

ANALISIS DESKRIPTIF KONDISI FISIK ATLET PUTRI PENCAK SILAT PROVINSI SULAWESI SELATAN

DESCRIPTIVE ANALYSIS OF THE PHYSICAL CONDITION OF FEMALE PENCAK SILAT ATHLETES FROM SOUTH SULAWESI PROVINCE

Muhammad Rizky Alfarizi¹, Muslim bin Ilyas²

^{1,2}Universitas Negeri Makassar

* Corresponding author, email: m.rizky.alfarizi@unm.ac.id

Abstrak

Kondisi fisik menjadi dasar penunjang performa dan prestasi atlet pencak silat. Penelitian ini bertujuan untuk mendeskripsikan kondisi fisik atlet putri pencak silat Provinsi Sulawesi Selatan yang diberangkatkan pada kejuaraan Pekan Olahraga Mahasiswa Nasional. Penelitian ini menggunakan metode deskriptif kuantitatif dengan subjek sebanyak 10 atlet putri. Instrumen yang digunakan adalah tes kecepatan, kelincahan, kekuatan, power, dan daya tahan aerobik (VO2Max). Analisis data dilakukan menggunakan statistik deskriptif berupa nilai minimum, maksimum, rata-rata, standar deviasi, serta distribusi kategori kondisi fisik. Hasil penelitian menunjukkan bahwa komponen kecepatan dan kelincahan memiliki variasi yang relatif rendah, sedangkan komponen kekuatan dan VO2Max menunjukkan variasi yang cukup tinggi antar atlet. Distribusi kategori kondisi fisik menunjukkan bahwa 10% atlet berada pada kategori baik, 40% cukup, dan 50% kurang. Dapat disimpulkan bahwa kondisi fisik atlet putri pencak silat Provinsi Sulawesi Selatan secara umum belum optimal dan memerlukan program latihan yang lebih terstruktur dan spesifik.

Kata Kunci: kondisi fisik; pencak silat; atlet putri; studi deskriptif; prestasi olahraga

Abstract

Physical condition is a fundamental factor in supporting the performance and achievement of pencak silat athletes. This study aimed to describe the physical condition of female pencak silat athletes from South Sulawesi Province who participated in the National Student Sports Week. A quantitative descriptive method was employed, involving 10 female athletes as research subjects. The assessment instruments included tests of speed, agility, strength, power, and aerobic endurance (VO2Max). Data were analyzed using descriptive statistics, including minimum and maximum values, mean, standard deviation, and the distribution of physical condition categories. The results indicated that speed and agility showed relatively low variability among athletes, whereas strength and VO2Max exhibited higher variability. The categorical analysis revealed that 10% of athletes were classified as good, 40% as sufficient, and 50% as poor. These findings suggest that the overall physical condition of female pencak silat athletes in South Sulawesi Province has not yet reached an optimal level. Therefore, the implementation of a more structured, targeted, and sport-specific training program is necessary to improve athletes' physical readiness and performance.

Keywords: physical condition; pencak silat; female athletes; descriptive study; sports performance

INTRODUCTION

The achievement of female Pencak silat athletes from South Sulawesi Province at the National Student Sports Week (POMNAS) held in Central Java, where they obtained only one bronze medal, reflects that the athletes' performance has not yet reached an optimal level. In the context of Pencak silat, success in competition is not solely determined by mastery of technical and tactical skills but is also strongly influenced by the athlete's level of physical condition (Ittaqwa et al., 2025). Biomotor components such as speed, agility, strength, explosive muscle power, and aerobic endurance capacity (VO2Max) play a crucial role in supporting movement effectiveness, responding to opponents' attacks, and maintaining competitive intensity throughout the match (Hernandez-Martinez et al., 2025). Several previous studies have indicated that limitations in certain physical components directly affect the decline in athletes' performance quality when competing at high intensity (Wang et al., 2025).

Scientific studies related to the physical condition of Pencak silat athletes have developed in recent years; however, most studies still focus on specific physical components separately, such as VO2Max or speed, without conducting a comprehensive analysis of athletes' overall physical condition profiles (Gawel et al., 2025). In addition, research has predominantly focused on male athletes or athletes at the national level, while studies examining female Pencak silat athletes, particularly regional athletes, remain relatively limited (Bueno et al., 2022). Furthermore, studies that specifically evaluate athletes' physical condition after participating in major competitions are still scarce, resulting in limited empirical data that can be used as a basis for post-competition training evaluation (Golmohammadi et al., 2024). This condition indicates a gap in information regarding the actual physical condition profile of South Sulawesi female Pencak silat athletes after participating in POMNAS.

The state of the art of this study lies in its post-competition evaluation approach by comprehensively examining the physical condition of female Pencak silat athletes from South Sulawesi using testing parameters relevant to competition demands, including speed, agility, strength, explosive power, and VO2Max (Alfarizi et al., 2025; Fahrizal et al., 2025). Through this approach, the study is expected to identify the dominant weaknesses in physical condition components that contribute to suboptimal performance achievements (Nugroho et al., 2021). The findings of this study are expected to serve as a basis for developing more specific, targeted, and needs-based physical conditioning training programs, thereby enabling the development of female Pencak silat athletes in South Sulawesi to be conducted more effectively and sustainably in order to improve performance in future national competitions.

METHODS

This study employed a quantitative descriptive approach aimed at objectively describing the physical condition of female Pencak silat athletes from South Sulawesi Province who were sent to compete in the National Student Sports Week (POMNAS) held in Central Java in 2025. This approach was selected because the study did not involve any

treatment or manipulation of variables but rather focused on portraying the athletes' physical condition based on measurement results obtained through physical tests and assessments.

The research subjects consisted of all female Pencak silat athletes from South Sulawesi Province who were officially registered and delegated to participate in the 2025 POMNAS in Central Java. The sampling technique used was total sampling, considering the relatively limited number of athletes and the inclusion of the entire population as research subjects. This study was limited to female athletes who participated in the centralized training program and officially represented South Sulawesi Province at the 2025 POMNAS in Central Java. Therefore, the findings are expected to provide an actual overview of the athletes' physical condition at the national university-level competition. The research instruments consisted of several physical fitness tests covering key components, including cardiorespiratory endurance measured using the Multistage Fitness Test (MFT), agility measured through the Shuttle Run test, lower body strength assessed using the Squat Free Weight test, arm and shoulder strength measured using the Push-Up test, abdominal muscle strength measured using the Sit-Up test, back muscle strength measured using the Back-Up test, and lower limb explosive power assessed using the Standing Broad Jump test. The collected data were analyzed using descriptive statistics, including minimum and maximum values, total scores, mean values, and standard deviations. The results were then categorized based on relevant physical fitness norms for female Pencak silat athletes. The analysis results were used to present a comprehensive profile of the athletes' physical condition as a basis for evaluation and for planning future performance development programs.

RESULTS AND DISCUSSION

Based on the results of descriptive analysis of the five biomotor components of female Pencak silat athletes from South Sulawesi Province who were registered as participants in POMNAS, the following descriptions were obtained:

Tabel 1. Data of physical condition of pencak silat woman athletes

	N	Min	Max	Sum	Mean	Std Dev
Speed	10	16,03	21,92	177,17	17,717	1,81660887
Agility	10	27,97	32,02	291,28	29,128	1,24616567
Strength	10	18	40	296	29,6	6,14997742
Power	10	1,8	2,15	19,6	1,96	0,12866839
VO2Max	10	3,3	6,9	52,5	5,25	1,0384283

Based on the measurement results involving 10 female Pencak silat athletes from South Sulawesi Province, the speed component showed a mean value of 17.717 with a standard deviation of 1.82, a minimum value of 16.03, and a maximum value of 21.92. These results indicate that the athletes' speed ability is relatively homogeneous, although variations in performance among athletes are still evident. For the agility component, the mean value obtained was 29.128 with a standard deviation of 1.25, a minimum value of 27.97, and a

maximum value of 32.02. These findings suggest that the majority of athletes possess a fairly good level of agility with relatively small variation.

Furthermore, the strength component showed a mean value of 29.6, with a relatively wide range of scores, namely a minimum of 18 and a maximum of 40, and a standard deviation of 6.15. The relatively high variation in this component indicates significant differences in strength levels among the athletes. For the power component, the measurement results showed a mean value of 1.96 with a standard deviation of 0.13, a minimum value of 1.8, and a maximum value of 2.15. The low standard deviation indicates that the athletes' power ability is relatively uniform.

Meanwhile, aerobic endurance capacity (VO2Max) showed a mean value of 5.25, with a minimum value of 3.3 and a maximum value of 6.9, and a standard deviation of 1.04. This variation indicates that the athletes' aerobic endurance capacity is still uneven and may become one of the limiting factors in achieving optimal performance.

Tabel 2. Woman athlete categories

Category	Athleet	Percentage
Very good	0	0%
Good	1	10%
Enough	4	40%
Less	5	50%
Very less	0	0%

Based on the analysis of the table above, no athletes were classified in either the very good or very poor categories, with each category showing a percentage of 0%. This indicates that, in general, the athletes' physical condition does not fall into extreme levels, either in the highest or lowest categories. One athlete (10%) was classified in the good category, while four athletes (40%) fell into the moderate category. These findings indicate that nearly half of the athletes possess a moderate level of physical condition, meaning that further improvement is still required to support competitive performance. However, the majority of athletes, namely five athletes (50%), were categorized as less. The dominance of this category indicates that, overall, the physical condition of female Pencak silat athletes from South Sulawesi Province is still not optimal and may hinder performance achievement. Overall, these results confirm that most athletes fall within the moderate to low categories, suggesting the need for special attention in designing more targeted and specific training programs aimed at improving physical condition components that remain dominant weaknesses.

The findings of this study indicate that the physical condition of female Pencak silat athletes from South Sulawesi Province has generally not yet reached an optimal level to support competitive performance. This is reflected in the average scores of each physical component as well as the distribution of assessment categories, which are dominated by moderate and low categories. Compared with other studies, Pencak silat athletes preparing to compete in a tournament generally demonstrate good physical condition (Aristiyanto et al., 2021).

The speed and agility components showed relatively low levels of variation, indicating that these abilities are relatively homogeneous among athletes. This condition may be

related to the characteristics of Pencak silat training, which emphasizes mastery of basic techniques, rapid and sudden movements, and repeated changes of direction during training sessions and match simulations (Young et al., 2015). The speed and agility of Pencak silat athletes are closely related to specific abilities that must be trained individually (Novita & Sumartiningsih, 2025). Therefore, these two components tend to develop better compared with other physical components.

In contrast, strength and VO2Max showed relatively high levels of variation among athletes. These findings indicate that the development of these two components may not yet have been implemented evenly or systematically. Muscle strength plays an important role in supporting the effectiveness of attacks, postural stability, and defensive capabilities during physical contact, particularly in combat sports (Hernandez-Martinez et al., 2025). Meanwhile, VO2Max capacity plays a crucial role in maintaining work intensity throughout a match (Kljajević et al., 2022). Imbalances in these two components may lead to decreased performance, especially in the final phases of competition, and may increase the risk of fatigue, which can potentially result in defeat (Langer et al., 2023). To avoid excessive fatigue, cardiovascular indicators such as VO2Max are often used; therefore, the higher an athlete's VO2Max, the better their potential performance (Srivastava et al., 2024).

The distribution of physical condition categories dominated by moderate and low classifications further confirms that the athletes' level of physical readiness is still below the demands of optimal performance. The absence of athletes in the very good category suggests that the training programs implemented may not yet be fully based on comprehensive physical condition evaluations and the individual needs of the athletes. Therefore, the findings of this study highlight the importance of designing more structured, specific, and individualized training programs, with particular emphasis on improving physical condition components that remain dominant weaknesses, especially strength and aerobic endurance. A data-driven approach based on physical test results is expected to serve as an effective strategy for improving the performance quality and achievements of female Pencak silat athletes from South Sulawesi Province.

CONCLUSIONS

Based on the results and discussion of the descriptive analysis of the physical condition of female Pencak silat athletes from South Sulawesi Province after participating in the National Student Sports Week (POMNAS) held in Central Java in 2025, it can be concluded that, overall, the athletes' physical condition has not yet reached the optimal level required to support competitive performance. This is reflected in the distribution of physical condition categories, which are dominated by moderate (40%) and low (50%) classifications, with only a small proportion of athletes categorized as good (10%). Speed, agility, and power demonstrated relatively low levels of variation among athletes, indicating relatively homogeneous abilities in these three components. In contrast, strength and aerobic endurance (VO2Max) showed relatively high variation, reflecting imbalances in physical capabilities among athletes and indicating that the development of these components has not yet been evenly implemented within the training programs.

These findings confirm that strength and aerobic endurance remain the dominant weaknesses in the physical condition profile of female Pencak silat athletes from South Sulawesi Province and may act as limiting factors in achieving optimal performance. Therefore, it is necessary to design and implement more structured, specific, and evaluation-based physical training programs that consider the individual needs of each athlete. A training approach supported by physical test data is expected to enhance athletes' physical readiness and contribute to improved performance in future national-level competition.

REFERENCE

- Alfarizi, M. R., Yudhistira, D., Muh, A., & Al, R. (2025). *Journal of Physical Education , Sport , and Human Performance (JPESH) Assessing Physical Fitness of Incoming Sports Students to Set Minimum Thresholds for Universitas Negeri Makassar Admission*. 1(1), 37–46.
- Aristiyanto, A., Nilawati, I., Setiawan, F. E., & Fadly, S. (2021). *Analysis of the Physical Condition of the Pencak silat Athletes*.
- Bueno, J. C. A., Faro, H., Lenetsky, S., Gonçalves, A. F., Dias, S. B. C. D., Ribeiro, A. L. B., da Silva, B. V. C., Filho, C. A. C., de Vasconcelos, B. M., Serrão, J. C., Andrade, A., Souza-Junior, T. P., & Claudino, J. G. (2022). Exploratory Systematic Review of Mixed Martial Arts: An Overview of Performance of Importance Factors with over 20,000 Athletes. *Sports*, 10(6). <https://doi.org/10.3390/sports10060080>
- Fahrizal, Ilyas, M. Bin, & Alfarizi, M. R. (2025). Analysis of the physical condition of south sulawesi pencak silat athletes in the men's category of the national student sports week sports branch. *COMPETITOR: Jurnal Pendidikan Kepelatihan Olahraga*, 17(3), 2439–2446.
- Gaweł, E., Drozd, M., & Zajac, A. (2025). Current trends in physical and physiological profile of elite WKF karate athletes: a systematic review. *BMC Sports Science, Medicine and Rehabilitation*, 17(1). <https://doi.org/10.1186/s13102-024-01047-5>
- Golmohammadi, H., Pashaie, S., & ... (2024). A Descriptive and Quantitative Content Analysis of Researchers in Martial Arts and Combat Sports: Examining the Gender Distribution, Educational *Archives in Sport ...*, 2(1), 36–47. <https://doi.org/10.22108/asml.2024.141776.1045>
- Hernandez-Martinez, J., Cid-Calfucura, I., Guzmán-Muñoz, E., Herrera-Valenzuela, T., Delgado-Floody, P., Nuñez-Espinosa, C., Branco, B. M., Mota, J., Nobari, H., Perez-Carcamo, J., Vásquez-Carrasco, E., & Valdés-Badilla, P. (2025). Effects of olympic combat sports on physical fitness in non-athlete students: a systematic review with meta-analysis. In *Frontiers in Physiology* (Vol. 16). Frontiers Media SA. <https://doi.org/10.3389/fphys.2025.1620621>
- Ittaqwa, Triatmo Joko Purnomo, Widya Nur Afifa, & Patrick Keilbart. (2025). VO₂max research: Endurance capacity levels of pencak silat martial artists. *Journal of Sports and Physical Activity*, 1(1), 47–58. <https://doi.org/10.64268/jospa.v1i1.7>
- Kljajević, V., Stanković, M., Đorđević, D., Trkulja-Petković, D., Jovanović, R., Plazibat, K., Oršolić, M., Čurić, M., & Sporiš, G. (2022). Physical activity and physical fitness among university students—A systematic review. In *International Journal of Environmental Research and Public Health* (Vol. 19, Issue 1). MDPI. <https://doi.org/10.3390/ijerph19010158>
- Langer, A., Polechoński, J., Polechoński, P., & Cholewa, J. (2023). Ruler Drop Method in *Indonesian Journal of Physical Activity* Vol. 6 No. 1, April 2026

- Virtual Reality as an Accurate and Reliable Tool for Evaluation of Reaction Time of Mixed Martial Artists. *Sustainability (Switzerland)*, 15(1).
<https://doi.org/10.3390/su15010648>
- Novita, F., & Sumartiningsih, S. (2025). *Journal Sport Area and agility in pencak silat athletes*. 10(2), 299–309.
- Nugroho, H., Gontara, S. Y., Angga, P. D., Jariono, G., & Maghribi, I. L. (2021). Quality Of Physical Condition Of Youth Pencak silat Athletes Reviewed From Speed, Power, and Strength. *Kinestetik: Jurnal Ilmiah Pendidikan Jasmani*, 5(1), 154–162.
<https://doi.org/10.33369/jk.v5i1.14376>
- Srivastava, S., Tamrakar, S., Nallathambi, N., Vrindavanam, S. A., Prasad, R., & Kothari, R. (2024). Assessment of Maximal Oxygen Uptake (VO₂ Max) in Athletes and Nonathletes Assessed in Sports Physiology Laboratory. *Cureus*, 16(5).
<https://doi.org/10.7759/cureus.61124>
- Wang, X., Soh, K. G., Zhang, L., Liu, X., Ma, S., Zhao, Y., & Sun, C. (2025). Effects of high-intensity functional training on physical fitness in healthy individuals: a systematic review with meta-analysis. *BMC Public Health*, 25(1).
<https://doi.org/10.1186/s12889-025-21538-5>
- Young, W., Dawson, B., & Henry, G. (2015). *Agility and Change-of-Direction Speed are Independent Skills: Implications for Agility in Invasion Sports* (Vol. 10, Issue 1).