacities and developing targeted, systematic, and sustainable conditioning programs.

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Keywords: Agility; Cardiovascular Endurance; Pencak Silat Athletes; Physical Condition; Physical Fitness

INTRODUCTION

Sport constitutes an important component of human development because it contributes not only to physical capacity but also to health, discipline, character development, sportsmanship, and overall quality of life (Andriansyah et al., 2025). When performed systematically and purposefully, physical activity can help maintain bodily functions while simultaneously improving human movement capacity (Dony et al., 2025). Within the context of national development, sport also holds a strategic position because it encompasses the integrated development of physical, psychological, social, and cultural potential as stipulated in Law of the Republic of Indonesia Number 11 of 2022 on Sports. Consequently, sport development cannot be separated from systematic and sustainable athlete development aimed at improving both performance quality and competitive achievement.

One of the sports that holds particular significance in this context is pencak silat. Pencak silat is not merely a martial art but also an Indonesian cultural heritage that has developed across different regions and subsequently expanded into the international arena (Setiawan et al., 2022). Its development demonstrates that pencak silat encompasses multiple dimensions, including spirituality, cultural art, self-defense, and sport (Lubis, 2004). As a competitive sport, pencak silat requires athletes to integrate technical proficiency with physical readiness so that movements can be executed effectively throughout competition (Kurniyawan & Susanto, 2020). It also embodies ethical, technical, aesthetic, and athletic values, making it not only a physical activity but also an important component of holistic human development (Mufarriq, 2021).

The development of pencak silat as a competitive sport has increased the need for more structured and targeted athlete development. Pencak silat competition is characterized by rapid, explosive, dynamic, and physically demanding movements that require athletes to maintain performance under competitive pressure (Lailin et al., 2026). In competitive categories, athletes must perform attacks, defensive actions, positional changes, and various techniques while maintaining effective body control and coordination (Suwirman et al., 2018). These characteristics indicate that athletic success is determined not only by technical

mastery and tactical ability but also by the physical capacities that support the execution of movement. Physical condition is therefore regarded as a fundamental component of sports achievement because it determines an athlete's readiness to respond to the demands of training and competition (Ridwan, 2020).

Physical condition can be understood as an integrated set of bodily capacities that are interrelated and should be developed according to the specific demands of a sport. These capacities include strength, endurance, speed, flexibility, agility, coordination, balance, accuracy, and reaction ability (Antoni, 2021). In pencak silat, several of these components are particularly important because the sport requires rapid positional changes, force production, and the ability to sustain performance during competition. Strength contributes to the execution of punches, kicks, and throwing techniques, whereas agility enables athletes to change direction and respond rapidly to an opponent's movements. Insufficient physical capacity may consequently restrict the effective application of technical and tactical skills, even when an athlete possesses adequate technical proficiency (Wicaksana & Wahyudi, 2021).

Accordingly, physical conditioning should be treated as an integral component of athlete development. Systematic and repetitive training accompanied by progressive increases in workload represents an essential process for developing physical capacities (Putri et al., 2025). The fundamental purpose of training is to improve athletes' abilities so that they can achieve optimal performance in accordance with the specific demands of their sport (Rizaldi et al., 2022). In this process, coaches need to consider individual characteristics, sport-specific requirements, and athletes' initial physical conditions to ensure that training programs are appropriately designed. Beyond training itself, physical condition is also influenced by healthy lifestyle practices and the environment in which athletes conduct their daily activities (Nurhidayah & Graha, 2019).

Conceptually, physical condition does not refer to a single ability but represents an integrated system of components that cannot be entirely separated in the process of development and maintenance. Good physical condition can contribute to improved physiological functioning, movement efficiency, recovery capacity, and bodily responses to the demands of physical activity (Harsono, 1988). Therefore, physical assessment is necessary to establish an objective profile of an athlete's current condition before subsequent training programs are determined. Systematic assessment can identify physical capacities that have

developed adequately as well as components requiring further improvement, allowing coaches to establish more appropriate and evidence-based training priorities.

The importance of such assessment is particularly evident at the Al-Azhar Pencak Silat School in Kepahiang Regency. Based on the preliminary observation underlying this study, the athletes experienced a decline in competitive achievement across several championships. In the 2024 DPD RI Pencak Silat Championship for the Sumbagsel region, the Al-Azhar athletes obtained three gold, two silver, and four bronze medals, whereas their achievement at the 2024 Al-Azhar Cup decreased to two gold, three silver, and three bronze medals. This decline indicates the need for an objective assessment of the physical factors supporting athletes' competitive performance. Physical condition is a critical factor that requires particular attention because technical abilities cannot be optimally demonstrated without adequate physical support (Hardiansyah, 2018).

The research gap in this study concerns the absence of an empirical profile specifically describing the physical condition of athletes at the Al-Azhar Pencak Silat School in Kepahiang Regency according to physical components relevant to the demands of pencak silat. Previous theoretical discussions have established the importance of physical condition and identified its various components, yet specific information regarding endurance, agility, upper-body muscular strength, and lower-body explosive power among athletes at this particular school has not been systematically documented. Such information is important because physical profiling can serve as a basis for evaluating athlete development and determining training priorities according to athletes' actual needs (Yusuf & Zainuddin, 2020). Accordingly, the present study is not intended to examine causal relationships among variables but to provide an empirical description of athletes' physical capacities as an evaluative basis for ongoing development.

The novelty of this study lies in its specific profiling of physical condition among athletes at the Al-Azhar Pencak Silat School in Kepahiang Regency through four components considered highly relevant to pencak silat performance: endurance, agility, upper-body muscular strength, and lower-body explosive power. The selection of these components reflects the characteristics of pencak silat, which requires athletes to sustain physical activity, change movement direction rapidly, generate force, and execute explosive actions. This framework is consistent with the view that physical conditioning should be developed according to the specific requirements of a sport and the athlete's existing physical

status (Indrayana & Yuliawan, 2019). The resulting profile is expected to provide practical information for coaches when determining training priorities and evaluating athletes' physical readiness.

Based on the foregoing discussion, this study focuses on assessing the physical condition of athletes at the Al-Azhar Pencak Silat School in Kepahiang Regency, specifically their endurance, agility, upper-body muscular strength, and lower-body explosive power. These components were selected to provide an objective description of the athletes' physical capacities as a basis for evaluating the effectiveness and direction of their development. The study aims to determine the levels of endurance, agility, upper-body muscular strength, and lower-body explosive power among athletes at the Al-Azhar Pencak Silat School in Kepahiang Regency. The findings are expected to provide useful information for coaches and athletes in identifying their current physical capacities and establishing training priorities that are more closely aligned with competitive performance.

METHODS

This study employed a quantitative approach with a descriptive research design to describe the physical condition of athletes in the Al-Azhar Pencak Silat Association, Kepahiang Regency, based on physical fitness tests and measurements. The descriptive approach was selected to present the athletes' physical condition as it existed at the time of the study without testing a particular hypothesis. The research variable was the athletes' physical condition, which was operationalized through four indicators: cardiovascular endurance, agility, arm muscle strength, and lower-limb explosive power. These indicators were represented by standardized physical tests used in the study, namely the beep test for cardiovascular endurance, shuttle run for agility, push-up for arm muscle strength, and vertical jump for lower-limb explosive power. The results obtained from each test were subsequently classified according to the assessment norms adopted in the study, enabling the physical condition of the athletes to be quantitatively described.

The study was conducted within the Al-Azhar Pencak Silat Association in Kepahiang Regency in April 2025. Based on information obtained from the coach, the study population consisted of 98 registered Pencak Silat athletes, comprising 68 beginner athletes aged 12–14 years and 30 senior or longer-standing athletes aged 15–17 years. The sample consisted of

30 athletes, including 15 male and 15 female athletes from the latter group. The sampling procedure employed stratified sampling, in which the population was divided into subgroups based on specified characteristics or levels before the sample was selected. The longer-standing athlete group was selected as the research sample because this group constituted the participants assessed for physical condition in the study.

The research instrument was a physical fitness test sheet used to record the results of each measurement. Cardiovascular endurance was assessed using a 20-meter beep test, in which athletes ran continuously between two lines while following progressively paced audio signals until they were unable to maintain the required pace. Agility was assessed using a shuttle run performed along a figure-eight course between two poles positioned 10 meters apart. Arm muscle strength was measured using a 30-second push-up test, while lower-limb explosive power was assessed using the vertical jump test. Each test was conducted through preparation and warm-up, instruction, test implementation, and recording of the resulting performance. The thesis does not report separate statistical validity and reliability testing of the instruments; therefore, the study relied on the testing procedures and assessment norms adopted from the references specified in the research.

The data constituted primary data obtained directly from the physical measurements of the athletes. The collected data were tabulated and analyzed descriptively using frequency distributions and percentages. The analysis involved classifying the results for each physical condition indicator into predetermined categories, namely very good, good, moderate, poor, and very poor, according to the norms established for each test. The percentage for each category was calculated using the formula $P = F/N \times 100\%$, where P represents the percentage, F represents the frequency, and N represents the total number of participants. The resulting analysis was used to describe the level of physical condition of the Al-Azhar Pencak Silat athletes in Kepahiang Regency for each indicator and to provide an overall description of their physical condition.

RESULTS

This study aimed to determine the physical condition of Al-Azhar pencak silat athletes in Kepahiang Regency based on four measured components: cardiovascular endurance assessed through the bleep test, speed assessed through the shuttle run, upper-

body muscular endurance assessed through the push-up test, and lower-limb explosive power assessed through the vertical jump test. The study involved 30 athletes, consisting of 15 male and 15 female athletes. The results of each physical test were presented separately by sex and subsequently converted into physical-condition categories based on the scoring criteria established in the study.

Among the male athletes, the bleep test results showed a varied distribution of performance levels. Four athletes (26.67%) obtained scores within the 25–33 range, two athletes (13.33%) were within the 34–42 range, seven athletes (46.67%) were within the 43–52 range, and two athletes (13.33%) obtained scores above 53. No athlete obtained a score below 24. The highest score recorded was 56, while the lowest was 25. Based on the scoring procedure, the cardiovascular endurance of the male athletes was classified as moderate, with a mean category score of 3.47.

The shuttle run results for the male group also demonstrated variation across performance ranges. Eight athletes (53.33%) completed the test in less than 15.5 seconds, two athletes (13.33%) recorded times between 15.6 and 16 seconds, one athlete (6.67%) was within the 16.1–16.6-second range, one athlete (6.67%) was within the 16.7–17-second range, and three athletes (20%) recorded times above 17.2 seconds. The best recorded time was 11.05 seconds, whereas the slowest was 23.50 seconds. Based on the scoring classification, the shuttle run performance of the male athletes was categorized as moderate, with a mean category score of 3.73 and a standard deviation of 1.67.

The push-up test showed that two male athletes (13.33%) completed more than 39 repetitions, six athletes (40%) achieved 29–38 repetitions, six athletes (40%) achieved 23–28 repetitions, and one athlete (6.67%) achieved 19–22 repetitions. No athlete recorded fewer than 17 repetitions. The highest number of repetitions was 42, while the lowest was 20. Based on the scoring classification, upper-body muscular endurance among the male athletes was categorized as moderate, with a mean score of 3.47 and a standard deviation of 0.92.

The vertical jump results indicated that one male athlete (6.67%) achieved more than 63 cm, two athletes (13.33%) recorded 59–62 cm, seven athletes (46.67%) recorded 35–58 cm, and five athletes (33.33%) recorded 20–34 cm. No athlete recorded a result below 19 cm. The highest jump reached 64 cm, while the lowest reached 22 cm. Based on the scoring classification, lower-limb explosive power among the male athletes was categorized as moderate, with a mean score of 2.93 and a standard deviation of 0.88.

Among the female athletes, the bleep test results showed that three athletes (20%) achieved scores above 49, seven athletes (46.66%) were within the 38–48 range, three athletes (20%) were within the 31–37 range, one athlete (6.67%) was within the 24–30 range, and one athlete (6.67%) obtained a score below 23. The highest score was 50, whereas the lowest was 23. Based on the scoring classification, cardiovascular endurance among the female athletes was categorized as moderate, with a mean score of 3.37.

For the female shuttle run, four athletes (26.66%) recorded times below 16.7 seconds, five athletes (33.33%) were within the 16.8–17.4-second range, one athlete (6.67%) was within the 17.5–18.2-second range, one athlete (6.67%) was within the 18.3–18.9-second range, and four athletes (26.67%) recorded times above 19 seconds. The best recorded time was 14.32 seconds, while the slowest was 23.20 seconds. The scoring results placed the female athletes in the moderate category, with a mean score of 3.27 and a standard deviation of 1.62.

The female push-up results showed that two athletes (13.33%) completed more than 33 repetitions, three athletes (20%) achieved 25–32 repetitions, six athletes (40%) achieved 18–24 repetitions, and four athletes (26.67%) achieved 12–17 repetitions. No athlete recorded fewer than 11 repetitions. The highest performance was 34 repetitions and the lowest was 12 repetitions. Based on the scoring classification, upper-body muscular endurance was categorized as moderate, with a mean score of 3.20 and a standard deviation of 1.01.

The female vertical jump results showed that eight athletes (53.33%) achieved 35–58 cm, four athletes (26.67%) achieved 27–34 cm, and three athletes (20%) achieved 19–26 cm. No athlete recorded a result above 59 cm or below 18 cm. The highest jump reached 58 cm, while the lowest was 21 cm. Based on the scoring classification, lower-limb explosive power among the female athletes was categorized as moderate, with a mean score of 3.33 and a standard deviation of 0.82.

The combined results of the four physical-condition measurements produced the overall distribution presented in Table 1.

Table 1. Frequency Distribution of the Overall Physical Condition of Al-Azhar Pencak Silat Athletes in Kepahiang Regency

No	Physical Condition Score Range	Frequency (Fa)	Percentage (%)
1	17 – 18	2	6,67
2	15 – 16	10	33,33
3	13 – 14	11	36,67
4	11 – 12	1	3,33
5	09 – 10	6	20
Total		30	100

Source: Compiled by the researcher (2026)

Table 1. Frequency Distribution of the Overall Physical Condition of Al-Azhar Pencak Silat Athletes in Kepahiang Regency shows that the largest proportion of athletes was concentrated within the 13–14 score range, comprising 11 athletes (36.67%), followed by the 15–16 range, which included 10 athletes (33.33%). Meanwhile, six athletes (20%) were within the 09–10 range, one athlete (3.33%) was within the 11–12 range, and two athletes (6.67%) were within the 17–18 range. Based on the overall scoring results, the mean physical-condition score of the Al-Azhar pencak silat athletes in Kepahiang Regency was 13.5, which was classified as moderate.

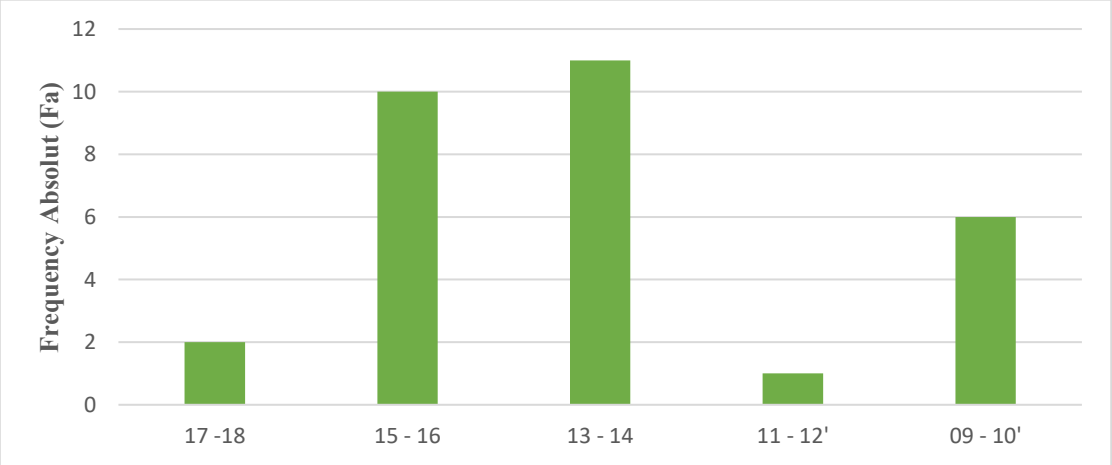


Figure 1. Distribution of the Overall Physical Condition of Al-Azhar Pencak Silat Athletes in Kepahiang Regency

Figure 1. Distribution of the Overall Physical Condition of Al-Azhar Pencak Silat Athletes in Kepahiang Regency shows that the physical-condition scores were primarily concentrated within the 13–14 range, representing 36.67% of the athletes, followed by the 15–16 range at 33.33%. The smallest proportion was observed in the 11–12 range, accounting for 3.33% of the participants. Overall, the findings indicate that the physical

condition of the Al-Azhar pencak silat athletes in Kepahiang Regency was classified as moderate, with an overall mean score of 13.5.

DISCUSSION

The findings indicate that the overall physical condition of athletes in the Al-Azhar Pencak Silat Association in Kepahiang Regency was classified as moderate, with an overall mean score of 13.50. When examined by sex, male athletes obtained a mean score of 13.67, whereas female athletes obtained a mean score of 13.33. The fact that both groups fell within the same category indicates that their overall physical condition had not yet reached an optimal level according to the assessment framework employed in the study. The relatively small difference between the two mean scores also suggests that the overall physical condition of the male and female groups was broadly comparable within the applied classification system. These findings indicate that the athletes possessed a functional physical foundation for training and competition, while also demonstrating considerable potential for systematic improvement.

Physical condition in this study was conceptualized not as a single physical capacity but as a combination of several components that contribute to athletic performance. Four indicators were assessed: cardiovascular endurance through the beep test, agility through the shuttle run, arm muscle strength through the push-up test, and lower-limb explosive power through the vertical jump test. These indicators represent different but interconnected dimensions of physical capacity relevant to pencak silat. Cardiovascular endurance concerns the ability to sustain physical activity, whereas agility reflects the ability to change movement direction rapidly. Arm muscle strength supports the execution of various technical movements, while lower-limb explosive power contributes to the ability to generate rapid and forceful actions.

The overall moderate classification suggests that the athletes' physical capacities had developed to a functional level but had not yet reached a condition that could be considered optimal. This finding is particularly relevant because pencak silat competition requires athletes to perform rapid, repeated, and coordinated movements under demanding conditions. Technical competence alone may not be sufficient when athletes are required to maintain performance throughout competitive activity. Lestari et al. (2021) argues that physical condition constitutes an important prerequisite for improving athletic achievement.

From this perspective, the moderate classification identified in the present study indicates that further physical development should remain an important component of the athletes' performance-development strategy.

The findings further suggest that the training provided by the coaching team has contributed to the development of the athletes' physical condition. The thesis indicates that physical conditioning has been incorporated into technical and tactical training, although dedicated physical conditioning has been relatively limited. Such integration allows physical capacities to develop alongside sport-specific skills. Nevertheless, the moderate classification suggests that the existing training stimulus has not yet resulted in an optimal level of physical development. This finding provides an important basis for coaches to evaluate whether the volume, organization, and continuity of physical conditioning are sufficient to produce further improvements.

The relationship between physical condition and technical performance is also important for interpreting the findings. Athletes with adequate technical skills still require sufficient physical capacity to execute those skills effectively under competitive conditions. Al Muttaqin & Wahyudi (2018) emphasizes that good physical condition is necessary to support the effective performance of technical skills. The present findings are consistent with this perspective because the moderate physical condition identified among the athletes indicates a need to strengthen the physical foundation supporting their technical and tactical abilities.

Physical assessment also serves an important evaluative function within the training process. Objective testing enables coaches to identify athletes' physical capacities through measurable performance indicators rather than relying exclusively on subjective observations. Asnaldi & Kibadra (2019) emphasizes the importance of physical testing and measurement for determining athletes' physical capabilities. In the present study, the use of four physical tests provided an empirical profile of several major physical components among the Al-Azhar athletes. Such information can serve as a baseline for identifying training needs and monitoring physical development through subsequent assessments.

The beep test provides an indication of aerobic endurance through repeated running over a 20-meter course while following progressively increasing audio signals. This procedure allows athletes' capacity to sustain activity under increasing intensity to be assessed systematically. The shuttle run, in contrast, provides information concerning the ability to

move rapidly and change direction. These capacities are relevant to the movement demands of pencak silat, which require athletes to combine sustained activity with rapid and controlled movements. The assessment norms used in the study also distinguish performance categories according to sex, allowing the results to be interpreted against the corresponding standards.

The assessment of arm muscle strength through the push-up test and lower-limb explosive power through the vertical jump test further strengthens the multidimensional assessment of physical condition. The push-up test assesses upper-body muscular capacity based on the number of repetitions performed within the specified time, while the vertical jump evaluates the ability to generate explosive force through the lower limbs. Both capacities are relevant to pencak silat because athletes must generate force rapidly while maintaining control of their movements. The classification norms applied in the study likewise differentiate performance levels for male and female athletes.

The findings are also consistent with the conceptualization of physical condition as a multidimensional construct. Sepriadi et al. (2017) describes physical condition as encompassing several capacities, including speed, agility, flexibility, strength, explosive power, and endurance. The present study did not assess all of these components but focused on four indicators represented in the research instruments. This narrower operationalization provides a specific empirical profile of the physical condition of Al-Azhar athletes based on directly measurable capacities. The study therefore contributes contextual evidence regarding how several physical components can be assessed simultaneously among pencak silat athletes in a local training setting.

From a practical perspective, the findings provide coaches with an empirical basis for evaluating the existing training program. The moderate classification indicates that the current training process has established a basic level of physical capacity, but further development is necessary to enhance competitive readiness. Training programs may therefore place greater systematic emphasis on endurance, agility, muscular strength, and explosive power while maintaining their integration with technical and tactical training. Additional individual conditioning may also be considered to address differences in athletes' physical development. Periodic reassessment would allow changes in physical condition to be monitored through objective measurements rather than inferred solely from competitive performance.

Theoretically, the study reinforces the view that physical condition represents a fundamental component of athletic development. The findings indicate that physical preparation should be regarded as an integral part of the training process rather than merely as an adjunct to technical and tactical practice. The study contributes empirical evidence from the specific context of the Al-Azhar Pencak Silat Association in Kepahiang Regency. It also demonstrates the value of assessing several physical components concurrently in order to obtain a more comprehensive representation of athletes' physical condition.

Several limitations should be acknowledged when interpreting the findings. The sample consisted of only 30 athletes from a population of 98, meaning that the results primarily represent the sampled athletes rather than the broader population of pencak silat athletes. The descriptive design also prevents the study from establishing causal relationships between particular training practices and physical condition. Because the measurements were conducted within a single research period, the study cannot demonstrate how athletes' physical capacities changed over time. Furthermore, the four indicators did not encompass every physical component potentially associated with pencak silat performance. The study also did not report separate statistical validity and reliability testing of the instruments, requiring the findings to be interpreted within the context of the testing procedures and assessment norms adopted in the thesis.

Overall, the moderate physical condition of the Al-Azhar Pencak Silat athletes indicates that they possess a basic physical foundation but still require further development to achieve a higher level of competitive readiness. The mean scores of 13.67 for male athletes and 13.33 for female athletes placed both groups within the same overall category despite the difference in their mean values. The findings consequently highlight the need for more structured, systematic, and continuous physical conditioning. The principal contribution of this study lies in providing an objective profile of the athletes' physical condition through four measurable indicators that can serve as a baseline for training evaluation and subsequent monitoring of physical development.

CONCLUSION

This study concludes that the overall physical condition of athletes in the Al-Azhar Pencak Silat Association, Kepahiang Regency, was classified as moderate, with an overall mean score of 13.50. This finding indicates that the athletes possessed a functional level of

physical capacity to support training and competitive activities, but their physical condition had not yet reached an optimal level for maximizing performance. The findings address the objective of the study by providing an objective profile of the athletes' physical condition based on the components assessed through the beep test, shuttle run, push-up, and vertical jump. Therefore, physical conditioning remains an important aspect requiring attention within the athletes' development and performance improvement process.

Practically, the findings provide a basis for athletes and coaches to develop physical conditioning in a more systematic and targeted manner. Athletes are expected to maintain motivation, discipline, and consistency in following training programs while maintaining dietary practices that support their sporting activities. Coaches should evaluate existing training programs by balancing physical conditioning with technical and tactical development to facilitate more optimal athletic performance. The significance of this study lies in providing a measurable profile of athletes' physical condition that can serve as an evaluation basis for the development program at the Al-Azhar Pencak Silat Association in Kepahiang Regency. The findings may also serve as baseline data for monitoring changes in athletes' physical condition in subsequent periods. Future studies are recommended to involve a broader population and incorporate additional physical fitness components to provide a more comprehensive assessment of physical readiness among pencak silat athletes.

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