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Mapping Physical Training Materials and Diet Management for Football Athletes

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Abstract

The physical component and food intake are significant factors in football. The aims of this study were 1) to identify materials and media for physical exercise and diet management for soccer athletes and 2) to map physical training materials and diet management for soccer athletes. The method used is Research and Development (R&D) with the Four-D (4D) model. The population in this study were football athletes and coaches. The sample consisted of 82 athletes and football coaches from PSMS Medan. Data analysis using descriptive analysis. The results showed that 95% of the sample agreed that all physical training material needs to be known by football athletes. The temporal indicators are anatomy and physiology, components of the physical conditions required in soccer, energy systems, principles of soccer physical training, training volume and intensity, training stages, preparation stages, training stages, match stages, training stages, transitions, and recovery exercises as well as weight training. This study also showed that 95.3% of the sample required an assessment or assessment of nutritional data on soccer athletes, such as body measurements/anthropometrics, body composition measurements, and dietary and healthy history. The conclusion of the study is that diet management material that athletes and soccer coaches need to know is Sports Classification According to the Metabolic System, Assessment or Assessment of Nutritional Data on Soccer Athletes, Nutritional Problems in Soccer Athletes, Nutritional Interventions in Soccer Athletes; Monitoring and Evaluation of Nutrition in Football Athletes.

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INTRODUCTION

Football is the most popular sport in the world. To optimize their appearance in the game, football players must maximize their techniques, tactics and physical abilities (Scheunemann, 2012). The physical component is one of the most critical factors in football. Therefore physical training must be a concern for football coaching. In modern times like today, the formation of physical conditions in football must keep up with developments. Methods and forms of training must be adapted for various types of players. Variations in training for athletes will affect performance during matches (Gultom & Endriani, 2021). Training can be done with a combination of techniques and tactics with more complex training variations.

However, in addition to aspects of physical training supporting athletes' achievements, nutritional aspects are also needed (Jorge, 2014). Besides physical exercise and sufficient rest, the nutritional aspect is essential in producing achievements in football athletes. Nutrition is vital in supporting sports achievement (Fiona, 2009). Complete nutritional intake and the right portion will make exercise better, and body function will also be maximized. Every athlete must pay attention to fulfilling his nutritional intake, especially on balance between energy intake and expenditure, both in the phase before, during and after practice or competition (Ministry of Health RI, 2014).

Bengali (2019) states that the maximum performance of an athlete can be obtained by paying attention to several aspects, one of which is the nutritional aspect. The ideal soccer player has a proportional body between muscle and fat. A football athlete who consumes foods containing balanced nutritional value can maintain excellent physical condition. The food given must be arranged so that energy can be used optimally (Komarudin, 2006).

The current conditions of several studies on youth athletes show that consumption patterns of youth football athletes for energy and carbohydrate nutrients need to meet the recommendations when compared to individual needs and the RDA (Panggalih et al., 2019). Apart from that, the results of these observations also encourage the author to conduct research for the benefit of coaches and athletes so that later maximum performance will be obtained.

The process of digitizing books is divided into three stages, and the first is scanning documents in printed form and converting them into digital files such as pdf. The second is editing, namely the processing of pdf files on a computer by providing passwords, watermarks, footnotes, table of contents, hyperlinks, and so on. The third is uploading, namely filling in (input) metadata and uploading the document file to the digital library.

The uploaded file is in the form of a pdf file containing the full text of the final work starting from the title page to the attachments that have gone through the editing process (Kustandi et al., 2013).

Education through ebooks can increase readers' knowledge, especially football coaches and athletes, so that it can be applied in physical training and diet given to athletes by the competition periodization. The aims of this study were 1) to identify materials and media for physical exercise and diet management for soccer athletes and 2) to map physical training materials and diet management for soccer athletes.

METHODS

The type of research used is research development or Research and Development (R&D). The model to be used is the Four-D (4D) model, which consists of four (4) stages: Define, Design, Develop, and Disseminate. In this study, the stages carried out were defined so that later they could design ebooks that fit the needs of athletes. The define stage began with analyzing the results of previous studies related to physical exercise in football athletes, then looking at and observing the needs on the field, especially for football athletes, and interviews with athletes and coaches. Besides that, they also look for study material from references from research athlete performance by implementing nutritional management.

The time for implementation is June to August 2021. The data collection technique is through an online survey regarding the need to make an ebook on physical exercise and diet management for football athletes, namely by filling out a questionnaire/questionnaire online using Google Forms. The population in this study were football athletes and coaches. The samples are athletes and football coaches, a total of 86 people data analysis using descriptive analysis.

RESULTS AND DISCUSSION

Results

The survey results obtained were 95% of the sample agreeing that all physical training materials need to be known by football athletes. The temporal indicators are anatomy and physiology, components of the physical conditions needed in soccer, energy systems, principles of soccer physical training, training volume and intensity, training stages, preparation stages, training stages, match stages, training stages, transitions, and recovery exercises as well as weight training.

The survey results also found that 95.3% of the sample required an assessment or assessment of nutritional data on soccer athletes, such as body measurements/ anthropometry, body composition measurements, and dietary and nutritional history. Results of identification, diet management material that an athlete and football coach needs to know is the grouping of sports according to the metabolic system, assessment or assessment of nutritional data on football athletes, nutritional problems on football athletes, nutritional interventions on football athletes; monitoring and evaluation of nutrition in football athletes.

Based on the Physical Training E-book Material Identification data in Football Athletes from the table above, most respondents (>95%) agree that all the material

in the indicator needs to be in the physical training e-book on athletes. Of all the existing hands, six materials have the highest percentage, 100%. All respondents agreed that these six materials must be in the physical exercise e-book. The six materials are Components of physical condition required in football, Principles of physical training of football, Volume and intensity of training, Stages of training (periodization): Preparatory stage (general and special preparation), Stages of exercise (periodization): Transition, and Recovery exercise.

Table 1. Physical Exercise *E-book* Material Survey Results

No	Indicators	Necessary		Not	
		n	(%)	n	(%)
1	Anatomy and physiology	84	97,7	2	2,3
2	Components of physical condition needed in football	86	100	0	0
3	Energy system	85	98,8	1	1,2
4	Principles of physical training of football	86	100	0	0
5	Exercise volume and intensity	86	100	0	0
6	Stages of practice (periodization): Preparatory stage (general and special preparation)	86	100	0	0
7	Stages of practice (periodization): Preparatory stage (general and special preparation)	85	98,8	1	1,2
8	Stages of exercise (periodization): Transitions	86	100	0	0
9	*Recovery* exercises	86	100	0	0
10	Weight Training	83	96,5	3	3,5

The tight training schedules of football athletes cause them to need to be more informed about the assessment of nutritional data. Based on the survey on 86 samples, all samples agreed to the development of dietary management for football athletes, and almost all stated that they needed an e-book on diet management for football athletes. The table below shows a material survey of making an e-book on diet management in football athletes.

Table 2. Results of the Material Survey for Making E-Book Management of Football Athlete Diets

No	Indicators	Sub Indicators	Necessary		Not Necessary	
			N	%	N	%
1.	Sports Grouping According to Metabolic System	Grouping of Nervous and Muscular Work Systems included in the Game	82	96.5	3	3.5
		Aeorobik-anaeobic	85	100	0	0
		Metabolic system in moderately categorized football athletes	82	96.5	3	3.5
2.	Assessment or Assessment of Nutritional Data in Football Athletes. (Data Retrieval and	Metabolic system in moderately categorized football athletes	81	95.3	4	4.7
		Body Composition Measurement (Muscle and Body fat)	81	95.3	4	4.7
		Eating History and Nutrition	81	95.3	4	4.7

No	Indicators	Sub Indicators	Necessary		Not Necessary	
			N	%	N	%
	Data Analysis Instruments)					
3.	Diagnosis / Nutritional Problems in Football Athletes	Conclusions of the Nutrition Data Assessment Analysis	85	100	0	0
		Diagnosis/Nutritional Problems to be solved	84	98.8	1	1.2
4.	Nutritional Interventions in Football Athletes	Diet Planning by Periodization (Preparatory stage ; 1-4 hours before exercise. ; during the game ; after the game)	84	98.8	1	1.2
		Calculation of the need for macro and micronutrients and fluids based on the periodization (each stage)	85	100	0	0
		Dietary Settings	82	96.5	3	3.5
		Giving Strategy: Menu Creation at the preparation stage • Feeding Time • Menu • Groceries • Household Size (URT) and Weight (g) • Energy, Protein, Fat and Carbohydrate Data • Total Intake, Needs and % Intake	85	100	0	0
		Nutrition Counseling Plan • Purpose • Method • Material • Media • Frequency • Goal	85	100	0	0
5.	Monitoring and Evaluation of Nutrition in Football Athletes	Nutritional Intake and Knowledge	85	100	0	0
		Method	84	98.8	1	1.2
		Target	84	98.8	1	1.2

Discussion

From the survey results, 97.7% of respondents said anatomy and physiology material needs to be discussed in a physical exercise ebook. This is in line with research conducted by Anggriawan (2015) states that by knowing the physiological anatomy of the body, we can plan a sports training program to get optimal changes in the body according to what is expected. Expected. So that later will support the performance of athletes in order to achieve optimal performance.

As many as 98.8% of respondents chose the material "Energy Systems" to be included in the physical exercise ebook, as Ihsan said

that the purpose of physical exercise is to improve the quality of the muscle system and the quality of the energy system (Ihsan, 2015). The human body makes various adjustments needed in a series of complex interactions involving the body's work systems (Julunus & Lanka, 2013). In general, it can be concluded that the human body requires energy to move and carry out activities, especially for athletes (Umar, 2014). Apart from that, nutritional regulation for athletes pays attention to the needs of athletes in each phase of the competition. The energy needs of athletes are more significant because this group requires additional energy to meet the energy needs of physical training activities (Condo et al., 2019).

Other physical training materials which, according to the respondents, are no less important to include in the physical training ebook are the Match Stage (98.8%) and Weight Training (96.5%). All material is essential to include in a physical training ebook for athletes. This is because all material is basic knowledge essential to be known and mastered by coaches and athletes.

Based on the survey, only 36% of the sample has a book on diet management. Diet management books are essential for football athletes to add to their knowledge about managing food to obtain nutrients. Food management for athletes is essential for achieving optimal performance (Syafrizar & Wells, 2009). Adequate food and balanced nutritional requirements are essential for an athlete who wants maximum performance. Apart from that, coaches are also advised to always remember the nutrition of athletes during training (Budiono et al., 2021). The survey results found that 83% of the sample needed information about dietary management. The lack of information and the tight training schedules of football athletes have resulted in them not having the opportunity to obtain information about dietary management.

The survey results, as shown in Table 2, found that 95.3% of the sample required an assessment or assessment of nutritional data on soccer athletes, such as body measurements/ anthropometry. Measurement of body composition and a history of eating and nutrition (Mulyawan, 2019). In addition, from the survey results, almost all athletes (98.8%) realized the importance of nutritional issues, nutritional interventions such as diet planning, calculation of nutritional needs, and strategies for giving or preparing menus before and after competing. Providing proper food and drink to athletes helps restore the energy expended in training activities or intense matches, which must be considered. In addition, it is also essential to study the nutritional status, food intake and hydration status of athletes, which can influence Vo2Max athletes during games (Melinda et al., 2012)

The survey results also found that the majority of soccer athletes, 98.8% realized the importance of monitoring and evaluating nutrition to support the performance and fitness of soccer athletes. Research conducted on youth football athletes in the city of Semarang also suggests monitoring and

evaluating the nutritional status, especially using fat percentage, needs to be routinely carried out in order to improve Vo2Max performance and prevent nutritional problems in athletes (Alfitasari et al., 2019; Hasan et al., 2021).

Almost all athletes know the importance of implementing dietary management in training and during competitions. Setting an athlete's diet when training or competing will affect the athlete's appearance. The results of the interviews found that the diet before competing also influenced the time of competition. The pre-competition diet needs to be well-planned so that the athlete does not feel undernourished during the match. Even with a good combination of talented athletes, physical training techniques and the best trainers, food that does not meet the requirements and unbalanced nutrition make it impossible for athletes to achieve optimally. This is in line with research results which state that eating arrangements according to training periods will influence athlete performance (Sari, 2021).

Diet management ebooks help athletes achieve their best performance. This also supports the management of nutrition care for influential athletes carried out to obtain good performance and fulfil the proper nutrition of football athletes (Dewinta et al., 2022).

Based on the Identification of Materials for Making the E-Book for Diet Management for Football Athletes in table 1, it can be seen that almost all athletes (96.5%) are aware of the importance of grouping sports according to the metabolic system. During exercise, there are three pathways of energy metabolism that can be used by the body to produce ATP, namely hydrolysis of phosphocreatine (PCR), anaerobic glycolysis of glucose and burning of stored carbohydrates, fats and proteins. In soccer, the energy system used is aerobic and anaerobic because soccer athletes require enormous energy. If the intensity is more prolonged, then the energy source from muscle glycogen is reduced, and blood glucose and free fatty acids will be used. The importance of energy needs in football athletes is also very influential on the fitness of athletes, in line with research conducted by Septiawan and Noordia (2019), which showed results that a lack of energy intake could result in fatigue in athletes due to the absence of glucose availability during sports activities.

CONCLUSION

An online survey shows that 95% of the sample agree that football coaches and athletes must know all physical training materials. The material is anatomy and physiology, components of the physical condition needed in soccer, systems energy, the principles of soccer physical training, training volume and intensity, training stages, preparation stages, training stages, competition stages, training stages, transitions, and recovery exercises as well as weight training. In addition to physical training material, more than 95.3% of coaches or athletes need knowledge related to diet management (Devlin et al., 2017; Grabia et al., 2022). The results of the identification, diet management materials that need to be known

by an athlete and football coach are sports grouping according to the metabolic system, nutritional assessment of soccer athletes, nutritional problems in soccer athletes, nutritional interventions in soccer athletes and monitoring and evaluation of nutrition in soccer athletes.

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REFERENCES

Alfitasari A, Fillah Fithra Dieny, Martha Ardiariaet al. 2019. Perbedaan Asupan Energi, Makronutrien, Status Gizi, Dan VO_2 Maks Antara Atlet Sepak Bola Asrama Dan Non Asrama. Media Gizi Indonesia14(1). 14-26. https://doi.org/10.204736/mgi.

Anggriawan, Novi. 2015. "Peran Fisiologi Olahraga Dalam Menunjang Prestasi." Jurnal Olahraga Prestasi 11(2): 8-18.

Budiono, I., Setiawan, A., & Kurnia, A. R. (2021). The use of participatory action research to improve the energy intake of soccer athletes. Jurnal Keolahragaan, 9(1), 75-85.

Condo, D., Lohman, R., Kelly, M., & Carr, A. (2019). Nutritional Intake, Sports Nutrition Knowledge and Football Players. Nutrients, 11, 1–13.

Devlin, B. L., Leveritt, M. D., Kingsley, M., & Belski, R. (2017). Dietary intake, body composition, and nutrition knowledge of Australian football and soccer players: Implications for sports nutrition professionals in practice. International Journal of Sports Nutrition and Exercise Metabolism, 27(2), 130–138. https://doi.org/10.1123/ijsnem.2016-0191

Dewinta Mustika, Mirza Penggalih, dan Digna Purwaningrum. 2022. Barriers and potential facilitators to implementing nutrition care programs in Indonesia's athletes' training centres. Nutr health. 2601060221102681. Doi: 10.1177/02601060221102681.

Fiona Pelly, Helen O'Connor, Gareth Denyer, dan Ian Caterson. 2009. Catering for the athlete's village at the Sydney 2000 Olympic games: the role of sports dietitians. Int J Sport Nutr Exerc Metab 19(4):340-54. DOI: 10.1123/ijsnem.19.4.340.

Grabia, M., Markiewicz-Żukowska, R., Bielecka, J., Puścion-Jakubik, A., & Socha, K. (2022). Effects of Dietary Intervention and Education on Selected Biochemical Parameters and Nutritional Habits of Young Soccer Players. Nutrients, 14(18), 3681.

Gultom, ES., Endriani, Dewi. 2021. The Influence of Attacking Exercise Variations Using Inverted Winger on Shooting Resultsin Football Games for SSB TGM Medan Athletes. (Jurnal

Pendidikan Jasmani 2(1):31-36. DOI:https://doi.org/10.55081/jpj.v2i1.

Hasan, M. S., Bismar, A. R., & Akbar, A.2021 Penerapan Pola Konsumsi dan Status Gizi dengan Tingkat Vo2 MAX Atlet SSB Persis di Makassar. In Seminar Nasional LP2M UNM.

Ihsan, Nurul. 2015. System Energy of Pencak Silat Fighting. Prosiding: Interaksi Holistik Antara Organisme dan Lingkungan Untuk Kualitas Hidup yang Lebih Baik (Ketahan Pangan, Kesehatan dan Prestasi Olahraga: 897-908.

Jorge Molina-Lopez, Jose Manuel Molina, Luis Javier Chirosa, et al. 2014. Implementing a nutrition education program in a handball team; consequences on nutritional status. Nutr Hosp. 28(4):1065-76. doi: 10.3305/ nh.2013.28.4.6600.

Julunus H dan Ria L. Teori Kepelatihan Olahraga. Jakarta: Lankor; 2013.

Kemenkes. Pedoman Gizi Olahraga Prestasi. Jakarta : Kemenkes; 2014.

Komarudin. 2006. Pemenuhan gizi atlet untuk mencapai prestasi sepak bola Indonesia. Medikora 2 (2), 119-134.

Kustandi Cecep dan Robinson Situmorang. 2013. Pengembangan Digital Library Sebagai Sumber Belajar. Perpektif Ilmu Pendidikan 27 (18): 61-68. DOI: https://doi.org/10.21009/PIP.271.8.

Melinda W Valliant, Heather P Emplaincourt, Rachel K Wenzel, dan Bethany H Garner. 2012. Nutrition education by a registered dietitian improves the dietary intake and nutrition knowledge of an NCAA volleyball team. Nutrients **4**(6):506–516. DOI: 10.3390/nu4060506.

Mulyawan. 2019. Profil Antropometri Atlet Sepakbola Profesional Pada Masa Transisi. Jurnal Ilmiah Kesehatan Olahraga Medikora 18 (1): 17-26. https://doi.org/10.21831/medikora.v18i1. 29192.

Penggalih Mirza, Muhammad Juffrie, Toto Sudargo, Zaenal Muttaqien Sofro.2019. Pola Konsumsi Atlet Sepak Bola Remaja di Indonesia. Jurnal Gizi Klinik Indonesia**15** (3):101-110. Doi: https://doi.org/10.22146/ijcn.41185.

Penggalih Mirza, Muhammad Juffrie, Toto Sudargo, dan Zaenal Muttaqien Sofro. 2017. Correlation between dietary intake with anthropometry profile on youth football athlete in Indonesia. Asian J Clin Nutr. 9 (1):9-16. DOI: 10.3923/ajcn.2017.9.16.

Sari SP, Puspaningtyas DE, Afriani Y, dan Anwar F. 2021. Fokus Grup Diskusi Pengaturan Makan Sesuai PeriodeLatihan Pada Pelatih Sepak Bola Atlet Junior. Sport and Nutrition Journal 3 (1):23-31. DOI: https://doi.org/10.15294/spnj.v3i1.

Septiawan Moch Robby, dan Anna Noordia. 2019. Analisis Kecukupan Energi Dan Tingkat Kelelahan Atlet U-19 Tahun Sepakbola (Studi SBB Putra Minak Jinggo Banyuwangi). Jurnal Kesehatan Olahraga 7(2):111-118.

Scheunemann T.Kurikulum & Pedoman Dasar Sepakbola Indonesia. Jakarta: Gramedia Pustaka Utama. 2012

Syafrizal dan Welis W. Gizi Olahraga. Malang : Wineka Media; 2009.

Umar. Fisiologi Olahraga. Padang: UNP Press; 2014.