

Competency Profile of Football Coaches at PS Bintang Kejora Masbagik, East Lombok Regency

Lalu Sapta Wijaya Kusuma¹, Jamaludin², Elya Wibawa S.³, Kurnia Taufik⁴, Nurdin⁵, Subakti⁶

^{1,2,3,4,5}, Mandalika University of Education, Indonesia

Article Info

Article history:

Accepted: 27 Juni 2026

Publish: 30 Juni 2026

Keywords:

Coach competence;

Youth football;

Sport science;

Training load monitoring;

Community service.

Abstract

This community service activity aimed to map the competency profile of youth football coaches at SSB PS Bintang Kejora Masbagik, East Lombok Regency, with emphasis on coaching knowledge, self-assessment, and the practical application of sport science in training practice. This activity used a descriptive quantitative approach involving 10 coaches with different ages and coaching experiences. Data were collected using a questionnaire consisting of 10 knowledge questions related to football coaching and sport science, along with five self-assessment statements measured on a 1–5 scale. The results showed that the average knowledge score was 64%, indicating a moderate level of coach competence. The highest levels of understanding were found in the topics of hamstring injury, mental fatigue, and microcycle, whereas lower scores were found in Rating of Perceived Exertion, recovery nutrition, HR Max, and video analysis. The average self-assessment score was 3.8, indicating that coaches perceived their own competence as fairly good. However, the findings also revealed a gap between objective knowledge and self-perceived competence. These results indicate that further coach development programs are needed, particularly in training-load monitoring, recovery nutrition, physiological indicators, and simple video analysis, to support youth football training that is safer, more measurable, and evidence-informed. As a concrete outcome, the competency mapping results were shared with SSB PS Bintang Kejora and used as a practical basis for designing a follow-up, needs-based coach training program prioritizing training-load monitoring, recovery nutrition, and simple video analysis.

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Corresponding Author:

Jamaludin

Mandalika University of Education, Indonesia

Email Coresspondent: jamaludin@undikma.ac.id

1. INTRODUCTION

Youth football development positions coaches as key actors in developing players' technical, tactical, motor, and psychosocial abilities, as well as ensuring player safety and sustainable participation. In this context, coach effectiveness is not only determined by coaching experience, but also by the ability to design training programs that are appropriate to athletes' developmental stages. Research shows that coaches who are able to adjust training based on players' biological and chronological age are more effective in improving athlete performance and engagement (Brito & Freitas, 2024). In addition, the use of game formats such as 5v5, 7v7, 9v9, and 11v11 has been shown to influence ball-touch frequency, decision-making, and player involvement in the game (Eldridge et al., 2022). Therefore, coaches need to understand how to modify field size, number of players, and training duration according to learning objectives.

Modern learning approaches such as Teaching Games for Understanding (TGfU), the Tactical Decision Learning Model (TDLM), and visual exploratory activity are increasingly recognized as effective strategies for integrating technical, tactical, perceptual, and decision-making aspects (Alzate et al., 2025). However, the implementation of these approaches at the grassroots level still faces challenges, particularly due to limited coach understanding and the lack of practical, applicable guidelines (Eldridge et al., 2022). This indicates that improving coaching competence is not only related to theoretical knowledge, but also to the ability to apply these concepts in real training situations.

In addition to pedagogical aspects, coaching competence is also closely related to the application of sport science principles. Fundamental movement skills (FMS) are known to have a significant relationship with football skills and serve as an important indicator in the development of young players' technical abilities (Duncan et al., 2022). A positive talent development environment, effective communication with parents, and alignment of vision between coaches and clubs also contribute to athletes' holistic development (Liu et al., 2022; Steenbok et al., 2025; Sweeney et al., 2022). Thus, coaches do not only act as technical instructors, but also as facilitators of athletes' overall development.

Although a substantial body of research has examined coaching pedagogy, athlete development, and the application of sport science principles within structured, academy-level football environments (Alzate et al., 2025; Brito & Freitas, 2024; Eldridge et al., 2022), comparatively little empirical attention has been directed toward the competency profile of grassroots coaches working in community-based football schools (SSB) in Indonesia. Most existing studies focus on elite or academy-level settings, leaving a gap in understanding how local coaches, who often combine limited formal sport-science education with substantial practical experience, apply core concepts such as training-load monitoring, recovery nutrition, and objective physiological indicators in their daily coaching practice. This gap is particularly important because grassroots coaches directly shape the technical, tactical, and physical foundations of young players before they progress to more structured development pathways. This community service activity addresses this gap by systematically mapping the knowledge and self-perceived competence of coaches at SSB PS Bintang Kejora, thereby providing empirical, context-specific evidence to inform the design of targeted, needs-based coach development programs at the grassroots level.

On the other hand, the use of data-based approaches such as rating of perceived exertion (RPE), simple fitness tests, maturity indicators, and training load monitoring is becoming increasingly important in ensuring safe and effective training (Teixeira et al., 2022). Continuous coach education accompanied by mentoring has been proven to be more effective in improving coaching quality than short-term training without follow-up support (Kennedy et al., 2024; Song, 2023). In addition, safety aspects such as injury prevention, age-appropriate heading, neuromuscular warm-ups, and emergency preparedness should be integral components of coaching competence (Baggish et al., 2025; Cao et al., 2024; Peek et al., 2023).

The problem faced by the partner, SSB PS Bintang Kejora, is the uneven distribution of coaches' competence in several important aspects, such as training load monitoring, understanding of recovery nutrition, use of HR Max, and utilization of video analysis. This condition has the potential to affect the quality of training and the optimal development of players. Therefore, this community service activity aims to map coaches' competence through a knowledge questionnaire and self-assessment instrument.

The novelty of this activity lies in the development of a coach competency profile based on a practical and contextual sport science approach. The results of this mapping are expected to serve as a basis for designing more targeted follow-up training programs according to the needs of coaches at the football school level. Thus, this article not only presents the results of a competency evaluation, but also provides empirical contributions to strengthening the capacity of youth football coaches in a sustainable manner at the local level.

2. IMPLEMENTATION METHOD

This Community Service Program (PKM) employed a descriptive quantitative approach aimed at describing the competency profile of coaches based on numerical data obtained through a questionnaire. This approach was selected because it is able to map levels of knowledge, perceptions, participation, and variables related to the effectiveness of coach education programs, although causal impact testing requires experimental or quasi-experimental designs (Kennedy et al., 2024; Song, 2023). The researchers considered this approach highly appropriate as an initial step in understanding the actual condition of coaches' competence before implementing more complex interventions. In the context of this activity, the descriptive approach was used as a preliminary stage to identify coaches' competency conditions before designing a more targeted and needs-based follow-up training program.

The participants consisted of 10 coaches from SSB PS Bintang Kejora Masbagik, East Lombok Regency, who had diverse backgrounds in terms of age and coaching experience. This diversity is an important factor because the competence of youth football coaches is influenced not only by practical experience, but also by technical knowledge, pedagogical knowledge, sport science literacy, safety awareness, and the ability to reflect on coaching practices (Kennedy et al., 2024; Peek et al., 2023). The researchers considered this variation in background to provide a more comprehensive picture of the actual condition of coaches' competence in the field.

The evaluation instrument used was a questionnaire consisting of 10 knowledge questions and five self-assessment statements using a 1–5 scale. The use of a questionnaire was considered relevant for assessing coaches' competence, particularly when it covers technical and pedagogical dimensions, sport science application, safety, coaching ethics, and data literacy (Cao et al., 2024; Teixeira et al., 2024). The researchers viewed the questionnaire as an effective tool for obtaining an initial overview of coaches' competence in a rapid and systematic manner. The knowledge topics measured included the overload principle, Rating of Perceived Exertion (RPE), recovery nutrition, hamstring injury, video analysis, HR Max, microcycle, the RICE principle, Yo-Yo Intermittent Recovery Test, and mental fatigue. These topics were selected based on the need for sport science understanding in football, including training monitoring, nutrition, recovery, safety, and data-based decision-making (Li et al., 2024; Peek et al., 2023). The researchers considered these topics to be fundamental aspects that youth football coaches need to master.

Regarding the validity and reliability of the instrument, the questionnaire items were developed based on a review of relevant sport-science and coaching-literacy literature (Cao et al., 2024; Li et al., 2024; Teixeira et al., 2024) and were examined for content validity through expert judgment involving sport-science lecturers prior to administration, focusing on the clarity, relevance, and representativeness of each item relative to the coaching-competency domains assessed. However, given the exploratory and descriptive nature of this community service activity and the limited number of participants, formal statistical validity and reliability testing (e.g., item-total correlation and Cronbach's alpha) was not conducted at this stage; this is acknowledged as a limitation of the instrument and is revisited in the Discussion section.

The data obtained were analyzed using descriptive statistics, including frequency, percentage, mean, and comparison of scores among respondents. This analysis was used to describe the distribution of correct answers, levels of self-assessment, and the gap between knowledge and perceived coaching competence. The results of the analysis were then presented in the form of three line graphs to show patterns of competence, areas of strength, and aspects requiring further improvement more clearly. The use of percentages and means was also considered effective in the initial evaluation of coach education programs because it presents participants' conditions in a concise and easily understandable manner (Baggish et al., 2025; Kennedy et al., 2024). The researchers also considered that presenting data visually through graphs greatly assists in interpreting the results in a clearer and more communicative way.

Overall, the researchers concluded that the implementation method used in this activity was able to provide a fairly comprehensive initial overview of coaches' competence at the football school level. Nevertheless, the results remain descriptive in nature and therefore need to be followed up with a more structured training program and further evaluation using a more in-depth approach. Thus, this activity can serve as an important basis for developing a sustainable coach competency improvement model that is grounded in actual needs in the field.

3. RESULTS AND DISCUSSION

RESULTS

General Competency Profile of SSB Bintang Kejora Coaches

The results of the activity showed that the general competency profile of SSB PS Bintang Kejora coaches was in a fairly good category; however, it was not evenly distributed across all aspects of sport science-based coaching. A total of 10 coaches participated in this activity. The respondents' ages ranged from 14 to 42 years, with an average age of 29.8 years. This composition indicates that most coaches were in a productive age group and had considerable potential to continuously develop their coaching competence. In terms of experience, five coaches had 1–3 years of coaching experience, two coaches had less than 1 year of experience, two coaches had 3 years of experience, and one coach had more than 4 years of experience. This diversity of experience indicates that coaching capacity within the football school environment is still in a developing stage.

The average knowledge score of the coaches reached 64%, indicating that basic understanding of youth football coaching had been established. The highest scores were found in the topics of hamstring injury at 100%, mental fatigue at 90%, and microcycle at 80%. These findings indicate that the coaches had relatively strong understanding of injury prevention, mental fatigue, and short-term training planning. Meanwhile, understanding of the overload principle at 70%, video analysis at 60%, the RICE principle at 60%, and the Yo-Yo Intermittent Recovery Test at 60% fell into the moderate category.

However, several important aspects still showed low achievement, namely RPE at 30%, recovery nutrition at 40%, and HR Max at 50%. This indicates that training load monitoring, recovery management, and physiological indicators had not been optimally understood. Several factors may explain this pattern of low achievement. Most coaches at SSB PS Bintang Kejora had limited or no access to formal, structured coach-education programs that specifically address data-based training principles, so their competence in these areas was largely shaped by practical field experience rather than systematic instruction in sport-science concepts. In addition, the limited availability of basic supporting tools, such as heart-rate monitors or simple recording sheets, together with limited familiarity with technology-based recording methods, likely constrained coaches' opportunities to practice and internalize RPE recording, recovery-nutrition planning, and HR Max calculation within their daily coaching routines. In terms of self-assessment, the coaches' average score was 3.8 on a scale of 1–5. The highest score was found in injury prevention, while the lowest scores were found in video analysis and RPE recording. Overall, these results indicate the need to strengthen practical competence through follow-up training focused on the simple, measurable, and relevant application of sport science according to the needs of football school coaches. Further details are presented in the following table:

Aspect Assessed	Main Finding	Interpretation
General coaching competence	Classified in the moderate category	The coaches have basic coaching competence, but further strengthening based on sport science is still required.
Understanding of sport science	Average score of 60–70%	The coaches have sufficient basic understanding, but its practical application has not yet been optimized.
Training load monitoring	Not yet implemented systematically	Training practices still largely depend on coaching experience and general observation.

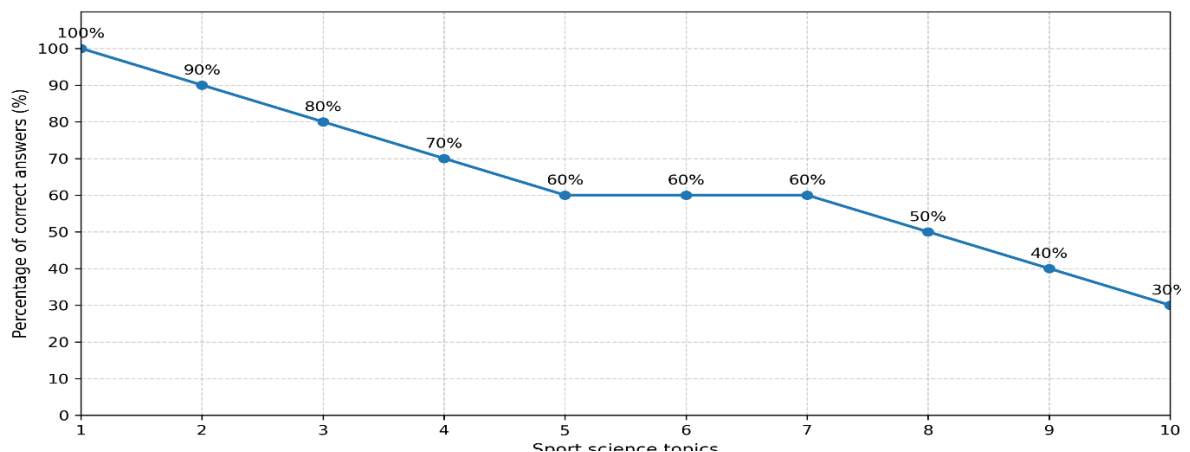
Use of RPE	Very limited	Coaches are not yet accustomed to recording athletes' perceived training load.
Video analysis	Very limited	Technical and tactical evaluations have not widely utilized visual documentation.

Coaches' Understanding of Sport Science

The evaluation results showed that the coaches of SSB PS Bintang Kejora had a moderate level of understanding of sport science, although this understanding was not evenly distributed across all topics tested. Based on the graph showing the percentage of correct answers, the topic of hamstring injury achieved the highest score, at 100%. This indicates that all coaches understood the movement phase that poses a risk of hamstring injury in football. A high level of understanding was also observed in the topics of mental fatigue at 90% and microcycle at 80%, indicating that the coaches had good basic knowledge of athletes' mental fatigue and the structure of short-term training periodization.

In the moderate category, coaches' understanding of the overload principle reached 70%, while video analysis, the RICE principle, and the Yo-Yo Intermittent Recovery Test each reached 60%. These findings indicate that the coaches already had a basic understanding of training principles, acute injury management, fitness evaluation, and the use of simple technology, although further practical strengthening is still required.

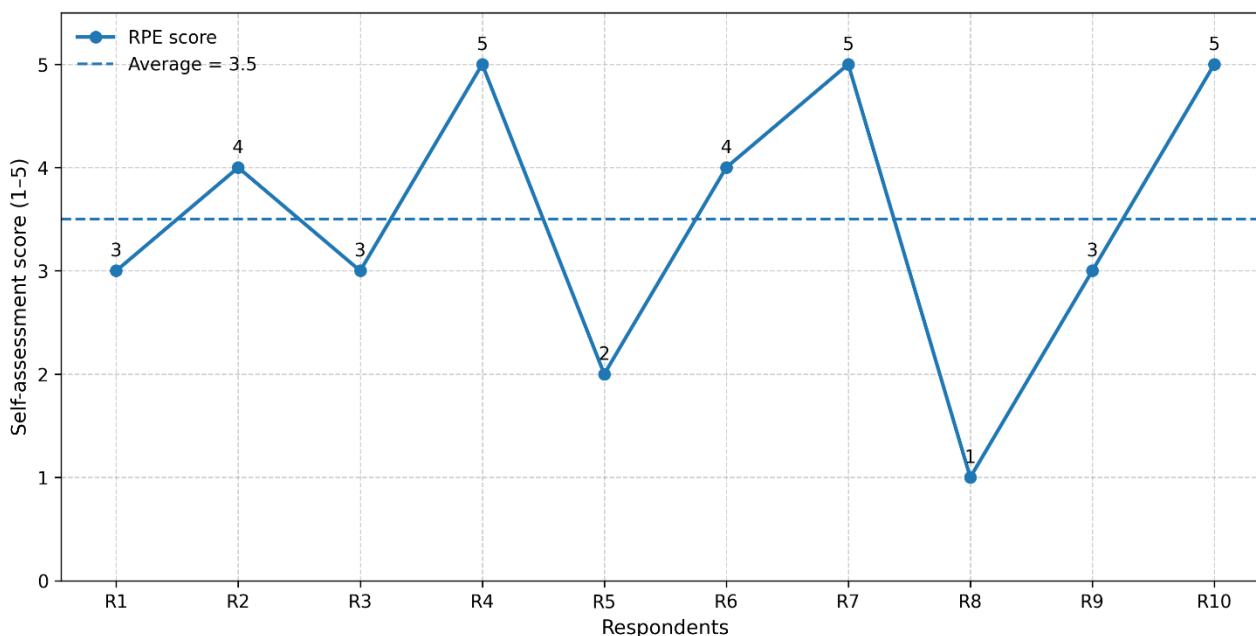
Meanwhile, the lowest scores were found in HR Max at 50%, recovery nutrition at 40%, and RPE at 30%. The low level of understanding in these three areas indicates that the coaches still require specific guidance in monitoring training intensity, managing recovery, and recording training load subjectively. Therefore, strengthening sport science content should focus on RPE, recovery nutrition, HR Max, and the utilization of video analysis so that the training process can be conducted in a more measurable, safer, and simple data-based manner.



Implementation of Training Load Monitoring

The evaluation results regarding the implementation of training load monitoring showed that coaches' ability to calculate and record Rating of Perceived Exertion (RPE) still varied among respondents. Based on the graph, coaches' self-assessment scores ranged from 1 to 5, with an average score of 3.5 on a 1–5 scale. Three respondents obtained the highest score, namely 5, indicating that some coaches had a strong level of confidence in understanding and recording RPE after training sessions. However, there were still respondents with low scores, namely 2 and 1, indicating that the implementation of training load monitoring had not been evenly applied within SSB PS Bintang Kejora.

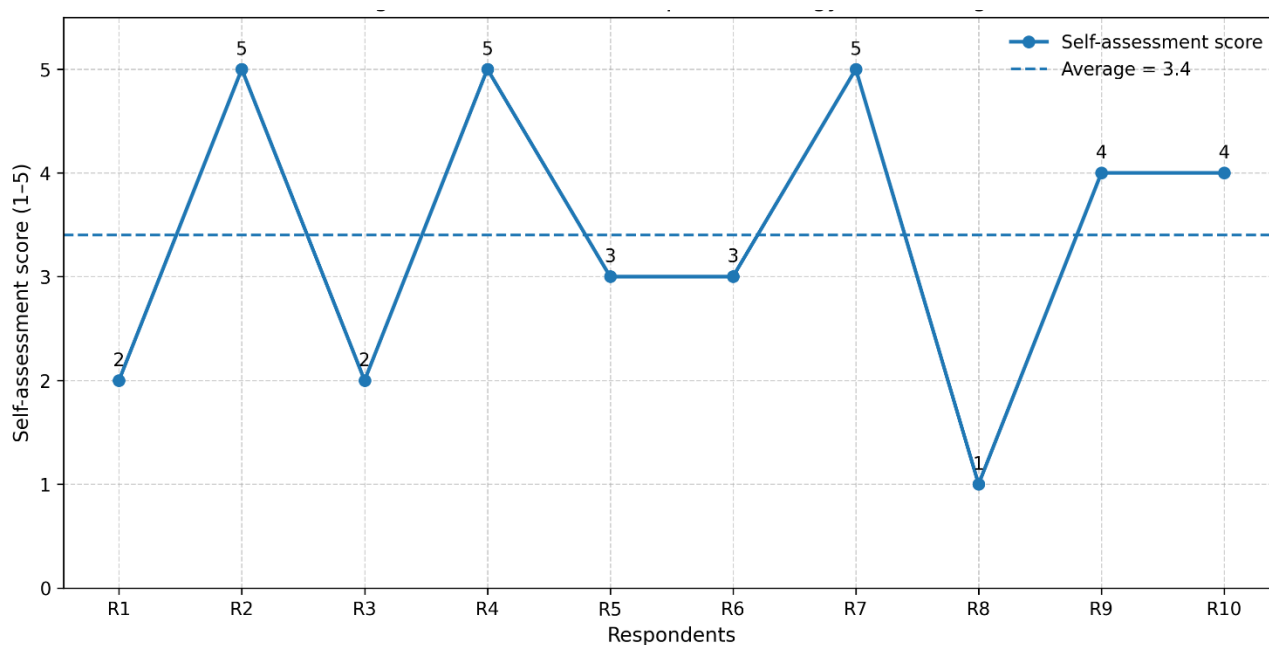
This finding shows that the training process still tends to rely on coaches' experience and general observation, and has not fully used structured records of internal or external training loads. This condition is an important concern because training load monitoring plays a role in helping coaches control training intensity, prevent excessive fatigue, and adjust training programs according to the condition of young athletes. In the context of the Community Service Program, these results emphasize the need for practical training on the use of RPE as a simple, low-cost, and easily applicable instrument at the football school level. Strengthening this competence is expected to encourage coaches to implement training that is safer, more measurable, and based on simple data.



Utilization of Simple Technology in Coaching

The evaluation results showed that the utilization of simple technology in youth football coaching was still uneven among the coaches of SSB PS Bintang Kejora. Based on the graph, coaches' self-assessment scores in using simple smartphone applications to record and analyze basic movement ranged from 1 to 5, with an average score of 3.4 on a 1–5 scale. Three respondents obtained the highest score, namely 5, indicating that some coaches already had confidence in using smartphones as a tool for movement analysis. However, there were also respondents with low scores, namely 2 and 1, indicating that some coaches still had limitations in utilizing simple technology for training evaluation.

This finding indicates that the use of video analysis has not yet become a routine practice in the coaching process. Technical and tactical evaluations still tend to be conducted through direct observation without systematic visual documentation. This condition may occur due to limited digital skills, lack of familiarity with using applications, and the absence of practical guidelines suited to the needs of community-based clubs. In the context of the Community Service Program, these results highlight the need to improve coaches' capacity through training in the use of low-cost, accessible, and relevant evaluation tools, such as smartphones and simple movement analysis applications. Strengthening this competence supports SDG 4 on quality education and SDG 3 by improving the quality of sports coaching that is safe, measurable, and sustainable.



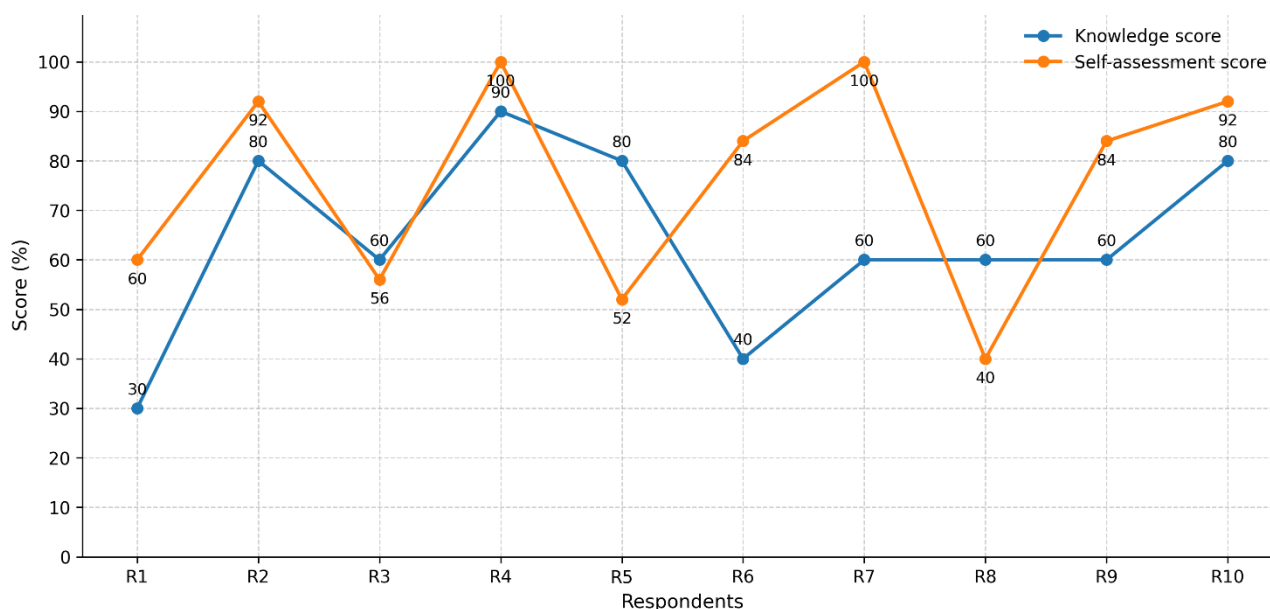
Gap between Knowledge Scores and Self-Assessment

The analysis results showed a gap between the knowledge scores and self-assessment scores of the coaches of SSB PS Bintang Kejora. The graph indicated that the coaches' knowledge scores ranged from 30% to 90%, while their self-assessment scores ranged from 40% to 100%. This difference indicates that coaches' perceptions of their own abilities were not always aligned with their actual conceptual mastery as measured through knowledge questions.

Several respondents showed higher self-assessment scores than knowledge scores. For example, R1 obtained a knowledge score of 30%, while the self-assessment score reached 60%. A similar pattern was observed in R6, R7, R9, and R10, indicating a tendency for some coaches to rate their own abilities higher than their objective knowledge results. This condition may occur because coaches feel sufficiently experienced in field practice, although they have not fully mastered sport science concepts theoretically and systematically.

Conversely, some respondents had higher knowledge scores than self-assessment scores, such as R5, who obtained a knowledge score of 80% but a self-assessment score of only 52%. This indicates that some coaches already had good conceptual mastery, but did not yet have a comparable level of confidence in applying that knowledge in coaching practice.

These findings emphasize that the evaluation of coaching competence should not rely solely on self-assessment. Measurement needs to combine knowledge tests, self-reflection, practical observation, and field mentoring in order to obtain a more objective competency profile. In the context of the Community Service Program, these results provide an important basis for designing follow-up training that not only improves conceptual understanding but also strengthens coaches' confidence and practical skills in applying sport science in a simple and sustainable manner.



Discussion

The general competency profile of SSB PS Bintang Kejora coaches indicates that their competence is in a fairly good category, although it is not evenly distributed across all coaching aspects. The average knowledge score of 64% shows that the coaches already have a basic understanding of football coaching and sport science, although gaps remain in several important topics. This condition can be understood because the respondents had diverse backgrounds in terms of age and coaching experience, resulting in different levels of understanding of coaching-related materials. In the context of youth football development, coaching competence is not only determined by practical experience, but also by the ability to understand training principles, learning design, safety, load monitoring, and holistic athlete development (Brito & Freitas, 2024; Duncan et al., 2022).

The coaches' highest level of understanding was found in hamstring injury at 100%, mental fatigue at 90%, and microcycle at 80%. These findings indicate that the coaches relatively understood aspects of injury prevention, mental fatigue, and the fundamentals of training periodization. Understanding injury and safety is an important aspect of youth football because coaches play a direct role in creating safe training sessions, including through neuromuscular warm-ups, load regulation, and initial injury management procedures (Baggish et al., 2025). In addition, understanding mental fatigue is relevant because cognitive load, competitive stress, and environmental pressure can affect the quality of decision-making and performance among young players (Ismail et al., 2023; Robert et al., 2022; Sari et al., 2024).

Nevertheless, coaches' understanding remained low in RPE at 30%, recovery nutrition at 40%, and HR Max at 50%. The low scores in these topics indicate that the concepts of training load monitoring and physiological indicators have not been optimally applied. In fact, simple data-based practices such as RPE, fitness tests, maturity indicators, and training load records can help coaches regulate training intensity more safely and objectively (Duncan et al., 2023; Teixeira et al., 2024). These findings reinforce the need for coach education programs at the grassroots level to include data literacy, load monitoring, nutrition, and recovery as part of the basic competence of youth football coaches.

The self-assessment results showed an average score of 3.8 on a 1–5 scale. The coaches felt fairly confident in injury prevention, preparing weekly lesson plans, and understanding nutrition and hydration. However, lower scores in RPE recording and the use of smartphones for video analysis indicate that simple technology has not been utilized optimally. In fact, video analysis can help coaches evaluate technical and tactical aspects visually, while RPE can serve as a practical tool for monitoring athletes' internal load. The literature indicates that grassroots

coaches require practical guidance in applying technology-based approaches, visual exploratory activity, and training designs that integrate technical, tactical, perceptual, and decision-making aspects (Alzate et al., 2025; Brito & Freitas, 2024; Eldridge et al., 2022).

The gap between knowledge scores and self-assessment scores was also an important finding. Some coaches showed higher self-assessment scores than their knowledge scores, while others showed the opposite pattern. This indicates that competency evaluation cannot rely solely on personal perception. Coach evaluation instruments should combine knowledge tests, self-assessment, practical observation, and instrument validation so that the results are more objective and reliable (Duncan et al., 2022; Kennedy et al., 2024).

Overall, this activity contributes to improving the quality of education and community-based sports coaching, in line with SDG 3 on health and well-being and SDG 4 on quality education. The main limitations of this activity include the small number of participants, the instrument not yet having undergone in-depth validity and reliability testing, and the absence of field practice observation. Therefore, follow-up activities should be directed toward practical training on RPE, HR Max, recovery nutrition, and video analysis, accompanied by continuous mentoring so that improvements in coaching competence can be implemented directly in training sessions.

4. CONCLUSIONS

Based on the results of the Community Service Program (PKM), it can be concluded that the competency profile of SSB PS Bintang Kejora coaches was in a fairly good category, although it was not evenly distributed across all aspects of sport science-based coaching. The average knowledge score of the coaches was 64%, indicating that they had a basic understanding of youth football coaching principles, particularly in the topics of hamstring injury, mental fatigue, and microcycle. Strong understanding in these aspects shows that the coaches had initial awareness of the importance of injury prevention, managing athletes' mental conditions, and short-term training planning.

However, the evaluation results also showed that several important aspects still required strengthening, particularly Rating of Perceived Exertion (RPE), recovery nutrition, HR Max, and video analysis. The low level of understanding in these aspects indicates that the application of sport science in the training process has not yet been implemented systematically. This condition was also reflected in the coaches' self-assessment results, where the average score was 3.8 on a 1–5 scale. The coaches perceived themselves as fairly capable in injury prevention, preparing weekly lesson plans, and understanding nutrition and hydration, but still showed limitations in recording RPE and using smartphones for movement analysis.

The gap between knowledge scores and self-assessment indicates that the evaluation of coaching competence should not be based solely on personal perception. A more objective evaluation needs to combine knowledge tests, self-assessment, field practice observation, and continuous mentoring. Therefore, follow-up training programs for SSB PS Bintang Kejora coaches should focus on strengthening practical skills in training load monitoring, HR Max calculation, recovery nutrition management, and the utilization of simple video analysis. Overall, this activity provides an important foundation for developing youth football coaches' competence in a more measurable, applicable, and sustainable manner at the football school level.

For practical implementation, it is recommended that SSB PS Bintang Kejora and its coaching staff adopt several concrete, low-cost measures: (1) introducing a simple RPE recording sheet to be completed by athletes after every training session, enabling coaches to monitor training load without specialized equipment; (2) organizing short, periodic (e.g., monthly) workshops or mentoring sessions in collaboration with Mandalika University of Education focusing on recovery nutrition and the use of HR Max as a basic physiological indicator; (3) utilizing readily available smartphone applications for basic video recording and movement analysis during training sessions to support technical and tactical evaluation; and (4) establishing an ongoing partnership

between the football school and the university team to provide continued mentoring and periodic re-evaluation of coaches' competence. These steps are intended to translate the findings of this activity into direct, sustainable benefits for the partner.

5. ACKNOWLEDGMENTS

The authors would like to express their deepest gratitude to SSB PS Bintang Kejora Masbagik, East Lombok Regency, for the cooperation and support provided during the implementation of this community service activity. Special appreciation is also extended to all coaches who participated by taking the time to respond and actively engage in the competency assessment process. Their participation was essential in obtaining an initial overview of the coaching competency profile related to youth football development and the practical application of sport science.

The authors also gratefully acknowledge Universitas Pendidikan Mandalika for providing financial support for this community service activity. This funding support played an important role in facilitating the preparation, implementation, and completion of the program.

The authors further express their gratitude to the academic team and supporting team involved in the preparation, implementation, and evaluation of this activity. Their support in developing the questionnaire instrument, collecting data, and interpreting the results made a significant contribution to the completion of this study. It is expected that the results of this activity can serve as a useful basis for designing future coach development programs, particularly in the areas of training load monitoring, recovery nutrition, HR Max, injury prevention, and the use of simple video analysis in youth football coaching.

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