

Profile of Physical Fitness of Young Football Players at SDN Cibeusi

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Abstract

Background: Health-related physical fitness components are important in hypokinetic disease prevention and good sports performance. The aim of this research is to evaluate the physical fitness profile of the SDN Cibeusi young football players based on Fitnessgram.

Methods: This study was participated by 20 subjects ranging from 10 to 12 years old boys who played for the school football team in SDN Cibeusi. This descriptive study was conducted in the school field in the month of November 2012. Physical fitness components that were tested are aerobic capacity, V_O2 max using the one-mile run test, muscle endurance by performing push-up and curl-up test, flexibility using the flexometer and body composition by measuring the body mass index and fat fold measurement. The mean and standard deviation of the results were tabulated.

Results: Aerobic capacity and percentage of body fat showed 100% of them scored in the category of healthy fitness zone. For body mass index, 55% scored in healthy fitness zone, 25% in some risk, and 10% each for in-high risk and very lean. For push-up test and curl-up test, 80% and 65% scored in the healthy fitness zone while the remaining 20% and 35% respectively scored in the not healthy fitness zone. For flexibility, 75% of them scored in healthy fitness zone and 25% scored in not healthy fitness zone.

Conclusions: The physical fitness level in these young football players is mostly in healthy fitness zone. [AMJ.2015;2(1):226-30]

Keywords: Fitnessgram, football players, physical fitness

Introduction

Currently mostly played and watched sport by millions of people each year is soccer, also known as football in many regions, which being top on the charts and surveys conducted by internet websites and polls. It has even been stated as the most popular pastime game on earth. People from all stages of life indulge into this sport, especially kids who start playing football at a very young age and progressively grow passion and become follower for this game. Although football holds its unofficial title as "the world game" the immense popularity does not mean that it is a simple or easy game to play successfully.¹

Football requires various physical and mental challenges where participants must conquer the action of defending and attacking. Ball control is crucial where variety of foot skills is involved and this is done under pressures or restricted space, limited time, determined challenges opposed by the opponents and the

most important aspect is the physical fitness level of the individual. The fast phase or rapidly changing situations during game requires the aspect of decision making abilities as well as overall endurance.²

Individual performance which is a major contributes to the team success rely on the importance of such aspects mentioned above. Playing football either for recreational purpose or competition level will evidently enhance good physical condition and has direct positive effect on skills and strategy competency development and contribute to a successful game. In order to attain the maximum physical performances, continuous training and high endurance is compulsory for good achievements.²

Regular and consistent physical training enhances health maintenance and indicates that a person has a good health and mind condition which is essential in preventing health risk factors at an early age.³ Physical fitness of an individual which can be accessed from components like body composition,

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cardiovascular and musculoskeletal determines whether the individual fall in healthy fitness zone (HFZ) and the “needs improvement” zone based on Fitnessgram criterion-referenced standards battery. Fitnessgram is the commonly used tool for childhood assessment.⁴

Traditional fitness test has been criticized as evaluations of athletic ability rather than health-related fitness.⁵ These zones indicate minimum level of fitness that offers protection against diseases. These components in football players should be assessed in time to time so that the individual has an adequate fitness level to provide important health benefits and prevent any possible sports injury thus they will be able to excel in sports and gain victory in competitions. To attain the maximal health benefits and optimal performance by the young football players in elementary school, a few tests should be conducted to evaluate their physical fitness level.⁶

Cardiorespiratory endurance can be evaluated by one-mile run test, body composition can be determined by body weight and height and body fat percentage can be determined by measuring the skin fold, and musculoskeletal can be tested by muscle endurance test such as curl-up test and push-up test. On the other hand, flexibility which is important for joints and back muscle can be measured using sit and reach test.⁷ The aim of this research is to evaluate the physical fitness profile of the SDN Cibeusi young football players based on Fitnessgram.

Methods

This descriptive study involved 20 subjects ranging from 10 to 12 years old boys who played for the school football team in SDN Cibeusi in November 2012. Physical fitness components that were tested are aerobic capacity, V02max using the one-mile run test, muscle endurance by performing push-up and curl-up test, flexibility using the flexometer and body composition by measuring the body mass index and fat fold measurement.

Cardiovascular endurance is the body's ability to continue exertion while getting energy from the aerobic system used to supply the body with energy. The aspect that will be used to measure the cardiovascular endurance is V02max. To evaluate this component, the test that will be used is the one-mile run test. The subjects required to run for one mile and the time taken to complete will be used to estimate the aerobic capacity based on given Fitnessgram table.⁸

Muscle endurance is the muscle's ability to work continuously against resistance over a long period of time. Push-up test was performed to evaluate the upper body strength which is the arm and shoulder muscle endurance, while the curl-up test was conducted to evaluate abdominal muscle endurance. This test was conducted in 60 seconds and the number of times the subject able to perform was recorded.

Flexibility is the range of motion possible around a specific joint or series of articulations. Flexibility is specific to a given joint or movement. Sit & reach test was used where the subject required sitting with the legs stretched and reaching out his fingers for the flexometer. The furthest distance the subject could reach out was recorded in inches.⁹

Body composition describes the different components that, when taken together, make up a person's body weight. Using callipers, fat fold are measured in two parts of the body the triceps and subscapular and body fat percentage are calculated using the formula given by Slaughter. Body mass index was also calculated based on the subject's weight and height and recorded as kg/

Results

Based on Table 1, this study showed that the mean age of the subjects are 11.25 (+ 0.85) years old with the criteria of body weight of 36.95 (+ 7.24) and body height of 140 (+ 7.39). The youngest subject involved in this study is 10 years old boy and the oldest subject was 12 years old. This subject's lowest body weight is

Table 1 Physical Characteristic of Young Football Players in SDN Cibeusi (n=20)

Characteristics	Mean ±SD
Age (years)	11.25±0.85
Body Weight (Kg)	36.95±7.24
Body Height (Cm)	140±7.39

SD: Standar deviation

Table 2 Healthy Fitness Zone of Young Football Players in SDN Cibeusi Based on Physical Fitness Components (n=20)

Physical Fitness Components	Frequency				
	HFZ	Non-HFZ	NI-SomeRisk	NI-High Risk	Very Lean
Aerobic Capacity	20	-	-	-	-
Percent Body Fat	20	-	-	-	-
Body mass Index	11	-	5	2	2
Muscle endurance					
1) Push-up	16	4	-	-	-
2) Curl-up	13	7	-	-	-
Flexibility	15	5	-	-	-

Note: HFZ: Health Fitness Zone, NI: Need Improvement

21kg and maximum weight is 50 kg. Whereas the tallest subject that involved in this study is 152 cm and the minimum height was 125 cm.

From the table 2, it was showed that all respondents have aerobic capacity with standard healthy fitness zone which body fat percentage were in the category of healthy fitness zone (HFZ). A number of 11/20 respondents have BMI on healthy fitness zone. Two respondents were in the category of very lean and the other 5/20 and 2/20 were in NI-some risk and NI- high risk respectively. In the category muscle endurance which consisted of push up and curl up, mostly were in HFZ each were (16/20 and 13/20). Based on flexibility component, the majority of respondents were in HFZ zone (15/20).

Discussions

The aerobic capacity (V02 max) of these players were measured using one mile run test and the value is estimated based on the time taken to complete the run and the students body mass index. Based on the table that had been given it can be interpreted that a percentage of 100% of these young football players fall in the category of healthy fitness zone where this zone promises a decrease in risk of coronary heart disease and early death. To maintain this zone, the students can keep fit by doing continues and regular exercise.⁸

In an unconditional individual, aerobic capacity can be improvised by getting involved in sustained regular activities involving large muscle groups. This improvement depends on frequency, intensity, and duration of training. As a result these athletes will have higher cardiorespiratory endurance during match and able to perform well. On the other hand,

a low aerobic capacity will contribute to accumulation of lactic acid in the body due to decrease in distribution of oxygen to the cells in the whole body, and this will lead to low performance of the players.

A good aerobic fitness is the basic component of fitness where an athlete can benefit as follows through training and exercise. The benefits are good oxygen supply to muscles, decreased stress level and body fat and increased removal of lactic acid from our body. On the other hand, a reduced aerobic endurance will eventually cause the lacking of other physical fitness components such as muscular endurance and these results in poor performance.¹⁰

Estimated percent of body fat in these football players were calculated based on skin fold measurement. To maintain this healthy zone, a proper diet which is low in fat and regular physical activities are crucial. This standard represents boundaries for HFZ. If the score fall either above or below this HFZ, then this student must be given attention. These standards are known to have higher chances in developing health problem related to their level of fatness and leanness.

In general if the students fall in the "very lean" category, they should be assessed for the reasons for low body fat to identify underlying problems such as nutritional problem or eating disorder. Increased body fat where improvement is needed can lead to overweight or obesity. Thus, to reduce problems or diseases in accordance to weight in future, it is important to identify the problems before the lifestyle patterns and physiological changes are established. High levels of physical exertion during training and activities tend to decrease body fat and help in gaining lean body mass.¹¹

The body mass index is calculated from weight and height of the students respectively. As a matter, students who are in the HFZ have an ideal weight for height. They should try on maintaining this level to prevent any complications related to health. And for those in the "very lean" should be assessed for under-nutrition problems to regain back the proper weight for their height. Students who score in the area above this should be encouraged and motivated towards weight reduction steps such as increase in physical activity and diet control.

Improvements and changes in body composition which consist of both components, percent body fat and body mass index will generally result in improved performance in aerobic capacity, muscle strength and endurance, especially in the upper body, due to reduction in excess weight.

Muscle endurance in these young football players is evaluated based on push up-test and curl up-test. The abdominal or stomach muscle strength can be assessed by performing curl up-test. Overall good muscle endurance is important for optimum performance of the student on the field. Good muscle endurance is important because it is correlated with aerobic capacity as the upper body muscle like the muscles in the thorax develops, this will help in better respiratory systems thus has positive effect in individuals aerobic capacity.¹² And if the students fall in the category of not healthy fitness zone, the trainer should encourage the students to involve in calisthenics as well as other muscle strengthening activities. Exercising the muscle appropriately has the benefit of changing the ratio of fat to muscle fibers and thus helps in weight loss. By eating healthily and constant exercise, more muscle will be used in the process of exerting work and thus body will be able to burn more calories and maintain a high metabolic rate. Weight training also improves ones speed and powerful movements by keeping more motor nerves connected to the muscles.

Flexibility of the students was evaluated in sit and reach test and measured using flexometer. Flexibility is defined as the ability of the muscles, tendons and ligaments to elongate within the physical limitations of the joint which is reflected by the range of motion in a joint system. Flexibility is important in football game as this game requires the students to run and maneuver with the ball where a lot of muscles and joints involvement is needed to perform and ease sudden runs and movements. With a good flexibility, athletes

will be prevented from muscle or joint injuries and thus they will be able to stand longer in the field and perform well during a football match. Injuries during training tends to occur due to the overstretching or movements that are beyond normal range of movements, thus flexibility training should be integrated as this process will gradually increases the range of motion and reduce the risk of injury.¹³

In conclusion, based on the excerpt above young footballers in SDN Cibeusi physical fitness should be improved and enhance their health status in order to prevent hypokinetic diseases and game standard will be maximized to win a football competitions.

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