



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

**A STUDY OF WORKING POSTURE AND PSYCHOPHYSICAL
EXPERIENCE IN STAMPING DIE COMPANY**

This report submitted in accordance with requirement of the Universiti Teknikal
Malaysia Melaka (UTeM) for the Bachelor Degree of Manufacturing Engineering
(Management) (Hons.)

by

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ABSTRAK

Pekerja dalam syarikat pembuatan melaksanakan pelbagai jenis postur bekerja yang dilaksanakan ketika aktiviti pengendalian bahan secara manual (MMH). Kajian ini adalah mengenai postur kerja dan pengalaman psikofizikal dalam syarikat 'stamping die' iaitu Miyazu Malaysia Sdn Bhd. Tujuan kajian ini adalah untuk menyiasat jenis postur yang memberikan pengalaman yang tidak selesa kepada pekerja-pekerja sementara melakukan aktiviti pengendalian bahan secara manual, untuk menganalisis postur kerja dan faktor-faktor psikofizikal kalangan pekerja ketika melaksanakan aktiviti pengendalian manual dan dengan itu untuk mencadangkan penambahbaikan di tempat kerja dan postur untuk mengurangkan kemungkinan untuk mendapatkan gangguan muskuloskeletal (MSDs). Kaedah yang digunakan untuk menganalisis keadaan postur kerja adalah dengan Rula analysis dalam perisian CATIA, sementara itu Microsoft Office Excel digunakan untuk menganalisis soal kaji selidik. Pekerja-pekerja yang kebanyakannya mengalami kesakitan dan ketidakselesaian dari tugas pemasangan dan mengendalikan mesin. Bahagian-bahagian badan yang lebih cenderung untuk merasa sakit dan tidak selesa adalah otot, leher, badan, kaki dan tangan yang dikenal pasti untuk menjadi sebahagian daripada sistem muskuloskeletal. Bagi pengalaman psikofizikal, pekerja pasti akan terjejas secara psikofizikal selepas tamat kerja-kerja mereka dengan mengalami keletihan otot, dan juga kehilangan fokus dan membuat kesilapan semasa bekerja. Cadangan untuk penambahbaikan kebanyakannya berasal dari menyesuaikan had sudut atau sudut pilihan dan mengurangkan tempoh kerja.

ABSTRACT

Workers in manufacturing companies are performing different types of working postures while undertaken manual material handling (MMH) activities. This study is regarding the working posture and psychophysical experience in a stamping die company, which is Miyazu Malaysia Sdn Bhd. The aim of this study is to investigate types of working postures which give discomfort experience to workers while undertaken manual handling activities, to analyze working postures and psychophysical factors among workers undertaken manual handling activities and hence to suggest improvement on workplace and posture to reduce the possibility to get musculoskeletal disorders (MSDs). The method used to analyze the condition of the working posture is by RULA analysis in CATIA software, meanwhile Microsoft Office Excel is used to analyze the questionnaire. The workers are mostly experiencing pain and discomfort from the assembly task and try out task. The body parts that are more likely to feel pain and discomfort are muscles, neck, trunk, legs and arms which are identified to be part of musculoskeletal system. As for the psychophysical experience, the workers are identified to be affected psychophysically after finishing their work by experiencing muscle fatigue, and also losing focus and makes error while working. Suggestions for improvements are mostly derived from adjusting the angular limitation or preferred angles and reduce the duration of work.

DEDICATION

To my beloved parents and siblings.

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LIST OF ABBREVIATIONS, SYMBOLS AND NOMENCLATURE

ASOII	-	Annual Survey of Occupational Injuries
BLS	-	Bureau of Labor Statistic
BPSS	-	Body Parts Symptoms Survey
CCOSH	-	Canadian Centre for Occupational Health and Safety
D.I.R	-	Department of Industrial Relations
DLI	-	Department of Labor and Industries
EMG	-	Electromyography
EU	-	European Union
HSE	-	Health and Safety Executive
IR	-	Incident Rate
LBP	-	Low Back Pain
MMH	-	Manual Material Handling
MMSB	-	Miyazu Malaysia Sdn Bhd
MSDs	-	Musculoskeletal Disorders
MSI	-	Musculoskeletal Injuries
NIOSH	-	National Institute for Occupational Safety and Health
PPE	-	Personal Protective Equipment
RULA	-	Rapid Upper Limb Assessment
SOP	-	Standard Operating Procedure
U.S	-	United States
VIHA	-	Vancouver Island Health Authorities
WHO	-	World Health Organization
WMSDs	-	Work-related Musculoskeletal Disorders

CHAPTER 1

INTRODUCTION

This is a study about the working posture and psychophysical experience of workers in a stamping die company. This study will be focused on working postures and psychophysical experience of the workers. This chapter consists of introduction of the study, problem statement for the study, objectives of the study, scope of the study, importance of the study, report outline and conclusion for this chapter.

1.1 Background

The stamping die company selected for this study is Miyazu Malaysia Sdn Bhd, a company that specialized in manufacturing automotive parts. The content of this study is to determine whether the workers are performing a safe working posture or not. Other than that, this study plans to show how the working posture and psychophysical experience of workers in a stamping die company can affect their safety and health.

The observation for this study is done in the Tooling Plant in Miyazu Malaysia Sdn. Bhd. because manual handling task are performed by the workers at the plant. Hence, the workers were performing various types of working posture throughout their work. Working tasks that require manual repetitive actions may cause the risk of fatigue, discomfort and musculoskeletal disorders (MSDs).

Musculoskeletal disorders (MSDs) were recognized as the main health problem that is related with occupational factors especially working posture. Hence, this study will cover about how the working postures and psychophysical experience of workers at the Tooling Plant in Miyazu Malaysia Sdn Bhd.

1.2 Problem Statement

Workers in manufacturing industry are greatly exposed to unsafe working posture during Manual Material Handling (MMH). At Miyazu Malaysia Sdn Bhd, the workers in the Tooling Plant are doing their task manually which means without using the aid of machines or robots. Their tasks include stamping die, grinding, operating machines, assembling jigs, and polishing.

All these tasks require several working postures that may be harmful to their health if it is practiced for a long time. The top management of Miyazu Malaysia Sdn Bhd is worried about the hazard of practicing bad working postures to their workers' health. In the other hand, the declined health quality of the workers can affect their productivity and hence decreases the efficiency of the manufacturing operation.

So, based on the scenario of the working environment at Miyazu Malaysia Sdn Bhd, it is important to understand the effects of working posture practiced by the workers and their psychophysical experience while undertaken manual handling tasks and how it relate to the cause of Musculoskeletal disorders (MSDs). Other than that, it is also important to identify the types of working postures and psychophysical factors that can affect the workers' safety and health in the terms of ergonomic.

1.3 Objectives

- a) To investigate the types of working posture which give discomfort experience for workers while undertaken manual handling activities.
- b) To analyze the working postures and psychophysical factors among workers undertaken manual handling activities.
- c) To suggest improvement on workplace and posture to reduce the possibility to get Musculoskeletal disorders (MSDs).

1.4 Scope of Study

The scope of this study is in a stamping die company which is Miyazu Malaysia Sdn Bhd, a manufacturer of automotive parts. Miyazu Malaysia Sdn Bhd is located at Proton City, Tanjung Malim. This study will be constructed by observing the workers who undertaken manual material handling (MMH) activities in the Tooling Plant. The total manpower at this plant is 80 personnel including all the engineers and technicians.

The scope for this study includes the workers and operators that undertaken manual material handling (MMH) activities in the Tooling Plant. The scopes of the observations are the types of working postures that the workers perform during manual material handling (MMH) activities.

The boundaries of this study include the Musculoskeletal Disorders (MSDs), a work-related disease. The types of working postures that can be the risk factors that contributes to MSDs will be analyzed. Other than the working posture, the types or conditions of their workplace are also analyzed in order to determine whether it contributes to their unsafe working postures.

1.5 Importance of the Study

This study is important in order to identify the safe working postures that can be performed by the workers of Miyazu Malaysia Sdn Bhd without getting an injury or discomfort experience. The current working postures that they are experiencing during Manual Material Handling (MMH) activities are estimated to be hazardous to the workers. Other than that, it can also affect the efficiency of their work and thus affecting the productivity of the company.

The improvements that will be done should be able to solve the problems regarding the unsafe working postures experienced by the workers. Employers will be held responsible if the workers are experiencing injuries or illness because of the hazards from the workplace. The employers will need to compensate the workers and usually work-related disease can be severe. Other than have to spend money, the employers also need to bear the consequences of the declining efficiency of workers as a result from the unsafe working postures.

As for the employees, they will be having a hard time as the experience from working in the company can decline their quality of health and limited their ability to do routine work. It will also cost them a lot because suffering from MSDs will make them to go to hospital regularly because there is no certain treatment for curing MSDs. By solving the problems, it will benefit the employers and not forgetting the employees.

1.6 Report Outline

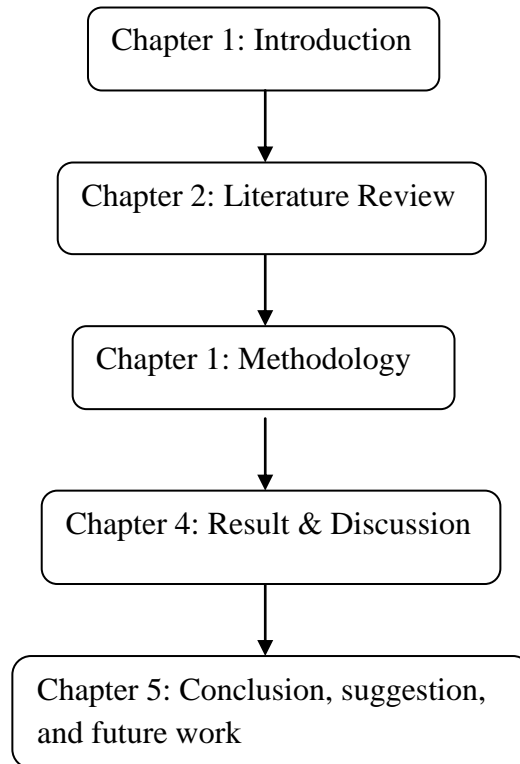


Figure 1.1: Report Outline Based on Chapters

Chapter 1 is the introduction of this study. The introduction part includes background of this study, problem statement, and scope of this study. In this chapter, it describes the study of working posture and psychophysical experience of workers in a stamping die company.

Chapter 2 is the literature review of this study. Literature review consists of all the studies, and research of published materials such as journals, thesis, and case studies which is related to this study. The contents are about risk factors, types of working postures, psychophysical factors, musculoskeletal disorders (MSDs), and previous researches regarding working postures and MSDs.

Chapter 3 is the methodology part. A process flow chart and gantt chart are described for a thorough view of the whole process of this study. The ways to collect the data and methods used to analyze the data are explained throughout this chapter. The company background for this study is also explained in this chapter.

Chapter 4 presents the development of the data collection by using the methods of observations, questionnaire, and interview. RULA method, CATIA software, and Microsoft Office Excel software are used to measure and analyze the data.

Chapter 5 is the part for summarizing the conclusions and suggestion for improvement. It is the most crucial part because from this, it can be concluded whether the objectives for this study have been achieved or not.

1.7 Conclusion

This chapter describes introduction of this study. It includes the background of the study, problem statement, objectives, and scope of this study. These are important to identify the limit and boundaries of this study for further investigation. The following chapter describes the literature review, which consists of the knowledge and information related in conducting this study.