

# Anthropometric Profile of UPSI Athletes During Masum 2018

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**Abstract:** This study aimed to determine the anthropometrics of athletes representing Universiti Pendidikan Sultan Idris (UPSI) during the Malaysian Inter-varsity Sports (MASUM) tournament, 2018. In this study, 50 athletes consisted of 15 hockey players, 12 netball players, 13 volleyball players and 10 volleyball players were recruited as participants. Percentage of body fat was measured using formula by Jackson, Pollock and Ward (1980) while somatotype were determine using the scale by Heath and Carter. Data were analyzed using descriptive statistics and Pearson correlation. The results of the anthropometric profile indicate that almost all teams have an endo-meso (more muscular) body, but the results of the relationship showed that significant relationship between the anthropometric profile and the performance were only found in the bowling team,  $r = 0.13$ ,  $p = 0.14$ ,  $p < 0.05$ . For hockey, netball, and volleyball teams did not show significant relationship ( $r = 0.15$ ,  $p = 0.74$ ,  $p > 0.05$ ), ( $r = 0.12$ ,  $r = 0.64$ ,  $p > 0.05$ ), ( $r = 10$ ,  $p = 0.71$ ,  $p > 0.05$ ) respectively. In conclusion, the overall anthropometric profile cannot be indicated as determinant of a team's performance at the MASUM 2018 tournament.

**Index Terms:** mesomorph, ectomorph, endomorph

## I. INTRODUCTION

Measurements of anthropometrics has widely been used as it can help a coach or educator to evaluate an athlete's abilities and also design an appropriate training program based on the athlete's own abilities. The study on anthropometrics has evolved from not only taking individuals' height and weight, but also looked into somatotypes and the architecture of muscles [1-4]. According to Hubal et al. [5], theoretically, exercise can increase muscle size. Physical fitness is important for coaches to design appropriate training programs to improve athlete performance. In addition, study [6] has shown that anthropometric features also influence current performance in sports such as long-distance swimming events in open water. Physical characteristics and body composition have been recognized as the basis for excellence in athlete performance [7, 8]. The scope of this study is focused on the anthropometric profile (weight, height and percentage of body fat) of athletes, the type of somatotype for each team sport (ectomorph, mesomorph and endomorph),

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performance and team achievement among athletes participating in MASUM tournament.

Anthropometry involves measuring the size, shape and body parts of a human body. It is also the profile information of athletes in different sports. Among the anthropometric components measured are height, weight, diameter and bone length, muscle circumference and skin folds. In addition, anthropometry is also frequently used in many sports to identify new talent and the suitability of these athletes in specific sports. Practically, it is believed that several coaches give less priority to look at anthropometric status and how to optimize it.

The objective of this study was to determine the anthropometric profiles of UPSI athletes and how it related to the performance during MASUM 2018.

## II. METHODOLOGY

### A. Participants

Fifty athletes that represent UPSI during MASUM tournament. In order to achieve our objectives, anthropometric profile were tested on its relationship with the performance during MASUM 2018 tournament. The performance achieved were as follows; i) Handball team – runner up, ii) Volleyball team – fourth place, iii) netball team – runner up and iv) Hockey – group stage.

### B. Procedure

All participants underwent four anthropometric measurements (i.e. height, weight, body fat percentage and somatotype). All the measurement were done entirely by the same researchers, which are the certified International Society of Kinanthropometrist level 1. These tests were conducted at the same time, according to the available schedule for each team during the MASUM tournament. The researchers have requested the cooperation and permission of the managers and coaches of each team to carry out these tests. Prior to the subject being tested, the researchers explained to the managers and coaches that the four tests could not be performed after the subjects underwent training, matches and after meals. It is because all these factors can cause hyperaemia (increase in blood flow) and contribute to increased skin thickness. Prior to the tests, participants filled in a voluntary admission form to participate in this study and the personal details required.

The classification of body types in this study is based on the Heath-Carter scale system [9] or the HSC acronym for the purpose of determining the type of somatotype among individuals studied and according to three types of human bodies, endomorphs, mesomorphs and ectomorphs.

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This HSC is popular and widely used by researchers especially to determine the type of somatotype among athletes involved in sports. Endomorphs are individuals with body shapes that are round, less muscular and have large feet and hands. Mesomorphs are individuals who are categorized as having muscular, large-body, rectangular bodies with upright, and muscular feet and hands. Ectomorphs are individuals who have a thin (less muscular) body type, small and tall, with long legs and arms.

### III. RESULTS

The results of the anthropometric profile for the hockey team showed that most players have a mesomorphic-ectomorphic body (1-2-2.3 + 0.2-1.1-1) (more muscular), for the average volleyball player is ectomorph-mesomorphic (0.4-2 -2.6 + 0.2-1-1) (thinner), the mean body of a bowler is (1-3-1) mesomorphic which is more muscular, while the mean body of netball players (1-2-2.4 + 0.2- 1-1.2) are ectomorphs (thinner). Correlation analysis showed that the anthropometric profile of the handball players are significantly correlated with the performance achieved during the MASUM 2018 tournament,  $r = 0.13$ ,  $p = 0.14$ ,  $p < 0.05$ . However, no significant relationship existed between team performance during the MASUM 2018 tournament and the anthropometric profile of hockey, volleyball and netball teams ( $r = 0.15$ ,  $p = 0.74$ ,  $p > 0.05$ ), ( $r = 0.12$ ,  $p = 0.64$ ,  $p > 0.05$ ), ( $r = 0.10$ ,  $p = 0.71$ ,  $p > 0.05$ ) respectively.

### IV. CONCLUSIONS

As the result showed significant correlation only exist among the handball players, it can be concluded that the overall anthropometric profile cannot be indicated as determinant of a team's performance at the MASUM 2018 tournament. More studies were needed to be conducted among other level of tournament and need to look into age and gender factors.

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