



## **EVALUATION OF ERGONOMIC IMPROVEMENTS AND THEIR IMPACTS ON THE QUALITY OF LIFE AT WORK IN THE POSITION OF POSTAL POSTMAN: A CASE STUDY**

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### **Abstract**

In this study will be analyzed the work developed by the professional Agent of Post - Postman of the Brazilian Postal and Telegraph Company - ECT. The article is a case study carried out with the professionals of the company in a Home Delivery Center - CDD of the metropolitan region of the capital of Goiás, gathering information and opinions regarding the insertion of new daily work equipment, organization of work, Ginástica Laboral - GL and its benefits. This article aims to evaluate the ergonomic improvements implemented in the activities carried out by the Postman and to demonstrate the positive impacts on the Quality of Work Life - QVT of the occupants of the same position. Considering the results obtained in the analyzed sample, it is verified that the investment in ergonomic improvements for the company brings a very positive result, since it contributes to the creation of adapted furniture, it offers possibilities of improvements in the relation of the equipment with its users, creating conditions so that compatible for its purpose and its use.

**Keywords:** Ergonomics; Furniture; Post Office - Postman.

### **1. INTRODUCTION**

The word ergonomics comes from the Greek: ergon = work and nomos = legislation, norms. In short, ergonomics can be defined as the science of man-made work configuration. At the beginning, the configuration of the tools, machines and the working environment was considered. The goal of ergonomics was (and still is) the development of scientific bases for the adequacy of working conditions to the capacities and realities of the person who works (GRANDJEAN, 1998).

According to Wisner, "Ergonomics is the set of scientific knowledge related to the human being and necessary for the design of tools, machines and devices that can be used with maximum comfort, safety and effectiveness" (WISNER, 1987, p. 189).

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According to the International Ergonomics Association – IEA (2011), the scientific study of the relationship between man and his means, methods and workspaces aims to elaborate, through the contribution of various scientific disciplines that compose it, a body of knowledge that, within an application perspective, should result in a better adaptation to man of technological means and work and life environments.

It is known that in the Brazilian Post and Telegraph Company - ECT, the adoption of inappropriate postures and the incidence of absenteeism is high in the population of postmen and other employees of the company. For these reasons, the proposal is justified by the search for better working conditions for all ECT employees, providing greater productivity concomitantly with a generation of a better Quality of Life at Work - QWL (MASCARENHAS, 2013).

Correios, with its peculiar characteristic, provides services in the segment of letters and parcels in the logistics sector in the country. These activities demand from your employees both physically and cognitively. To this end, NR 17 (BRASIL, 2018), brings this need to adapt working conditions to the psychophysiological characteristics of employees, in order to provide maximum comfort, safety and efficient performance.

In this context, the following questions arise: what are the ergonomic improvements that can be implemented in the position of Post Office Agent – Postman? And what impacts do such improvements have on the Quality of Life at Work (QWL)?

## **2. GOAL**

This article aims to evaluate the ergonomic improvements implemented in the activities performed by the position of Post Office Agent – Postman and to demonstrate the positive impacts on the QWL of the occupants of this position.

## **2. MATERIAL AND METHODS**

### **2.1. Research Modality**

This is a case study in terms of procedures.

Regarding the approach, it will be a qualitative research. According to Del Bianco (2016), it is the one that is not concerned with numerical representativeness, but with the deepening of the understanding of a social group, an organization, a set of companies, etc. It seeks to explain the why of things, but without quantifying values and symbolic exchanges, nor does it put facts to the test.



When it comes to nature, it will be an applied research. This type, according to Del Bianco (2016), aims to generate knowledge for practical application, aimed at solving specific problems, involving local truths and interests. The investigator is driven by the need to contribute to practical ends, seeking solutions to concrete problems. He intends to transform the results of his work into concrete action.

In relation to the objectives, it will be descriptive. Del Bianco (2016) reports that the modality that aims to describe certain characteristics of a group, population or phenomenon, is a type of investigation that observes, records, analyzes and correlates variable facts or phenomena without manipulating them.

As for the procedures, it will be a bibliographic research (survey of data from the literature on Ergonomics, postural disorders and ergonomic adjustments).

According to Del Bianco (2016):

Bibliographic research is the foundation that supports the entire investigation plan, as it is through this theoretical framework that the researcher is updated on the indicated subject and increases his theoretical and intellectual knowledge. It is important to note that the technique should induce a reflective and critical approach to the subject. An investigation should not be a mere gathering of what has already been written on a certain topic, but rather provide an evaluation of the subject from a new perspective or with a different approach, leading to new conclusions. Ideally, it can provide the evaluation of a theme under a new focus, leading to innovative conclusions (DEL BIANCO, 2016, p.15).

The data will be obtained at the Brazilian Post and Telegraph Company (ECT) in a Home Distribution Center – CDD located in the Metropolitan Region of Goiânia. The company operates in the economic activity of post and telegraph. Postmen carry out internal and external activities. Internal activities are carried out in the warehouses intended for the sorting of postal objects, in the so-called CDD – Home Distribution Centers. Outdoor activities are carried out on the streets and avenues of the city, in home distribution of postal objects. Home distribution is carried out by the conventional postman on foot, by bicycle or motorcycle.

The sample will consist of employees who hold the position of Postman at ECT, whose inclusion criteria are: working at the aforementioned Institution for 5 years or more; occupy the position of postman; both sexes; make daily use of the equipment necessary for the execution



of activities. Among the equipment used are: Postman Table - MCA-11-ERG; Swivel Chair (360°); Cart – Support for Caixeta that helps in the transport of loads; Correspondence Orderer – OC-01 (Handler); and other equipment used internally for the development of the professional's work at ECT. In the sample, all those who meet the inclusion criteria will be included, totaling 09 (nine).

In the first moment of the field visit, contact was made with the company's Operations Manager and then with the managers of the units, with the objective of obtaining authorization to carry out the research.

Photographic records of the aforementioned equipment were made, both before and after the implementation of the ergonomic improvements, and a questionnaire was applied with questions open to the sample in question. The confidentiality of the participants was guaranteed.

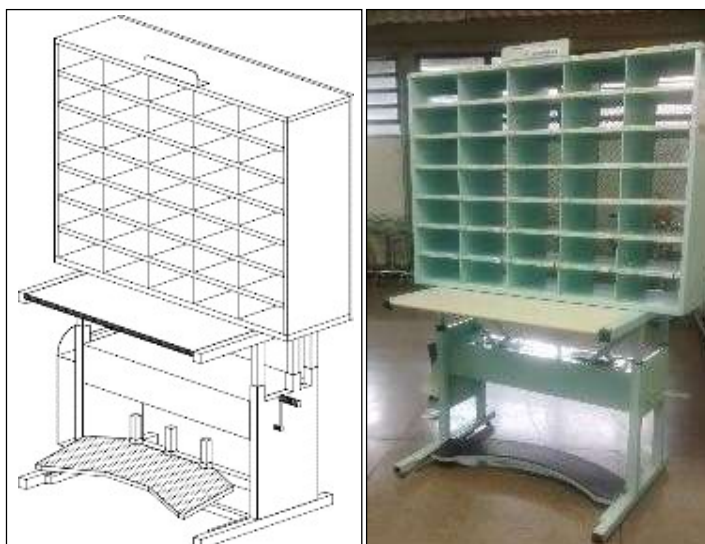
The entire survey of the survey data will be carried out in October and November of 2018.

#### 4. RESULTS AND DISCUSSION

The proposal of the new ergonomic furniture for the ECT professionals arose from the need to improve the man-work relationship and the operative modes performed in the activities. The insertion of this new equipment in the work environment was accompanied by the subjective report of the employees about the perception of these implemented improvements.

The new postman's table consists of a block of bins fixed on a height-adjustable metal structure, with a fixed top, footrest and document holder shown in Figure 1.

Figure 1: Postman Table - MCA-11-ERG.





**Source:** SESMT Correios/GO 2018

Another ergonomic improvement implemented was the Swivel Chair (360°), which is part of the composition of the postman's workstation and has the following adjustments: seat and backrest height slightly adapted to the body to protect the lumbar region. In addition, it has a base with five (05) legs provided with double casters and the ring for foot support allows height adjustment and serves as space for a small rest of the lower limb, mechanisms in accordance with NR 17 (BRASIL, 2018).

It should be noted that, as with the table, the same guidelines regarding the adjustment should also be passed on to the chair. The length of the legs is considered with the user seated and with the feet resting on the footrest or on the floor, in order to provide comfort, without pressing the lower thigh on the seat and without impairing the circulation of the lower limbs, a situation that can be observed in Figure 2.

Figure 2: Swivel Chair Erg. Source: SESMT Correios/GO 2018



**Source:** SESMT Correios/GO 2018

Also an integral part of the ergonomic improvements is the Cart – Box Holder, equipment that has height adjustment with a fixed inclination that allows the placement of boxes close to the sorting manipulator, avoiding extreme and frequent movements. The implementation of this facilitates access to the objects to be tried, avoiding flexion and rotation movements of the trunk. The Cart can also be used for transport in small displacements and positioning of the boxes at the workstations, as shown in Figure 3.



Figure 3: Cart – Caixeta Support.



Source: SESMT Correios/GO 2018

The Correspondence Sorting Officer – OC-01 (Handler) is another improvement used in the postmen's sorting station as a support for correspondence at the time of its ordering, as shown in Figure 4. This equipment has a non-slip surface base and two screens, one fixed and the other mobile, with opposite inclinations, helping in the work of professionals. The base must have a slot for fitting and displacement of the movable bulkhead.

Figure 4 - Correspondence Sorter – OC-01 (Handler).



Source: SESMT Correios/GO 2018

After the implementation of these ergonomic improvements listed: Postman Table - MCA- 11-ERG, Swivel Chair (360°), Cart - Support for Caixeta and Mail Sorter - OC-01 (Manipulator), the execution of internal work has improved significantly.

According to the answers obtained by the questionnaire applied, the professionals reported improvement in the body: "the possibility of adapting to the table according to their height through the adjustments, as each worker has different heights"; "considerable improvement in body posture"; "increased visual comfort without having to strain the vision, providing rest and QWL".





For the configuration of workplaces, the choice of the correct working height is of fundamental importance. If the work area is too high, the shoulders are often elevated to compensate, generating muscle contractions and static efforts in the upper limb segments. If the working area is too low, the spine, especially the lumbar region, is overloaded by excessive trunk flexion, which often gives rise to complaints of pain, called low back pain. Therefore, the height of the work tables must be in accordance with anthropometric measurements for both standing and sitting work (GRANDJEAN, 1998).

NR 17 emphasizes that for manual work sitting or standing, the tables must provide the employee with conditions of good posture, good visualization and execution of tasks. They must also meet the following minimum requirements: height and characteristics of the work surface compatible with the type of activity, with the distance from the eyes to the work area and with the height of the chair; easy arrangement and movement of body segments; having the workplace within easy reach (BRASIL, 2018).

In the evaluation of the chairs, the employees report that with their recent replacement, numerous benefits were achieved: the first and most remembered by them was "the postural gain with the possibility of adjusting the equipment"; "A better elaborate upholstery, with its rounded edges which improves blood circulation". Sensations that were not experienced before, when the use of chairs with other characteristics was made.

Furniture is more than an item in the office or operational area, as people spend a large part of the workday making use of it. The right choice of chair is essential to work correctly and comfortably, directly impacting the productivity of employees with a reduction in the chances of leave due to work-related diseases.

According to NR 17 (BRASIL, 2018), the chair needs a seat compatible with the worker's height, rounded front edge and specific foam density to facilitate blood circulation; the backrest must favor the fit of the lumbar region in addition to having inclination adjustment; surfaces where body contact occurs must be upholstered and covered with material that allows perspiration; the base must have casters; and the forearm rest must be adjustable.

According to Grandjean (1998), whenever possible, the work should be done sitting. Even more recommendable would be workplaces where one could alternate between sitting and standing postures. The height of the working field (height of the work surface) should allow for optimal visual observation with the most natural body posture possible. "The trolleys guarantee a fast and efficient transport of all handled objects"; "it reduces weight bearing and consequently less physical effort"; "does not overload the upper limbs"; "greater fluency in the



execution of services, gaining in productivity". Such arguments were obtained from the questions made to the employees regarding the use of the new equipment for moving loads.

Cargo packaging and handling devices are essential for transport and storage activities to be carried out with greater speed and safety. Companies that work with logistics cargo need a practical way to load their goods and objects. The carts favor the work situations of the employees who will transport, mobilize, store and handle those different materials, with ample safety and without risks, both for the materials and for the team's own health (BRASIL, 1978).

Transporting and lifting loads are always problematic and several aspects must be considered. First of all, it should be avoided as much as possible that these activities are carried out without mechanical assistance. Brazilian legislation has rules for the transport and handling of cargo. But these limits are very high and are being reviewed (CLT, 1943).

Lida (1990) warns that in the endurance of the spine, the back muscles are the ones that suffer the most from heavy lifting. Due to the structure of the spine, composed of overlapping discs, it has little resistance to forces that do not have the direction of its axis. Therefore, as far as possible, the load on the spine should be done vertically, avoiding loads with a curved back.

In the ECT, the weight limit carried by the postman, either at the exit of the units or in the Auxiliary Depots - DA's, will not exceed 10 (ten) kg for men and 8 (eight) kg for women (ACT, 2017).

According to the study carried out with the employees, they report that Workplace Gymnastics - GL, see figure 5, has contributed to the development of their work: "increased disposition and pace of work, providing better agility in the development of tasks"; "exercise the body with stretches; inhibition of the appearance of injuries and discomfort arising from activities"; "awakens awareness to the importance of exercising"; "significant improvement in QWL". In view of all these positive reports, according to employees, GL should be mandatory on the part of the company.

Figure 5: Workplace Gymnastics - GL in the CDD







**Source:** SESMT Correios/GO 2018.

For Lima (2007), WPA does not lead workers to fatigue, as it is short-lived. With this, it is expected to prevent muscle fatigue, reduce the rate of work accidents, correct postural vices, increase the employee's willingness at the beginning and return to work and prevent diseases due to cumulative trauma.

The implementation of ergonomic improvements allowed the reduction of pain complaints reported by employees in various body segments. According to their reports, the physical sensations that have been manifested are: "less pain in the cervical spine, joints and upper and lower limbs"; "reduction of fatigue, discomfort and muscle problems".

In the study with employees, most of them would recommend the same ergonomic actions and improvements in the work environment to other companies, the investment in the well-being of employees will bring a very large return to institutions, such as, for example, increased productivity and profits, which would lead to providing a favorable work environment for the employee, making you more satisfied. The cost/benefit ratio justifies for the company's board of directors without a doubt the investments in the area of Ergonomics. Studies in the field of Ergonomics have a character of continuous improvement. They are developed according to the needs and demands of the areas, aiming at the comfort, health and well-being of employees.

### 3. CONCLUSION

The study proposed in this article highlights the concern with the health, safety and well-being of the postman and other professionals who work in the ECT, and continues to be the main reason for the improvement of the company's furniture and equipment. These were produced so that the professional can take full advantage of all the designed resources, thus significantly improving working conditions, comfort and productivity.

Based on the studies carried out, it is verified that ergonomic practices as a whole: investment in new equipment, the practice of Workplace Gymnastics and the constant training of employees, aiming at the prevention and anticipation of possible occupational diseases, brings to the company a very large gain, with the reduction of leaves from work. Employees gain in the physical, social and psychological aspects, in Quality of Life at Work, because they are more excited and able to develop their work, resulting in greater financial gain for the company.



It is clear that innovations in the work environment have been causing considerable changes in work patterns, leading companies to better study the man-machine-environment relationship. More than complying with the legislation, the objective with these ergonomic changes and adaptations is to show society the relevance of Correios, as a Public Company that thinks about the social of its employees, its customers and society.

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