

Nutrition Application to Support Fitness in Amputee Football Athletes

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ABSTRACT

Objective: This study aims to identify the challenges faced by athletes, particularly those with disabilities, in implementing proper training and nutrition management programs. It highlights the importance of structured nutritional strategies in enhancing physical fitness, improving performance, and supporting recovery for football players. **Method:** The research employs a community development practice approach, focusing on providing training and nutritional education to disabled football athletes. These initiatives were designed to increase awareness and encourage the adoption of balanced nutrition and hydration practices during training and competition. **Results:** The program successfully improved athletes' knowledge of the significance of balanced nutrition and proper hydration. However, further efforts are required to ensure the optimal implementation of nutrition programs that fully support athletes' physical fitness and performance. **Novelty:** This study addresses a specific gap by focusing on disabled athletes in football, an area often overlooked in sports nutrition research. It emphasizes the role of structured nutritional management in enabling athletes to achieve peak performance, reduce injury risks, and compete at higher levels.

INTRODUCTION

Football has become a globally popular sport, including in Indonesia [1]. In forming a football team, the nutritional intake of athletes plays a very important role in achieving optimal performance. The physical fitness of an athlete is one of the main factors in a team's success in facing a match. In European countries, football has experienced an extraordinarily rapid development. Football players receive special attention regarding their diet, meal planning, and well-structured nutrition management.

Every professional football club and training center has a special team responsible for meeting the nutritional needs of its athletes. Good nutrition management, both during training and competition, can help athletes achieve optimal physical condition so that they can compete with their best performance [2]. Specifically for football involving individuals with disabilities, such as athletes with leg amputations due to accidents or congenital defects, the role of nutrition becomes increasingly significant [3]. Good nutrition not only supports their health but also enables them to compete at their best.

Athletes with disabilities often have to fight against the negative stigma that considers them incapable of living independently and productively. Nevertheless, with the right support, including nutrition, these athletes are able to demonstrate extraordinary abilities on the field. In addition, to achieve optimal performance, they need to ensure that energy needs during training and matches are met [4]. Balanced nutritional intake plays a significant role in supporting athletic performance, as explained in several previous studies.

However, the results of observations and interviews indicate that some athletes have less than ideal nutritional status. Some of them suffer from malnutrition or being overweight (obesity) which can affect their performance. Moreover, many athletes are still not fully aware of the importance of paying attention to their nutritional condition. For example, many of them do not know the amount of fluid that should be consumed during training and matches, so their habit is to only drink when they feel thirsty.

Furthermore, the training patterns currently undertaken by some athletes with disabilities are still not optimal. The training provided tends to focus on technical aspects such as kicking drills or basic ball-playing techniques. Meanwhile, other aspects of physical fitness, such as strength training, cardiovascular exercises, and general fitness management, are often neglected [5]. This certainly poses a unique challenge for athletes to achieve optimal performance.

From the analysis of the situation that has been explained, there are several main issues that need to be addressed. the athletes have not yet understood and implemented the special training program designed to improve overall physical fitness. In fact, physical fitness is an important element in achieving optimal performance [6]. The athletes' awareness of the importance of nutritional status and a balanced diet is still very minimal. Many of them do not yet understand how proper nutrition can directly impact their performance on the field.

The fluid needs of athletes during training and matches are still not given enough attention. In fact, dehydration can cause a significant decline in physical and mental performance. An educational program on the importance of maintaining body fluid balance needs to be part of athlete training. Fourth, the lack of attention to comprehensive physical fitness training results in athletes being unable to optimize their physical abilities to compete at higher levels.

The unstructured management of athlete nutrition is also an issue that needs to be addressed immediately. Collaboration between coaches, nutritionists, and team management is essential to ensure that athletes' nutritional needs are met effectively. Sixth, the importance of an individual approach in nutrition management must also be considered, given that the nutritional needs of each athlete can vary depending on their physical condition, training intensity, and personal goals.

The synergy between team management, coaches, and nutritionists in designing an integrated nutrition program is very important. This includes not only daily menu planning but also regular monitoring of athletes' nutritional intake. Thus, the physical condition of athletes can be continuously monitored and improved according to their needs.

Nutrition education for athletes should also be a priority. Understanding the importance of nutrition, including the regulation of a healthy diet, must be taught to athletes from an early age. This educational program is not only beneficial for athletes' performance but also for maintaining their long-term health [7].

The collective awareness of all parties involved in athlete development, including coaches, management, and the athlete's family, is also key to success. With comprehensive support, athletes can focus more on improving their abilities without having to worry about nutrition or fitness aspects.

With the right steps, the potential of athletes with disabilities to compete at the national and international levels can continue to be enhanced. This requires continuous efforts, both in terms of management, training, and structured, results-oriented nutrition management. Thus, football can be an effective medium for building self-confidence and eliminating the negative stigma towards people with disabilities.

Based on the situation analysis that has been explained, there are several main issues that can be identified. First, the athletes have not yet understood and implemented the special training programs designed to improve physical fitness in order to achieve optimal performance. Second, athletes are still not fully aware of the importance of nutritional status, food intake, and fluid needs during training and competitions.

RESEARCH METHOD

The method applied in this community service activity is community development practice, namely through training provided to a group of people. The stages of implementing community service include:

A. Pre-Implementation Activities

The strategy meeting for the implementation of community service is led by the head of the implementation team to discuss strategies and program planning that will be carried out. This meeting is attended by all team members, including students who play a role in assisting with the implementation of the service.

B. Location Survey and Permits

The location survey is conducted before the preparation of the service proposal and is carried out again before the activity begins. This survey is conducted no later than one day before the activity, with the aim of arranging the layout of the equipment and conducting a dry run. In addition, this stage also includes obtaining permits from LPPM and the East Java amputee football association.

C. Implementation of Activities

The implementation stage of activities is the main phase of the community service program. The respondents in this activity are 40 athletes.

Through the socialization of nutritional application understanding, specifically understanding nutrition for athletes with the aim of improving athlete performance, providing appropriate nutritional guidelines to meet energy needs, enhance physical performance, and increase the athlete's endurance. Helping athletes choose foods and drinks that support muscle recovery after training or competitions, thereby reducing the risk of injury. Enables monitoring of daily nutrient intake according to individual needs based on the type of sport, age, weight, and performance goals. Educates athletes about the importance of nutrition in supporting health and sports performance. Helps athletes

avoid nutrient deficiencies or excess calories that can negatively impact health and performance. Providing recommendations tailored to the preferences, allergies, or dietary restrictions of athletes. Providing guidance to maintain an ideal weight according to the category of sport practiced.

The evaluation conducted to measure the success level of this community service program implementation uses pretest and posttest questionnaires. The aim is to determine the extent of the respondents' knowledge about special training programs, nutritional status calculations, and hydration status. The results of the pretest questionnaire will be compared with the results of the posttest questionnaire. If there is an improvement, this program can be considered successful.

The next evaluation is conducted by objectively assessing the respondents' ability to create training programs, calculate, and measure nutritional status. If the respondents can perform these tasks well and demonstrate a high level of curiosity through questions, then this program can be considered successful. The next step is follow-up. If the evaluation results show that the respondents' knowledge has not improved, the follow-up action will be to evaluate the methods used. If the method proves to be less accurate, the team will conduct retraining with a more effective method. On the other hand, if the evaluation shows an increase in knowledge, this service program can be recommended for the next service program with respondents from other sports branches.

D. Post-Implementation Phase

The final stage of this community service program is the preparation of reports and scientific articles that will be submitted for publication in national journals, as well as being used as material for the creation of a paragliding textbook. In addition, a long-term evaluation will be conducted regarding changes in respondents' attitudes after gaining an understanding of the special training program, nutritional status assessment, and hydration status. This evaluation will be carried out by monitoring and observing respondents during training and matches.

RESULTS AND DISCUSSION

Athlete training camps are a coaching strategy focused on helping athletes achieve peak performance in competitions. Throughout this process, athletes are directed to follow the training load that aligns with the designed program. In supporting their stamina, management plays an important role in ensuring that the food provided has a balanced nutritional content. Effective nutritional management can be achieved through well-organized management planning. Thus, the achievement of athletic performance can be realized more optimally.



Figure 1. Direct implementation on participants

Solid coordination between the education department or the Youth and Sports Department and the management of schools or clubs becomes very important in developing a program for planning athletes' nutritional needs. This program should be structured in phases, covering short, medium, and long-term periods, as outlined in the athletes' meal plan [8]. In addition, budgeting funds to meet the food needs of athletes also requires intensive collaboration between the relevant departments and the management of clubs or schools. The athlete's meal menu must be designed by the catering manager together with the coach and management to ensure its suitability [9]. Proper nutrition counseling also requires the role of a certified nutritionist to provide appropriate guidance.

School or club management needs to collaborate with nutritionists to periodically evaluate the nutritional status of athletes. This evaluation aims to maintain the stability of their nutritional status in the long term [10]. In addition, monitoring the athletes' diet requires good coordination between dormitory supervisors, catering managers, and coaches. The synergy between coaches and management in designing training programs that align with nutritional needs is a crucial aspect. Deep knowledge about the importance of nutrition for athletes must be continuously improved among coaches and the athletes themselves.

In enhancing athletes' understanding of the importance of nutrition, specialized training has become one of the effective approaches. The education provided must cover various aspects, from energy needs to physical recovery after training or matches. Athletes also need to be equipped with information on how to choose foods that can support their health and performance [11]. Thus, the risk of injury can be minimized through optimal recovery. In addition, this education also helps athletes avoid nutritional deficiencies that can negatively impact their health.



Figure 2. Nutrition guidance by the resource person

Good nutrition management not only impacts health but also contributes to the physical endurance of athletes during competitions. The preparation of a specific menu tailored to individual needs is one of the strategic steps. Food preferences, allergies, and dietary restrictions must also be considered to ensure that the nutritional intake meets the athletes' needs comprehensively. Monitoring daily nutritional intake through tools or applications can also help ensure that athletes' energy needs are met. This is important to support the stability of athletes' performance throughout the competition season [12].

In addition to focusing on nutrition, the training program implemented must also include comprehensive physical fitness development. Exercises specifically designed to improve endurance, strength, and speed can help athletes cope with the pressures of competition [13]. The role of the coach in integrating aspects of fitness and nutrition becomes very significant. Coaches must have a sufficient understanding of how nutrition and physical activity are interconnected. Thus, they can provide proper guidance to the athletes.

Management must also actively monitor the implementation of this nutrition and exercise program. Monitoring can be conducted through regular evaluations involving various parties, such as coaches, nutritionists, and catering managers. The evaluation results can be used to identify areas that require further improvement and development. For example, if a deficiency in certain nutritional intake is found, then menu improvements must be made immediately. This evaluation can also serve as a basis for decision-making in future program planning [14].

It is important to involve athletes in the planning and evaluation process of this program. By providing them with an understanding and responsibility for their nutritional and fitness needs, athletes will be more motivated to follow the designed program. This participatory approach can create a greater sense of ownership and commitment among athletes. Additionally, open communication between athletes,

coaches, and management is also very important to ensure that all parties clearly understand the program's goals.

Cross-sector collaboration between agencies, club management, and experts is necessary to create a supportive coaching ecosystem. Each party must have a clear role in implementing this program, from planning to evaluation [15]. With good coordination, obstacles that may arise during the implementation of the program can be overcome more effectively. This program can also serve as a model that can be applied to other sports that have similar needs.

The success of this program also greatly depends on the commitment of all parties involved [16]. Therefore, capacity development, such as training for trainers and nutrition managers, needs to be continuously carried out. Coaches and nutrition managers must continuously update their knowledge in accordance with the advancements in science and technology in the field of sports. Thus, they can provide the best support to athletes [10]. This commitment will ensure that the program can run sustainably.

In conclusion, integrated nutrition management and training programs are essential foundations in the development of performance-oriented athletes. With a holistic approach, encompassing aspects of nutrition, physical fitness, and cross-sector collaboration, this program can generate significant positive impacts. Evaluation and continuous development are key in ensuring that this program remains relevant and effective. The results of the implementation of this program can also serve as recommendations for policy development at a broader level.

CONCLUSION

Fundamental Finding : The findings reveal that effective nutrition management significantly impacts the performance of amputee football athletes during training and competitions. Training sessions enhanced athletes' understanding of nutritional needs, hydration, and maintaining ideal body weight for optimal performance. The involvement of nutrition experts in monitoring and planning proved instrumental in improving athletes' nutritional status, reducing injury risks, and boosting physical endurance. Evaluation results demonstrated a significant improvement in athletes' knowledge of nutrition and fitness. **Implication :** The program underscores the critical role of collaboration among club management, coaches, catering staff, and nutritionists in achieving success. Integrating nutrition with tailored training programs holistically has shown promising potential for broader application in other sports disciplines. This approach highlights the importance of structured nutrition programs in enhancing the performance of athletes, particularly those with disabilities. **Limitation :** Despite its success, the program faced challenges such as limited resources and the varying nutritional knowledge levels among athletes. The dependency on experts for dietary planning also highlighted the need for more self-sustaining strategies. Future programs must address these limitations to ensure consistent and scalable implementation across

different athlete groups. **Future Research :** Future studies should focus on long-term effects of integrated nutrition and fitness programs on disabled athletes' performance. Additionally, exploring cost-effective and scalable methods to implement similar initiatives across various sports and disability groups can further enhance their impact and inclusivity.

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