

# Postural analysis of workers in a typical meat processing company in Brazil

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**Abstract.** Companies have increasingly sought strategies that will ensure a more competitive position in the marketplace. Among these strategies adopted by companies include the health and welfare of the worker, factors currently valued by consumers, especially those of most demanding market. Thus, the postural analysis is of great importance and interest because it is the study of positioning related to body parts like head, torso and limbs, capable of producing loads that may be excessive or insufficient causing disturbances in the muscle skeletal system worker. The aim of this study was to perform a postural analysis of the main sectors of workers (slaughter, cutting room, special cuts, packaging and dispatch) of a typical refrigerator pig industry in Brazil during the execution of their daily activities as well as developing proposals to minimize and/or eliminate the diseases and accidents. The study followed the safety norms of Brazilian Ministry of Labor and Employment. The posture analysis used the OWAS (Ovako Working Posture Analyzing System) methodology. The postures assumed by workers in the sector of packaging were as the most in need of emergency and quick action.

Keywords: Ergonomics, musculoskeletal disorders , pig industry

## 1. Introduction

Nowadays, companies increasingly seek to adopt strategies to ensure market competitiveness. Within this context, the environmental work conditions and health of workers came to be worthy of attention, resulting in rapid and profound changes in the workplace and thus altering the conditions of health and worker safety. The agro-industries, including refrigeration companies also faced this situation. According to Sarda et al. [5] most of the tasks performed in the refrigerator, considered as repetitive, monotonous and fatiguing, often cause problems related to health, comfort and worker safety.

The movements of the upper and lower limbs of workers needed to carry out a large part of the activities of the production process in the refrigerator, make the incidence of musculoskeletal diseases at the ends of these members is high [2]. Furthermore, these diseases can also be related to the static and repetitive motion associated with the continuous presence of these members, especially superiors, during the work day [3].

In the slaughterhouses and refrigerator, according to the type of activities, the propensity for development of MSDs (Musculoskeletal Disorders - Work Related) increases. Many injured workers complain of pain in the tendon regions, arms, forearms and hands, considering that in most cases, these works

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already have shown psychological consequences of these lesions [1].

Within this context it is also important to mention that the demands of consumer markets, mainly European, with regard to animal welfare, environmental protection and also the conditions of human labor, are going to be factors related to barriers to market products of animal origin. Thus, it is crucial that meat trading companies increase attention in relation to these factors in order to increase acceptance of its products on world markets.

The objective of this work was to perform a postural analysis of the workers while performing their daily activities in main sectors of workers (slaughter, cutting room, special cuts, packaging and dispatch) of a typical refrigerator of the pig industry in Brazil, as well as developing proposals to minimize and/or eliminate the diseases and accidents risks. The study followed the safety norms of Brazilian Ministry of Labor and Employment.

## 2. Methodology

The study was conducted in a food industry company located in the state of Minas Gerais, Brazil, that among the various branches of the foodstuff in which current it is also specialized in breeding, slaughter and processing of pork.

To evaluate the positions taken by the workers was used OWAS (Ovako Working Posture Analyzing System) [4] method. The positions were analyzed from photographic records of worker in a real work situation.

The positions related to the back, arms, legs, the use of force, were considered during the observation. This analysis indicated: normal posture dispensing care (category 1); posture that should be checked during the next routine work (category 2); posture that must be addressed in the short term (category 3); and posture that needed immediate attention (category 4).

## 3. Results and discussion

In the study 42 activities were analyzed and only 4 deserved immediate corrective action due to postural classification: two in the sector of packaging (filling boxes with 20 kg of products and arrange full boxes), one in the sector of special courts (push cart full of meat) and one in the dispatch sector (fill box for dis-

patch). In the production process other 9 activities analyzed forced workers to assume postures indicating the need for short-term attention. Among them are: manually push slaughtered pigs on the bench (slaughter industry/ area dirty), push the carcasses from the refrigeration sector to the cut (refrigeration sector), etc. Most postures needed long-term care. The other remaining exempt care since they were classified by the OWAS [4] as normal.

The incorrect position of the body during the execution of some activities and excessive weight supported by only one straight leg were crucial for classification in category 3 and 4.

A proper postural advice to employees of this activity can achieve satisfactory results when properly performed.

## 4. Conclusions

The incorrect position of the trunk during the execution of some activities and weight supported by only one straight leg were crucial and had to be corrected immediately. Most of their correct postures occurred when the work station were ergonomically poorly designed. In this case, the body anatomical structures were forced to take an awkward position to execute the activity. The measures to be adopted included improvement of the work station and establish a workers posture training program. It is important to ensure adequate furniture for the workers according to their anthropometric characteristics in order to provide conditions for good vision, operating conditions and posture. These measures can eliminate the possibility of adopting awkward and inappropriate postures that could contribute to the onset of MSDs (musculoskeletal disorders – work related).

The postures assumed by workers in the sector of packaging are deserved immediate corrective action.

Seeking smaller risk associated with physical postures assumed by the company workers in the refrigerating process studied suggests that the following should be adopted:

- To develop or create certain equipment or devices aiming to change postures considered inappropriate and dangerous adopted by certain workers while conducting their daily work as was the case of the posture adopted by employee responsible to pull pallet in the shipping sector.

- To perform periodic equipment and machinery maintenance to reduce noise and physical effort.

- To maintain policy of job rotation, already adopted efficiently in some sectors of the company.
- To promote periodically trainings and guidance to employees about the importance of work safety, especially regarding correct posture for the workers of packaging and dispatch sectors.

### Acknowledgements

The authors acknowledge the FAPEMIG – Fundação de Amparo à Pesquisa do Estado de Minas Gerais and the CNPq – Conselho Nacional de Pesquisa e Desenvolvimento Tecnológico for financial assistance in this work.

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