

**UNIVERSITI TEKNOLOGI MARA**

**CLINICAL OUTCOME ON  
CARDIOVASCULAR RESPONSES  
WITH DIFFERENT EXERCISE  
CHARACTERISTICS IN  
HYPERTENSIVE PATIENTS**

**NOOR FATIHAH BINTI ILIAS**

Thesis submitted in fulfillment  
of the requirements for the degree of  
**Master of Science**

**Faculty of Sport Science & Recreation**

February 2017

## ABSTRACT

Presently, exercise training has been recommended as a useful treatment for management hypertension. It has been speculate, different exercise intensities may results different effect on hypertension. The purpose of the present study was to address the effect of different exercise intensities and optimal exercise volume on cardiovascular responses in management hypertensive patients. A systematic review and meta-analysis was conducted using MEDLINE search (1985 to April 30<sup>th</sup>, 2016), eighteen studies were included, involving 22 intervention groups; 9 (41%) were moderate intensity, 13 (59%) were vigorous/high intensity, providing a total of 655 were exercise and 352 were control, totaling 1017 hypertensive patients. Results were analyzed using Revman version 5.3 software. Result suggests that possibly vigorous/high intensity and higher energy expenditure may elicit greater improvement in cardiovascular responses in management hypertensive patients. This meta-analysis found vigorous/high exercise intensity is more effective, therefore, a randomized controlled trial was conducted to compare between high intensity interval training (HIIT) and moderate intensity continuous training (MICT) in management hypertensive patients. A total 9 patients (age =  $40.29 \pm 5.61$ ; weight =  $79.80 \pm 11.7$ ; height =  $159.14 \pm 4.74$ ; year of hypertension =  $4.14 \pm 2.80$ ) were randomly assigned into HIIT (n = 4) at > 85% heart rate reserved (HRR) and MICT (n = 5) at 40% to 60% HRR. A mix between-within ANOVA was used to analyze the changes blood pressure between groups. Study found blood pressure response was greater after HIIT than MICT. Possibly HIIT is superior in management of hypertensive patients.

**Keywords:** *High intensity interval training, moderate intensity continuous training, systolic blood pressure, diastolic blood pressure, mean arterial pressure.*

## ACKNOWLEDGEMENTS

Assalamualaikum W.B.T and Salam Sejahtera,

First and foremost, I would like to express my deep gratitude and great appreciation to my principle supervisor Dr. Hashbullah Bin Ismail for his continuous support, patient guidance, motivation, constructive suggestions, and immense knowledge throughout my Master studies. I could not have imagined having a mentor and also a friendly advisor for my research, and this thesis would not have been possible without his willingness or generous time.

I am particularly grateful for the assistance given by my co-supervisor, Dr. Mazlifah Binti Omar for her invaluable support and friendship on both personal level and academic. Her assistance for collecting data and writing my research paper is greatly appreciated. Advice and academic support given by my co-supervisor Dr. Kee Kang Mea has been a great help in strategizing, planning and conducting my research for my Master.

My special thanks are extended to Mr. Saridan Bin Sairin and Madam Nurlaila Naduri for his/her technical support during my clinical practice in the laboratory and cardiology clinic. I wish to acknowledge the help provided by the staff of the Faculty of Sport Science and Recreation UiTM Shah Alam for academic and administration support. Special thanks to my parents Ilias Bin Jusoh and and family members who have motivated and supported me throughout my life. Not to forget, to all my friends those have helped me directly or indirectly in completed my Master journey.

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# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 INTRODUCTION OF STUDY**

Hypertension is a chronic elevation of blood pressure against the wall of blood vessel (American Heart Association, 2014). Long term exposure to high blood pressure may cause end-organ damage and finally may lead to cardiovascular disease. Interestingly, exercise training has been shown to improve functional capacity and being recommended by several guidelines as a useful treatment for management hypertension. However, it has been speculated different exercise characteristic may results different effect on hypertension. Therefore, the body of work has been design to address and explore some important issue in improving the prognosis of hypertension and attempt to establish the optimal exercise characteristic which should individually tailored to hypertensive patients. This work seems to add the evidence base exercise prescription in management hypertensive patients. This chapter will discuss on background of study, problem statement, purpose of study, research questions, research hypotheses, scope of study and significant of study.

### **1.2 BACKGROUND OF STUDY**

Hypertension is a major global health problem and public health challenges that demanding vast proportion view from health care possessions directly and indirectly to reduce the risk of serious problem. It is one of the most common serious medical problems, in the long-term; it may cause end-organ damage and results in increased the risk of morbidity and mortality. According to World Health Organization (2015), it was estimated around seventeen millions of death yearly due to complication of cardiovascular disease (CVD) and one third from the total death is due to complication of hypertension. In addition, the number of hypertensive patients worldwide rise from 600 million in year 1980 to 1 billion in year 2008, at which approximately 40% of adults aged 25 and above had been diagnose with hypertension