ANTHROPOMETRICAL AND PHYSIOLOGICAL PROFILE OF MALAYSIAN UNIVERSITY SWIMMERS

MOHD NAWAWI BIN YASIN

SCHOOL OF HEALTH SCIENCES

UNIVERSITY SAINS MALAYSIA

2013

ANTHROPOMETRICAL AND PHYSIOLOGICAL PROFILE OF MALAYSIAN UNIVERSITY SWIMMERS

By

MOHD NAWAWI BIN YASIN

Dissertation submitted in partial fulfillment

of the requirements for the degree of Bachelor of Health Science

(Exercise and Sport Science)

JUNE 2013

ACKNOWLEDGEMENT

In the name of Allah, the Most Gracious and the Most Merciful.

Alhamdulillah, all praise to Allah the one above all of us, for the strengths and His blessing in completing this thesis and for answering my prayers for giving me the strength to plod on despite my constitution wanting to give up. First and foremost, special appreciation goes to my supervisor, Associate Professor (Dr.) Oleksandr Krasilschikov, for his supervision and constant support. His invaluable help of constructive comments and suggestions throughout the thesis works have contributed to the success of this research. Also, I am thankful to my co-supervisor, Associate Professor (Dr.) Mohammed Saat Ismail.

This dissertation would not have been possible without the guidance and the help of several individuals. My utmost gratitude goes to the organizing comittee of Majlis Sukan Universiti Malaysia (MASUM) for allowing me to do the research and also to all swimmers from Universiti Sains Malaysia (USM), Universiti Teknologi Mara (UiTM), Universiti Malaysia Sabah (UMS), University of Malaya (UM) University Putra Malaysia (UPM) and Universiti Utara Malaysia (UUM), for their participation in the research.

Not forgotten, my deepest gratitude to my beloved parents; Mr. Yasin bin Hassan and Mrs. Halimah@Safiah bt. Mustapha@Setapa for their endless love, prayers and encouragement for me to persue my degree.

I would like to extend my thanks to Dr. Hairul Anuar Hashim from Sports Science Unit, PPSP to teach me about statistical data analysis. Thanks to my other colleagues for their support, encouragement, advice and guidance to finish this study.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

PROFAIL ANTHROPOMETRI DAN PHYSIOLOGIKAL DI KALANGAN PERENANG PERINGKAT UNIVERSITI DI MALAYSIA

ABSTRAK

Renang merupakan salah satu sukan berprestij dalam Olimpik. Dalam sukan air, acara renang yang terdiri dari terjunan, polo air dan renang berirama merupakan salah satu penyumbang pingat terbesar dalam Sukan Olimpik. Acara renang termasuk acara bebas, kuak dada, kuak lentang, kuak kupu-kupu, 'medleys' dan 'relays' menyediakan jumlah pingat sebanyak 34 set pingat dalam acara Olimpik. Dalam dua dekad terakhir ini, renang menjadi satu acara yang lebih menjurus ke arah saintifik serta lebih canggih. Dengan kepakaran saintis yang ada dari semua bidang pengetahuan dapat membantu dalam meningkatkan prestasi renang. Karakteristik fizikal perenang telah dikaji dalam menentukan karakteristik perenang pecut dan ketahanan yang berjaya (Smith et al., 2002) dalam menilai kepentingan relative karakteristik yang spesifik dalam prestasi. Walaupun telah banyak penyelidikan telah dilakukan dalam sukan renang, setakat ini masih tiada kajian yang menganalisa profail antropometri dan fisiologikal perenang Malaysia di peringkat universiti. Dengan ini, Pusat Renang dan Kecemerlangan MOHE-USM membuat inisiatif bagi mewujudkan nilai norma dan standard dalam antropometri dan fisiologikal perenang Malaysia di peringkat universiti. Tujuan kajian ini dijalankan untuk mendapatkan ukuran-ukuran anthropometrik dan fisiologikal, menghuraikan dan membandingkan profil anthropometrikal lelaki dan wanita , dan juga menganalisis perbezaan di antara perenang dalam acara 'sprint' dan 'middle and long' antara jantina perenang elit Malaysia di peringkat universiti. Kajian ini terdiri daripada 11 lelaki dan 14 perempuan yang terlibat dalam Karnival Sukan Majlis Sukan Universiti Malaysia (MASUM) pada 2011. Data dipungut melalui perincian peribadi dan ukuran anthrophometrikal iaitu ketinggian, berat badan, BMI, peratusan lemak badan, jengkal lengan, ketinggian duduk, kelebaran bahu, kelebaran pelvis, panjang kaki dan juga kekuatan

cengkaman tangan kanan dan tangan kiri. Statistik diskriptif mempamerkan min dan sisihan piawai melalui kedua-dua jantina, jenis jarak dalam acara renang untuk kedua-dua jantina. Nilai min bagi kedua-dua jantina untuk setiap variabel adalah ketinggian (171.16 ± 4.58) , berat (65.13± 7.95), BMI, jengkal lengan, ketinggian duduk (88.74 ± 1.83), panjang kaki (25.03 ± 1.26), kelebaran bahu (41.15± 1.78), cengkaman tangan kanan (40.88 ± 7.18) dan cengkaman tangan kiri (39.06 ± 9.10), kesemua nilai menunjukkan lelaki lebih tinggi terhadap kesemua variabel kecuali pada peratusan lemak (24.04 ± 2.77) di mana perempuan lebih tinggi dan kelebaran pelvis telah menunjukkan hampir sama antara jantina. Terdapat perbezaan nilai antara 'sprint' dan 'middle and long' di kalangan lelaki, tetapi tiada satu pun yang menunjukkan signifikasi yang berbeza secara statistik. Terdapat perbezaan nilai antara 'sprint' dan 'middle+long' antara perenang wanita, tetapi tiada satu pun mempunyai signifikasi yang berbeza secara statistik.

ANTHROPOMETRICAL AND PHYSIOLOGICAL PROFILE OF MALAYSIAN UNIVERSITY SWIMMERS

ABSTRACT

Swimming belongs to one of the most prestigious Olympic sports. Belonging to Aquatics, Swimming along with Diving, Water Polo and Synchronized Swimming, has one of the largest medal hauls at stake in the Olympic Games. Swimming events include freestyle, breaststroke, backstroke and butterfly, medleys and relays altogether counting a massive 34 sets of medals in the current Olympics programme. In the last two decades swimming turned into highly scientific and sophisticated sport, with scientists from all fields of knowledge contributing to the improvement of swimming performance. Swimmers' physical characteristics have been examined to determine the characteristics of successful sprint and endurance swimmers (Smith et al., 2002) in order to assess the relative importance of specific characteristics to performance. Although research into the anthropometry and physiology of swimmers is substantial, no studies to date have been found analyzing anthropometrical and physiological profile of Malaysian University swimmers. With all this in mind, MOHE-USM Swimming Centre of Excellence initiated profiling of Malaysian University level swimmers and development of locally applicable norms and standards. The purpose in this study was to describe and compare anthropometrical profiles of male and female University swimmers, and also analyze the differences between sprinters and middle and long distance swimmers within the genders of Malaysian elite university swimmers. A convenience sample subjects were 11 males and 14 females from among three top finishers in the events of Karnival Sukan Majlis Sukan Universiti Malaysia (MASUM) in 2011. Data was collected through personal particulars sheet and anthropometrical measurements including: height, weight, arms span, sitting height, shoulder width, pelvic width and foot length. Among physiological variables were: BMI, body fat percentage, grip strength for right and left hand. Descriptive statistics

was performed to display means and standard deviation through both genders, type of event in respect to swimming distance for both genders. The mean values of variables in height (171.15 ± 4.58) , weight (65.13± 7.95) , arm span (177.10± 8.42), sitting height (88.74 ± 1.83), foot length (25.03 ± 1.26), shoulder width (41.15± 1.78), right hand grip (40.88 ± 7.18) and left hand grip (39.06 ± 9.10), in males were significantly higher than in females except in fat percentage (24.04 ± 2.77) where females were significantly higher in values than males, whereas in BMI, and in pelvic width results were almost same between genders. There are certain differences observed between sprint and middle & long distance among males, but none of them occured to be statistically significant. Certain differences were observed between sprint and middle & long distance swimmers in female section, but none of them happened to be statistically significant.