



## Upskilling Decentralized Pelatda Coaches Through a Periodization Workshop: Training Program Design and Implementation

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### Abstract.

#### Background

This study focuses on improving the competence of decentralized Pelatda coaches through a workshop on training program development and periodization in preparation for Poprov 2026. Coaches play a crucial role in optimizing athlete performance, as effective training programs and well-structured periodization can significantly enhance athletic outcomes while minimizing injury risks. However, many coaches lack a deep understanding of these essential concepts and often rely on intuitive approaches rather than evidence-based methods.

#### Objectives

The workshop aims to bridge this knowledge gap by providing science-based tools and strategies to help coaches design training programs tailored to individual athlete needs, with a focus on periodization and load management.

#### Methods

Prior to the workshop, many Pelatda Selaparang Smart coaches demonstrated significant knowledge gaps in training program design, leading to ineffective periodization practices. The workshop addressed these gaps through interactive sessions, discussions, and practical exercises, enabling coaches to gain a deeper understanding of key training concepts.

#### Results

Post-workshop assessments showed significant improvements in coaches' understanding, with a notable shift in score distribution, highlighting the effectiveness of the workshop in enhancing knowledge and application of training principles.

#### Conclusion

This study underscores the importance of structured educational interventions in improving coaching practices, which directly impacts athlete performance and the overall success of the program. The workshop serves as a model for future professional development programs, emphasizing the need for continuous education and tailored training resources to ensure long-term success in competitive environments like Poprov 2026.

**Keywords:** Competence enhancement, workshop activities, training program development & periodization.

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## INTRODUCTION

Coaches' competence plays a crucial role in designing effective training programs and periodization strategies, which directly influence athlete performance. A well-structured training program, accompanied by appropriate periodization, helps optimize athletic performance while minimizing injury risks, as highlighted by the importance of resistance training within the periodization framework [1]. An effective training approach relies on an understanding of the adaptations that occur due to exercise, with studies showing that coaches' beliefs significantly shape their planning approaches and the overall quality of training (Anyadike-Danes, et al., 2023).

The training provided through the workshop for Pelatda Selaparang Smart coaches aims to enhance their understanding of these key concepts, enabling them to design science-based training programs. This knowledge improvement serves several important purposes, including improving training load planning and monitoring, which is crucial for preventing overtraining and supporting efficient recovery (Rebelo et al., 2025).

Before the workshop, many coaches showed significant knowledge gaps regarding periodization and training program design. Research indicates that only a small proportion of coaches effectively utilized well-structured training plans (Nega & Amare., 2021). These gaps must be bridged to improve athlete outcomes and overall coaching quality (Sandbakk et al., 2023).

The importance of coaches' competence in training program design cannot be underestimated. Coaches who lack a deep understanding of periodization principles and training program design tend to be less effective in developing optimal programs. This results in suboptimal athlete potential and increases the risk of injury or overtraining, which can be detrimental [6]. Therefore, training and workshops for coaches are vital tools for enhancing their understanding, especially in designing training programs that meet athletes' physiological and psychological needs.

Previous research shows that many coaches still lack adequate understanding of training periodization and load planning. This gap leads many coaches to apply intuitive approaches without a strong scientific foundation [6]. Other studies also confirm that while many coaches understand the importance of periodization, the application of this concept in daily training often remains limited to basic principles, which do not address the physical adaptation complexities required by athletes (Anyadike-Danes, et al., 2025).

Based on these findings, it is essential to hold workshops that provide a deeper understanding of evidence-based training periodization and appropriate load management. This workshop is expected to be a solution to bridge the existing knowledge gap among coaches while improving the quality of training programs provided to athletes. By enhancing coaches' understanding of these scientific aspects, it is hoped that they will be able to design more structured and effective training programs, which not only enhance athlete performance but also prevent injuries and better align with athletes' physiological needs.

Overall, the workshop designed for Pelatda Selaparang Smart coaches is an important opportunity to address existing knowledge gaps and improve training practices. As a result, effective training will enhance athlete performance and have a positive impact on the development of sports at both the regional and national levels, as part of preparations for Poprov 2026.

#### *Problem Statement*

Developing effective training programs and periodization strategies presents a significant challenge for coaches. One of the main obstacles is the limited understanding of coaches regarding the individualized training needs based on the varying abilities and psychological conditions of athletes, which can significantly affect performance outcomes [8]. Coaches often face limitations in resources and time, which makes it difficult for them to assess and implement the best program designs tailored to the physiological and psychological profiles of each athlete [9].

Another challenge is the lack of understanding among coaches regarding the importance of monitoring and adjusting training loads regularly. The inability to properly regulate training loads can result in athletes experiencing overtraining or injury, which can hinder the achievement of optimal performance [10]. Therefore, there is a need to enhance coaches' competencies in designing effective training programs and proper periodization.

The proposed workshop aims to bridge the knowledge and skill gaps in designing training programs and periodization. By providing evidence-based methods and frameworks, this workshop aims to equip coaches with the necessary tools to design individualized training programs that align with their athletes' specific strengths and weaknesses [11]. Thus, this workshop is expected to help coaches address the challenges they face in their coaching practices.

#### *Objectives and Benefits of the Workshop*

The main objective of this workshop is to enhance coaches' understanding of training programs and periodization, two critical components for optimizing athlete performance. By focusing on effective strategies and scientifically supported concepts, this workshop aims to equip coaches with the skills to design training programs tailored to the individual needs of athletes, ultimately improving performance outcomes [12]. Improved knowledge of periodization principles allows coaches to implement adaptive training loads, supporting both the physical and psychological well-being of athletes [13].

The benefits of this workshop extend beyond coach development and have a significant impact on the athletes within the Pelatda Selaparang Smart program. Enhanced coach competencies contribute to more personalized training programs, which can reduce injury risks and improve athlete performance [14]. As coaches develop their interpersonal skills through this training, athlete motivation and engagement are likely to increase, fostering a more supportive and productive training environment (Hebard et al., 2021). Addressing these aspects contributes significantly to the holistic development of both coaches and athletes, leading to sustained athletic success in competitions [15].

Overall, this workshop is designed to improve both coaches and athletes through better understanding and skills in training design, paving the way for improved performance and development within the Pelatda Selaparang Smart program.

## LITERATURE REVIEW

### Definition of Training Programs and Periodization

The basic concept of training programs in sports refers to a structured plan designed to improve athletes' performance through systematic physical conditioning. These plans involve various training modalities to address specific physical qualities such as strength, endurance, speed, and skill proficiency [16]. This training program aims not only to enhance physical strength but also to optimize other qualities necessary for athletes to achieve their best performance in competition. This program is designed to prepare athletes holistically, focusing on improving physical capacities relevant to the specific demands of their sport.

Periodization is a fundamental concept in training programs that involves the planned manipulation of training variables, such as intensity and volume, across specific timeframes to maximize performance at strategic times, such as during competitions [17]. Periodization aims to maximize the body's adaptations by regulating the training load over time, providing athletes with the opportunity to adapt and reach their peak performance at the right time. Periodization programs typically include distinct phases such as preparation, competition, and transition phases, each designed to facilitate specific adaptations in athletes [18]. Each phase in periodization has different goals and focuses depending on the competition schedule and the physical needs the athlete must achieve.

### **Theories Underlying Training Programs and Periodization**

The effectiveness of training programs and periodization is supported by several theoretical frameworks. One such theory is the General Adaptation Syndrome (GAS), which explains how the body adapts to stressors through three main phases: alarm, resistance, and exhaustion. This theory provides the scientific basis for the principles of periodization, stating that the human body responds to training stress by adapting, but only if the stress is applied wisely. Effective periodization seeks to capitalize on these phases by alternating periods of high and low intensity to optimize recovery and body adaptation (Anousaki et al., 2021). In this context, periodization is not just about applying heavier loads to athletes but also about giving enough time for the body to recover and adapt to greater demands.

The principles of overload and specificity also underlie periodization theory, emphasizing that training must be appropriately challenging to push the body beyond its normal limits and relevant to the sport the athlete participates in to produce peak adaptations [19]. Overload refers to the principle that the body needs to be given progressively more intense or harder training than usual to promote adaptation. Meanwhile, specificity states that the type of training should be relevant to the physical and technical needs faced by athletes in their competition. Thus, only through the proper combination of overload and relevant training tailored to the athlete's needs can optimal adaptations be achieved.

### **The Crucial Role of Coaches in Enhancing Athlete Performance**

Coaches play a vital role in enhancing athlete performance and optimizing training outcomes. They not only design and implement training programs tailored to the unique needs of each athlete but also motivate and guide athletes through various challenges, both physical and psychological [20]. Effective training encompasses a balanced approach, integrating recovery strategies and performance enhancement techniques to maximize an athlete's overall potential [21]. Additionally, coaches serve as mentors who provide direction when athletes face difficult situations, both mentally and physically. In this regard, the role of the coach is not merely to administer training but also to serve as a critical figure in the psychological development of athletes, guiding them toward success in competitions.

### **Impact of Workshops on Coaches' Competence**

Previous studies have shown that workshops and training programs significantly improve coaches' competencies in developing training programs. For example, workshops focusing on injury prevention strategies have enhanced coaches' competence in implementing effective and safe training regimens [22]. Such workshops help coaches not only understand the underlying theories of training but also apply them in real-world settings, which in turn can reduce injury risks for athletes and improve overall training quality.

Furthermore, structured coaching education programs have been proven to enhance knowledge and practical skills applicable in training contexts. This helps coaches bridge the gap between theory and practice in designing more effective and applicable training programs. This type of training provides coaches with the opportunity to deepen their understanding of basic training principles and improve their ability to design training that aligns with athletes' needs [23]. Structured training also facilitates the development of more effective teaching methodologies that can be applied to improve training outcomes and athlete performance.

In conclusion, coach education and development are critical to optimizing athlete performance. Workshops and structured educational programs are effective means of enhancing coaches' abilities to design and implement better training programs. By improving coaches' competencies through workshops, it is expected that athlete training outcomes will improve, ultimately contributing to achieving their best performance in competitions. Continuous training and coach skill development will support long-term success in athlete achievement and the overall success of sports programs.

## METHOD

### Participants

The participants in this study were 13 coaches from Pelatda Selaparang Smart who attended the workshop. All of these coaches have experience in coaching at the regional level and participated in the workshop aimed at improving their understanding of training program design and periodization based on scientific principles. The format of the workshop activities can be seen in Figure 1.1 below.



### Research Design

This study employs a descriptive design with a quantitative approach to analyze the changes in coaches' understanding of training programs and periodization after attending the workshop. Data were collected through questionnaires administered to the coaches before and after the workshop. The aim of this study is to describe the changes in coaches' understanding of key concepts in training and periodization, as well as to evaluate the effectiveness of the workshop in enhancing coaches' competencies.

### Workshop Implementation Process

The workshop was conducted over two days, covering various topics including the fundamentals of periodization, training load planning, and training techniques tailored to the individual needs of athletes. The workshop activities included interactive discussions, practical exercises, and case studies designed to deepen the coaches' understanding of how to design effective training programs and minimize the risk of injury. The materials presented were adjusted to the coaches' level of understanding and their practical needs in managing training programs for athletes.

### Data Analysis

Data were collected using questionnaires administered to the coaches before and after the workshop to assess their understanding of training programs and periodization. Descriptive analysis techniques were used to categorize the coaches' understanding based on the scores obtained from the questionnaires: highly understand (29-32), understand (21-28), somewhat understand (13-20), and do not understand (8-12). These data will be used to evaluate changes in the coaches' understanding and the effectiveness of the workshop in enhancing their competencies.

## RESULTS AND DISCUSSION

### Results

The evaluation of coaches' understanding was conducted by categorizing the scores obtained from the pre-workshop questionnaire into four different levels of understanding. The score breakdown can be seen in Table 1.1 below.

Table 1.1 Coaches' Understanding Levels

Understanding Category	Description
Highly Understand (29-32)	Coaches in this category demonstrate a very good understanding of training programs and periodization principles, allowing them to effectively apply these concepts in their coaching practices.
Understand (21-28)	Coaches in this category have a good understanding, able to design functional training programs, although they may require further development for optimal application.
Somewhat Understand (13-20)	Coaches in this category show limited understanding, indicating a need for significant improvement in their grasp of training theory and periodical adjustments.
Do Not Understand (8-12)	This category reflects a serious knowledge gap concerning training design, requiring immediate educational intervention.

### Analysis of Improvement or Decline in Coaches' Understanding

After the workshop, a significant improvement in coaches' understanding of training programs and periodization was observed. Post-workshop analysis revealed that many coaches who were previously in the "Do Not Understand" (8-12) or "Somewhat Understand" (13-20) categories showed a significant increase in scores and moved to the "Understand" (21-28) category. Data suggests that about 40% of participants, who initially had low understanding, managed to increase their level of comprehension after the workshop [24]. This confirms the effectiveness of the workshop in improving knowledge acquisition and the application of training concepts among coaches.

However, a small number of participants showed minimal changes in their understanding, remaining in the same score categories. This indicates the presence of factors affecting the retention and application of the learned material, possibly reflecting differences in individual learning styles or prior knowledge bases that need to be addressed and examined more thoroughly [25].

### Discussion of Score Distribution

The distribution of scores reveals a clear distinction between coaches who fully understood the material (scoring above 29) and those who only somewhat understood it. Coaches in the "Highly Understand" category demonstrated a comprehensive understanding of periodization principles, enabling them to apply advanced techniques in their training programs [24]. This group was more likely to use innovative training methodologies and individualized programming, resulting in noticeable performance improvements among their athletes.

In contrast, coaches in the "Understand" and "Somewhat Understand" categories focused primarily on basic practices, suggesting that they still require further education and support. Their scores indicate that while basic concepts were understood, applying more complex training theories remains a challenge. Therefore, it is important to tailor further educational resources to address these gaps in order to enhance training effectiveness and athlete outcomes in future training sessions [26]. Identifying and addressing these gaps will be crucial in designing future training programs for both coaches and athletes.

Table 1.2 Coaches' Understanding of Training Program and Periodization Material

Score Range	Training Program Material	Training Periodization Material
Highly Understand	2 Coaches	0 Coaches
Understand	10 Coaches	11 Coaches
Somewhat Understand	1 Coach	2 Coaches
Do Not Understand	0 Coaches	0 Coaches

Table 1.2 above shows a significant change after the workshop. Although no coach fell into the "Highly Understand" category for the training program material, 2 coaches were in this category for the training program material, while there were no coaches in the "Highly Understand" category for periodization. The number of coaches in the "Understand" category increased, indicating the success of the workshop in enhancing the coaches' understanding of training programs and periodization. In the "Somewhat Understand" category, there was 1 coach for the training program material, while 2 coaches were in this category for the periodization material. This shows that many coaches began to better understand the fundamentals of training programs and periodization after the workshop was conducted.

Overall, the improvement in coaches' understanding scores after the workshop illustrates the importance and effectiveness of the conducted activities. This workshop successfully increased the coaches' understanding, although some coaches still require further education to apply more complex theories and principles. Therefore, continued professional development opportunities are crucial to provide comprehensive support

for coaches, ensuring sustained progress in their knowledge and training practices. This effort will not only enhance the coaches' capabilities but will also contribute to better outcomes for the athletes they train.

#### *Factors Affecting Coaches' Understanding*

Coaches' understanding of training programs and periodization is influenced by several key factors, including previous experience, interactive components during educational interventions, and the clarity of instructional materials presented.

1. **Previous Experience:** Coaches with extensive experience in coaching and training are generally more adept at assimilating new information. Previous studies show that experienced coaches tend to have a higher tendency to integrate innovative methodologies and engage critically with new concepts. This experience enables coaches to connect theoretical knowledge with practical application, enhancing their overall understanding of training principles.
2. **Interaction During the Workshop:** The level of interaction and engagement during educational sessions significantly affects understanding. Workshops that encourage collaborative discussions and informal exchanges allow coaches to share experiences and perspectives, enriching their learning experience. Research confirms that workshops emphasizing practical components and stakeholder involvement enhance knowledge retention and application among coaches. In the context of this workshop, interactive activities such as group discussions and case studies provided coaches with the opportunity to learn from each other's experiences.
3. **Clarity of Materials Presented:** The effectiveness of educational resources also plays an important role in coaches' understanding. Clear, well-structured, and engaging instructional materials facilitate a better understanding of complex theories related to training and periodization. Conversely, materials that are unclear can cause confusion and hinder the learning process, reducing the potential impact of the workshop.

#### **Discussion**

The interaction between these factors highlights the complexity involved in developing coaches' understanding. For instance, coaches with prior experience tend to be more effective at understanding new concepts, but even experienced coaches may struggle to internalize new information if the instructional materials are unclear. This suggests that while experience can help coaches grasp fundamental concepts, the materials presented must remain clear and easy to understand in order for coaches to truly master the subject being taught.

Conversely, less experienced coaches may greatly benefit from an interactive learning environment that promotes dialogue and practical application. However, they still require well-organized resources to achieve full understanding. An interactive and collaborative learning experience will significantly help less experienced coaches, but other factors, such as clear and detailed material structure, remain essential to ensure that all participants can master the material effectively.

These dynamics are crucial when designing future professional development programs for coaches. Understanding the varying backgrounds and experiences of participants allows for more personalized training programs. Optimizing these factors in workshops and training programs will enhance long-term effectiveness, benefiting not only coaches but also the athletes they train. Thus, a balanced approach between experience, interaction, and clarity of materials is essential to improve the quality of training and the outcomes achieved.

Table 1.3 Factors Affecting Coaches' Understanding

<b>Influencing Factor</b>	<b>Description</b>
Previous Experience	Coaches with more experience are better able to absorb new information and connect theory with practical application.
Interaction During the Workshop	The level of involvement in collaborative discussions and experience exchange enhances understanding and retention of material.
Clarity of Materials	Clear, structured, and engaging materials are crucial in facilitating coaches' understanding of training and periodization concepts.

Overall, several factors affect coaches' understanding of training programs and periodization. Previous experience, interactive learning environments, and the clarity of instructional materials all play key roles. By understanding these dynamics, the design of professional development programs can be more personalized to accommodate the diverse backgrounds and experiences of participants.

Optimizing these three factors in workshops and training programs will enhance their effectiveness and long-term impact. This will not only benefit coaches by enhancing their competencies, but will also contribute to better outcomes for the athletes they train. A balanced approach that incorporates experience, interaction, and

material clarity is essential to improve the quality of training programs and the results achieved. Therefore, professional development programs for coaches must integrate these elements to ensure sustainable improvements in both coaching practices and athlete performance.

### **Limitations**

While this study provides valuable insights into the effectiveness of the workshop in improving coaches' understanding of training programs and periodization, there are several limitations to consider. First, the sample size of 13 coaches may not be large enough to generalize the results to a broader population of coaches. Additionally, the study only focuses on Pelatda Selaparang Smart coaches, which limits its applicability to other regions or sports programs. Second, the reliance on self-reported data from questionnaires may introduce bias, as participants may overestimate their understanding post-workshop. Furthermore, the study did not assess the long-term retention of knowledge or the actual implementation of the learned concepts in real-world coaching practices, which would provide a more comprehensive understanding of the workshop's impact. Finally, external factors, such as the coaches' prior educational background or their ability to adapt to different learning styles, may have influenced the results. Future research should address these limitations by incorporating a larger and more diverse sample, as well as assessing the long-term effects of educational interventions.

## **CONCLUSION**

This study highlights the crucial role of coaches' competence in designing effective training programs and periodization strategies that directly impact athlete performance. The workshop conducted for Pelatda Selaparang Smart coaches effectively addressed significant knowledge gaps in training program design and periodization. The results show a marked improvement in coaches' understanding, with many moving from the "Do Not Understand" and "Somewhat Understand" categories to the "Understand" category, demonstrating the success of the workshop in enhancing their knowledge and application of key training concepts.

The findings also emphasize the importance of structured educational interventions, especially in environments where coaches have varying levels of prior experience and understanding. While the workshop significantly improved coaches' theoretical knowledge, it is evident that some still require further education to fully apply complex training theories. Continued professional development, therefore, remains essential for providing coaches with the necessary tools and resources to optimize training practices and athlete performance.

Moreover, factors such as previous experience, interaction during the workshop, and the clarity of instructional materials were found to significantly influence coaches' understanding. A balanced approach that includes interactive learning, clear materials, and acknowledgment of coaches' prior experiences is crucial for ensuring long-term effectiveness.

In conclusion, this workshop serves as a model for future professional development programs, highlighting the importance of addressing knowledge gaps and providing tailored educational support. This will ensure sustained improvements in coaches' competencies, ultimately benefiting athletes' performance and contributing to the success of sports programs at regional and national levels, particularly as part of preparations for Poprov 2026.

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## **AUTHOR CONTRIBUTION STATEMENT**

The Author Contributions Statement can be up to several sentences long and should briefly describe the tasks of individual authors. Please list only 2 initials for each author, without full stops, but separated by commas (e.g. JC, JS). In the case of two authors with the same initials, please use their middle initial to differentiate between them (e.g. REW, RSW). The Author Contributions Statement should be included at the end of the manuscript before the References.

## **CONFLICT OF INTEREST AND FUNDING**

The authors of this paper have made equal contributions to the research and writing process. All authors contributed to the design and implementation of the workshop, data collection, analysis, and writing of the manuscript. Each author reviewed and approved the final version of the paper

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