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RESEARCH ARTICLE

Profile of Late Adolescent Performance of Papua in Persipura U-21 Athlete Selection

Leonardo Lubis,[1] Rizki Perdana,[2,3] Ambrosius Purba,[1] Daniel Womsiwor[4]
[1]Department of Anatomy, Physiology and Cell Biology, [2]Graduate School of Biomedical Sciences Master Program, Faculty of Medicine, Universitas Padjadjaran, Bandung, Indonesia, [3]Department of Anatomy, Faculty of Medicine, Universitas Islam Bandung, Bandung, Indonesia, [4]Faculty of Sport Sciences, Universitas Cenderawasih, Jayapura, Indonesia

Abstract

The enthusiasm of the people of Papua for football is in harmony with the emerging numbers of talented football athletes from Papua. It reflected in the selection of athletes football Persipura U-21 (aged 21 years and under) for the late adolescent. This study aims to determine the performance profile of late adolescents of Papua at the selection of Persipura U-21 football athletes. The result can be a material of strategic evaluation for improving the achievements of football sport in Papua. A descriptive study with the cross-sectional design conducted on total samples of 97 late adolescents (ages 16–21 years) of men from all provinces of Papua on Persipura U-21 January 2016 selection. Performance data consisted of body mass index (BMI), subcutaneous fat, cardiorespiratory fitness, anaerobic capacity, muscle endurance, flexibility, power, strength, balance, reaction time, and concentration levels. The results showed that all subjects were in healthy condition and most subjects (85%) had normal BMI. Physical characteristics of subcutaneous fat showed most of the subjects were lacking in the triceps (83%) and supraciliary (58%) fat. The basic physical ability for soccer is in good category whereas cognitive ability is in the less category. The research conclusions indicate the urgency to improve basic physical components of the athlete through a well-scaled and well-programmed exercise plan, as well as mental and cognitive development to improve athlete performance.

Keywords: Characteristic, football, late adolescent, performance

Profil Performa Remaja Akhir Papua pada Seleksi Atlet Sepak Bola Persipura U-21

Abstrak

Antusiasme masyarakat Papua terhadap olahraga sepak bola selaras dengan munculnya banyak atlet sepak bola bertalenta dari Papua. Hal tersebut terlihat pada seleksi atlet sepak bola Persipura U-21 (usia 21 tahun ke bawah) kategori remaja akhir. Penelitian ini bertujuan mengetahui profil performa remaja akhir Papua pada seleksi atlet sepak bola Persipura U-21 sehingga dapat menjadi bahan evaluasi yang strategis dalam meningkatkan prestasi cabang olahraga sepak bola di Papua. Penelitian deskriptif dengan desain potong lintang dilakukan terhadap seluruh sampel berjumlah 97 remaja akhir (usia 16–21 tahun) laki-laki dari seluruh provinsi Papua pada seleksi Persipura U-21 Januari 2016. Data performa terdiri atas indeks massa tubuh (IMT), lemak bawah kulit, ketahanan jantung paru, kapasitas anaerobik, daya tahan otot, kelentukan, daya ledak, kekuatan, keseimbangan, kecepatan reaksi, serta tingkat konsentrasi. Hasil penelitian menunjukkan bahwa seluruh subjek berada dalam kondisi sehat dan sebagian besar subjek (85%) memiliki IMT yang normal. Karakteristik fisik lemak bawah kulit menunjukkan sebagian besar subjek adalah kurang pada bagian trisep (83%) dan suprailiaka (58%). Kemampuan fisik dasar untuk sepak bola berada pada kategori baik, sedangkan kemampuan kognitif dalam kategori kurang. Simpulan penelitian menunjukkan perlu perbaikan komponen fisik dasar atlet melalui perencanaan latihan yang terukur dan terprogram dengan baik, serta pembinaan mental dan kognitif untuk peningkatan performa atlet.

Kata kunci: Karakteristik, performa, remaja akhir, sepak bola

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Correspondence: Leonardo Lubis. Department of Anatomy, Physiology and Cell Biology, Faculty of Medicine, Universitas Padjadjaran. Jln. Raya Bandung–Sumedang km 21, Jatinangor, Kab. Sumedang 45363, West Java, Indonesia. Mobile: 6285353699557. E-mail: leonardolubis@yahoo.com

Introduction

The skills of playing soccer and the basic ability of a soccer athlete are closely related to the physical, tactical, and mental characteristics of the athlete. Basic skills are important elements to master and learn from the beginning of the training in order to develop the quality of the game that determines the performance of the teams in the game. Improved football achievement determined by many factors such as infrastructure, quality of trainers, basic conditions and talent of players, and measurable training. Factors that play an important role in a football athlete is the physical ability and basic techniques of football and the ability of teamwork when playing.[1,2]

A well-scaled and programmed physical exercise can start from an early age or the start of the athlete into the training program. Improved physical conditions obtained through the provision of exercise, among others strength training, flexibility, speed, agility, and endurance. These aspects of the exercise are useful for knowing and leveraging the conditions of every soccer athlete. A trainer providing training to athletes will then provide an evaluation of the results of the training provided as the planning capital of the next training program or as a threshold to determine the eligibility of his or her athlete in a match.[1,3]

The evaluation of the physical condition should include everything that affects the performance of a football athlete. The good physical condition of a football athlete can sustain technical skills, tactics, and strategies in a football game for 2 × 45 minutes. Physical conditions influenced by internal factors such as gender, age, and race, as well as external factors such as nutrition, weather, and biophysical conditions. Many also know that Papua has human resources, including children or adolescents who naturally have a physical condition that meets the standards to become a football athlete. Physical conditions owned by Papuan children and adolescents may be influenced by both internal and external. The enthusiasm of Papuan children and teenagers to become football athletes were very high. Evidence came from the many participants who follow every event on Persipura players selection every year such as the selection of U-21 football athletes (age 21 years and under).[3,4]

This paper analyzes the profile of the late adolescence performance of Papua at the selection of Persipura U-21 football athletes. The result can serve as a strategic evaluation material in improving the ability, performance, and achievement of football in Papua.

Methods

Subjects in this study are 97 late adolescents (ages 16–21 years) men who came from all provinces of Papua to follow the selection of football Persipura U-21 athletes conducted in January 2016. This research was a descriptive study with a cross-sectional design. All subjects have undergone physical assessment, with blood pressure tests were performed using a sphygmomanometer and lung function using a respirometry. A physician conducted all the tests to ensure all subjects were healthy and fit to follow all performance tests. After examination, it is checked to obtain performance data of athletes in the form of body mass index (BMI) based on WHO criteria for Asia-Pacific, under skin fat using skin calipers, pulmonary heart resistance through 2.4 km run test, anaerobic capacity through a 50 m run test. Endurance component examination is measured based on muscle endurance through push-up and sit-up movement, flexibility using the flexometer tool, explosive power through vertical jump activity and opera medicine ball. Strength components are measured using hand grip, hand dynamometer, back dynamometer, and leg dynamometer, while balance through balance test. Also, subjects assessed for reaction speed through color and sound stimuli at various sound frequencies and concentration levels using a grid concentration test. All measurements conducted in Abepura, Jayapura. The research was approved by the Health Research Ethics Committee, Faculty of Medicine, Universitas Padjadjaran, Bandung number: 827/UN6.C1.3.2/KEPK/PN/2015.

All data categorized based on the provisions of Perhimpunan Ahli Ilmu Faal Olahraga Indonesia (PAIFORI). Data processing is done using Microsoft Excel 360.[10]

Results

All subjects who followed the assessment were 21 years old and under with normal blood pressure and lung function. BMI description and criteria is in Table 1. Most subjects (85%) had normal BMI, while the rest were abnormal, either deficient or overweight.

The results of the assessment of the physical characteristics of the subcutaneous fat listed

Table 1 Body Mass Index

Body Mass Index	Total Subject	
	n=97	%
Underwight	6	6
Normal	82	85
Overweight	8	8
Obese I	1	1

Table 2 Physical Characteristic of Subcutaneous Fat

Component	Subcutaneous Fat		
	Low	Normal	Over
Tricep	81 (83%)	16 (17%)	0 (0%)
Subscapula	20 (21%)	72 (74%)	5 (5%)
Suprailiac	56 (58%)	35 (36%)	6 (6%)

in Table 2 show that most subjects had low subcutaneous fat in triceps (83%) and supraciliary (58%), whereas in the subscapular part the subjects had normal subcutaneous fat.

Table 3 shows a collection of physical performance components. The component was chosen based on the characteristics of the activities performed during the football game.

The reaction speed seen in Table 4 reflects the subject's ability to respond to the dynamics that occur in a football game such as the speed at which the feed-pass, penalty, or response takes place during off-side.

Table 4 Reaction Speed Performance

Component	Reaction Speed		
	Low	Enough	Good
Colour	0 (0%)	54 (56%)	43 (44%)
Sound			
500 Hz	0 (0%)	66 (68%)	31 (32%)
1 KHz	0 (0%)	65 (67%)	32 (33%)
3 KHz	0 (0%)	55 (57%)	42 (43%)

Discussion

The description of the body mass index held by prospective football athletes in the U-21 show that most (85%) are at a reasonable level as shown in Table 1. Reflecting the balance of nutrients as physical structural is essential in conducting training programs. Nevertheless, there are still 9% of athlete candidates who have excess BMI so that adjustment of exercise in order to decrease body fat is recommended to be a program in conditioning exercises. 6% are still on the underweight criteria, so the attention to the fulfillment of the nutritional aspect to reach the

Table 3 Characteristic of Basic Physical Ability

Component	Basic Physical Ability				
	Very Low	Low	Enough	Good	Very Good
2.4 km run	1 (1%)	5 (5%)	22 (22%)	50 (52%)	19 (20%)
50 m run	45 (46%)	15 (16%)	26 (27%)	7 (7%)	4 (4%)
Endurance					
Arm	0 (0%)	0 (0%)	4 (4%)	24 (25%)	69 (71%)
Abdomen	0 (0%)	0 (0%)	40 (41%)	55 (57%)	2 (2%)
Flexibility	0 (0%)	27 (28%)	33 (34%)	22 (23%)	15 (15%)
Strength					
Arm	0 (0%)	2 (2%)	15 (15%)	46 (48%)	34 (35%)
Back	0 (0%)	3 (3%)	21 (22%)	44 (45%)	29 (30%)
Leg	0 (0%)	36 (37%)	31 (32%)	27 (28%)	3 (3%)
Power					
Arm	0 (0%)	44 (45%)	26 (27%)	20 (21%)	7 (7%)
Leg	0 (0%)	44 (45%)	1 (1%)	4 (4%)	48 (50%)
Balance	0 (0%)	1 (1%)	6 (6%)	8 (8%)	82 (85%)
Concentration	34 (35%)	49 (51%)	13 (13%)	1 (1%)	0 (0%)

proportional BMI through high carbohydrate diet with a simple type of sugar is necessary. Simple sugar is chosen as a BMI enhancement strategy because the majority of Papuans have a habit of consuming tubers and papeda which are a simple type of glucose.[1,4]

The regulation of nutrient intake in sports must follow balanced nutrition. Macronutrient balance such as carbohydrates, fats, and proteins should be done individually according to the needs of each athlete. The macronutrients required by the athlete must be in proportion to their performance. The macronutrient balance shows from the body fat composition. Increased body fat will decrease agility and has an impact on the athlete's performance. Based on the characteristics of subcutaneous fat in the supraciliary area 58% and triceps 83% as seen in Table 2 indicate that the subject can move agile because of slight obstacles of the underlying subcutaneous fat. However, the fat under the skin also has a function as a major energy reserve after glucose runs out and insulation of body temperature. Insulation of body temperature is needed in the adjustment of cold environmental conditions when attending training and when competing. Body fat also serves as a protection against concussion so expect a proportionate body fat can minimize injury to the athlete. Therefore, it is necessary to have the intake of high-calorie nutrition that aims to increase the fat under the skin so that the function of energy reserves, isolation, and protection maintained.[5,6]

In addition to nutritional intake requirements, physical ability is also required to support the performance of athletes for aerobics and anaerobic. Aerobic ability required to support the stamina as seen from cardiopulmonary resistance, while the anaerobic ability needed to support the dexterity seen from the speed, muscle strength, and power.[1,6]

The 50-meter run test results showed that almost half of the athlete candidates had deficient speed (46%) (see Table 3). This situation requires adjustment to future training programs by increasing the type of exercise that improves the capacity of exercise in the anaerobic energy system. Most of the activities when doing football require running speed at such short distances and time as when chasing the ball from the opponent. Such activities fall within the anaerobic predominant category.[3,6]

Another physical capability that needs to be improved is the leg muscle strength which in the measurement results is 1/3 the number is in a low category. Leg muscle strength is the capital to obtain optimal limb activity performance. Components of muscle strength that are not well prepared will increase the injury and skill training process and football techniques less than optimal.[1,3,7]

In addition to muscle strength, football also requires a good limb power. Football activities such as dribbling and kicking the ball require significant power, on the other hand, power requires mostly in the form of good leg muscle strength. Therefore, the strength and power of the muscles of the legs should train in synergy. Limb power component at prospective athletes Persipura U-21 is proportional to the strength of the legs. The results showed that 45% of participants had low limb power.[1,4]

Achievement is a combination of good physical component quality, proper technique and strategy, and excellent mental (cognitive) ability. The link between cognition and exercise explained in a study of the increase in brain-derived neurotrophic factors (BDNF) at a time when exercise has a positive relationship with cognitive function. One of the mental abilities (cognitive) is the ability of concentration. The results of this study indicate that the concentration of prospective candidate athletes mostly located in the category below enough (low 51%, deficient 35%). Concentration is required when going to a match because it is related to the response speed during a match. The concentration assessed only reflects the state of one's concentration when it is measured. Therefore, attempts to improve concentration just before the game can be made to escalate the athlete's ability to act on field conditions.[8–11]

Conclusion

Physical characteristics of prospective football Persipura U-21 athletes are in a good category. However, the specific physical components need to improve through improvement and well-programmed exercise plans.

Conflict of Interest

The authors declare no conflict of interests.

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