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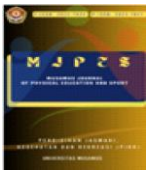

Physical Fitness Profile of Pencak Silat Athletes at the PSHT Batang Kuis Training Unit: A Descriptive Survey

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Abstract

Objectives: This study profiled six components of physical fitness—strength, speed, flexibility, agility, explosive power, and balance—among athletes training at the Persaudaraan Setia Hati Terate (PSHT) Batang Kuis training unit.

Materials and Methods: A quantitative cross-sectional descriptive survey was conducted with all 18 active athletes registered at the training unit. Total sampling was applied. Athletes completed the six-component field-test battery documented by the training unit. The analysis used the arithmetic mean and frequency distributions, and each component was interpreted according to the classification standards used in the original assessment records.

Results: Mean scores were 37.70 for strength (moderate), 4.59 for speed (moderate), 314.40 for flexibility (good), 15.52 for agility (above average), 59.70 for explosive power (good), and 37.00 for balance (average). The pattern indicates comparatively stronger flexibility, agility, and explosive power, while strength, speed, and balance remain priority areas for conditioning.

Conclusions: The athletes displayed an uneven fitness profile rather than uniformly high readiness across components. Coaches should retain power and mobility work while giving greater emphasis to progressive strength development, acceleration and reaction-speed training, and dynamic balance exercises. Periodic retesting with clearly documented protocols and units is recommended to monitor individual responses.

Keywords: agility; balance; combat sports; explosive power; pencak silat

Introduction

Pencak silat is an Indonesian martial art and competitive combat sport that integrates attack, defense, movement patterns, tactical decision-making, and cultural values. Competitive performance is intermittent and technically complex: athletes must repeatedly accelerate, decelerate, change direction, stabilize the body, and produce rapid force while responding to an opponent. Early physiological evidence showed that silat competition places substantial aerobic and anaerobic demands on athletes and requires meaningful lower-limb power (Aziz et al., 2002). More recent reviews similarly identify strength, speed, agility, flexibility, power, coordination, and endurance as central elements of physical preparation in pencak silat (Nugroho et al., 2024; Zulfa & Hanief, 2022).

A multidimensional assessment is therefore more informative than relying on a single fitness indicator. Strength supports stable postures, blocking, and forceful attacks; speed and agility enable athletes to initiate or evade actions within short time windows; flexibility contributes to kicking range and movement efficiency; explosive power underpins rapid kicking and jumping actions; and balance helps maintain control during unilateral and rotational techniques. Empirical studies have linked explosive power and flexibility with sickle-kick performance (Ihsan et al., 2022), balance and leg power with T-kick speed (Firmanto et al., 2023), and leg explosive power with sickle-kick speed (Islam & Octavia, 2025). These findings support the use of a component-based profile when coaches plan training.

Physical readiness is also sensitive to training exposure and program design. Tabata and circuit weight training have improved strength, flexibility, endurance, and power in female pencak silat athletes (Patah et al., 2021). Plyometric, functional, and interval training can enhance power and kicking speed in university athletes (Lubis et al., 2024), while sport-specific high-intensity interval training improves endurance and technical performance (Khotimah et al., 2023). Accordingly, baseline profiling can identify which components should be maintained and which require targeted intervention.

Despite the growing literature, local training units often lack a consolidated description of their athletes' physical condition. This limits the coach's ability to prioritize training and evaluate change over time. The PSHT Batang Kuis training unit regularly prepares athletes from different age groups but had not previously summarized their physical fitness across the major components used in its field assessment. This study therefore aimed to describe the strength, speed, flexibility, agility,

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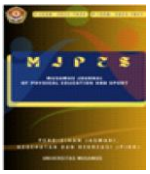

explosive power, and balance of all active athletes at the unit. The practical objective was to provide a baseline for conditioning decisions and subsequent monitoring.

Materials and Methods

Study Design

This study used a quantitative, cross-sectional descriptive survey design. It was intended to characterize the athletes' current physical fitness rather than test a causal hypothesis or evaluate a training intervention. Data were collected at the PSHT Batang Kuis pencak silat training unit in Batang Kuis, North Sumatra, Indonesia.

Study Participants

The target population comprised all athletes actively registered at the training unit at the time of data collection. Because the population was small and accessible, total sampling was used; all 18 athletes were included in the analysis. The source manuscript did not provide a verified breakdown by sex, age, competitive category, training history, or weight class. These characteristics should be added from the original roster before journal submission because they affect the interpretation and external validity of fitness scores.

Study Organization and Measures

Testing covered six components: strength, speed, flexibility, agility, explosive power, and balance. The training-unit records contained a score and categorical interpretation for each component. Testing was completed in the training environment under coach and researcher supervision. Athletes received instructions before each assessment and completed the tests in a standardized sequence with recovery between efforts.

The archived manuscript did not identify the exact test name, measurement unit, number of trials, equipment specification, rater reliability, or normative cut-off source for every component. Consequently, the present revision reports the recorded values exactly as supplied and does not retrospectively assign units or protocols. Before submission, the authors should insert the original protocol details (for example, test name, unit, trial rule, and classification reference) to ensure reproducibility.

Statistical Analysis

Descriptive statistics were used. For each fitness component, the arithmetic mean was calculated as the sum of individual scores divided by the number of athletes. Frequency distributions were originally calculated as the number of athletes in a category divided by the total sample and multiplied by 100. However, several category percentages in the source manuscript were internally inconsistent and exceeded 100% when summed. To protect data integrity, the revised Results section reports only the verified component means and overall classifications. No inferential statistical tests were performed.

Ethical Considerations

The source manuscript did not state the name of an ethics committee, approval number, consent procedure, or data-protection process. These details must be verified and added by the authors before submission in accordance with the target journal's research-ethics policy.

Results

All 18 athletes completed the recorded six-component assessment. Table 1 summarizes the verified mean score and overall classification for each component. Flexibility and explosive power were classified as good, and agility was above average. Strength and speed were moderate, while balance was average.

Table 1. Physical fitness profile of PSHT Batang Kuis athletes (n = 18)

No.	Fitness component	Mean score	Overall classification
1	Strength	37.70	Moderate
2	Speed	4.59	Moderate
3	Flexibility	314.40	Good
4	Agility	15.52	Above average
5	Explosive power	59.70	Good
6	Balance	37.00	Average

Note. Scores and classifications are reproduced from the verified summary in the source manuscript. Units and protocol-specific cut-offs were not documented in the archived text and require author confirmation.

The profile shows that the athletes were not uniformly developed across all assessed components. Their relatively favorable flexibility, agility, and explosive-power classifications suggest a useful base for kicking, directional change, and rapid force production. In contrast, moderate strength and speed and average balance identify areas in which additional conditioning and individual monitoring may be warranted. Because only aggregated means were available, variability between athletes could not be quantified.

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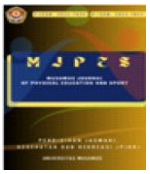

Discussion

This study found a mixed physical fitness profile among PSHT Batang Kuis athletes. Agility was the strongest relative classification (above average), flexibility and explosive power were good, strength and speed were moderate, and balance was average. The principal implication is that group-level readiness cannot be represented adequately by a single label. Instead, the team has specific assets and deficits that should guide periodized conditioning.

The favorable explosive-power result is consistent with the technical demands of pencak silat. Powerful attacks depend on the rapid production and transfer of force through the lower limbs and trunk. Ihsan et al. (2022) found that explosive power and flexibility contributed to sickle-kick performance, while Islam and Octavia (2025) reported a significant relationship between leg explosive power and sickle-kick speed. Experimental evidence also shows that plyometric methods improve straight-kick frequency (Sudiana et al., 2023) and that combined plyometric, functional, and interval programs can increase power and kicking speed (Lubis et al., 2024). The good explosive-power classification in the present sample should therefore be maintained through progressive, technically appropriate jumping, hopping, medicine-ball, and resisted-kicking exercises rather than treated as a completed training goal.

Flexibility was also classified as good. This finding is practically relevant because adequate hip and lower-limb range of motion supports kicking amplitude and helps athletes reach targets without excessive compensatory trunk movement. Ihsan et al. (2022) identified flexibility as one contributor to sickle-kick performance, and Kamarudin et al. (2023) showed that training approaches combining speed and plyometric elements can improve kicking ability. However, flexibility should be interpreted alongside active control. High passive range without sufficient strength and balance may not translate into stable, precise technique. Coaches should therefore integrate mobility with eccentric strength, unilateral control, and sport-specific movement patterns.

The above-average agility result suggests that the athletes can change direction relatively effectively. Agility in combat sport is not merely pre-planned running; it also requires perception, rapid decision-making, braking, and reacceleration in response to an opponent. Sport-specific reaction-speed models have been developed for pencak silat athletes (Sulfa et al., 2024), and physical-performance research emphasizes the interaction of speed, power, and agility rather than their isolation (Nugroho et al., 2021). Maintaining this quality requires drills that include an external stimulus, tactical choice, and technically valid attack-defense sequences.

Strength and speed were only moderate, indicating clear priorities. Strength is a foundation for force production, postural control, repeat-effort capacity, and the safe expression of power. Evidence from combat sports shows that strength training improves several dimensions of athletic fitness (Cid-Calfucura et al., 2023). Within pencak silat, Patah et al. (2021) reported improvements in arm and leg strength after both Tabata and circuit weight training. A progressive program should therefore include bilateral and unilateral lower-body strength, pulling and pushing strength, trunk anti-rotation, and movement quality, with load adjusted to athlete age and training experience. Speed work should combine short accelerations, fast technical repetitions performed without fatigue, reaction drills, and adequate recovery so that movement quality remains high.

Balance was the lowest relative classification. This deserves attention because many pencak silat techniques are performed from a narrow or unilateral base, and athletes must remain stable while kicking, evading, landing, or absorbing contact. Firmanto et al. (2023) reported that balance and leg power were associated with T-kick speed, supporting the inclusion of balance as a performance-related quality rather than an isolated rehabilitation measure. Dynamic single-leg tasks, controlled landings, perturbation exercises, and kick-to-recovery sequences may be more specific than prolonged static balance alone. Progress should be monitored on both limbs to identify asymmetry.

The present findings broadly agree with earlier descriptive research showing that pencak silat athletes often display uneven physical profiles across speed, power, strength, and other components (Khotimah et al., 2022; Nugroho et al., 2021). They also align with the recent systematic review by Nugroho et al. (2024), which concluded that physical preparation in pencak silat must integrate agility, flexibility, strength, motor ability, and psychological readiness. At the same time, direct comparison of numerical scores between studies is inappropriate when test protocols, units, athlete level, sex, age, and competitive category differ. This reinforces the need for transparent, standardized test documentation.

Practical Implications

The profile can be translated into a simple coaching sequence: (1) verify each athlete's individual score and test unit; (2) prioritize strength, acceleration/reaction speed, and dynamic balance for athletes below the unit's target; (3) retain agility, mobility, and explosive-power stimuli; and (4) repeat the same test battery after a defined training block. Individual results should be interpreted against age-, sex-, and competition-appropriate norms where available. Recent work on physical test norms for young pencak silat athletes demonstrates the value of population-specific standards (Nurhidayah et al., 2024).

Limitations

This study has several limitations. The sample was small and drawn from one training unit, so the findings cannot be generalized to all PSHT or pencak silat athletes. The analysis was descriptive and cross-sectional, preventing causal conclusions. Raw individual data, dispersion statistics, demographic characteristics, training history, and competition category were unavailable. Most importantly, the archived manuscript did not document the exact protocol, unit, reliability, or normative source for each test, and some original category percentages were mathematically inconsistent. The revised paper therefore limits its claims to verified means and overall classifications. Future studies should use a prespecified, reproducible battery and report individual-level distributions, confidence intervals, and subgroup comparisons where sample size permits.

Conclusions

The 18 PSHT Batang Kuis athletes demonstrated a differentiated physical fitness profile. Flexibility and explosive power were good and agility was above average, whereas strength and speed were moderate and balance was average. These results provide a preliminary baseline for training, with strength, speed, and dynamic balance as the main development priorities. Coaches should preserve the athletes' existing mobility, agility, and power while applying progressive, individualized conditioning and repeating the same documented assessments after training blocks. Final journal submission should include verified participant characteristics, ethics information, and complete test protocols and units.

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Author Contributions

Agung Susila: conceptualization, methodology, investigation, project administration, and writing—original draft. Eka Abdurrahman: data curation, formal analysis, interpretation, and writing—review and editing. Ramadan: supervision, validation, and writing—review and editing. All authors approved the final manuscript and accept responsibility for the integrity of the work.

Conflict of Interest

The authors declare no conflict of interest.

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This research received no external funding.

Data Availability

The aggregate data supporting the findings are presented in the article. De-identified individual data may be made available by the corresponding author upon reasonable request, subject to verification of the original records and applicable ethical requirements.

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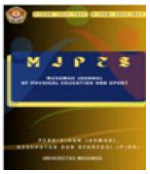

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