



Analysis of the Physical Condition of the Indonesian National Talented Athletes Development Center

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Abstract

To improve the quality of young athletes' development, the government, through the 2025 National Talented Athlete Development Center program, provides a regular training system complemented by routine monitoring and evaluation activities. Monitoring and evaluation are conducted to determine the success of the training program, observe athletes' progress, and serve as a reference for making decisions to improve the development program. Regular assessments help coaches and program managers identify progress or weaknesses in training activities. Physical condition testing using standardized tests is an important way to evaluate the success of a training program. Comparing assessment results between different stages provides a clear picture of an athlete's physical progress over time. By analyzing quantitative data descriptively, this progress can be presented as percentages and score categories, facilitating a clear understanding of program achievements. This study aims to analyze the physical development of athletes in the 2025 National Talented Athlete Development Center program based on the results of Monitoring and Evaluation (Monev) Phase 1 and Phase 2. The study uses a qualitative library research approach. The research sample consisted of 342 athletes who took physical tests in both evaluation phases. The data were analyzed using descriptive statistics in the form of percentages and distribution of score categories. The results show an increase in the average physical condition from 77% (adequate category) in Phase 1 to 80% (good category) in Phase 2. The proportion of athletes with scores <70% decreased from 23% to 12%. These findings indicate an increase in the effectiveness of physical training over a four-month period.

How to Cite

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INTRODUCTION

The Physical condition is an important factor in determining the outcome of a sports competition. Conceptually, physical condition refers to the body's ability to perform physical activities in accordance with the requirements of a particular sport, involving the coordination of several components such as cardiovascular endurance, muscle strength, speed, agility, flexibility, and power or muscle explosive force. These components not only help improve athletes' technical and tactical abilities, but also ensure they are ready to face increasingly fierce competition in the modern world of sports. Research in the field of sports shows that accurately measuring physical condition is the basis for creating effective and optimal training programs for each athlete, in accordance with the characteristics of their sport. Real research shows that athletes who are in good physical condition can maintain their technical abilities longer and are better able to adapt to training intensity and competition. This aligns with findings indicating that planned physical training can enhance cardiac efficiency, lung capacity, and muscle strength (sports physiology), ultimately having a positive impact on overall athlete performance (Saifudin et al., 2025)

Research conducted in Indonesia on the physical condition of athletes from sports training centers shows varying results, and these results need to be taken seriously. For example, a study measuring the physical condition of table tennis athletes in a sports school environment found differences in physical components such as endurance, speed, and strength, and showed that most athletes were in the intermediate category, depending on the component tested (Lisa et al., 2025). Another study analyzing NZR academy soccer athletes in Malang showed that body size and good physical condition are closely related to the athletes' level of readiness to compete, thus demonstrating the importance of regular physical check-ups in the athlete development process (Pohan et al., 2025). Research at PPLP Riau also shows that the physical condition of martial artists such as karate practitioners is still considered adequate, so input is needed in designing more specific training (Hardiansyah et al., 2022). . In addition, research on freestyle wrestlers shows that there are differences in physical components such as leg muscle strength and balance between male and female athletes, indicating that training should use a more specific approach (Shodiq & Fadhli, 2025). Other research

at the regional training center level shows that the relationship between physical parameters and athlete performance is important information in designing sports coaching strategies in the region (Prameswari et al., 2025).

Although several studies have been conducted to evaluate the physical condition of athletes at various sports training centers in Indonesia, comprehensive research covering the physical condition of SPOBNAS athletes nationwide is still limited. Many studies only focus on one sport or a specific region and do not represent the overall physical condition of the entire SPOBNAS athlete population. However, the physical profile of young athletes at national training centers such as SPOBNAS is an important reference in assessing the effectiveness of the training process, especially in the midst of increasingly fierce global competition.

This study aims to understand the physical condition of Indonesian SPOBNAS athletes in 2025 by evaluating and comparing the main physical components that are important in supporting athletic achievement. Thus, the results of this study are expected to provide a concrete basis for creating training programs, planning athlete development, and providing policy recommendations to strengthen sports development based on physical conditions in Indonesia.

METHOD

This study uses a qualitative approach with a literature-based research method. The qualitative method was chosen because this study aims to understand and analyze the physical condition of SPOBNAS athletes descriptively. This study used various relevant written sources, such as documents, reports, scientific articles, and official files related to athlete training, monitoring and evaluation of physical condition, and national sports coaching policies. The library research approach is a qualitative research method in which data is obtained not by observing, collecting information through surveys, or conducting field experiments, but by studying, understanding, and combining various previously published materials. In this approach, researchers evaluate, compare, and connect various literature reviews relevant to the research topic, enabling in-depth analysis of athletes' physical condition based on information available in written form. This approach is suitable for conceptual and theoretical research that explains a particular phenomenon in the social sciences and sports science, including sports

activities and the development of athletes at the national level (Yudha Prawira et al., 2021). A sample of 342 athletes participated in the physical test evaluation, consisting of 122 females and 220 males, aged 15-18.

The research data is secondary, obtained from various credible literature sources, namely;

1. Official documents and reports on the monitoring and evaluation of athletes' physical condition published by the Ministry of Youth and Sports of the Republic of Indonesia (Kemenpora) and related athlete training institutions (e.g., SPOBNAS annual reports or similar).
2. National and international scientific journal articles discussing topics related to the physical condition of athletes, physical training methods, and sports development.
3. Book and academic literature related to qualitative research methods and literature studies in the field of sports science.
4. Policy documents and various other supporting documents related to athlete development and physical assessment from educational and sports institutions.

Data collection was carried out by searching for information from reference sources in a structured manner using the following strategies;

The research data is secondary, obtained from various credible literature sources, namely;

1. Determining search keywords that are relevant to the research topic, such as "athletes physical condition", "sports training evaluation", "SPOBNAS/PPLP Indonesia", "sport talent development Indonesia", and other relevant keyword combinations.
2. Searching for reference sources from scientific databases such as accredited national journals, international journal portals, open access repositories, Indonesian Ministry of Youth and Sports documents, and sports policy sources.
3. Articles selected through a selection process that considers the level of relevance, connection to the topic discussed, and scientific quality proven through peer review by experts from journals or academic documents.
4. Classifying and recording sources relevant to the research into a reference list for further analysis.

The collected data is analyzed by analyzing the content of the literature and compiling the themes that emerge. The analysis process includes;

1. Reducing reference data to select information and research objectives.

2. Grouping data based on themes such as physical condition components, sports training frameworks, physical condition evaluation results, and athlete training policies.
3. Creating explanations and arrangements to connect various existing research results, comparing the actual evidence collected, and combining all the data to form a complete picture of the physical condition of SPOBNAS athletes in 2025.

The analysis was conducted in a critical and structured manner in accordance with qualitative research principles, focusing on understanding written data to achieve the research objectives (Yudha Prawira et al., 2021)

The validity of this research data is ensured through ;

1. The selection of reliable sources such as official government documents, accredited scientific journals, and academic books.
2. In-depth analysis of the relationship between data and the background of national sports phenomena.
3. Consistency in compiling themes in an integrated manner from various reference sources helps to create a complete picture of the topic being studied (Yudha Prawira et al., 2021).

RESULTS AND DISCUSSION

In Monitoring and Evaluation (Monev) Phase 1 (August 2025), the number of active athletes was recorded at 366 athletes out of a total of 420 according to the decree. Meanwhile, in Monitoring and Evaluation (Monev) Phase 2 (December 2025), the number of active athletes increased to 394 athletes. This increase indicates an improvement in the fulfillment of the coaching quota and the re-selection process in several provinces. However, there are still athletes who did not take the physical test due to: injuries, participation in national/international championships, national training camps, illness, school exams, and age degradation or coaching elsewhere. These factors are external variables that affect full participation in physical evaluation.

In Phase 2 Monitoring and Evaluation (Monev), which began in December 2025, the number of active athletes increased to 394. The number of athletes who took the physical test remained at 342, but their average physical score rose to 80% in the "good" category. The percentage of athletes with scores below 70% decreased dramatically to 12%, while the group of athletes with scores between 80-89% increased to 34%. This increase shows that the training program be-

came more effective after the Phase 1 evaluation was carried out. The decrease in the number of athletes with low scores indicates that the training program and its support successfully improved the athletes' physical abilities.

Compared to the overall average, there was a 3% increase from Phase 1 to Phase 2. The shift in scores from the low category to the middle-high category indicates that physical performance is beginning to stabilize. The two-stage monitoring system proved effective in detecting early weaknesses and encouraging continuous improvement. Although there was a slight decline among the 90-100% score group, this was likely due to repeated training cycles, accumulated fatigue at the end of the year, or an increase in assessment standards.

The 3% improvement in physical condition indicates physiological adaptation stimuli. According to (Bompa & Buzzichelli, 2019), physical adaptation occurs through the principles of progressive overload and periodization. When athletes are given measured training loads and monitored regularly, performance improvements will occur gradually.

These findings are in line with research published in *Medicine & Science in Sports & Exercise* (Musselman et al., n.d.), which states that increases in strength and endurance correlate directly with increases in competitive performance. The decrease in athletes with scores <70% in Stage 2 indicates that the training program successfully increased the basic capacity of the majority of athletes.

Furthermore, these findings are related to the Long Term Athlete Development (LTAD) approach, which is widely discussed in sports literature as a sustainable and comprehensive training model. Optimal physical ability improvement occurs when the biological growth stages of athletes are recognized and considered in planning long-term training (Perbawanti et al., 2025). With the average age of athletes being in the early stages of development, the improvement in physical condition in the Phase 2 Monitoring and Evaluation shows that SPOBNAS has effectively utilized the adaptation period over the past four months.

Local and regional studies from 2024-2025, such as "Evaluation of VO2MAX Physical Condition and Speed of Taekwondo Athletes" and "Analysis of the Physical Condition of PPLP Bali Athletes," show that measurements of physical capacity such as VO2MAX (a key indicator of the aerobic system) and speed aspects show variations in scores that reflect differences in individual baseline capacity, but remain within the

standard range of improvement when training programs are implemented regularly and systematically. These studies support the notion that regular monitoring and systematically designed training will result in significant improvements in physical condition, especially when supported by individual evaluations and adjustments to training loads (Febrianti & Hariyanto, 2025).

In addition, the results of physical evaluation also depend on several other supporting factors, such as health checks, psychological tests, and assistance from a multidisciplinary team consisting of physical trainers, physiotherapists, nutritionists, and sports psychologists. This approach is often referred to in books as a multidisciplinary or multidisciplinary support approach in sports, where various sciences work together to improve the overall health and abilities of athletes. Research on the concept of an integrated psycho-biological measurement protocol developed by (Tossici et al., 2024) in the journal *Frontiers in Psychology* shows that an athlete's health profile, which includes medical, psychological, nutritional, and physical aspects, is very important for evaluating the psychophysical condition of athletes and determining the type of training that is effective. Support from multidisciplinary teams, including sports psychologists, physical therapists, nutritionists, and medical staff, has proven to enhance monitoring outcomes and significantly improve athletes' performance.

In general, the physical condition of Indonesian SPOBNAS athletes in 2025 shows good progress and continues to improve, as seen from the increase in average physical scores and the decrease in the number of athletes who did not meet the minimum standards in the latest evaluation. These evaluation results are consistent with previous research findings on athlete training programs, which indicate that by regularly administering physical condition tests such as speed, strength, and maximum oxygen capacity (VO2MAX), athletes' performance can improve significantly. Additionally, these tests provide clear and honest information to coaches, enabling them to refine and adjust the training programs being used (Samin, 2024).

Improvements in physical test results indicate that a training system using measurable evaluations is successful in monitoring and promoting physiological adaptations in athletes, as seen in the explanation of badminton physical condition evaluations, which recorded significant improvements in various physical components after the training program was refined. Training balanced with regular monitoring can help athletes achieve

the best adaptive response (Aprilia et al., 2018).

However, additional efforts are still needed to ensure that the quality of training is consistent across all regions. The uneven availability of testing facilities and training resources is often cited as an obstacle in athlete training evaluations. This indicates that the lack of testing equipment and training resources often limits the quality of training programs in some regions (Apriori, 2025).

Table 1. Physical Condition

Category	Monitoring and evaluation stage 1	Monitoring and evaluation stage 2
<70%	23% (79 athlete)	12% (49 athlete)
70-79%	27% (92 athlete)	21% (83 athlete)
80-89%	30% (101 athlete)	34% (133 athlete)
90-100%	20% (70 athlete)	13% (51 athlete)

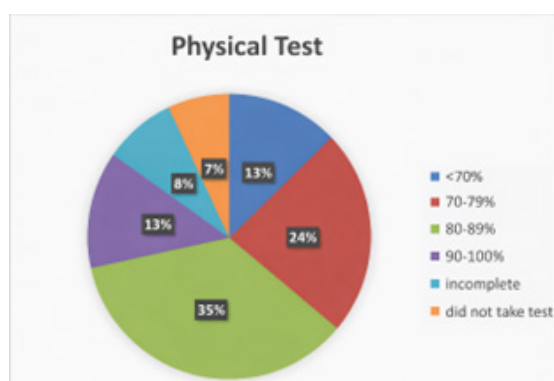


Figure 1. Physical Test Diagram Monitoring and Evaluation Stage 1

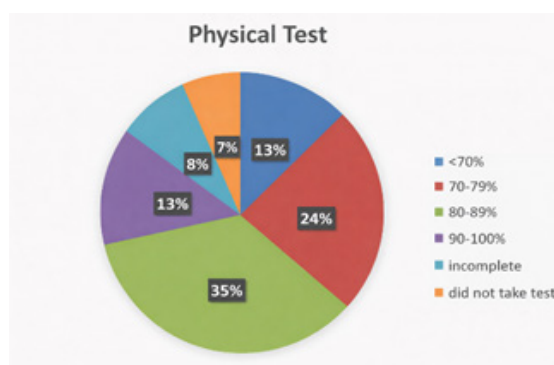


Figure 2. Physical Test Diagram Monitoring and Evaluation Stage 2

Based on a comparison of the physical test **Figure 1.** Monev Stage 1 and **Figure 2.** Stage 2, there is a change in the distribution of physical condition categories. Overall, there is an increase in several categories with better percentages, indicating a positive impact from the training and coaching programs that have been carried out.

This shows that training interventions are quite effective in improving certain fitness components.

However, there are other categories where the percentages remain unchanged or even decline. This condition shows that the athletes' abilities have not improved evenly across the board. In sports books, this phenomenon is often explained by the concept of individual differences in response to training, namely how each person's body and mind adapt differently even though they follow the same training program. Research in *Frontiers in Physiology* (Stenbäck et al., 2019) states that how the body responds to exercise depends on a person's initial condition, the body's ability to recover, overall health, and genetic factors, so each athlete may experience different levels of improvement.

As shown in **Table 1**, although the physical condition of SPOBNAS athletes generally improved, there are several points to note, particularly because the 90-100% category saw a decrease in proportion from 20% to 13%. This change in distribution may indicate differences in athlete performance or differences in their participation in the tests, especially when some athletes did not complete all stages of the test due to injury or other reasons, which could affect the accuracy of the data distribution results. Research on the validity and reliability of physical measurement tools shows that participant absence and injury factors can interfere with the understanding of test results. Therefore, it is important to pay attention to missing data when analyzing statistics and reporting athlete performance assessment results (Sganzerla et al., 2021).

CONCLUSION

Based on the results of the evaluation of the Monitoring and Evaluation (Monev) reports for Stages 1 and 2 in 2025, it can be concluded that: the physical condition of SPOBNAS athletes has improved gradually in the last four months, and the decline in the group below the standard indicates that the training program is effective. These results are in line with the theory of training schedule management and modern fitness science research. Physical condition has been proven to be an important foundation in helping to improve the abilities and results of athletes. Thus, the 2025 SPOBNAS monitoring and assessment program has shown effective results in improving the physical condition of young Indonesian athletes nationwide. However, improvements are still needed to ensure that the improvement is evenly distributed and sustainable.

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