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## Ergonomic Risk Controls in Construction Industry- A Literature Review

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### Abstract

This paper overview the ergonomics risk control in construction industry. The objective is to give a basic introduction of ergonomic in construction industry and risk controls in relation to minimize the ergonomics risk factors. The study will highlight five (5) significant ergonomics risk controls. Better communication and management control will enhance ergonomics implementation in the workplace. It is followed by the appropriate ergonomics design, organization training and education. Written ergonomics program statement which outlines the goals and plans for the organization ergonomic program are also essential in order to reduce the ergonomics risk factors.

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### 1. Introduction

Ergonomics, as defined by the Board of Certification for Professional Ergonomists (BCPE), "is a body of knowledge about human abilities, human limitations and human characteristics that are relevant to design. Ergonomic design is the application of this body of knowledge to the design of tools, machines, systems, tasks, jobs, and environments for safe, comfortable and effective human use" (BCPE, 1993).

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The term ergonomics is derived from the Greek word *ergos* meaning "work" and *nomos* meaning "natural laws of" or "study of." The profession has two major branches with considerable overlap. One discipline, sometimes referred to as "industrial ergonomics," or "occupational biomechanics," concentrates on the physical aspects of work and human capabilities such as force, posture, and repetition. A second branch, sometimes referred to as "human factors," is oriented to the psychological aspects of work such as mental loading and decision making.

## 2. Ergonomic Risk Controls

The building and construction industry is a dynamic and hazardous industry, making it both unique and challenging for ergonomic aspects to be implemented on site. Therefore, there are lots of controlling factors that can be taken into consideration in implementing ergonomics and controlling ergonomics risk factors in the construction site. Ergonomic controls are used to help fit the workplace to the worker. They seek to place the body in a neutral position and reduce the other ergonomic risk factors. These controls must accommodate the widest range of personnel. There are a few approaches and steps can be taken to improve ergonomics implementation in the workplace and to reduce the risk factors that can be done through a few control channels such as communication, management control, ergonomic design factors, training and education as well as written ergonomics programs.

## 3. Communications

Many problems in health and safety arise due to poor communication. It is not just a problem between management and workplace; it is often a problem the other way or indeed at the same level within an organization. It arises from ambiguities or even, accidental distortion of a message [1]. Therefore it is important for team leaders and supervisors to engage in actions which demonstrate support for workers to facilitate positive exchange relationships, encouraging employees to raise safety concerns. Brooks [2] believes that understanding the communications network and requirements of the workplace can be the key to getting the layout and internal structure right. There are a few common channel of communication such as meetings, reporting structures, and clear link between departments may be quite well understood, but, informal communications network within an organization which makes the difference between success and failure. Therefore it is essential to understand the basic informal communication such as who needs regular access to whom, how things get done and which departments need to be sited close to one another. According to Marras and Karwowski [3], to enhance communication the following points should be considered:

- Verbally communicate the importance of ergonomics as the means to a safe, healthy and efficient workplace.
- Express interest to give a message that the program is important and to instil energy and quality of work in employees.
- State the program objectives clearly.

Cooper [4] stated that closer contact and better communications between all organizational levels is a characteristic of good safety culture. It also be supported by Keith Molenaar [5] said that communication is the effectiveness of management in communicating safety goals to employees in the field. In order to enhance communication in ergonomics implementation in the workplace, there are few types of communication that can be implemented by top management. Dias & Coble [1] in his book stated that, verbal communication is the most common. It is communication by speech or word of mouth. Verbal

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