

CHAPTER I INTRODUCTION

1.1. Research Background

A construction project is a collection of actions related to a building construction project. It includes essential work in civil engineering and architecture, but sometimes it also involves other fields, such as industrial, mechanical, electrical, and geotechnical engineering¹. Construction projects have three dimensions, namely unique, resource-intensive, and organized. The development project itself is a number of work tasks, both structural, architectural, MEP and other work that are certainly very risky, one of which is a work accident. The accident itself often occurs not entirely as a result of a person's factors, but can also be due to the situation of unergonomic work environment conditions².

Occupational safety and health in the construction field is a job that manages things that may affect workers at an extreme level or failure. Although occupational safety is very important in the construction industry, *stakeholders* often overlook occupational safety issues when projects are implemented. Some of the risk factors related to MSDs complaints in this study are individual factors, such as age, working period, and smoking habits, occupational factors, such as work attitude, work time, and workload, and environmental factors, such as temperature and noise. Occupational safety in the construction services industry is important, but it is often forgotten during project implementation³.

¹ Annisaa Dwiretnani, Wari Dony, and Febry Arianto Manalu, "Performance Analysis of Supervisory Consultants in the Implementation of Construction Projects," *Journal of Civronlit Unbari* 9, No. 1 (2024): 1, <https://doi.org/10.33087/Civronlit.V9i1.112>.

² Miliani Satiti Handayani, "Thesis on the Application of Ergonomics for K3 Architectural Work in the Main Market Development Project of Batu City, East Java" (Bali State Polytechnic, 2023).

³ Titik Yuwantri Lady Suratno, Luh Putu Ruliati, and Mustakim Sahdan, "Factors Associated with Musculoskeletal Disorders (MSDS) Complaints in Construction Workers of Pt. Housing Development in Manikin Dam," *Sehatmas: Scientific Journal of Public Health* 1, No. 4 (2022): 666–78, <https://doi.org/10.55123/Sehatmas.V1i4.970>.

Workers in the construction sector have a higher risk of developing MSDs complaints compared to workers in other fields. This is because construction work generally involves activities carried out manually. Health hazards caused by ergonomics can be acute or recurrent, especially when performing manual activities that involve high exposure and repetitive movements. Manual hauling work usually involves pulling, pushing, carrying, and lifting goods in a way that can create pressure when loading or unloading goods. Generally, workers often experience MSDs complaints and pain in the spine, waist, and certain other parts of the body. Factors that affect MSDs include occupational, psychosocial, and environmental factors. Occupational factors are often associated with static, repetitive activities and the use of great force in a particular posture position. Individual worker characteristic factors such as disease history, working period, and age also play an important role⁴.

Projects cannot succeed without labor. However, workers are in immediate danger while working in the field. Work accidents can increase the risk of Related Musculoskeletal Disorders (WMSD). This WMSD can cause all construction workers' productivity to be poor, they are unable to perform their work as usual due to pain in their muscles, and they are unable to maintain their jobs due to their ability to survive⁵.

Over the past five years, the trend of Health Insurance claims on average has continued to increase. Based on BPKS Employment data, the number of Health Insurance claims in 2019 was recorded at 182,835 cases. Furthermore, the number of Health Insurance claims has consistently increased, 221,740 claims in 2020 and 234,370 claims in 2021. Then in 2022, the number rose again to 297,725 claims. Throughout January-November 2023, the number of

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⁴ Yessie Ardina Kusuma et al., A Case Study of the Influence of Individual Characteristics of Construction Workers on Musculoskeletal Disorders (MSDS) Complaints in the Construction of At-Ta'awun Buildings, 2 Journal Of Manufacturing In Industrial Engineering And Technology (Mine-Tech 20–33 (2023).

⁵ Cherrilyn Aprilianne, Gabriella Gracia, and Paulus Nugraha, "Analysis of Ergonomic Factors of Construction Workers for Consolidation Work in Apartment Projects in the North Jakarta Area," Dimensi Pratama Civil Engineering 12, No. 1 (2023): 17–24.

work accident cases that submitted Health Insurance claims has reached 360,635 cases. Most of the cases of Health Insurance claims occur in companies and plantations⁶.

A work activity, both the organization and the company's work environment, has the potential for danger in terms of health, safety, ergonomics, and environmental hazards. Therefore, in Government Regulation of the Republic of Indonesia No. 50 of 2012 concerning the Implementation of Occupational Safety and Health Management System Article 5 which states that every company is obliged to implement an occupational safety and health management system in its company where the company has at least 100 (one hundred) workers or labors and has a high level of potential occupational hazards⁷.

Before the ITS CWI-01 Construction Project begins, a project plan must be created. This plan should include various matters related to the CWI-01 Project, such as project controls and schedules, construction methods, safety plans, and so on. In project control, including the Arrangement of Work Details, which describes in detail the work to be carried out. In general, the work is divided into four broad categories: foundation, structural, architectural, and MEP (*Mechanical, Electrical and Plumbing*) work.

Therefore, it is necessary to implement ergonomics in the workplace so that the work can bring workers of the CWI-01 Development Project in a healthy, comfortable, and safe state, productive, and prosperous, in other words, behind the danger. So if this ergonomics is not applied correctly, it can cause complaints and occupational diseases. Even a high level of occupational ergonomics risk can often result in some health problems in workers. One of

⁶ Bpjs Ketenagakerjaan, "Work Accidents Have Become More Prevalent in the Last Five Years," Bpjs Ketenagakerjaan, December 27, 2023.

⁷ Melani Misca Manurung, "Analysis of Occupational Safety and Health Risks and Welding Activities with the Hiradc Method of Pt. Nov Profab" (Pasundan University, 2022).

the risks that can occur due to inappropriate / uncomfortable work caused by *Musculoskeletal Disorders*.

The data collection method used was by distributing questionnaires to find out the MSDs complaints used with *the Nodic Body Map* and individual and occupational risk factors. For observation, this study uses *the Rapid Entire Body Assessment* as a research instrument used to see the level of ergonomic risk in work activities. The REBA method was chosen because REBA is able to assess ergonomic risks in all parts of the human body from the uppermost part of the body to the bottom part of the body, namely the legs and can be used to investigate static and dynamic work, these conditions have a great contribution in analyzing the influence of unergonomic working conditions on complaints of *musculoskeletal disorders* in workers.

1.2. Problem Formulation

Based on the background that has been described, the formulation of the problem in this study is How to Work Posture Confusion with MSDs Complaints in CWI-01 ITS Package Development Project Workers.

1.3. Research Objectives

1. General Purpose

The purpose of this study is to Determine the Relationship between Work Posture and MSDs Complaints in Workers of the CWI-01 ITS Package Development Project.

2. Special Purpose

- a. Analyzing the Work Posture of CWI 01 ITS Package Development Project Workers.
- b. Analyzing MSDs Complaints in CWI 01 ITS Package Development Project Workers.
- c. Analyzing the Relationship between Work Posture and MSDs Complaints in CWI 01 ITS Package Development Project Workers.

1.4. Research Benefits

1. For Authors

Can find out work postures and MSDs complaints in construction workers in reducing or controlling incorrect work postures and MSDs complaints in workers.

2. For Study Programs

The results of this research can be an addition to the Library collection, especially within the Occupational Safety and Health Study Program.

3. For CWI-01 Project

Knowing the importance of correct work posture in workers to reduce msds complaints and good work posture.



1.5. Research Authenticity

Research related to the Analysis of MSDs Complaints Based on the Risk of Ergonomic Hazards in Workers has been carried out with many different goals and intentions, such as the following studies:

Table 1. 1 Research Authenticity

No.	Research Title	Research Methods	Variable	Result	Research Differences
1	Work Posture and Complaints of Musculoskeletal Disorders in Finishing Workers (2023)	The design applied in this study is cross-sectional	Work posture, <i>Musculoskeletal Disorders Complaints</i>	The results of the analysis showed that the p-values for each factor were: work posture = 0.001, age = 0.026, work duration = 0.008, work period = 0.720, smoking habit = 0.509, and exercise habit = 1.000. It was concluded that the finishing workers' MSDs in Project XYZ were influenced by the factors of work posture, age and work duration ⁸ .	This reasearch located in the CWI-01 construction site research site in the CWI-01 construction project
2	The Relationship of Job Position to LBP (Low Back Pain) Complaints in Formwork Field Workers at PT Cipta Dimensi (2024)	This study uses a cross-sectional quantitative study aimed to understand the dynamics of the relationship between variables	Job Position, <i>Low Back Pain (LPB) Complaints</i> , Working Hours, Employment Period	This study has a significant relationship between LBP complaints and work positions, in other words workers with medium & low risk job positions tend not to have many LBP complaints, on the other hand, workers with poor job	This study took all of CWI-01 construction site

⁸ Nada Adinda Irhamna et al., "Work Posture and Complaints of Musculoskeletal Disorders in Finishing Workers," Forikes Vocal Health Research Journal, April 2, 2023, 1–5.

		and complaint-related effects through methodological considerations, observations, or data collection.		positions have a very high risk and high tend to have LBP complaints ⁹ .	
3	Complaints of Musculoskeletal Disorders of Apartment Construction Workers in Tangerang (2024)	This study uses a cross sectional study design	<i>Musculoskeletal Disorders, Occupational Diseases, Ergonomics, REBA</i>	Based on the acquisition of data, the results were obtained that most of the workers were ≥ 35 years old (57.4%). The results of the statistical test using the chi-square test showed that there was a relationship between gender variables ($p=0.035$). Other variables that were examined in this study were not related to age, working period, exercise habits, workload and length of work. Construction workers are mostly male, so it is necessary to pay attention to the ergonomic aspect in the work environment ¹⁰ .	This study analyzed the MSDs complaints using NBM questionnaire

⁹ I Gusti Ngurah Yoga Usdayana, Nur Asniati Djaali, and Ajeng Tias Endarti, "The Relationship of Work Position to Complaints of Lbp (Low Back Pain) in Formwork Field Workers at Pt Cipta Dimensi," Journal of Urban Public Health 4, No. 1 (March 30, 2024): 13–21, <https://doi.org/10.37012/jkmp.v4i1.2218>.

¹⁰ Januar Ariyanto et al., "Complaints of Musculoskeletal Disorders of Apartment Construction Workers in Tangerang," Journal of Preventive Promotive 7, No. 1 (2024): 77–83, <https://doi.org/10.47650/jpp.v7i1.1175>.