

# Implantation of an ergonomics administration system in a company: report of an occupational therapist specialist in ergonomics

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**Abstract.** This article aims to describe step-by-step the implementation of an ergonomics administration system in a company from March 2009 till March 2011 by an occupational therapist specialist in ergonomics based on the OSHAS 18001 guidelines and the Regulatory Norms 17 manual. The process began with the definition of five requisites with bases on the manual of application of the Regulatory Norms 17: survey; materials individual transportation and discharge; workplace furniture; workplace equipments; work environment and organization of the work to be managed with bases on the OSHAS 18001 guidelines. The following steps were established: sensitization of the company high administration, elaboration and institution of an ergonomics politics, development of ergonomics committees, ergonomics analysis of the work with recommendation of ergonomic improvements, implantation of improvements and evaluation of the results. This research experiment suggests the importance not only of a guiding axle but also of a professional qualification and participation of the company on the implementation of an ergonomics management system.

Keywords: Health; Risk; Disease

## 1. Introduction

The implementation of an ergonomics system in companies has been pointed as a tool for managing risks and sickness at work related to ergonomic problems whose results are highly positive, both in reducing occupational diseases and Repetitive Strain Injuries or Work Related Musculoskeletal Disorders (LER/DORT), as well as on improving general work conditions [1]. The entrepreneur and managers conscience to promote workers health is compatible with a world view of social responsibility that preserving the worker's health (and his environment) is the right thing to be done. Favoring earn productivity to warrant peoples' versatility to work in order to promote renewability, national and international certificates, legal adaptation to the

Regulatory Norms 17 (NR 17) of the Ministry of Labor and Employment are other business reasons. In this context, companies have been hiring professional service specialists for employment and management of ergonomic problems which demands both a qualified professional as appropriate theoretical frameworks. This demand has been moving professionals to specialization and experience in ergonomics, among them occupational therapists. This article aims at reporting the experience of implantation of a management ergonomics system in a medium-size company in Ceara, Brazil, based on theoretical references: application of the Regulatory Norms 17 manual and the OSHAS 18001 guidelines, from March 2009 to March 2011 by an occupational therapist specialized in ergonomics.

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## 2. Application of Norm 17 (NR 17)

The application manual of the Regulatory Norms 17 is a document proposed by the Ministry of Labor and Employment in Brazil in 2002 with the aim of clarifying the meaning of the concepts expressed in that norm, featuring what is expected in each statement and defining the main aspects to be considered to develop a Work Ergonomics Analysis, noting that the accomplishment mainly aims the modification work situations, thereby characterizing the legislation in force and ergonomics as an important tool to ensure the employees' safety and health and the productivity of companies.

The manual suggests that the ergonomic analysis of work be a constructive and participatory process to solve a complex problem that demands the knowledge of the tasks, the activity developed to perform them and the difficulties faced to achieve the required performance and productivity.

Thus, the analysis begins with a demand that can have various origins, from the observation that in a given sector there is a large number of diseases and accidents (health claims) or complains of union workers (social demands), in turn, that also stemmed from some complaint or claim. Regarding the firms, a demand almost often comes from the need to improve the quality of a product or service provided or driven by higher productivity gains.

Usually the demand that makes the company seeks to hire a professional, as proposed by the item 12.12 of NR 17: "To evaluate the adaptation of working conditions to the workers psycho-physiological characteristics, it falls to the employer perform ergonomic analysis which should, at least, approach working conditions, as set forth in this Regulatory Standard."

Therefore, it is clear that the role of the ergonomist is to present an employment contract in which it will be explained the applied methodology, the steps of the analysis, as well as the procedures to be used.

According to the manual of application of NR17, the ergonomic analysis should include, minimally, the following steps:

1. The demand analysis and the context.
2. The global analysis of the company
3. The analysis of the population of workers.
4. Definition of the situation work to be studied.
5. The description of the prescribed tasks, the actual tasks and tasks developed to implemented them.
6. Establishment of a pre-diagnosis.

7. Systematic observation of the activity as well as the means available to accomplish the task.
8. The diagnosis or diagnoses.
9. Validation of the diagnosis.
10. The design of modifications/changes.
11. The implementation chronogram of modifications/changes.
12. The monitoring of changes/alterations.

The working conditions to be analyzed according to the item 17.1.1 of NR 17 include aspects related to:

- Lifting, transportation and disposal of individual materials;
- Furniture of working places;
- Equipments of working places;
- Environmental conditions of work;
- Organization of work.

The 12 steps proposed in the manual application of NR 17 and the definition of working conditions to be analyzed guide the ergonomist to carry out the ergonomic analysis of work that permits the adjustment of working conditions to the psycho-physiological characteristics of workers in order to provide optimal comfort, safety and efficient performance, but does not guide the company for managing ergonomic hazards.

## 3. Management System of Occupational Health and Safety (OHS)

The System of Safety and Health at Work is a group of subsystems composed of resources and minimum standards that work together and with other systems aiming, through the planning and development actions, to prevent all types of occupational injuries in all activities of a company in order to meet the needs of the organization itself and its employees [2]. For this author, the implementation of a safety system of a job is not one of the simplest tasks. It requires a transformation of an organizational culture at all levels of an organization, availability of everybody, and involvement of management levels.

Manage the security of the work is to make the planning and control of working conditions that exist in the company through the identification, evaluation and elimination of the risks in the workplace. This activity requires a commitment from all the levels of the company, from the simplest to the senior man-

agement, which will be responsible for setting policy and objectives [4].

The development and implementation of a system of job security consists in a strategic form of organizational competence, and the model to be adopted depends largely on the company's strategic focus. Models can be used already prepared, and can have as reference, for example, the Occupational Health and Safety Assessment Series (OHSAS).

### 3.1. Occupational Health and Safety Assessment Series (OHSAS)

The guidelines of the Assessment Series Occupational Health and Safety - *Occupational Health and Safety Assessment Series (OHSAS)* and OHSAS 18001 - Specification for Safety Management Systems and Occupational Health, were developed in response to urgent customer demand for a recognized standard for Management Systems Occupational Safety and Health, based on which organizations can be assessed and certified by a guide and guidelines for the implementation of this standard [5].

The guidelines of the Safety Assessment and Occupational Health Series Occupational Health and Safety Assessment Series (OHSAS) and OHSAS 18001 provide the requirements for the Safety and Occupational Health Management System (OHS), allowing an organization to control their risk of accidents and occupational diseases and improve its performance [5].

Noteworthy are the elements of the Safety and Occupational Health Management System proposed by OHSAS:

- Policy on Occupational Safety Health;
- Planning;
- Implementation and operation;
- Checking and corrective action;
- Management review;
- Continuous improvement.

Because of its compatibility with the Standards of management systems ISO 9001:1994 (Quality) and ISO 14001:1996 (Environment), it facilitates the integration of the quality management systems, environmental and the Occupational Health and Safety by the organizations if they wish. Therefore, its methodology is applicable to an ergonomics management system integrated to the OH&S policy of the company.

## 4. The implementation of a Ergonomics Management System in the company: an experience report

This article aims to describe step by step the implementation of a management system for ergonomics in the company: Health Reference Center, a service provider of Occupational and health and safety located in Fortaleza - Ceará - Brazil, based on the guidelines of OHSAS 18001 and the Manual of application of the Norm 17.

The company had as a labor force 125 employees, divided into five sections: Administrative, Medical/Dental, Safety, Educational Activities and Occupational Medicine.

The working journey was 44 hours per work, from 8 AM Monday to Friday, and 4 AM on Saturdays, with hours of service to the public from 6 AM to 7 PM.

Its clientele consisted of approximately 200 workers and companies in Fortaleza and Metropolitan Region, whose issues of day care exceed 500 workers at times.

The proposed implementation of a management system came from the ergonomics consultant's dialogue with the management and medicine in March 2009, facing the occupational disease demand, musculoskeletal type in 20% of employees from different sectors of the company for ergonomic issues.

### 4.1. Definition of ergonomic questions to be managed by the company:

In order to manage the cases of employees with musculoskeletal disease, the process began with the definition of five questions based on the manual application of the Norm 17: lifting, transportation and unloading of individual materials; furniture and workplace; equipments and workplace; workplace environment and organization of work to be managed based on the guidelines of OHSAS 18001.

### 4.2. Implementation of the management ergonomics system:

After being defined the requirements to be managed, the theoretical and methodological framework to be applied, it was developed a two year chronogram that consisted on the following steps: awareness of senior management and employees, developing and instituting a policy in ergonomics, training of ergonomics committees, conducting an ergonomic

analysis of work with recommendations for ergonomic improvements, implementation of improvements and evaluation of performance indicators.

#### 4.2.1. Sensitization:

Awareness was the first step to implement the ergonomics management system. Information related to ergonomics care that the managers and employees should adopt to ensure a comfortable and productive environment workplace was systematically disseminated through physical and digital information.

##### 4.2.1.1. Senior management sensitization:

In April 2009 a meeting organized by the Occupational Safety and Medicine (SESMET) with the aid of the Consulting Ergonomics was conducted to the sensitize the management (one manager) and the managers of strategic areas (five managers) to guarantee their commitment to success and integrity in conducting ergonomics issues in the company.

There was a 90% participation of senior members and adherence to the 100% ergonomics management system.

##### 4.2.1.2. Workers sensitization:

The awareness of the workers was conducted by the Human Resources department with the aid of ergonomics consultant in April 2009 through an educational activity lasting one hour to consider ergonomics factor and its decisions to work.

There was 85% participation of workers in educational activities.

#### 4.2.2. Ergonomics Policy:

Alongside the establishment of ergonomics committees, it was developed an Ergonomics Politics which was incorporated into the Health and Occupational Safety Politics of the company with the participation of the manager and supervisors.

The first version of the Ergonomics Policy was completed in July 2009 and presented to all employees by electronic means and by a booklet prepared by the quality and educational activities sector.

#### 4.2.3. Establishment of the Ergonomics Committee:

In May 2009 two ergonomics committees was established: Deliberative Ergonomics Committee and Executive Ergonomics Committee.

#### 4.2.3.1. Ergonomics Committee Board:

Deliberative ergonomics committee was composed of six deliberative senior management members of the unit and five supervisors of each strategic area. There was a four hour training seminar addressing the importance of ergonomics in the management company, the financial impact on the company and on the workers' health.

#### 4.2.3.2. Ergonomics Executive Committee:

It was composed by one ergonomics executive committee that had 12 members of the company's five strategic areas. There was a 20 hour training covering aspects of ergonomics, risk identification and management, budgeting and financial impact on the company, continuous improvement actions and evaluation indicators.

#### 4.2.4. Ergonomics mapping in the company:

In July and August 2009 the Executive Ergonomics Committee held in conjunction with the coordinators of the sector an ergonomics mapping of 100% of the business functions of the company based on a five question checklist of NR 17.

#### 4.2.5. Ergonomics Analysis of Work:

From September 2009 to February 2010 it was performed an ergonomics analysis of 100% of work functions with the participation of the workers. It was dedicated special attention to sectors/functions that showed musculoskeletal disease.

Each ergonomics analysis of work proposed recommendations and solutions to be deployed by the company to improve working conditions.

An action plan with budget proposal and deadlines for implementing was established and approved by senior management. The periods ranged between one and five years, depending on the severity and the amount to be invested.

#### 4.2.6. Implementation of ergonomics improvements:

From March 2010 to March 2011 it was implemented 50% of the ergonomics improvements.

#### 4.2.7. Evaluation of outcome indicators:

It was established ten indicators. In March 2011 it was performed the first evaluation of the results and identified positive results in four indicators: reduction in the number of cases of dismissal due to economical questions; reducing on the number of complaints at the clinic; increasing on the number of resolved small improvements; reduction of accident costs/illness after the implantation of ergonomic improvements.

#### 4.2. • Working Groups COERGO Executive:

After analyzing the results from the first assessment of the indicators and the shown demands of the Executive Ergonomics Committee over the meetings it was established four working groups to direct preventive actions. Such division into working groups happened only in March 2011. Therefore, its implementation could not be evaluated in this work, but it is considered important to be presented as part of the ergonomic management process since it was included in the politics of ergonomics.

The following working groups, their goals and actions to be undertaken under the responsibility of each team's executive committee on ergonomics:

Working group 01 – Education and Training in ergonomics aim to report ergonomics for all employees, making it a value to the company. Here are its responsibilities:

- Monthly conduction of “educational ergonomic blitz”;
- Organization and/or educational achievement;
- Monthly/fortnightly drafting, updating and dissemination of the electronic and print informative COERGO
- Promotion of monthly studies on ergonomics and related fields;
- Yearly organization and accomplishment of SIERGO;
- Application and analysis of evaluation in the level of awareness and knowledge of ergonomics by the employees;

It was selected representatives of the following business sectors: Human Resources; Information Technology; Communication, Specialized Health Service and Safety and Medicine (SESMIT).

Working group 02 – Physical, environmental and technological improvements aim to keep the physical, environmental and technological work comfortable and efficient. The responsibilities are:

- Monitoring/implementation of preventive and corrective pieces of furniture, tools and working machines;
- Study, choice, bidding and purchasing of equipment, machinery, and furniture that meet NR 17 and NBR;
- Monitoring/adequacy of the environmental aspects: thermal, listening and visual comfort depending on the NR and NBR 17;
- Participation in structural projects of company improvement (buildings, expansions, renovations, changing layout) taking into account the ergonomic aspects;
- Application and analysis of ergonomic assessment solution by employees;

It was selected representatives of the following business sectors: engineering, engineer and technical security engineer, maintenance and purchasing.

Working group 03 – Promotion of the workers' health and quality of life aims to promote their health and quality of life. The responsibilities were:

- Annual application of ergonomics sense;
- Control of absenteeism for medical ergonomic issues;
- Investigation of occupational diseases by ergonomic issues;
- Monitoring the practice of health actions in company (labor gymnastics, massages, physiotherapy, occupational therapy, among others);
- Promoting actions referring to quality of life in and outside the company (cinema, library, theater, fraternization);
- Conducting a survey about quality of life of the worker.

It was selected representatives of the following business sectors: Occupational medicine (doctor, nurse, practical nursing, physical educator, physiotherapist, occupational therapist, psychologist).

Working group 04 – Optimizing the organization of work aims to improve the organization or work. Here are its responsibilities:

- Follow-up studies of the descriptions of the production standards of the position to perform the tasks;
- Verification of the appropriateness of the tasks within the work timeframe;
- Monitoring overtime/bank of hours;
- Monitoring the performance of breaks for workers;
- Conducting an employee satisfaction survey.

It was selected representatives of the following company sectors: Human resources, administration, industrial engineering times and methods, legal.

### 5. Discussion:

Theoretical references guided the occupational therapist specialist in ergonomics to the practical implementation of the management ergonomics system for companies. There was a good acceptance by the manager, supervisors and employees in implementing the ergonomics system since its methodology facilitates the management of the ergonomics committee. Being aware and participative as a member of the Deliberative Ergonomics Committee, senior managers effectively took part in the action management and facilitated the implementation of ergonomic recommendations for improvement. The institution of a policy in ergonomics in the company directed the management system actions. The formation of an ergonomic executive committee with representatives of various strategic areas of the company was crucial for both the analysis and ergonomic work as for the management of the actions to improve implementation and evaluation of the results since, when divided into strategic groups according to affin-

ities, they incorporated the ergonomics issues in their working practice.

### 6. Final considerations

The experience of this research suggests the importance of both a guiding in the theoretical and methodological principle as the participation of an occupational therapist expert in ergonomics, supervisors and employees of the company in the implementation of a management system in ergonomics in companies.

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