

The Status of Young Soccer Players' Motor Abilities Performance

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Abstract: The aim of this research was to describe the status of young soccer players' motor performance abilities (MPA) as an effort to improve their soccer skills. Like other techniques, motor performance abilities (MPA) including basic movements like walking, slow running or jogging, fast running in short area, turning, stopping then moving in different direction, hopping, jumping, accelerating and decelerating is important in soccer field. The MPA of every talented player must be trained time to time progressively. Motor abilities like strength, endurance, speed, agility, coordination, flexibility and balance are needed as complement techniques. An appropriate touch is needed when dribbling, receiving and controlling, passing and shooting the balls in soccer. In this case, this MPA is needed to develop soccer skills through trainings and matches. The sample as the participants in this study included all prospective athletes through the talented athletes' selection in 2018 in Yogyakarta and they were chosen through total sampling. A descriptive quantitative analysis was used to describe a role of MPA components to develop soccer skills. The findings of this research showed that MPA status of young soccer players can be described as integrated training of soccer skills. The data of MPA young soccer players' status were detected and evaluated by observations and measured through tests. The MPA test could be used to maintain or increase the players' skills, which can be designed for different age group players.

1 INTRODUCTION

Learning or training process experienced by athletes is continuously conducted in order to improve the ability of athletes. This process is done through giving materials adapted to the stages of learning. There are three synergistic relationships which are interrelated and correspondent to each other. They are called learning domains instructed by the trainers. Those learning domains include cognitive, psychomotor and affective which must be comprehensive and integrated.

The relationship between the three will be experienced by individuals with different successes from one another. This is greatly influenced by the ability of each individual. In this case, the individual speed is very dependent on which domains are easier to accept based on their respective readiness. This is very influential on the length of time spent on the training process and the results to be achieved by individuals. Likewise in sports that have more orientation to motor abilities, they are strongly influenced by the innate of each individual. Students

or athletes as individuals are not passive but have an active role to implement the instruction model given by the instructor in sports called a trainer or coach. This really depends on how the individual is prepared to experience the process of training or practicing. The training process will provide role and responsibility to each individual so that they must always be prepared to prove accountability to succeed in a particular training model. Regarding the readiness of individuals to learn depends on how they are capable as an individual and are able to follow safe and responsible directions.

2 MOTOR ABILITIES

Physical abilities which are known scientifically are motor abilities, which in terms of motor learning are the basis of the movement of athletes to carry out all the activities of the sport that is followed. Various sports have specific needs for motion abilities in the form of physical abilities (as known as motor abilities). The specificity in question is adapted to the

needs of movement in each sport. Team sports will require different movement abilities from those of individual sports. Environment, equipment, and the surface of the field will also affect the need for such motion in sports.

Branches of individual sports, teams and game sports especially need factors that determine the need for mobility and success in coaching sports, both internal (from the player or athlete) and external (derived from the influence and support of the sport). The factors that determine success can be in the form of: motor abilities, techniques, tactics, mental, psychomotor, anthropometry, motivation, nutrition, genetics and other factors (support of parents, friends and viewers and the community).

Motor abilities needed to support learning skills as motor competence. Motor competence, as a global term relating to development and performance of human movement, has been defined as relating to proficiency in fundamental motor skills (i.e., locomotors and object control skills) (Stoden, et al, 2014). Thus, the term motor skill competence (MSC), as referenced in this paper, refers to competence in selected object control and locomotors skill performance. Specific context experiences including practice, instruction, and structured training are critical for the acquisition of these types of skills as they do not “naturally” develop over time (Stoden, et al, 2014).

Motor skills are strongly associated with psychomotor factors and complementary between the need for movement ability and motion behavior that is needed by each individual in their respective sports. Motor abilities elements will be able to run and be able to do their activities well if supported by good motion behavior too; and vice versa.

Jalilvand (2015) stresses that to develop adaptations towards positive transfers from the influence of training, the principle of dynamic correspondence needs to be applied. Athletic training is not as simple as lifting weight. There is an inherent relationship between biomechanical, physiological, and psychological factors during the exercise. It is intended that the role of each factor will support and strengthen each other during the ongoing training process, and even have a positive influence on each other.

Body composition has an important role in playing soccer (Enemark-Miller, Seegmiller, and Rana, 2009; Gil, Gil, and Ruiz, et al., 2007). Since in soccer lots of physical contacts occur and many movements and skills are involved, a high level of physical demand is required which involves kicking, short sprinting, throwing, catching, trapping, etc

(Hoff, 2005; Reilly, 2005). Moreover, since soccer players have to cover a big area in the ground during attacks and defenses, the game demands for aerobic fitness as well as anaerobic one (Reilly, 2005; Popadic Gacesa, Barak, and Grujic, 2009). A high number of accelerations and decelerations associated with a large number of changes in direction of play create an additional load to the muscles involved. Therefore, just those players, who are suited to cope with these demands, reach elite levels (Reilly, 2005; Miller, Thierry-Aguilera, Congleton JJ, et al. 2007). The intermittent high intensity pattern of activity during matches requires a high function of both aerobic and anaerobic energy delivery pathways (Impellizzeri, Marcora, Castagna, et al. 2006; Venturelli, Bishop, Pettene, 2008). Moreover, power and strength have great impacts over the game which is required during sprinting and in execution of various skills with the ball (Hoff, 2005; Reilly, 2005).

Biomotor abilities are the foundations of ability of an individual to perform an exercise—strength, endurance, speed, coordination, flexibility and agility (Manikandan, S. 2016). Motor abilities are abilities in human activities that are influenced by organ systems in humans, in the form of the neuromuscular system (nerve), digestion, breathing, blood circulation, muscular, bones, and joints. Furthermore, the quality of the motor abilities is very necessary to support or facilitate the development of training processes that will be applied to every sport, including soccer. The term biomotor is closely related to motor abilities which human needs as living and moving beings. Therefore, the uses of the two terms are very close and even interchangeably. Sukadiyanto (2010) states that biomotor components are influenced by energy fitness and muscle fitness. Energy fitness includes aerobic and anaerobic capacities, while muscular fitness includes strength, endurance, speed, explosive power or power, flexibility

Motor performance abilities, in many years have been viewed as a multidimensional construct consisting of such specific components as endurance, strength, coordination, and flexibility. In addition, it became obvious that the dimensionality of motor performance abilities (MPA) is not the same for different target groups as team sports (Lämmle, Lena, et al., 2010). In this study, the level of motor performance ability (MPA) is closer to the game support movement like dribbling, passing, ball controlling, and shooting. The force of techniques depends on how the players push the ball with strength and how far the distance of other players stand up to receive the ball. Every technique needs some aspects like strength, speed, power, endurance,

agility, coordination, balance, flexibility, and accuracy which have different portion to learn. Therefore, MPA can help young players learn how to pass to other players in the right way, etc. When the players keep the ball and try to shoot the ball to the goal, they can kick the ball powerfully or less powerfully. The players can use feeling touch on one of the MPA components like soft strength while shooting by placing the ball far away from the goalkeeper. Flexibility and balance as MPA components should be used to maintain the body shape when shooting the ball. Like this shooting technique, dribbling, receiving and controlling, and passing the ball can be done well if the players can apply the MPA components accurately. As a result, the players especially the young ones, must train the MPA and techniques separately in the training program. The weakness on the MPA components must be trained as a priority.

Another research has shown that 12 weeks of speed, agility and quickness (SAQ) training had positive effects on speed and agility on SAI East football players. All football players improved their performance significantly in post test with due respect to pre test on speed and agility. The result revealed that SAQ training is an important factor for the improvement of soccer players (Toppo and Tirkey, 2014). They also confirm Bloomfield et al.'s (2007) viewpoint that the SAQ regimen is an important training method for the improvement of speed and quickness. Furthermore, Toppo and Tirkey, (2014) concluded that SAQ training has positive effect on soccer players on selected motor abilities (speed and agility). However, a great deal of planning is needed to create an appropriate and effective SAQ program. Another study showed that the importance of developing high levels of lower-body strength to enhance sprint and jump performance of young soccer players, with stronger athletes demonstrating superior sprint and jump performances (Comfort, et al., 2013).

Soccer is characterized as a high intensity, intermittent contact team sport that requires a number of proficient physical and physiological capabilities to perform successfully (Turner and Stewart, 2014). In soccer, strength and other aspects of MPA will support the lack of individual movement abilities and techniques. The motion abilities in question are adjusted to movement which often occurs in the field and the basic motion needs of each sport. Kapidžić, Ismaili, and Ervin (2010) conducted a study on Basic motor abilities: predictive value on the situational test results in 12-14 years old soccer players. The main aim of this study was to determine the impact of the

predictive system of variables (basic motor ability) against the criterion set of variables (situational motor ability). The analysis of the obtained results showed that the applied basic motor variables are dominantly responsible for achieving better results in players' situational motor abilities. In this study it was detected the abilities which have most influence on improving results in tests of situational motor abilities. This information can contribute to more efficient means of selecting exercises that would be applied in training program of young players.

On top all of these, the process of selecting candidates for soccer players or athletes is conducted to find individuals who have abilities above the group average or standard of motion that has been determined. Every part of skills or techniques need some phases to follow, like fun phase, train phase, win the game phase in competitive training. Therefore, soccer can develop and explore differences style or method time to time.

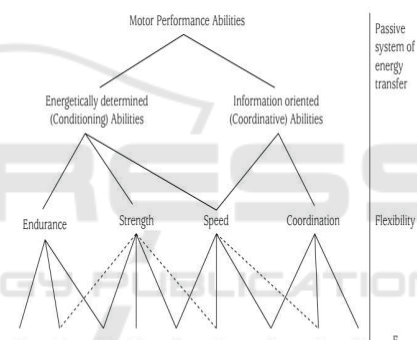


Fig 1 Differentiation of motor abilities (Bos 1987, p. 94). AE=aerobic endurance; AnE=anaerobic endurance; ME=muscular endurance; MS=maximum strength; SS=speed strength; AV=action velocity; SR=speed of response; CT=coordination under time pressure; CP=coordination with precision requirement; F=flexibility.

The ability to move in soccer games is needed, among others; the movement of walking, tiptoeing, running slowly, medium, and fast, and the ability of agility, flexibility, balance and good coordination. Other movements are in the form of simultaneous rotating movements and sudden stops (acceleration and deceleration). Besides that, to resist the impact of your opponent (body contact) in an attempt to seize the ball (intercept) it takes strength, speed and power. Other motion abilities are how a player is able to play consistently for a long time according to the time of soccer game 2 x 45 minutes (can be extended with an additional time of 2 times 15 minutes). Therefore, it can be concluded that soccer players are expected to have good mobility for 2 times 60 minutes. Then, for senior players, the training needs to be done with a minimum training time of 2 to 3 hours. This is needed

as part of the principle of practice, namely anatomical adaptation (AA) so that players become accustomed to the various situations faced in the field for 2 times 45 minutes or 2 times 60 minutes (including extra time 2 x 15 minutes).

The soccer game is very modern now, both from more complete development of basic motor skills, which is expected to be able to complete the techniques and tactics on the field which eventually became the best skills supported by a high mentality. Modern soccer games involve two teams attacking each other with the intensity of the game from medium to high. Perception in developing strategy games requires players with the best quality players from all elements of the game. Players must be able and understand the coach's desire to work in the field according to the scenario as a strategy to win a match. Every movement of teammates and opponents is always watched carefully so that the attack and defense process can run well.

As a sport with open skill category games, soccer is played with a pattern of playing against each other and defending to win the game. Characteristics of soccer play have open skill qualifications, so it is necessary to have the ability to move (complete motor abilities to deal with and overcome various situations and conditions for each change that occurs on the field. The movement of friends when mastering the ball will always move and change at any time, so that it requires the support of other teammates to provide support both in an empty area of the front area and the behind whose function is to provide support at any time needed. As the opponent controls the ball, the movement will always be monitored including the possible direction of the ball as well as the movement of the opponents who always move and change with high mobility. This monitor requires complex motion and communication between teammates. For these needs, soccer players really need the right and good mobility, all of which can be improved and developed only through programmed, systematic and sustainable training in accordance with the principles of good trainings.

3 METHOD

This research used the quantitative approaches and made a descriptive analysis based on motor performance abilities; namely to confirm the status between the factors that determine the ability of motion in soccer games. The purpose of conducting component analysis is to find out the role of the

dominant in explaining the most influential variables in soccer games.

3.1 Participants

The population and sample in this study were 189 prospective athletes of the Talented Athletes Development (TAD) selection process in Yogyakarta. All of the selection participants of TAD were 189 students with the age U<15 and all used to confirm their significance in determining the needs for motor performance abilities tests and practices in soccer games, then compiled in the form of reinforcement of young soccer players' skills based on motor performance abilities or MPA.

3.2 Instruments

3.2.1 Anthropometry

The data collection was carried out by conducting tests and direct measurement of all factors that have been determined as dominating factors in the soccer sports. These factors include anthropometric measurements (height, weight, and sitting height).

3.2.2 Motor Performance Abilities

The MPA test in this study included speed, flexibility, strength (abdominal and arm muscles), leg power and cardiovascular endurance.

The results of the test and measurement data analysis were in the form of a description of statistical data, by testing the correlation, validity, reliability, and different test groups of TAD for each variable. The description of the data contains the minimum and maximum value, the mean value and the standard deviation of the number of subjects of this study. Validity and reliability tests were carried out by correlating the data of each subject factor with the overall factor average. In order to do correlation and test the statistical analysis easily, the equations were made; that is to make the equivalent data for each factor became T-score.

4 DESCRIPTION OF STATISTICAL ANALYSIS

The following are the results of tests and measurements of 189 subjects who were candidates

for TAD athletes throughout the Special Region of Yogyakarta conducted on February 25, 2018 at Amongrogo Sports Hall of Yogyakarta and at the Mandala Krida stadium in Yogyakarta for the field tests.

Participants in TAD selection 2018 DIY were tested based on the selection of following athletes' positions: 28 goalkeepers; 33 fullbacks; 19 wingbacks; 91 midfielders; and 18 strikers or forwards; as shown in the table below.

Table 1. Position of players

POSITION	GK	BACK	WB	MF	FW	N
N	28	33	19	91	18	189
%	14,81	17,46	10,05	48,15	9,52	100

Analysis of the chosen positions; there are 28 subjects choosing positions as goalkeepers, 52 subjects as defenders (both fullback and wingback), 91 subjects as midfielders, and 18 subjects as forwards (strikers).

Anthropometric measurements are one of the important parts of the sport, although measurements are only made on three dimensions, namely height, weight, and height sitting. The test was used to measure the body height, weight, sitting height of TAD athletes in the Special Region of Yogyakarta. This test used an area that can be adjusted to the number of athletes. The test was carried out at Amongrogo Sports Hall of Yogyakarta. The test participants were 189 students from five districts or cities in DIY.

The test results of the Height, Weight, and Sitting Height are as follows:

Table 2. Height, Weight, and Sitting Height

	n	Min	Max	Average	SD
Height	189	125	179	159.34	9.96774
Weight	189	25	82.7	49.49	10.8323
Height sitting	189	62.5	107	92.36	7.04334

The test used to measure the flexibility of prospective TAD athletes in the Special Region of Yogyakarta was the flexibility test (sit and reach modification test). This test used a field area that can be adjusted to the number of athletes. The test was carried out at Amongrogo Sports Hall of Yogyakarta. The test participants were 189 students from five districts in DIY.

The test results of Flexibility Test were as follows:

Table 3. Flexibility Test Results

N	Min	Max	average	SD
189	3	28	14.17	5.640303

The test used to measure speed of TAD athletes in the Special Region of Yogyakarta was a 30 meter short sprint running test according to the needs in the field. This test used a field with a track length of at least 30 meters and a minimum width of 1 meter which can be adjusted to the number of athletes. The test was carried out at Amongrogo Yogyakarta of Sports Hall. The test participants were 189 students from five districts or cities in DIY.

The test results and graphs are as follows:

Table 4. Speed Test Results

n	Min	Max	average	SD
189	3.39	7.03	4.71	0.386936

The test used to measure the ability of abdominal muscle strength in TAD athletes in the Special Region of Yogyakarta was sit up test. This test used a field that can be adjusted to the number of athletes. The test was carried out at Amongrogo Sports Hall of Yogyakarta. The test participants were 189 students from five districts or cities in DIY.

The test results of Stomach Muscle Strength Test (sit up test) were as follows:

Table 5. Stomach Muscle Strength Test Results (sit up test)

N	Min	Max	average	SD
189	32	88	56.14	11.10535

The test used to measure the arm muscle strength of TAD athletes in the Special Region of Yogyakarta was a push up test. This test used a field that can be adjusted to the number of athletes. The test was carried out at Amongrogo Yogyakarta Sports Hall. The test participants were 189 students from five districts or cities in Yogyakarta Special Province. The test results of Arm Muscle Strength Test were as follows:

Table 10. Arm Muscle Strength Test Results (push up test)

N	Min	Max	average	SD
189	14	85	47.57	12.54585

The test used to measure the vertical jump of the TAD of Yogyakarta Special Region was the vertical jump test. This test used a field that can be adjusted to the number of athletes. The test was carried out at Amongrogo Sports Hall of Yogyakarta. The test participants were 189 students from five districts or cities in DIY.

The test results of Leg Power Test were as follows:

Table 11. Leg Power Test Results (vertical jump test)

N	Min	Max	average	SD
189	5	83	44.39	10.24076

The test used to measure endurance abilities of TAD in the Special Region of Yogyakarta was the multistage fitness test (MSFT) test. This test used a field with a track length of at least 20 meters and a minimum width of 1 meter which can be adjusted to the number of athletes. The test was carried out at Amongrogo Sports Hall of Yogyakarta. The test participants were 189 students from five districts or cities in DIY.

The test results of Endurance Test were as follows:

Table 12. Endurance Test Results using MSFT

Marks	MSFT (level, shuttle)	Vo2max
min	5.2	30.192
max	12.7	56.142
average	8.91	43.03
SD	1.460421	5.053057

Analysis results were 92 subjects below the average, with the lowest level of 5.2 and the highest level of 8.9. with Vo2max of 30.19 mmol/kg at the lowest and 42.99 mmol/kg at the highest and 96 subjects above the average, with the lowest level of 9.1 and the highest level of 12.7. with the lowest Vo2max of 41.69 mmol/kg and the highest of 56.14 mmol/kg.

5 RESULTS

The test of the motor performance abilities of potential athletes in the TAD DIY 2018 was held simultaneously with the same test and measurement forms. For this reason, it is needed to know the difference between motor skills of prospective

athletes. The following are the results of a statistical descriptive analysis of the potential athletes in soccer. Importantly, a recent meta-analysis indicated that school- and community-based programs which include developmentally appropriate fundamental motor skill learning experiences delivered by physical education specialists are a critical medium for the development of the youth motor competences.

To improve the skills of a soccer player, it should be known the determination of motor performance abilities (MPA) in every technique (e.g. dribbling, passing, shooting, ball control, etc.). What is the term? How to do it? When should it be done? etc. Soccer is divided into categories such as high-speed movements, acceleration, maximum speed or agility skills. The velocity in soccer is defined as the velocity, the rate of reaction and the rate of acceleration in the first stage. All of these categories (speed, agility and quickness) imply that the method of education should be a useful component of training in soccer.

Soccer is a sport that includes repetitive strong movement such as kicking, sprinting, fighting and jumping. Abilities of the players were to sprint, the height and distance of the jump, such as the force of performance, etc. It has been shown that there is a positive correlation to the development of performances. Soccer is divided into categories such as high-speed movements, acceleration, maximum speed or agility skills. The velocity in soccer is defined as the velocity, the rate of reaction and the rate of acceleration in the first stage.

This study showed that MPA status of young soccer players can be described to soccer skills integrated in training. Through data of MPA status of young soccer players' skills can be detected and evaluated by observation and used a test and measurement. The MPA test could be used to maintain the player ability or to increase their skills, which can be designed for different age group players.

6 DISCUSSION

Young soccer players should be trained very carefully, because they are in growth and development phase. Consequently, coach and parent must be intense to give attention in training and after training. Control function as a big snow to monitor what skill the players have got. Soccer skills are more complex and must be trained step by step using correct training program. Every technique should be

trained individually. The coach must focus to every player, what techniques have been taught and trained.

Motor abilities as given to every player as a talent must be trained time to time for many years. Motor abilities like strength, endurance, speed, agility, coordination, flexibility and balance are needed as complement techniques. An appropriate touch is needed when dribbling, receiving and controlling, passing and shooting. MPA were needed to develop skills in training and match. As an individual, a player should possess a complete skill which is supported by MPA. The MPA can improve integrated skills step by step as continuous training in many years.

Soccer skills can be detected and evaluated by observation and take a test and measurement. The MPA test could be used to maintain the player ability or to increase their skills. Finally, it can be designed for different age group players.

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