



**ERGONOMICS PARTICIPATORY OPPORTUNITIES TO
DETERMINE A COMFORTABLE CAR SEAT FOR MALAYSIAN
FEMALE CAR DRIVERS**

MOHD HAIRIL B. OTHAMAN

I.D: 2002612989

**A thesis submitted in partial fulfillment of the requirement for award of Bachelor
Engineering (Hons) Mechanical"**

**Faculty of Mechanical Engineering
MARA University of Technology (UiTM)**

MEI 2006

ABSTRACT

The development of comfortable seats is an important issue in the automotive industry. The purpose of seat is to provide stable bodily support in a posture that comforts over a period of time, physiologically satisfactory and appropriate to the task or activity in question.

In order to match the seat to the user, anthropometric factors are the major importance in designing car seat. At such, it should accommodate the entire population by using appropriate parameters according to their anthropometric dimensions. Seat reference point, seat height, seat width, lumbar support and adjustability range of seat should also be considered as part and partial of designing this car seat.

This study uses qualitative method such as observation and measurement to collect data. The relevant anthropometric data was used to propose the recommended car seat design based on Malaysian size; nevertheless it will be compared to analyze the most suitable seat for Malaysian populations.

It is hoped that the finding of this anthropometric data will be used in designing car seat and increasing the comfort and alertness of the drivers, also help reducing fatigue while driving a car on the road.

ACKNOWLEDGMENT

First and foremost, I would like to express my greatest gratitude to Allah the Almighty because of His permission, this thesis has been successfully accomplished and completed.

I would like to express my appreciation and thanks to those who have been helping me in carrying out this study and writing of this thesis whereupon people have contributed their time, energy, ideas and suggestions for completing this thesis.

Furthermore, a conveyance of appreciation to my advisor, Assoc. Prof Ir. Dr. Abdul Rahman Omar for his encouragement, time and cooperation towards the completion of this thesis and En Isa for his time, moral support, guidance, and invaluable advice.

Last but not least, a special thanks to all people who directly involved in collecting data for measurement body especially Nurul, Noraziela who contributed so much in this field study.

Among the above people mentioned, also those indirectly contributed their help and moral supports, may all their kindness be blessed by Allah.

Thank you very much.

TABLE OF CONTENTS

CONTENTS	Page
ABSTRACT	ii
ACKNOWLEDGEMENTS	iii
TABLE OF CONTENTS	iv
LIST OF TABLE	viii
LIST OF FIGURES	x
LIST OF ABBREVIATIONS	xi
CHAPTER	
1. INTRODUCTION	1
1.1 Introduction of anthropometry data	1
1.2 Background of the problem	2
1.3 Objectives	3
1.4 Scope	3
1.5 Significant of the study	4
2. LITERATURE REVIEW	5
2.1 Introduction	5

2.2	Current status of research	6
2.3	Anthropometry	6
2.4	Anthropometrics aspects of seat design	7
2.4.1	Seat height	7
2.4.1.1	The important aspects of seat height	8
2.4.2	Seat depth	8
2.4.2.1	The important aspects of seat depth	8
2.4.3	Seat width	8
2.4.3.1	The important aspects of seat width	9
2.4.4	Backrest dimension	9
2.4.4.1	The important aspects of backrest dimensions	10
2.4.5	Armrest	10
2.4.5.1	The important aspects of armrests	10
3.	METHODOLOGY	11
3.1	Introduction	11
3.2	Seat measurement	12
3.2.1	Design parameters of car seat	12
3.3	Anthropometry data	14
3.3.1	Measurement	14
3.4	Sample size	17
3.5	Type of sample	17
3.6	Experimental tool	17
3.7	Software	18
3.7.1	RULA analysis	18
4.	RESULTS AND DISCUSSION	19
4.1	Introduction	19
4.2	Analysis and Interpretation of Anthropometry Data	20