

UNIVERSITI TEKNOLOGI MARA

**RELATIONSHIP BETWEEN HANDGRIP
STRENGTH ON MUSCULAR STRENGTH AND
POWER AMONG RACQUET SPORT ATHLETES**

MOHD 'AIZAT ABDUL RAZZAQ BIN MOHAMED

Dissertation submitted in partial fulfillment of the requirements
for the degree of

Master of Sports Science

Faculty of Sports Science and Recreation

December 2013

AUTHOR'S DECLARATION

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA (UiTM). It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This dissertation has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Postgraduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

Name of Student : Mohd 'Aizat Abdul Razzaq bin Mohamed
Student I.D. No : 2011802424
Programme : Master of Sports Science
Faculty : Sports Science and Recreation
Dissertation Title : Relationship between Handgrip Strength on Muscular
Strength and Power among Racquet Sport Athletes

Signature of Student :
Date : December 2013

ABSTRACT

Handgrip strength has been popularly used to predict overall body strength in the general and athletic populations. The purposes of this study were to compare handgrip strength between both hands (dominant and non-dominant hand) as well as selected arm position (flexion and extension). This study also explores the relationship between handgrip strength on muscular strength and power among racquet sport athletes. Ninety male racquet athletes aged 18 to 26 years old from Public Institutes of Higher Learning (IPTA) in Klang Valley area was participated in this study (tennis=30, badminton=30, and squash=30). Result of this study revealed that there was a significant difference between dominant and non-dominant hand in handgrip strength among all three racquet sport athletes ($p < 0.05$). The tennis athletes recorded the highest handgrip strength score for both the dominant and non-dominant hand. A significant difference was also reported between extension and flexion arm position among racquet sport athletes ($p < 0.05$) except for badminton athletes ($p > 0.05$). The tennis and squash athletes showed more superior handgrip strength score in the extension arm position. However, the badminton athletes showed superior handgrip strength score in the flexion arm position. Moderate linear correlation was recorded between handgrip strength with upper body strength among all the three racquet sport athletes, with ($r = 0.374 - 0.529$). Result of the study also showed the significant correlation was recorded between handgrip strength with lower body strength and handgrip strength with lower body power among three racquet sport athletes. The badminton athletes showed highest correlation among the three racquet sport athletes ($r = 0.543$; $r = 0.604$). However, lower body strength with lower body power stated that almost negligible relationship among three racquet sport athletes. Based upon the findings of this study, handgrip strength can be used as a predictor for upper body strength, lower body strength and lower body power among racquet sport athletes.

TABLE OF CONTENTS

	Page
AUTHOR'S DECLARATION	ii
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
TABLE OF CONTENTS	v
LISTS OF TABLES	ix
LIST OF FIGURES	x

CHAPTER 1: INTRODUCTION

1.1	Background of the Study	1
1.2	Problem Statement	4
1.3	Objectives of the Study	4
1.4	Hypotheses of the Study	5
1.5	Significance of the Study	6
1.6	Delimitations of the Study	7
1.7	Limitations of the Study	7
1.8	Assumption of the Study	7
1.9	Operational Terms	8
	1.9.1 Handgrip Strength	8
	1.9.2 Muscular Strength	8
	1.9.3 Muscular Power	8
	1.9.4 Racquet Sport	8

CHAPTER 2: LITERATURE REVIEW

2.1	Handgrip Strength	9
2.2	Dominant and Non-dominant Hand Handgrip Strength	10
2.3	Hand Position and Handgrip Strength	11
2.4	Prediction of Maximal Strength	12
2.5	Power	13
2.6	Handgrip Strength and Racquet Sport	14
2.7	Conclusion	16

CHAPTER 3: METHODOLOGY

3.1	Introduction	17
3.2	Research Design	17
3.3	Conceptual Framework	18
3.4	Sampling Technique	18
3.5	Instrumentations	20
	3.5.1 Handgrip Dynamometer	20
	3.5.2 45° Incline Bench Press	21
	3.5.3 Free Standing Rack	22
	3.5.4 Vertec	23
3.6	Data Collection Procedures	24
3.7	Data Analysis	25

CHAPTER 4: RESULTS

4.1	Introduction	28
4.2	Normal Distribution	28
4.3	Descriptive Statistical Results	31
4.4	Descriptive Statistics Result of Dependent Variables	32
4.5	Difference Handgrip Strength between the Dominant and Non-Dominant Hand	34