Anthropometric and Body Composition of Universiti Teknologi MARA Pahang Football Players (Pahang Tigers) during Competitive Season

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ABSTRACT

Football is the most enjoyable sport in the world and will be played continuously at different level of match. Universti Teknologi MARA (UiTM) Pahang football team may be considered as a serious contender in competitive football tournament recently. The series of victory in every match in Liga IPT 2012 Division 3 allow the team to be promoted in Division 2 for next season. This study was undertaken to record the anthropometric and body composition of the players who were responsible of this great achievement. A total of 15 football players were involved that consist of three main roles in the team (midfielder, defender and striker). The data were included the height, weight and body fat percentage of the players. Subjects mean age was 19.6 (± .63) years. The mean body weight and height (± SD) were 59.3 (± 5.92) kg and 170.8 (± 3.98) cm respectively. All testing were in accordance to standardized procedures. Overall findings based on one-way ANOVA did not reveal significant differences in terms body fat percentage based on the three specific playing positions. Major cause for the current findings was due to the limited number of participants in this study. This collective data will set as a physically status that permit the modification of dietary intakes and training programs to sustain fitness and match performance throughout the football competitive season. Thus, preliminary descriptive analysis proposes that anthropometric and body composition of the players in this team significantly contributes to their successful performance in the tournament.

Keywords: *football, anthropometric, body composition, fitness, Liga IPT 2012*

Introduction

In a modern football, the recruitment of players derived from different level of football league. In this respect, university recently plays the role of developing the talented players. Thus, coaches are continually found their players in the university and try to expose them into the higher level of football league. However, the formulas of successful result in football among the university players are not gradually being studied. In general, the physical and physiological characteristics among football players are widely reviewed and well reported in football literature [Gil, Gil, Ruiz, Irazusta, &Irazusta, (2007); McIntyre, & Hall, (2005); McIntyre, (2005); Muniroglu, &Koz, (2006); Pyne, Gardner, Sheehan, & Hopkins, (2006)] but there is a lack of data pertaining physical and physiological profiles among UiTM Pahang football players.

Fitness for football really is concerned with body composition among the players and define it as excess adipose tissue that give an unnecessary weight in activities where the body mass must be lifted repeatedly against gravity. Several studies conducted found that the availability of changes in body fat during the whole season consists of training, competition and pause. For instance, Ostojic, (2003) found that alterations in body fat have only been investigated at the start and end of the competitive season.Excess body fat makes the body move constantly against gravity and it is an unnecessary load for soccer players.In supporting the notion, Muniroglu, &Koz, (2006) reaffirmed that although there have been several studies examined the seasonal changes in the body composition of elite sportsmen; there are not enough studies on the effects of a pre-season preparation training period on the physical and physiological properties of soccer players particularly with regards to body composition.

Researchers have typically attempted to develop player's physical and physiological profiles in relations to their positions in the team. Four main roles in the team (midfielder, defender, striker and goalkeeper) could be different in term of physical as we familiar with that goalkeeper are taller, heavier and significantly higher BMI than other in FIFA World Cup (2002 and 2006). Meanwhile, Wong, P., Chamari, K., Dellal, A., &Wisløf, U. (2009) insisted that midfielder were shorter and lighter in the team. Based on the physical differences that related to the positions, it suggests the selection of UiTM Pahang football players must be based

on the anthropometrical advantage and ideal body composition. However, this suggestion is an early perception to be accepted because of the previous studies investigating the positional differences in physiological performance are limited and the result have been inconsistent (Wong et. al, 2009). Hence, an important selection aspect that may need to be considered in the immediate future is the identification and assignment of players to specific playing positions based on their physical fitness and physiological characteristics.

Methods

Fifteen male football players participated in this study, which was conducted during the competitive season in Liga IPT 2012. These players were selected for UiTM Pahang football team from three main positions in the team that competing in Division 3 level before been promoted to the Division 2 for next season. Most of the players had at least 3 years of training experience and must be a student of UiTM Pahang disregard the year of study. Players were requested to read all the terms stated in the Consent Form, and upon agreement, were required to sign this form.Study approval made by the team management.

A day of data collection was provided in this study. In this process, anthropometric data recorded were height and weight measurements of the body, using standardized equipment and procedures. Participants' height was measured by using a stadiometer. Determination of body weight was conducted using a portable metric scale, and to determine body fat percentage, body fat analyzer (OMRON-HBF 200) is used.
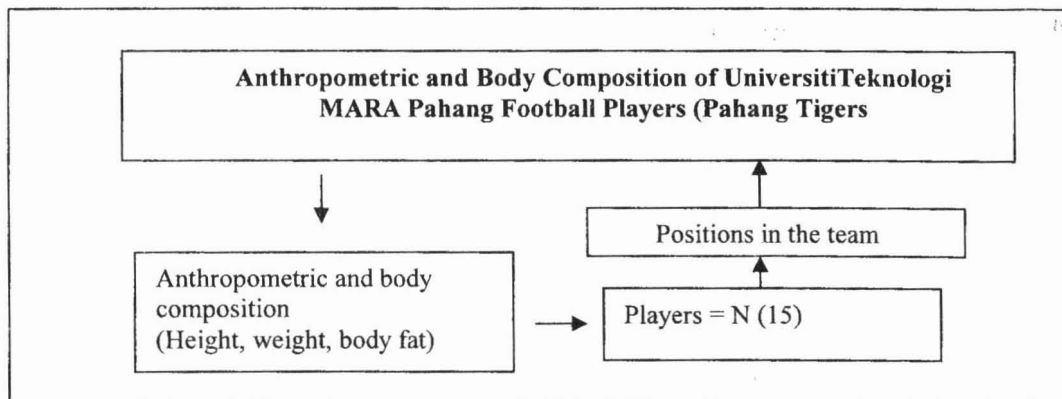

Figure 1: Framework of the study

For analytical purposes, descriptive statistics including means and standard deviations were used to analyze data from the test scores. Hence, these data analysis generally could be reported as a main comparison for different anthropometric and body composition between players' playing position in the team. A one-way analysis of variance (ANOVA) was used to determine mean differences among the forwards, midfielders and defenders in terms of anthropometric and body composition. For all comparison purposes, the significance level was predetermined at 95% level.

Results

The present study examined selected physical fitness parameter of 15 university male football players (n= 15) of three main playing positions. These parameters include: anthropometric and body composition. Table 1 shows the data of selected physical characteristics of subjects involved in this study. Subjects mean age was 19.6 ($\pm$ .63) years. The mean body weight and height ($\pm$ SD) were 59.3 ($\pm$ 5.92) kg and 170.8 ($\pm$ 3.98) cm respectively.

	N	Mean	Std. Deviation (SD)
Age (years)	15	19.64	0.63
Height (cm)	15	170.79	3.98
Weight (cm)	15	59.31	5.92

Table 1: Physical characteristics of UiTM football players

Body composition is an important aspect of fitness and can be assessed from anthropometric measures. A standard anthropometrical analysis during a physical fitness assessment would involve determining the height (in meter), body weight (in kg), and body fat percentage of an individual or athlete (in %).

	N	Mean	Std. Deviation (SD)
Striker	3	13.80	3.80
Midfielder	6	16.18	2.19
Defender	6	15.66	2.65

Table 2: Body fat percentage based on three different playing positions
inUiTM Pahang football team

Table 2 presented the descriptive statistics for differences in the body fat percentage based on three playing positions in football. Mean ($\pm$SD) Body fat percentage for defender is 15.66 (2.65), followed by mean of midfielder 16.18 (2.19) and 13.8 (3.81) for the striker.
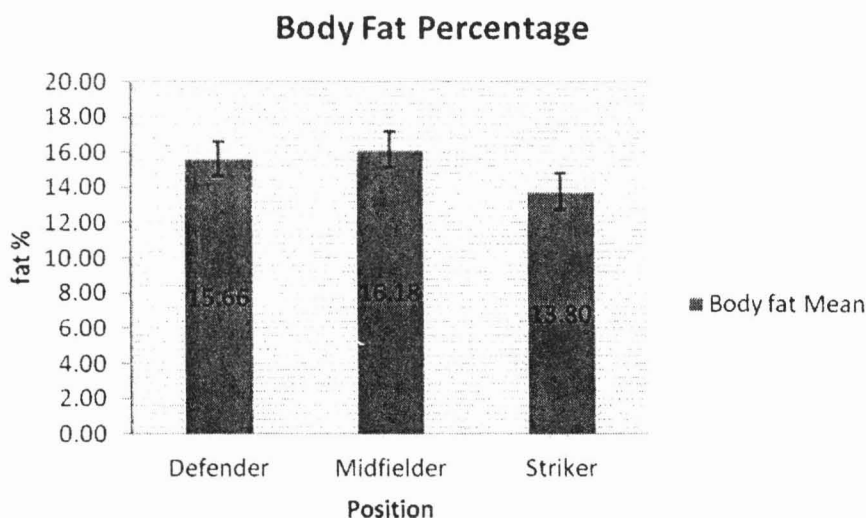

Figure 2: Means of body fat percentage

A one-way ANOVA was conducted for the purpose of comparing body fat percentage mean among the three difference playing positions in soccer. Table 3 showed the results of the one-way ANOVA.

	Sum of Squares	df	Mean Square	F	Sig
Between Groups	13.097	2	6.548	.923	.424
Within Groups	85.117	12	7.093		
Total	98.213	14			

Table 3: ANOVA of body fat percentage

Result in Table 3 did not demonstrate significant difference [df (2, 12) = .923, p = 0.424)] in body fat percentage between different positions of play in soccer.

Discussion

This study attempted to report possible differences of body composition and selected skill-related fitness (i.e. speed and agility) between three main positions in UiTM Pahang football team. In general, the finding demonstrated midfielder has higher body fat percentage but did not achieve statistical significance. Mean percentage of body fat range between 13.8 and 16.2%. The figure previously reported for percentage body fat range between 9.8 to 10.7% for a number reported in full time football players at clubs and international level. (McIntyre, 2005). Thus, this finding on body composition is consistent with body composition studies which not reported the difference between positions. (McIntyre and Hall, 2005). However, there is existed finding reported that defensive players in higher level differentiate in terms of anthropometric measures (i.e. height and mass) from the amateur. (le Gall, F., Carling, C., Williams, M., Reilly, T. 2010). This result suggests that physical characteristics did not really contribute in position selection. However, future study may include other fitness variables to predict performance achievement within three positions.

Conclusion

Players in this study were categorized into three main positions, defender, midfielder and striker. Physical characteristics and body composition were measured to find the difference between these positions. Body fat percentage was reported higher among the midfielder who covered more distance during football match. However, there is no significance difference in body fat percentage between positions. In addition, criteria to select players position least important to focus on their physical characteristics. Such an example, defender and striker must get from the taller players subject to team tactical and criterion position selection by coach whereas midfielders are generally faster, more agile and have greater endurance. Suggested by Bloomfield, J., Remco, P., & O'Donoghue, P. (2007), these differences would indicate that players in different positions could benefit from specific conditioning programs.

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