

## Ergonomics at work – Health and well-being of workers



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### ABSTRACT

The objective was to identify the consequences of ergonomics on the health of workers. This

qualitative study sought, through literature review, to make a theoretical debate between several authors on the following topics: Ergonomics at work, Legislations that describe the rights and duties of workers, accidents, and occupational diseases at work, in addition to presenting suggestions for educational measures and models of business successes. As a result, it was shown that when promoting improvement proposals that are aimed at health and well-being at work, the worker feels valued and cared for, generating therefore, an increase in his/her happiness, greater engagement, and improvement in the production of his/her tasks, in addition to the recognition and elevation of his/her profession and workplace. It is concluded that a company that works following solid ergonomic bases at work is ready to obtain significant advantages, impacting its results and its competitiveness in the market.

**Keywords:** Ergonomics, Health, Welfare, Worker.

## 1 INTRODUCTION

Spending hours at a time performing a certain task, regardless of its degree and risk, can lead to exhaustion, causing consequences of physical and emotional orders to the worker. It is known that in certain professions, the expectation for the completion of an activity, overlap an excessive load of stress and charges. This pattern, added to the repetitiveness of the activities, can become a risk, compromising physical and psychological health, leading, in most cases, the worker to make mistakes and suffer work accidents. (OLIVE TREE *et al.*, 2021).

In order to avoid these misfortunes, ergonomics at work is a fundamental practice. Fortunately, companies that **care about the well-being of their employees and effectively, apply routine preventive measures in their processes, promote more satisfactory results, the organization gets the best of each of them and can thus walk with great strides to success.** (SILVA *et al.*, 2021).

Level tables, chairs that contribute to proper posture, proper use of prevention materials such as Personal Protective Equipment (PPE), proper environmental conditions, separate disposal, reuse and proper recycling of materials, and a host of other items and accessories are key to promoting a quality of life at work.



Work accidents are a major concern on the part of companies, since their employees, depending on the performance, are at risk in the exercise of an activity, and their replacement can compromise the smooth running of their activities. In addition to the attempt to reduce as much as possible the possibilities of accidents and occupational diseases, there are also practices that aim to avoid injuries due to impact, body aches, discomfort, among other examples. (SAINTS, 2021).

Bureaucratic areas were modernized, starting to perform more efficient and innovative tasks. However, along with this innovative process, new technologies have been strengthened, creating from this new context, new formats of work, requiring greater attention from their executors, since there is a considerable increase in risks in their processes. (SAINTS, 2022).

For this reason, it is that the Ergonomics of work advocates for the application of good practices in all processes related to the life, health and well-being of its workers, imposing limits to protect all the rights and guiding guarantees provided for in law, with clear rules and procedures, based on legislation or permeate the entire path of progress, safeguarding as a unique piece, the principle of the dignity of the human being.

The objective was to identify the consequences of ergonomics on workers' health.

This qualitative study sought, through the literature review, to make a theoretical debate between several authors on the following topics: Ergonomics of work, Legislation that describes the rights and duties of workers, Accidents, and occupational diseases at work, in addition to presenting suggestions for educational measures and models of business success.

## 2 WORK ERGONOMICS

Ergonomics at work is a fundamental field of study that increasingly needs to gain space and appreciation within organizations. It values the well-being of its employees, creating, from its constitution, efficient proposals for improvements of work processes, with the application of innovative and necessary techniques for the guarantee and safety of its workers. (LIMA; Ramirez, 2022).

With corrective proposals and implementing educational actions, the ergonomics of work has been well explored by our indoctrinators today. In the lessons brought by Wisner (1995), it is based on two important phases. The first concerns the behavioral basis (*operant modes*) and the second to legitimize its results. These commandments have the objective of guiding research aimed at the improvement of all their actions throughout their work chain.

Seligmann-Silva (2003) argues that current organizations should propose actions aimed at creating harmonious and comfortable spaces with the purpose of adding value to their business. However, the item safety becomes elementary, because it is the guarantee of its survival in the market



and of its employees, because this causes the chances of the development of occupational diseases to be reduced.

For Vidal (2001), Ergonomics is applied in several production fronts and it ends in a very elementary way in the projects of workpieces and production systems. For the author, the elementary role of Ergonomics is **to create possibilities of resolution for each situation.**

**It is corroborated that the construction of spaces of social coexistence, with green and accommodation projects, with rest and leisure structures for the workers, help in reducing stress, collaborating in the execution of their processes, adding greater effectiveness and commitment in their activities, in addition to adding value to the company.**

**In the same sense, we bring the teachings defended by Dul and Weerdmeest (2004, p. 2):**

Ergonomics differs from other areas of knowledge by its interdisciplinary character and its applied nature. The interdisciplinary character means that ergonomics is based on several areas of human knowledge. The applied character, on the other hand, is configured in the adaptation of the workplace and the environment to the characteristics and needs of the worker.

**Regarding the theme, Hubault (2004, p. 106), reports that Ergonomics has the "mission of deepening the understanding of the relationship between what man lives at work and by his work, what he does, with what the company understands of it, what it does of it, even more, what it expects from it, what does she want to make of it."**

**In the words described by Abrahão and Pinho, (1999) the process of Ergonomics ends in the search for knowledge about work, its conditions, and the relationship with its executor. For this, it is essential to make a detailed survey of the whole process and, only then, you can put it into action. Thus, the production of knowledge and the rationalization of action constitute, therefore, the main axis of ergonomic research. (SOARES, 2021).**

**In this sense, the important role that work ergonomics plays within organizations is highlighted, with the application of favorable measures to improve working conditions, to the benefit of the health of its employees. The corrections and adjustments that are necessary have strengthened the smooth running of the tasks performed by the worker, ensuring greater confidence and comfort, thus eliminating any action that may cause discomfort that may be harmful. (TENORIO, 2021).**

**In this set, issues such as lighting, temperature, noise, furniture arrangement and how this impacts the worker may be targets of analysis. However, in this analysis, it is essential that when applying the process of ergonomics in work environments it becomes elementary to understand the profile of its workers and the working conditions to which they are subjected. It is worth remembering that work accidents often result from the excessive fatigue of their executors, as well as from the inadequate conditions they are subjected to.**



### 3 ERGONOMICS OF WORK AND BRAZILIAN LEGISLATION

We know that in certain professions the working day is exhausting, and that it requires a lot of effort and dedication, because of their responsibility in the execution of their tasks. A doctor, a dentist, an electrician, whatever your legacy, safety in your activities should be the basis of your support.

The ergonomics of the work came to aggregate and add these advantages to the worker. (WILLIAMS; Dutra, 2022). Adjusting, improving aspects of work, reducing stress, minimizing as much as possible any consequence that this scenario may generate to your health, is a measure that must be followed by the entire business community, with great precision and awareness.

In Brazil, the Constitution of the Federative Republic of Brazil of 1988, includes as a right of workers the reduction of risks inherent to work, which we outline below:

#### Chapter II

#### Social Rights

Art. 7 The rights of urban and rural workers, as well as others aimed at improving their social condition, are:

[...].

XXII - reduction of risks inherent to work, through health, hygiene, and safety standards. (BRAZIL, 2002a).

The Consolidation of Labor Laws (CLT), with original publication through Decree-Law No. 5,452, of May 1, 1943, approves the laws governing labor activity in the country. (BRAZIL, 1943). This publication is finally drafted by Law No. 6,514, of December 22, 1977. (BRAZIL, 1977).

The CLT points out information on safety and medicine at work,

### 3.1 OCCUPATIONAL SAFETY AND MEDICINE:

#### 3.1.1 Section i

##### 3.1.1.1 General provisions

Art. 157 - It is up to the companies: (Text given by Law No. 6,514, of 12.22.1977)

I - comply with and enforce the standards of safety and occupational medicine; (Included by the Act in the 6,514, dated 22.12.1977)

II - instruct employees, through work orders, as to the precautions to be taken in the sense to avoid occupational accidents or diseases; (Included by Law No. 6,514, of 12.22.1977)

III - adopt the measures determined by the competent regional body; (Included by Law No. 6,514, of 12.22.1977)

IV - facilitate the exercise of supervision by the competent authority.

Art. 158 - It is up to the employees:

I - observe the norms of safety and occupational medicine, including the instructions referred to in item II of the previous article; (Text given by Law No. 6,514, of 12.22.1977)

II - collaborate with the company in the application of the provisions of this Chapter. (BRAZIL, 1943).

Law 8.213/91, which provides for Social Security Benefit Plans, describes the work accident as follows:



Art. 19 Accident at work is that which occurs by the exercise of work at the service of a company or domestic employer or by the exercise of the work of the insured referred to in item VII of article 11 of this Law, causing bodily injury or functional disturbance that causes death or the loss or reduction, permanent or temporary, of the capacity for work. (Text given by Complementary Law No. 150, of 2015). (BRAZIL, 1991).

In Brazil, the health policy is guaranteed to all workers, supported by Ordinance No. 1,823/2012 that establishes the National Occupational Health Policy. (BRAZIL, 2012).

In its first three articles, Ordinance No. 1823/2012, considers,

Art. 1 The National Occupational Health Policy is hereby established.

Art. 2 The National Occupational Health Policy aims to define the principles, guidelines, and strategies to be observed by the three spheres of management of the Unified Health System (SUS), for the development of comprehensive health care for workers, with emphasis on surveillance, aiming at the promotion and protection of workers' health and the reduction of morbidity and mortality resulting from development models and production processes.

Art. 3 All workers, men and women, regardless of their location, urban or rural, their form of insertion in the labor market, formal or informal, their employment, public or private, salaried, self-employed, loose, temporary, cooperative, apprentice, trainee, domestic, retired or unemployed are subjects of this Policy.

Single paragraph. The National Occupational Health Policy is aligned with the set of health policies within the SUS, considering the transversality of workers' health actions and work as one of the determinants of the health-disease process. (BRAZIL, 2012).

In the same follow-up, we cite the Regulatory Standard (NR) n° 17, entitled of the Ministry of Labor (MT), establishing the guidelines for adapting the working conditions to the psychophysiological characteristics of the workers, in order to provide maximum comfort, safety and efficient performance of their daily activities. BRAZIL, 2002B).

#### **4 ERGONOMICS AT WORK: EDUCATIONAL MEASURES AND MODELS OF SUCCESS**

The modern technological models available today in the global market strengthen the capital market in a very peculiar way. The exchange of bureaucratic processes for *software*, robotics, the industrial revolution, the strong investment in the construction of production systems and circulation of information in real time, combined with the production of means capable of enabling the realization of negotiations in a tenuous way in different markets, and in several countries, at the highest possible speed, are some examples available today of access for the entire population. (CIELO *et al.*, 2020).

But in this fast-paced world of great changes, both in the physical aspects of companies, as well as in the operating patterns of their executions, the worker is forced to adapt to the new format of business management. Works in *home-office* format, meetings via *web* conference, digital signatures, are some examples that have fostered new formats of business management, creating from it, a more efficient management, with the reduction of costs, with greater brevity and security in their actions,

Rezende and Abreu (2003) argue that, with the implementation of Information Technology (IT) tools today in the business world, it is possible to perform a more accurate analysis of all its processes,



from the analysis of costs, measurable and non-measurable benefits, and respective results), also considering the optics of the economic, financial and political-social reality of the organization with the state of the technologies available in the market.

It is also shown that the organization of tasks, productivity control, avoiding waste or lack of materials, as well as standardization of procedures and materials, with the appropriate use of information systems promote a linear integration of sectors, reflecting in quality services, greater productivity of teams and effective human resources, optimization of processes and cost reduction.

However, in this tangle of innovations, workers' health care cannot be forgotten. (ABRAHÃO; PINE, 1999; SELIGMAN-SILVA, 2003). It's not because your new workplace is your home that this concern should be set aside. It is in this field that Ergonomics at work is seen as an essential tool for the construction of studies that focus on interacting man, his instruments and the organization of the environment, ended for the improvement of working conditions. However, when disassociated from a practical action it ends up becoming ineffective.

For this reason, it is essential that in addition to the delivery of all PPE free of charge to workers, the performance of corrective maintenance constantly in the workplaces, it is also necessary to implement educational actions that will strengthen this entire process. (MATTOS, 2011). Training for the perfect use and conservation of equipment in such a way that the worker is safe as to its use and thus avoid risks, accidents and occupational diseases.

For Vieira de Melo (2011, p. 359) "education and training are the basis of support for the maintenance of the continuity of the improvement process". It is necessary that the workers are aware of the purpose, the importance and the correct ways of use and conservation.

It should be considered that the training of all those involved (employer and worker) represent an important step in the process of discussion about management methods compatible with the reality of each sector, of each executor, contributing to the effective implementation of all the goals and needs of the company's follow-up.

It is worth mentioning that education is the ideal bias for the progress of a society, with the continuous transmission of heritage and cultural values between the various generations, creating, from it, new concepts and new knowledge.

Thus, knowledge is the fruit of the conscious activity of thought that defines the social nature of the human being, endorsing his history and culture.

[...]. Education is a process of human improvement, a cultural process. It is advisable to stick initially with this very general definition and not to situate oneself beforehand in a particular discipline and affirm with sociology that education is socialization, or with psychology that it is integration of personality, or with a certain type of philosophy that education is the conquest of freedom. (ORO; ZILLES, 1981, p. 24).



Mister emphasizes that one of the greatest difficulties that organizations have been facing is the idea of adapting it to the new opportunities that emanate from the work environment, since it is necessary to avoid any trace of potential danger or any other adverse event that may embezzle the purposes proposed in this follow-up. (FREY *et al.*, 2008).

NR-6 contains the responsibilities of the employer, the employee, the manufacturer and the Ministry of Labor, in terms of obligations, care and risks, information, training, washing and hygiene, conservation, maintenance, registration of irregularities, supervision and penalties due to non-compliance with the regulations. (BRAZIL, 2015).

A good benefit that companies can offer is to bet on leisure within the work environment itself, with recreational, harmonious spaces and large green area for the use of workers and other employees. Providing, thus, moments of relaxation, creating spaces for social coexistence, such as games, rest areas, reading, among others.

Some examples of companies that have been following this new trend, we can point out the company Altenburg, from Santa Catarina, which has been expanding its business throughout the Brazilian territory, however, adding social spaces of leisure, worrying and caring for the health of its employees.

Another institution that also follows this trend is the company **Netshoes**, which, with more than 2 thousand employees, the spaces of relaxation and leisure are an indispensable part of the structure of this company. It also offers specialization, undergraduate and graduate courses for employees. There are still a multitude of other institutions that have been following this trend, valuing not only the quality of their services and products, but also preserving the safety of their employees.

In the view well described by Moura *et al.* (2021), nowadays, it is already possible to build pleasant and functional environments in all organizations. Sustainable, corporate models that prey on the health of their workers are increasingly adding value to the business world.

It is worth remembering that corporate spaces in addition to beautifying, promote social coexistence and reduce stress among employees. Corporate models in sustainable formats have been attracting attention in all segments of society around the world. The low cost in maintaining new architectural models, standardized, efficient, and with a social function, foster a new look at the future. Innovation translates a new market perspective, which in its molds, add a differential value to its products and services becoming more competitive.

## 5 CONCLUSION

In this study, we sought to make a theoretical debate between several authors about the process of implementation of work ergonomics, presenting what are its benefits and functionality, in addition to presenting all the care that is expended from it.



Work accidents and occupational diseases are realities experienced by workers, with harsh consequences such as physical and emotional sequelae, which also affect their co-workers and their own family.

Although in Brazil, there is a tangle of legislation aimed at its faithful compliance with inspections carried out by the competent bodies, there is still a great resistance in its compliance, not only on the part of the employer, but also of the workers.

The ergonomics of work aims to present proposals for improvements in work environments, identifying errors, improving and making adjustments, presenting educational measures, and increasingly strengthening the execution of tasks in a safer way, with less impact on workers.

In this study it was possible to identify that promoting proposals for improvements to health and well-being at work makes workers feel valued and cared for, generating consequently, the increase of their happiness, greater engagement and improvement in the production of their tasks, in addition to the recognition and elevation of their profession and their workplace.

It is also shown that the construction of a relationship between the environment and workers in the elaboration of projects is an efficient model of advancing knowledge, building a good relationship between clients and workers – workers and managers. It is worth mentioning that the work is fundamental in any area of knowledge, however, the awareness of all those involved is an elementary piece in the engagement of all actions that strengthen the good progress of all business activities, with a strong tendency to long-term success.

Thus, it is shown that a company that works following solid foundations of ergonomics at work is ready to obtain significant advantages and that directly impact its results and its competitiveness in the market.





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