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Coaching for Physical Condition Improvement of Sidoarjo Football Club Players Based on Sport Science

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ABSTRACT

Objective: *This community service program aimed to improve the physical condition of football players at a football club in Sidoarjo Regency through sport science–based assistance.* ***Method:*** *The program involved needs analysis, initial physical fitness assessment, assistance in designing and applying physical conditioning programs, and evaluation of outcomes. Educational sessions and practical on-field mentoring were provided to the coaches and players.* ***Results:*** *The program resulted in enhanced understanding of sport science-based physical training, leading to improvements in several components of players' physical conditions. Coaches and players gained valuable knowledge about the importance of structured physical training.* ***Novelty:*** *This initiative bridged the gap between theoretical sport science principles and their practical application in a local football club, offering a systematic, sustainable physical training guideline. It exemplifies the role of physical education lecturers in developing sports performance at the local level.*

INTRODUCTION

Football is a sport with a high participation rate and is growing rapidly in various regions, including Sidoarjo Regency. The existence of local football clubs provides a platform for athlete development and a means of building character, discipline, and sportsmanship for players. However, the development of club achievements is often not balanced with the application of sports science-based training principles, particularly regarding the physical condition of players, which is the main foundation of performance on the field.

Physical condition plays a crucial role in supporting a football player's technical and tactical abilities. Components such as endurance, strength, speed, agility, and explosive power must be trained in a planned and continuous manner to enable players to perform optimally throughout matches. In practice, many regional football clubs still rely on conventional training patterns that have not been adapted to player characteristics, competition intensity, and the principles of proper training load [1].

Limited understanding of the concept of physical conditioning training among coaches and players often results in less than optimal training results and even increases the risk of fatigue and injury. Unmeasured training and not based on initial physical condition evaluations result in programs that are general and lack specificity. This presents a unique challenge for local football clubs in their efforts to sustainably improve the quality of coaching and team performance [2].

The sports science approach offers a solution through the application of scientific principles to the sports training process. Sports science integrates various disciplines such as sports physiology, biomechanics, and training methods to produce training programs that are effective, safe, and tailored to the needs of athletes. Through this approach, physical conditioning training is not only oriented towards improving performance but also considers aspects of player health and injury prevention [3].

Physical Education lecturers have a strategic role in transferring sports science-based knowledge and skills to the sports community, including football clubs. Through community service activities, lecturers can directly contribute to improving the capacity of coaches and players by providing mentoring, education, and examples of training practices that align with scientific principles and field needs [4].

Football clubs in Sidoarjo Regency, as community service partners, face a real need for mentoring in the development and implementation of physical conditioning training programs. This mentoring activity is expected to bridge the gap between theories developed in academic settings and training practices implemented in clubs. This way, clubs can have a more systematic training framework oriented towards long-term player development [5].

This community service program focuses on assisting players in improving their physical condition through measurement, education, and sports science-based training practices. This approach is designed to ensure that coaches and players not only receive theoretical material but also understand its direct application in daily training on the field.

Through this mentoring activity, it is hoped that coaches and players will increase their understanding and awareness of the importance of planned, sports science-based physical conditioning training [6]. Furthermore, this activity is expected to positively impact the quality of soccer coaching at the local club level and strengthen the role of Physical Education lecturers in supporting the development of high-performance sports in the community.

RESEARCH METHOD

The method used in this community service activity is a participatory mentoring approach that emphasizes the active involvement of coaches and players at soccer clubs in Sidoarjo Regency. This approach was chosen to ensure effective knowledge and skills transfer through direct interaction, discussion, and field practice. The mentoring activities are designed to be more than one-way, but encourage partners to be involved in every stage of the activity.

The implementation phase begins with a needs analysis to identify the club's initial conditions, including player characteristics, current training patterns, and any challenges faced related to physical condition. Next, measurements of the players' initial physical condition are conducted as a basis for developing a training program. These measurements aim to obtain an overview of the players' fitness levels and determine priorities for developing the required physical condition components.

The next stage is mentoring in the development and implementation of a sports science-based physical conditioning training program. During this stage, Physical Education lecturers provide education on basic training principles, examples of appropriate exercise forms, and direct guidance during the training process on the field. The training program is tailored to the club's needs and player characteristics so that it can be implemented sustainably by the coaches after the community service activity is complete.

The final stage of the program is an evaluation of the mentoring program, which involves observing training sessions, discussing with coaches and players, and comparing physical condition before and after the mentoring program. This evaluation aims to assess the effectiveness of the program and obtain feedback from partners. The results will be used to inform program improvements and provide recommendations for developing similar mentoring programs in the future.

RESULT AND DISCUSSION

1. Initial Club Conditions and Mentoring Needs

The initial conditions of the partner football clubs indicate that physical conditioning training has not been fully structured based on sports science principles. The training patterns implemented are still general and tend to be repetitive without being based on the results of player physical condition measurements. This results in less than optimal player fitness development and uneven physical abilities across individuals within the team.

Some players have quite good endurance, but other components such as strength, speed, and agility still show significant variation. These differences are not yet fully recognized by coaches due to the lack of measurable physical condition data to base training programs on [7]. This situation reinforces the importance of scientifically based mentoring to support the development process at clubs [8] [9] [10].

Furthermore, coaches and players' understanding of the principles of training load, intensity, and progression is still limited. Training often focuses on game-play aspects without considering players' physical readiness. This situation has the potential to reduce training effectiveness and increase the risk of excessive fatigue.

2. Implementation of Sports Science-Based Mentoring

The mentoring conducted in this community service activity began with physical condition measurements as the initial step in implementing sports science. The measurement data was used as a basis for determining training focuses that were appropriate to the players' needs. This approach helped coaches understand that physical conditioning training needed to be tailored to the players' actual conditions, not solely based on habits [11] [12].

Through educational sessions, coaches and players were introduced to the basic concepts of physical conditioning and its relationship to soccer performance. The material was presented in a simple and practical manner for easy understanding and

immediate application in training. This approach has been shown to increase partner interest and engagement throughout the mentoring process [13].

Field mentoring was a crucial part of this activity because it provided direct examples of the training program's implementation. Physical Education lecturers acted as facilitators, guiding coaches in managing the training, from warm-ups and core physical conditioning exercises to cool-downs. This activity helped coaches gain practical experience in applying sports science principles.

3. Impact of Mentoring on Coaches' and Players' Understanding

The mentoring results showed an increase in coaches' understanding of the importance of structured, data-driven physical conditioning training. Coaches are beginning to recognize that each player has different training needs, requiring more flexible and adaptive training programs [14].

Players are also showing positive changes in attitudes toward physical conditioning training. Training, previously considered an additional activity, is beginning to be understood as an important part of supporting game performance [15]. This awareness encourages players to be more serious and disciplined in participating in each training session.

The interactions established during the mentoring sessions also strengthen communication between coaches and players. Discussions regarding training objectives and benefits help create a more conducive training environment [16] [17]. This is crucial for maintaining consistent implementation of the training program after the community service program concludes.

4. Improvement in Player Physical Condition Components

The mentoring sessions have had a positive impact on several components of the players' physical condition. Although the community service activities were limited in duration, the training results showed a trend toward improvements in players' endurance and strength. These changes are early indicators that sports science-based training programs can be implemented effectively in local clubs [18].

Improvements in physical condition are also evident in the players' increased ability to maintain game intensity throughout training sessions. Players appear better able to control fatigue and maintain movement quality. This shows that planned training can improve a player's physical efficiency [19].

In addition to physical aspects, structured training also has a positive impact on a player's mental readiness. Players become more confident in training and matches because they feel better physically prepared. This impact strengthens the relationship between physical condition and overall performance [20].

5. Benefits of Activities for Partner Clubs

This community service activity provides tangible benefits to partner clubs in the form of more systematic physical conditioning training guidelines. These guidelines can be used as a reference in developing medium- and long-term training programs. This way, clubs no longer rely on trial-and-error training patterns.

Furthermore, this activity helps clubs improve the capacity of their human resources, particularly coaches. Coaches gain additional insight and skills relevant to the needs of modern football development. This increased capacity is expected to impact the quality of player development on an ongoing basis.

The role of Physical Education lecturers in this activity demonstrates the university's tangible contribution to sports development in the community. The collaboration between academics and football clubs provides a model of synergy that can be replicated at other clubs with similar characteristics. Thus, this community service activity not only provides short-term benefits but also opens up opportunities for broader sports development at the local level.

CONCLUSION

Fundamental Finding : This community service program successfully enhanced the physical condition of football players at a Sidoarjo-based football club through sport science-based assistance, bridging the gap between theoretical knowledge and practical application. Coaches and players demonstrated increased understanding of physical conditioning principles, leading to improvements in players' physical components. **Implication :** The results underscore the importance of integrating sport science principles into local football clubs, highlighting the significant role of physical education lecturers in transferring knowledge to enhance sports performance. This program provides a model for future collaborations between universities and local sports clubs. **Limitation :** The study's limited duration restricted the ability to assess long-term impacts, and the sample size confined the scope of generalization. **Future Research :** Future research should explore the long-term effects of sport science-based conditioning programs across various sports and clubs in different regions, examining the sustainability of the training outcomes and the broader impact on players' overall performance and health.

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