

## Analysis of physical fitness test on junior football players

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**Abstract:** The main objective of this study is to evaluate the effectiveness of training programs in terms of physical fitness approach "Tiki Taka" in football among male players below 15 years old. Fitness aspect is at the heart of any conducted sports training program. Physical fitness is significant in every game (Bravo, 2008). The study involved some elements of physical fitness assessment that General Fitness (Tests SEGAK) and Fitness Test Specification "Tiki Taka" (FTSTT) selected is a 12-minute Cooper Test Run (CTR), Zig Zag Test Run 13.7 meters / sec. (ZZTR), Stuttle Run Sprint (SRS) 9.15 m / sec. and Sprinting 30 meters (S). Samples were selected in the Test SEGAK. However, this study involved testing Pre Test and Post Test and it involved 22 samples aged 14 and 15 years. Samples were selected among Secondary School Mengkebang (SSM) students in Kuala Krai, one of the districts in Kelantan, Malaysia. The time period of 6 months training program involved 4 days a week, 2 hour day training. The Descriptive Statistics (DS) analysis and T-Test between Test Pre Test and Post Test found the Test-CTR is [t (21) = 31,273, p <0.05], the Test-ZZTT [t (21) = -19,193, p <0.05], Test-SRS [t (21) = -26,984, p <0.05] and S-Test [t (21) = -29,390, p <0.05]. Analysis of the results showed that there were significant differences on four UKSTT implementations in the training program. Despite losing team studies showed that players are very positive in terms of fitness and skills. The results showed significant differences in the Pre Test and Post Test on a sample survey and performance of the team. The study found physical fitness tests that formed the predictor variables in football talent below 15 years old.

**Key words:** Approach football "Tiki Taka"; General physical fitness test (Test SEGAK); Physical fitness test specification and football talent

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### 1. Introduction

Fitness is defined as the condition that allows an individual to lead a perfect life and to deliver his tasks efficiently, and in turn produces useful contributions and services. Fitness consists of five components, which are physical, emotional, spiritual, intellectual, and social fitness. All the five components of fitness need to be adjusted and balanced in order for an individual to get on with his daily life. Kassim and Isa (2015), noted that the athletes are engaged in a process of learning, which involves important aspects interpersonal and intrapersonal skills. This is supported by Kassim and Berahim (2015), a conducive learning environment is also important, as well as giving them a reward if they achieve excellence. The definition of physical fitness proposed by Clarke (1975) stated that physical fitness is the ability to perform daily tasks efficiently and fit without excessive fatigue and having sufficient energy for leisure activities. According to Kassim and Mokhtar (2016), physical fitness is a component that constitutes total fitness that is constantly being used in acting or in any order form of action. In addition, a person who is fit enough able to face challenges of emergencies that may arise in the future. The above definition is supported by the study known as AAHPERD (1980),

Bompa (1983), Johnson and Nelson (1986), Bloomfield et al. (1994), Corbin and Lindsey (1997) Bangsbo (2003), Larsen, George, Alaxender and Fellingham, (2002), Baumgartner (2003), Penney and Clarke (2005) and Jackson et al. (2007). Physical fitness is an individual's ability to perform daily activities and recreational activities without feeling tired and lethargic (Bompa, 1999). According to Corbin, Lindsey and Welk (2000), physical fitness means the body's ability to function or work efficiently, and still have excess energy to do leisure activities and act in an emergency.

Understanding the latest related physical fitness raised by Kassim Ahmad (2016), physical fitness is when a person has the ability to perform daily tasks without being fatigue with minimal energy consumption and have surplus energy to be used for more challenging activities. This shows that there is a difference between a healthy individual fitness levels with an active individual. Individuals who are able to perform daily tasks are healthy individuals and individuals who are active are the ones who able to do both daily activities and recreational activities without feeling tired in everyday life. However the level of physical fitness can be affected by factors such as breed, behavior and environment that affect the health and treatment of individuals to produce individuals who are fit (Dove Adwin, 2009) and confirmed by a study by Kassim Ahmad (2016).

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Physical fitness is divided into two that are current fitness and fitness-based treatment. Current fitness includes aspects such as cardiovascular endurance, muscular strength, muscular endurance, softness and body composition. According to Bomp (2006) and Kassim Ahmad (2016), fitness on treatment involves coordination, balance, agility, power, reaction time and quickness. However the combination of these two aspects of physical fitness is an important element in shaping individuals in sports or games. An athlete must possess both components. Those who are involved in sports or game require high fitness level to achieve excellent performance limited individual or team. The game of football is a sport that requires a level of physical fitness that is optimal for achieving success in a competition (Bravo, 2008). Physical fitness is significant in any games, especially a game that risked aspects of physical ability as a football game. Improvement in physical fitness will help improve the performance of an athlete or a team (Bangsbo, 2003). He was supported by researchers in sports such as Pate (1991); Miller (1994); Franks and Hawley (1998); Baumgartner and Jackson (1999); ACSM (1999) and Siedentop (2004). Individuals and team who have the maximum level of physical fitness have the advantage of achieving victory. Therefore, a good coach will establish fitness skills before applying aspects and psychological skills in a training designed program. Kassim (2012) stated that the important of coaches requiring knowledge in the coaching process are important to build up the quality of fitness level using the norms of physical fitness. Based on the facts stated above, a fitness training program has relevance to the football game approach "Tiki Taka". The "Tiki Taka" is one of the tactical uses in the game of football. The tactical features "Tiki Taka" are like sending short distances, use swipe passing, quick movement, the use of space and the use throwing 'one and two touch '. Such studies should be conducted to identify the relationship between fitness and team performance in the game of football, especially at the youth level. The training program, which was being formed include the fitness aspect. The effectiveness of giving instruction shows the achievements carried out resistance based on the training program which was significantly focus on performance of fitness tests. In this study, the fitness aspects were associated with cardiovascular endurance, speed and agility in a football game in "Tiki Taka".

Cardiovascular endurance means the ability of the heart, blood vessel system and respiratory system supplies oxygen to muscles continuously while performing activities (Corbin, 1999); The ability of the circulatory system and respiratory system to supply fuel (fuel) during continuous physical activity (Thygeson and Thygeson, 2009). In a connection with the heart's ability to pump oxygenated blood to the working muscles and makes the muscles ability to absorb and use oxygen to produce energy continuously (Powers et al., 2006). Williams and Reilly (2000), concurred regarding the selection of

talent in football found cardiovascular endurance component of maximal oxygen uptake ( $VO_{2max}$ ) is very important in identifying football talent among adolescents. The game of football is a tough and challenging game which makes cardiovascular endurance fitness is very important for any footballers. According to Kassim Ahmad (2016), strenuous physical activity requires the ability of the heart and lungs work efficiently because this situation requires a lot of aerobic energy and the flow of oxygen-rich blood allows muscles to undertaking such activities. The statement highlighted above showed that cardiovascular endurance fitness is the main artery in a football game. However, in football skills-based approach "Tiki Taka" skills such as speed skills activities, passing across the room, skills breakdown, touch short and short passes precise to be addressed. On the other hand, motor-based fitness refers to the muscle potential and the ability of an individual to carry out physical activity in terms of balance, agility, speed, power, reaction time and coordination. In addition, physical training is defined as training required preparing players' respiratory, energy, and muscular systems physiologically from aerobic, anaerobic, and strength perspectives (Kassim and Ali, 2015). This is supported by Kassim; Azmir and Mokhtar (2014), fitness is defined as the condition that allows an individual to lead a perfect life and to deliver his tasks efficiently, and in turn produces useful contributions and services. Fitness consists of five components, which are physical, emotional, spiritual, intellectual, and social fitness. Consequently, according to Kassim; Ahmad and Muda (2016) cardiovascular endurance is a most important component in the human physiology. Speed is the ability of a person to perform movements in the short term and as the velocity of movement of the body or part of the body (McCloy 1937). The definition of merit is supported by In AAHPERD (1976); Prederick (1977); Mathews (1978); Verdussi (1980); Catledge (1981); Spilman (1983); Bastad and Lacy (1998); Ahmad (2003). Kassim Ahmad (2016), defines merit as the ability of individuals to perform movements in a row quickly within a short time according to the speed direction, the response time and moving time. However researchers have studied on the difference in time and the size of the run off. Speed has three components. The first component is related to the speed of movement to the body segments, namely the head, hands and feet. The second component in the speed aspects is speed sprint which increases the rate of acceleration of a person's ability in a short distance. The third component is the speed connection which can only be maximized and done by athletes; as the distance of merit done by an athlete's speed, the athlete's performances increase at the very best level. Mastering these three skills would affect the speed of an athlete's kinesthetic intelligence (Corbin, 2007). All these three skills are important elements in football skills-based approach "Tiki Taka". The athlete's talent has a close

relationship with the level of skill of the players (Miller, 1998). According to Ahmad (2015), agility is the ability to change the direction of the position of the body or body part quickly and fast. The statement was endorsed by practitioners of sports science and physical education as Kirby (1971), AAHPERD (1976), Barrow and McGee (1979), Johnson and Nelson (1986), Rollins (1992). Acceleration and ability to change direction quickly is the key in this game. According to Williams (2005), sports that involve explosive movements or 'dynamic maneuverability' requires agility and speed to achieve the best performance of its two components are interrelated. A recent study by Kassim Ahmad (2016), stated that agility is the ability of a person's movements consecutive to a different direction as efficient, fast and can change the position of a specific space for neat and easy. This study is consistent with the characteristics of the training program carried out and meets the requirements of a "Tiki Taka". Overall, the selection of the items contained in the physical fitness program conducted a critical element in modern football, which has been practiced by countries (Spain and Germany) and famous football clubs (Barcelona and Bayern Munich). Numerous successes have been achieved by several teams which practicing football skills-based approach to physical fitness "Tiki Taka" like winning the World Cup, EURO Cup, World Club Champions and won the European Club Champions League football in their respective countries. However to produce a football player at best, a high level of physical fitness is not enough. Factors such as football skill games, high level of psychology, teamwork, the role of an effective coach, best management and support from the fans are the important aspects in shaping individual and successful football team.

## 2. The objective of the study

1. Identify the physical fitness level of football players below 15 years old at the state level.
2. Identify the level of fitness after undergoing a football training program approach "Tiki Taka".
3. Comparing the level of physical fitness before and after football training approach "Tiki Taka".

## 3. Literature review

According to Falls (1980), a perfect physical fitness occurs when a person is able to do simple daily activities without feeling tired and lethargic and engage in recreational activities in his spare time and be able to act in times of emergency. Johnson and Nelson (1986), states that cardiovascular endurance is an energy source that should be prioritized in football but he noted that a researcher should not only use one item in assessing the physical fitness level of the players. Physical fitness can be defined as the ability of humans to function efficiently and effectively, which will contribute to the quality of life, to learn effectively, enjoy leisure time, healthy and can prevent disease and

hypokinetic can act in times of emergency (Corbin and Lindsey, 2007). Recent studies of Kassim et al. (2016), states that physical fitness is when a person has the ability to perform daily tasks without fatigue with minimal energy consumption and has surplus energy to be used for more challenging activities. The above definition is supported and match results of the study by researchers related physical fitness cults such as AAHPERD (1980), Bompa (1983), Johnson and Nelson (1986), Bloomfield et al. (1994), Corbin and Lindsey (1997) Bangsbo (2003), Larsen, George, Alaxender and Fellingham, (2002), Baumgartner (2003), Penney and Clarke (2005) and Jackson et al. (2007). The emphasis on the physical fitness training programs is more specific for the formation of individual athletes (Lyle, 2005). The elements contained in fitness such as cardiovascular endurance, muscular endurance, muscular strength, flexibility, body composition, speed, agility, power, reaction time, balance and coordination. However, this study only applies to the physical fitness aspects of cardiovascular endurance, speed and agility. The choice of three items of physical fitness is influenced by a football training program that incorporates features of the approach of a football game "Tiki Taka".

Bloom (1985) states that aerobic power is a basic requirement in the game of football; cardiovascular endurance means the ability of the heart, blood vessel system and respiratory system supplies oxygen to muscles continuously while performing activities (Corbin, 1999). Therefore, the coach will choose the tests that are most appropriate and effective way to test the fitness of the players selected. In a football game, aerobic energy is one of the most important aspects. Williams and Reilly (2000), concurred regarding the selection of talent in football found cardiovascular endurance component of maximal oxygen uptake ( $VO_{2max}$ ) is very important in identifying football talent among adolescents. Prentice (1988) supported the above statement by stating that the strength and endurance of an athlete is closely related to cardiovascular endurance. Cardiovascular endurance is an important component of a football game. The total running distance was below the level of professional players in 10 yards in one game which illustrates the game of football really needs a system of optimal cardiovascular endurance.

Cardiovascular endurance means the ability of the heart, blood vessel system and respiratory system supplies oxygen to muscles continuously while performing activities (Corbin, 1999). The ability of the circulatory system and respiratory system is to supply oxygen during continuous physical activity (Thygerson and Thygerson, 2009). Cardiovascular endurance is associated with the heart's ability to pump oxygenated blood to the working muscles, and the muscles ability to absorb and use oxygen to produce energy continuously (Powers et al., 2006). Williams and Reilly (2000), concurred regarding the selection of talent in football found cardiovascular endurance component

of maximal oxygen uptake (VO<sub>2</sub>max) is very important in identifying football talent among adolescents. He argued on Potential Model Talent which indicated the importance of cardiovascular endurance. He had done research related to the physical, psychological fitness and identifying talent in football among boys aged 14 to 15 years.

According to Johnson and Nelson (1986), cardiovascular endurance was an energy source that should be prioritized in football but he noted that a researcher should not only use one item in assessing the physical fitness level of the players. Prentice (1988) supported the above statement by stating that the strength and endurance of an athlete is closely related to cardiovascular endurance. Cardiovascular endurance is an important component of a football game. The total running distance was for professional players between 6 and 10 yards in one game illustrated that the game of football really needs a system of optimal cardiovascular endurance.

Williams and Reilly (2000) stated the selection of talent in football was found in cardiovascular endurance component of maximal oxygen uptake (VO<sub>2</sub>max) which was very important in identifying football talent among adolescents. He argued on Potential Model Talent which focuses on the importance of cardiovascular endurance which focusing on doing research related to the physical, psychological fitness and identifying talent in football among boys aged 14 to 15 years. Vaeyens et al. (2006) used a model of multidisciplinary talents in football which focus on male players aged between 12-16 years in order to identify the relationship between the physical, performance and football level skills. His findings showed that the most important components of cardiovascular endurance are for football players aged 14 to 15 years. The findings on UPSI (2013) also found that cardiovascular endurance was the predictor variables football talent among male players aged 14 and 15 years. In addition, the energy cardiovascular endurance, speed and agility aspects are also important in the game of football especially during the training program implementation using the characteristics of a "Tiki Taka".

The definition of merit is the ability of individuals to move part or all of the body quickly (Bompa and Haff, 2009). Kassim Ahmad (2016) defined it as the ability of individuals to make the speed of movement in a row quickly in a short period of time according to the direction and speed of having connections with the response and moving time. The quickness or speed is an athlete's ability to perform the movements in the short term and as the velocity of movement of the body or part of the body (McCloy 1937). The definition of merit is supported by In AAHPERD (1976); Prederick (1977); Mathews (1978); Verdussi (1980); Catledge (1981); Spilman (1983); Bastad and Lacy (1998); Ahmad (2004). These statements were suitable in modern soccer training program that is being practiced by the best team in the world. However the study was carried

out by the researchers on the difference in time and the size of the runoff in the study.

A recent study by Kassim et al. (2016), said speed is the ability of individuals to perform movements in a row quickly in a short time in one direction. The distance of merit was measured by an athlete's speed which enhances the skill level of the athlete to become better. Mastery of these three skills affects the speed of an athlete's kinesthetic intelligence (Corbin, 2007). Speed is one of the skills that would give an advantage to a football player because the speed of a football player can score goals and win in the race for the ball. The study found that anaerobic power was increased progressively according to age category sample. Fournier et al (1982) in Balciunas et al. (2005) also notes that anaerobic power will be increased from childhood to adulthood and drastic increase happens during puberty. This is due mainly to increased activity of the enzyme phosphofructokinase glycolytic. This statement is also supported by Sherpard (1999) and Alvarado (2005).

According to Reilly (1997), examples of anaerobic activities in football can be seen when a player tried to hinder or obstruct an opponent who carries the ball at high speed. Thus, by playing football regularly and systematically, an individual can increase their anaerobic capacity. According to Lorino (2006), recurrent training was the cause of the increasing speed. Speed training requires maximum power within 8 seconds. This type of exercise is the most important aspect and it is the cause of the increased speed level. Wilmore (1976) stated that the frequency will move faster as a speeding downhill sprint running better than the truck. Kurz (2001) also agreed that the speed of running down a steep track 2 or 3 degrees is 17% better than the speed of the track that ran above the ordinary. Therefore, a coach should apply the training down the steep to increase the speed of their players. A coach should be more sensitive about anything that exercise training is done to give the best impression to the player.

Definition of agility is the ability of individuals to make a series of explosive movements quickly and in different directions (Bompa and Haff, 2009). According to Ahmad (2015), agility is the ability to change the direction of the position of the body or body part quickly and fast. The statement was endorsed by practitioners of sports science and physical education as Kirby (1971), AAHPERD (1976), Barrow and McGee (1979), Johnson and Nelson (1986), Rollins (1992). The latest statement relating agility by Kassim et al. (2016), stated agility as the ability of an individual to perform movements in a row to a different direction as quickly and swiftly as possible. Dexterity skills are necessary elements dominated by football players in dribbling skills, send, and gore and kick the ball. An agility skill in the game of football is very important in the use of a "Tiki Taka".

#### 4. Methodology

This study used the "Experimental Analysis" that guided the "Ex-post-facto" which has a quantitative test of practical field. The test pretest and posttest were used in this study. The study used several field trials as an instrument. A total of 72 students have participated in the selection sample. According to Timothy (2009), identifying talent is a systematic process used to find new talent in sports. An assessment has been carried out by three members of the panel who were commissioned to observe on The Championship SSM Cup. The participants were consisted students grade one and two at MKM. The selected sample is a sample that collects the highest score in the Fitness Test Specification "Tiki Taka" (FTSTT) conducted. Items selected Test-CTR (12 minutes), TEST-ZZTR (13.72meter / sec), Test-SRS (9.15meter / sec) and Test-S (30 meters). The data pretest and posttest were recorded and analyzed using SPSS Version 20.0. A total of 22 male football players were selected in a survey conducted training program. In this study, there are some variables.

The variables were categorized into two types, namely the independent variable (IV) and dependent variable (DV). To facilitate implementation, this study was divided into three main phases. The first phase of the study was to gain sample control of 20 students. In the first phase, 20 students below 14 years old from Secondary School Dato' Mahmud Paduka Raja 1 (SSDMPR1), a Football Schools Project in Tanah Merah District, were selected. From of aged 14 to 15 years is an independent variable (IV). The fitness test scores and proficiency is the dependent variable (DV). In the fitness test, there are four tests, which are run Test-CTR (12 minutes), Test-ZZTR (13.72meter / sec), Test-SRS (9.15meter / sec) and Test-S (30 meters). The tests selected features and approach football game "Tiki Taka". The selected test has validity and reliability made by Ahmad Hashim, (2015). However Test-ZZTR (13.72meter / sec) was modified to suit the football game approach "Tiki Taka" which used the norms of basketball skills.

The second phase was conducted before the students attended the training program. Samples will encounter a friendly match with football players aged below 15 years from Secondary School Dato' Mahmud Paduka Raja 1 (SSDMPR1), a Football Schools Project in Tanah Merah District. Players SSDMPR1 are beyond the control of the study sample. Match results will be recorded as Pre Test data performance. The third phase came after the friendly match. The sample will follow a training program for six months. After eight weeks samples undergo a training program from the first test post being done. The time period of eight weeks of a training program was the maturity of the rated according to Bompa (2003). After conducting a three times of maturity on the physical fitness test of the samples, the researchers have recorded the best results of the three tests conducted.

This test is recorded and a data test Post Test was done by the researcher. A test that can give consistent results when tested repeatedly is called reliability (Ahmad, 2004; Baumgartner, 2003;

Jackson et al., 2007). Summary of the methodology of this study is to see how competence the players fitness on the aspect that has been introduced. Overall performance is measured through a fitness test run. The team's performance will be assessed through friendly matches and competition matches. Descriptive statistics is used to determine the performance level of fitness and skill test scores sample. Prentice (1997), also stated that athletes involved in football match required a high cardiovascular endurance. This is very important because a football match requires players to perform a variety of fitness skills in a long duration of 90 minutes. The findings of researcher were also supported by Williams and Reilly (2000) in their study-related talents in football found cardiovascular endurance component of maximal oxygen uptake (VO<sub>2</sub>max) in identifying football talent among adolescents.

## 5. Finding and discussions

The entire test Pre Test and Post Test conducted showed significant differences. Each raw score was converted to a standard score (T-score) in advance as the score for each component of fitness tests are different measurement units. Next T score derived T are combined into a total score for each test and the results of matches. Comparison between the control samples and the samples out of control showed: The results of the test analysis found Test-CTR is mean = 1587m, SD = 142.8 and the  $t = [t(21) = 31,273, p < 0.05]$ , the Test-ZZTR Mean = 12.9, SD = 0.6 and  $t = [t(21) = -19,193, p < 0.05]$ , Test-SRS mean = 11.3, SD = 0.9 and  $t = [t(21) = -26,984, p < 0.05]$  and Test-S mean = 6:59, SD = 0.4 and  $t = [t(21) = -29,390, p < 0.05]$ . Analysis of the results showed that there were significant differences on four physical fitness tests conducted in the training program based on results of a study conducted similar to research done by Baumgarther (1995) and supported by Prentice (1997), Koenig and of evidence (2000), Williams and Reilly (2000) and Vaeyens et al. (2006).

Results showed that football game aerobic and anaerobic energy systems are limited aspects that should be preferred by the players which use both optimal energy systems to form a successful football team. The researchers chose the Test-CTR as an assessment of the aerobic system. The results of the study analysis were significant value = 1587m, SD = 142.8 and the  $t = [t(21) = 31,273, p < 0.05]$ . According to Bouchard (1985), the aerobic system is an aspect that should be prioritized in order to form a successful athlete and Bloom (1985), stated that aerobic power was a basic requirement in the game of football. Therefore, the coach will choose the tests which are most appropriate and effective way to test the fitness of the selected players. Players who pass the test of cardiovascular endurance are based on a selected player who has a good level of fitness in a football game. Players who achieved the level set will be invested on the team need to be set up.

The increase of fitness will help to improve the performance of an athlete or a team (Bangsbo, 2003); the ability of the circulatory system and respiratory system to supply (fuel) during continuous physical activity (Thygerson and Thygerson, 2009); furthermore, in connection with the heart's ability to pump oxygenated blood to the working muscles and how the muscles ability to absorb and use oxygen to produce energy continuously (Powers et al., 2006). Thus the study program meets the requirements established in the football game. In addition to energy consumption aerobics football games also require the application of anaerobic energy.

The training program focused on the study of speed skills and a team player. This is because both of these skills have a relationship with a "Tiki Taka" adopted in the training program. The study analyzes the speed is significant with mean = 12.9, SD = 0.6 and  $t = [t(21) = -19,193, p < 0.05]$  for the Test-ZZTR 13.72 meters and Test-S 30 meter with significant value min = 6:59, SD = 0.4 and  $t = [t(21) = -29,390, p < 0.05]$ . Speed is the ability of a person to perform movements in the short term and as the velocity of movement of the body or part of the body (McCloy 1937). The definition of merit is supported by In AAHPERD (1976); Prederick (1977); Mathews (1978); Verdussi (1980); Catledge (1981); Spilman (1983); Bastad and Lacy (1998) and Ahmad (2003); the ability to move part or all of the body quickly (Bompa and Haff, 2009).

The studies conducted are based on training programs in conjunction with the study done by Fournier et al. (1982). Balciunas et al. (2005) also noted that anaerobic power will be increased from childhood to adulthood and the increase happens drastically during puberty. This is due mainly to the increased activity of the enzyme phosphofructokinase glycolytic. This study was also supported by Sherpard (1999) and Alvarado (2005), which stated anaerobic capacity increased progressively during the process until it reached the age of maturity which depending on the activity of glucoside ages. The researcher found the age of each subject taken is at the stage of maturity and it is a bit of influence can study.

A recent study by Kassim Ahmad (2016), defines merit as the ability of individuals to perform movements in a row quickly in a short period of time according to the direction and speed of having connections with the response time and moving time. The features such as speed, response time, the time to move are being practiced in modern football, adopted by the state and the world's best football clubs. This showed that the fitness test based on the speed selected and combined approach "Tiki Taka" found significant findings on training programs conducted either on an individual or a team. The validity of the instrument can be defined as the ability of an instrument or measurement tools measure what should be measured (Ahmad, 2004; Baumgartner, 2007; Hanna and Dettmer, 2004).

The third element applied in a physical fitness test exercise program approach "Tiki Taka" is agility. The analysis results are significant agility test with the Test-ZZTR 9.16 meters / sec is mean = 11.3, SD = 0.9 and  $t = [t(21) = -26,984, p < 0.05]$ . Test talent of an athlete has a close relationship with the skill level of agility (Miller, 1998). Football is no exception based on quickness especially the legs. Acceleration and ability to change direction quickly are the keys in this game. Williams (2005), stated sports which involve explosive movements or 'dynamic maneuverability' requires inter-related agility and speed to achieve the best performance for both components. According to directions (Bompa and Haff, 2009), the ability of athletes are to perform a series of explosive movements quickly and in different angle. Ahmad (2015) stated agility is the ability to change the direction of the position of the body or body part quickly and fast. The statement was endorsed by practitioners of sports science and physical education as Kirby (1971), AAHPERD (1976), Barrow and McGee (1979), Johnson and Nelson (1986), Rollins (1992). The aspects of agility are selected by researchers because speed is an important element in the approach "Tiki Taka" of modern football. The swift movement will form a comfortable space to pass the ball, receiving the ball and kicking the ball. However, this study has some differences with other researchers because some researchers only emphasize on the element of fitness and football skills specifically to customize training programs to approach the football game "Tiki Taka". The game "Tiki Taka" emphasizes short passes and swipe, fast movement across the space and touch "one and two touch". Normally a football player who has the level of muscular endurance will also have good cardiovascular endurance. Prentice (1988) stated that muscle endurance and strength are closely related to a person's cardiovascular endurance. This study emphasized on fitness, skills and performance to the approach of the football game "Tiki Taka". Psychological, tactical and strategic sides are the factors that were not recorded.

## 6. Conclusion

The first phase of the study was to determine the selection of an appropriate sample to follow the training program set up. Williams and Reilly (2000) explained that in searching football talent was also a process of identifying players which has the potential to become elite players in the future. Data from the study samples were obtained through four specific physical fitness test approach "Tiki Taka" Test-CTR 12 minutes, Test-ZZTR 13.72meter / sec, Test-SRS 9.16 meter / second and Test-S 30 meter. The researchers used the test Pre Test and Post Test on the same sample. The study was carried out on the same sample as the objectives of the study were to identify the effectiveness of the training program in terms of individual fitness which involved 22 samples. The findings of T tests showed a significant

difference in the four physical fitness tests conducted. This also indicated the training program which suitable for measuring individual physical fitness level football players below 15 years old. The appropriate tests and the ability to measure what should be measured are very important because these tests used in the process of validity and reliability of the findings able to provide the required information accurately and correctly (Ahmad, 2004).

The second phase of the study is to identify the effectiveness of the training program among boys below 15 years old of Sekolah Menengah Kebangsaan Mengkebang, Kuala Krai, Kelantan. The researcher used the fitness test (CTR- 12 minutes, ZZTR-13.72meter / sec, SRS-9:16 meters / sec. and S-30 meter). Features of a football game "Tiki Taka" were to be completed within the established training program. For the team's performance, the researcher used the results of the assessment element of resistance Pre Test and Post Test run.

The findings showed that by using the predictor variables of physical fitness items featured specific approach football game "Tiki Taka" (Test-CTR, Test-ZZTR, Test-SRS and Test-S) are significant predictor variables on the performance and achievements of physical fitness among boys under 15 years old in a football match. The findings of this study will help to guide all the coaches and sports teachers to develop physical fitness level approach "Tiki Taka". The tests of physical fitness that are being produced in the study can be used as a main source of tests in identifying talents in football. Identifying talent generally includes a series of tests that can measure the key factors for success in a particular sport and carried to a larger population (Balyi and Hamilton, 1995).

The weakness on the results of this study will provide an opportunity for other researchers to conduct another study related to physical fitness or other aspects of the game of football. Hopefully, this study will be beneficial to the development of Malaysian football team in helping to identify talented football players which competent to compete at international level. An appropriate football training program will help to develop physical requirements and skills which lead to strengthening up the quality of football in our country and at the international level. One hope is that all citizens will support our football team and bring back the glory days of Malaysian football. According to Timothy (2009), identifying talent is a systematic process used to find new talent in the sport. It will enhance the transformation of football team in Malaysia and in the eyes of the world. Go Sport for the State.

## References

- AAHPERD (1980). Youth fitness test manual. Washington, DC: AAHPERD
- Ahmad Hashim (2004). Pengukuran Kecergasan Motor. Tanjong Malim: Quantum
- Ali Ozkan, Bayrak Ariburun, Isler, A. K. Relationship of Body Composition, Anaerobic Performance and Isokinetic Knee Strength in American Football Players. Poster Presentations, Physiological Testing of Football Players. Journal of Sport Science and Medicine (2007). Suppl. 10: 127.
- Alvarado, M. U. (2005). Nutrition for Young Soccer Players. International Journal of Soccer and Science, 3 (1), 12-20. University of Costa Rica.
- Barrow, H.M. (1954). Test of motor ability for college men. Research Quarterly, 25: 253-260.
- Barrow, H.M., and McGee, R. (2000). Practical measurement and assessment (5th ed.). Philadelphia: Lippincott Williams and Wilkins.
- Baumgartner, T. A., Jackson A. S., Mahar M. T. and Rowe D.A. (2003). Measurement for evaluation in physical education and exercise science (7th ed.). New York: McGraw-Hill.
- Baumgartner, T. A., Jackson A. S., Mahar M. T. and Rowe D.A. (2007). Measurement for evaluation in physical education and exercise science (8th ed.). New York: McGraw-Hill.
- Baumgartner, T.A, and Jackson, A.S. (1999). Measurement for Evaluation evaluation in physical education and exercise science (6th ed). USA: McGraw-Hill.
- Blimkie, C.J.R. (1989) Age and sex-associated variation in strength during childhood: Anthropometric, morphologic, urologic, biomechanical, endocrinologic, genetic and physical activity correlates. In: Perspectives in exercise science and sports medicine Vol. 2. Youth, exercise and sport. Ed: Gisolf, C.V. and Lamb, D.R. Indianapolis: Benchmark Press. 99-163.
- Bloom, B.S. (1976). Human Characteristics and School Learning. New York: McGraw-Hill.
- Bloom, B.S. (1985). Developing Talent in the Young. New York: Ballantine.
- Bloomfield, J., Ackland. T.R, Elliot, B.C. (1994). Applied anatomy and biomechanics in sport. Melbourne: Blackwell Scientific Pub.
- Bompa, T.D. (1983). Theory and methodology of training the key to athletic performance. Iowa: Kendall Hunt Publishing Co. Books.
- Bompa. (1994). Theory and Methodology of Training. The Key to Athletic Performance (Third Edition). London: Kendall/Hant Publishers.
- Castagna, C., D'Ottavio, S., Alvarez, J. C. B. Physiological Effects of Playing Futsal in Professional

- Castagna, C., D'Ottavio, S., Vincenzo, M., Alvarez, J. C. B. Ability to Repeat Sprint and Maximal Aerobic Power in Young Soccer Players. Poster Presentations, Physiological Testing of Football Players. Journal of Sport Science and Medicine (2007). Suppl. 10: 123.
- Chan, O. (1974). The Cardiorespiratory Fitness and Energy Expenditure of The Temiars Med. J. Malaysia 20 : 207-217.
- Cooper, K.H. (1986). Aerobic, New York : Bantam Books.
- Corbin C. B. and Lindsey R. (1998). Concept of physical fitness with laboratories (6th ed.) Dubuque, Iowa: Wm. C. Brown Publisher.
- Derek Chan (2004). Fitness Testing Assignment: Soccer, Perth : Curtin University Of Technology.
- Di Silvo et al. (2006) International Journal of Performance Analysis in Sport 18, 108-119
- Dove-Edwin, F. H. (2009). The fitness parameters of 14-17 year old children in Sierra Leone. Michigan : ProQuest Dissertations and Theses (PQDT).
- Falls. (1980). Teori and Methodology of Training. New York. Humans Kinetick Publisher.
- Farwell, R.R., and Mayhew, J.L. (1983). Task specificity in the relationship of predicted VO2 Max and run performance. Journal of Sport Medicine. 23(2). 286-290.
- Futsal Players. Poster Presentations, Physiological Testing of Football Players. Journal of Sport Science and Medicine (2007). Suppl. 10: 117.
- J. Bangsbo, 2003; Fitness Training In Soccer A Scientific Approach. Data Reproductions, Auburn, Michigan.
- Kassim , M. (2008). A Qualitative Study of the Relationship between the Knowledge and Behaviour of Coach in two Football Academies in Malaysia. Loughborough University, UK: Unpublished doctoral thesis.
- Kassim , M. (2014). Relationship Between Knowledge of Coaching and Behaviour of Football Coaches. ZULFAQAR International Journal of Defence Science, Engineering and Technology, 1(1), 43-51.
- Kassim , M., and Ali , N. R. (2015). An Effective Coaching Through 'Coaching Model'. Journal of Scientific Research and Development, 2(9), ISSN 1115-7569.
- Kassim , M., and Berahim , M. (2015). Football training Development Programme under-15 years old State Level. Australian Journal of Basic and Applied Science , E-ISSN: 2309-8414.
- Kassim , M., and Mokhtar , R. S. (2016). The Evaluation of Cardiovascular Endurance Test for Male Cadet Officer. Modern Applied Science, 10(2), 11-16.
- Kassim , M., Azmir, H., and Mokhtar, R. S. (2014). The Development of Portable Application Software for Cardiovascular Fitness Norm of NDUM Cadet Students. ICSS 2014 : 18th International Conference on Sports Science. 1 (10). Dubai: International Journal of Sport and Exercise Sciences.
- Kassim, M. (2012, May). The Acquisition of Knowledge by the Coaches : Can Qualitative Approach Help ? Jurnal Sains Sukan dan Pendidikan Jasmani, 1, 24-34.
- Kassim, M., and Isa, I. M. (2015). The Important of Psychology Factor for Female hockey goalkeeper. Journal of Basic and Applied Science , ISSN :1991-8178.
- Kassim, M., and Mokhtar, R. S. (2015). Test and Measurement of Cardiovascular fitness for Female Cadet Officers. Journal of Scientific Research and Development, 2(8), ISSN : 1115-7569.
- Kassim, M., and Rustam , S. (2015). Inculcation of Value in Co-Curricular Activities form Virtues Module. Journal of Scientific Research and Development, ISSN: 1115-7569.
- Kassim, M., Sheikh Ahmad, S., and Muda, B. B. (2016). Konsep Latihan dalam Sukan . Kuala Lumpur : Pekan Ilmu Publication .Kerlinger, F.N. and Lee, H.B. (2000). Foundations of Behavioral Research. 4th ed. Fort Worth, Texas : Thompson Learning.
- Kurz, T. ( 2001). Science of Sports Training U.S.A Stadion Publishing Company.
- Legar and Lambert (1982). A maximal 20m shuttle run test to predict VO2 Max European Journal of Applied Physiology.
- Liu, N.Y., Plowman, S. A., and Looney, M. A. (1992). The reliability and validity of the 20 - meter shuttles test in American students 12 to 15 year old. Research Quarterly for exercise and sport (RQES), 63(4), 360-365.
- Lorino, A.J, Lloyd, L.K, Crixell, S.H dan Walker, J.L (2006). **The effects of caffeine on athletic agility.** J. Strength Cond. Res. 20(4):851-854.
- Mahar, M. T., Rowe, D. A., Parker, C. R., Mahar, F. J., Dawson, D. M. and Holt, J. E. (1997). Criterion-referenced and norm-referenced agreement between the mile run/walk and PACER. Measurement in Physical Education and Exercise Science, 245-258.
- Mohamad Razali Abdullah, Abu Zarin Abu Bakar, Abd. Majid Mohd. Isa dan Wan Salihin Wong Abdullah (2004) cuba membina kesesuaian bateri ujian Jurnal Penyelidikan IPBL, Jilid 8, 2008
- Mohar and Ahmad. (2016). Konsep Latihan Dalam Sukan. Selangor. Malaysia: Pekan Ilmu.
- Mohd Zubir Idrus. (1987). Pencapaian Daya Tahan Kardiovaskular Di Antara Pelajar-Pelajar Sekolah

- Bandar Dan Luar Bandar, Program Pendidikan Jasmani Fakultas Pengajaran Pendidikan University Putra.
- Mohr et al. (2003) *Journal of Sports Sciences* **23**, 521-528
- Morten Bredsgaard Randers, Jack Majgaard Jensen and Peter Krustrup. (2007). VIth World Congress On Science And Football. *Journal Sport of Sports Science and Medicine – Book of abstracts* **10**, 16.
- National Council of Youth Sports. Report on trends and participation in organized youth sports, 2008 edition. Available at: [www.ncys.org/pdfs/2008/2008-ncys-marketresearch-report.pdf](http://www.ncys.org/pdfs/2008/2008-ncys-marketresearch-report.pdf). Accessed January 17, 2015.
- Nur Ikhwan Mohamad Msc (2006) Sukan dan Prestasi Program Kecergasan Untuk Bola Sepak, Kuala Lumpur, Malaysia: Explorefix.
- Penney, D., and Clarke . (2005). Inclusion in Sport Education. In P. Dawn, *Sport Education in Physical Education: Research Based Practice* (pp. 41-54). Loughborough: Taylor and Francis, 2005.
- Prentice William E and Bucher Charles A. (1988). *Fitness for college and life.*(2nd ed.). St. Louise, Missouri. Mosby college Publishing.
- Ramsbottom, R., Brewer, L., and Williams, S. (1988). A progressive Shuttle Run Test To Estimate Maximal Oxygen Uptake. *British Journal Of Sport Medicine*, vol 22, Issue 4 141 – 144.
- Reilly, T. (1997). Energetics of high intensity exercise (soccer) with particular reference to fatigue. *Journal of Sports Sciences*, 15, 257-263.
- Reilly, T., Williams, A. M. (2003). *Science and Soccer*. 2th edition. London: Routledge Taylor and Francis Group.
- Reilly, T., Williams, A.M., Nevill, A. and Franks, A.,(2000); A Multidisciplinary Approach To Talent Identification in Soccer, *Journal of Sports Sciences*,18(9),695-702.
- Safrit, M. J. (1981). *Introduction to measurement in physical education and exercise science*. St. Louis: Times Mirror/Mosby College.
- Schmidt, R.A (1991). *Motor Learning And performance*. Champaign, Illinois: Human Kinetics Publishers.
- The Cooper Institute.(2007). *FITNESSGRAM/ACTIVITYGRAM test administration manual* (4th ed.). IL: Human Kinetics.
- Timothy R. Ackland Bruce C. Elliot and John Blommfield (2009), *Applied anatomy and biomechanics in sport 2ed*, USA : Human Kinetics.
- Trent, M. E., and Ludwig, D. S. (1999). Adolescent obesity, a need for greater awareness and improved treatment. *Current Opinion in Pediatrics*, 11, 297-302.
- Williams A.G (2005). Specificity of acceleration, maximum speed, and agility in professional soccer players. *J. Strength Cond. Res.* 19(1):76-78.
- Williams, L.R. and Scott, R.B. (1953). Growth and Development of Negro Infans Motor development and its Relationship to Child Rearing Practices in Two Group of Negro Infans. *Childs Development*. Pp 103-121.
- Young ,W and Farrow, D. (2006). Strength and Conditioning *Journal*. Lawrence Vol. 28, Iss. 5; pg.24, 7 pgs