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**ASSESSMENT OF ERGONOMIC IMPROVEMENTS AND THEIR IMPACT ON
QUALITY OF WORK LIFE IN THE POSITION OF POSTAL WORKER AT THE
BRAZILIAN POSTAL SERVICE: 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 Greek: ergon = work and nomos = legislation, standards. In abbreviated form, ergonomics can be defined as the science of configuring work adapted to humans. Initially, the configuration of tools, machines, and the work environment was considered. The target of ergonomics was (and still is) the development of scientific bases for adapting working conditions to the capabilities and realities of the person working (GRANDJEAN, 1998).

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

According to the International Ergonomics Association – IEA (2011), the scientific study of the relationship between humans and their means, methods, and workspaces aims to develop, 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 of technological means and work and living environments to humans.

It is known that in the Brazilian Post and Telegraph Company - ECT, the adoption of inadequate postures and the incidence of absenteeism are high among the population of mail carriers and other employees of the company. For these reasons, the proposal is justified due to the search for better working conditions for all ECT employees, providing greater productivity concurrently with the generation of better Quality of Work Life - QWL (MASCARENHAS, 2013).

The Post Office, with its peculiar characteristic, provides services in the segment of letters and parcels in the logistics sector in the country. These activities demand from its employees both physically and cognitively. Therefore, NR 17 (BRAZIL, 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 possible ergonomic improvements to be implemented in the position of Postal Agent - Mail Carrier? And what impacts do such improvements have on Quality of Work Life - QWL?

3. OBJECTIVE

The objectives of this article are to evaluate the ergonomic improvements implemented in the activities performed by the Postal Agent - Mail Carrier position and to demonstrate the positive impacts on the Quality of Work Life (QWL) of the occupants of said position.

4. MATERIALS AND METHODS

Research Methodology

This is a case study regarding the procedures.

In terms of approach, it will be a qualitative research. According to Del Bianco (2016), this type of research is not concerned with numerical representativeness but with deepening the understanding of a social group, an organization, a set of companies, etc. It seeks to explain the reasons behind things, without quantifying values and symbolic exchanges, nor subjecting facts to proof.

Regarding the nature, it will be an applied research. According to Del Bianco (2016), this type aims to generate knowledge for practical application, directed at solving specific problems, involving truths and local interests. The researcher is driven by the need to contribute to practical purposes, seeking solutions to concrete problems. It aims to translate the results of its work into concrete action.

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

Regarding the procedures, it will be a bibliographic research (data collection from the literature on Ergonomics, postural disorders, and ergonomic adjustments).

According to Del Bianco (2016):

Bibliographic research is the foundation that supports the entire research plan, as it is through this theoretical framework that the researcher updates themselves on the indicated subject and increases their 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 compilation 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 differentiated approach, leading to new conclusions. Ideally, it should enable the evaluation of a topic from a new perspective, leading to innovative conclusions. (DEL BIANCO, 2016, p.15).

The data collection will be carried out at the Brazilian Post and Telegraph Company (ECT) in a Home Delivery Distribution Center (CDD) located in the Metropolitan Region of Goiânia. The company operates in the economic activity of postal and telegraph services. Postal workers perform both internal and external activities. Internal activities are carried out in warehouses designated for sorting postal items, in the so-called CDD - Home Delivery Distribution Centers. External activities are conducted on the streets and avenues of the city, in the home delivery distribution of postal items. Home delivery is carried out by conventional mail carriers on foot, by bicycle, or by motorcycle.

The sample will consist of employees holding the position of Mail Carrier at ECT, with inclusion criteria including: working at the mentioned institution for 5 years or more; holding the position of mail carrier; both sexes; daily use of the equipment necessary for the execution of the activities. Among the equipment used are: Mail Carrier Desk - MCA-11-ERG; Swivel Chair (360°); Cart - Box Support Cart that assists in the transportation of loads; Mail Sorting Unit - OC-01 (Manipulator); and other equipment used internally for 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 stage of the field visit, contact was made with the company's Operations Manager and then with the unit managers, with the aim of obtaining authorization for the research. Photographic records of the aforementioned equipment were taken, both before and after the implementation of ergonomic improvements, and a questionnaire with open-ended questions was administered to the sample in question. Participant confidentiality was ensured.

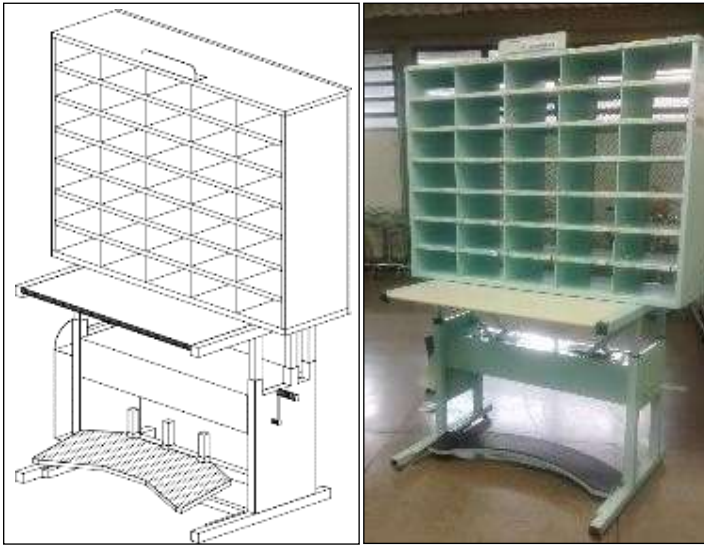
All data collection for the research will be conducted in the months of October and November of the year 2018.

5. RESULTS AND DISCUSSION

The proposal for the new ergonomic furniture for ECT professionals arose from the need to improve the relationship between human work and the operating modes performed in activities. The introduction of these new equipment in the workplace was accompanied by the subjective feedback from the employees regarding their perception of these implemented improvements.

The new mail carrier desk consists of a block of compartments fixed on an adjustable height metal structure, with a fixed top, footrest, and document holder as shown in Figure 1.

Figure 1: Mail Carrier Desk - MCA-11-ERG.



Source: SESMT Correios/GO 2018

Another ergonomic improvement implemented was the Swivel Chair (360°), which is part of the mail carrier's workstation and features the following adjustments: seat height and backrest slightly adapted to the body for lumbar region protection. Additionally, it has a base with five (05) legs equipped with double casters, and the footrest ring allows height adjustment and serves as a space for resting the lower limb, mechanisms in accordance with NR 17 (BRASIL, 2018).

It is emphasized that, just like with the desk, the same guidelines regarding adjustment should also be provided for the chair. The length of the legs should be considered with the user seated and with the feet supported on the footrest or on the ground, in order to provide comfort without putting pressure on the lower thigh on the seat and without impeding circulation of the lower limbs, a situation that can be observed in Figure 2.

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



Source: SESMT Correios/GO 2018

As part of the ergonomic improvements, the Cart - Box Support Cart is also considered, which is equipment with height adjustment and 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 items to be sorted, avoiding bending and rotating movements of the trunk. The Cart can also be used for transportation in small displacements and positioning of the boxes at workstations, as shown in Figure 3.

Figure 3: Cart - Box Support Cart.



Source: SESMT Correios/GO 2018

The Mail Sorting Unit - OC-01 (Manipulator) is another improvement used in the sorting station of the mail carriers as support for sorting mail, as shown in Figure 4. This equipment has its base with a non-slip surface and two partitions, one fixed and the other movable, with opposite inclinations, aiding the work of the professionals. The base should have a slot for the insertion and movement of the movable partition.

Figure 4 - Mail Sorting Unit - OC-01 (Manipulator).



Source: SESMT Correios/GO 2018

After the implementation of these listed ergonomic improvements: Mail Carrier Desk - MCA-11-ERG, Swivel Chair (360°), Cart - Box Support Cart, and Mail Sorting Unit - OC-01 (Manipulator), the execution of internal work has significantly improved.

According to the responses obtained from the questionnaire administered, professionals reported improvement in their bodies: "the ability to adapt the desk according to their height through adjustments, as each worker has different statures"; "considerable improvement in body posture"; "increased visual comfort without needing to strain the vision, providing rest and QWL (Quality of Work Life)".

For configuring workstations, choosing the correct working height is of fundamental importance. If the workspace is too high, shoulders are often raised to compensate, leading to muscle contractions and static efforts in the upper limb segments. If the workspace is too low, the spine, especially the lumbar region, is overloaded due to excessive trunk flexion, often resulting in complaints of pain, known as low back pain. Therefore, the height of work desks should be in accordance with anthropometric measurements for both standing and sitting work (GRANDJEAN, 1998).

NR 17 emphasizes that for seated or standing manual work, desks should provide employees with conditions for good posture, good visualization, and task execution. They should also meet the following minimum requirements: height and characteristics of the work surface compatible with the type of activity, distance from the eyes to the work area, and chair height; easy arrangement and movement of body segments; work area easily accessible (BRASIL, 2018).

Regarding the evaluation of chairs, employees report that with the recent replacement of the chairs, numerous benefits have been achieved: the first and most remembered by them was "postural improvement with the possibility of adjustment in the equipment"; "better-designed upholstery, with rounded edges that improve blood circulation." These sensations

were not experienced previously when chairs with different characteristics were used.

Furniture is more than just an item in the office or operational area, as people spend a large part of their working day using it. Choosing the right chair is essential for working correctly and comfortably, directly impacting the productivity of employees by reducing the chances of absenteeism due to work-related illnesses.

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

According to Grandjean (1998), whenever possible, work should be done seated. Even more recommended would be workplaces where there could be an alternation between sitting and standing postures. The height of the workspace (work surface height) should allow optimal visual observation with the most natural body posture possible.

"Carts ensure quick and efficient transport of all handled objects"; "reduces weight lifting and consequently less physical effort"; "does not overload the upper limbs"; "greater fluency in service execution, resulting in increased productivity." These arguments were obtained from inquiries made to employees about the use of the new equipment for cargo movement.

Devices for packaging and handling loads are essential for transportation and storage activities to be carried out with greater speed and safety. Companies that work with logistics need a practical way to carry their goods and objects. Carts favor work situations of employees who will transport, mobilize, store, and handle different materials, with ample safety and no risks, both for the materials and for the health of the team (BRASIL, 1978).

The transportation and lifting of loads are always problematic, and various aspects must be considered. First and foremost, every effort should be made to avoid these activities being performed without mechanical assistance. Brazilian legislation has standards for transporting and handling loads. However, these limits are very high and are being reviewed (CLT, 1943).

Iida (1990) warns that in the resistance of the spine, the back muscles suffer the most from lifting weights. Due to the structure of the vertebral column, composed of overlapping discs, it has little resistance to forces that do not have the direction of its axis. Therefore, as much as possible, the load on the spine should be in the vertical direction, avoiding loads with the back bent.

At ECT, the limit for weight carried by mail carriers, both when leaving the units and in the Auxiliary Deposits - DA's, will not exceed 10 (ten) kg for men and 8 (eight) kg for women (ACT, 2017).

According to the study conducted with employees, they inform that Occupational Gymnastics - OG, see Figure 5, has contributed to the development of their work: "increased disposition and work pace providing better agility in task development"; "exercises the body with stretches; inhibition of the onset of injuries and discomfort resulting from activities"; "raises awareness of the importance of exercising"; "significant improvement in QWL." Given all these positive reports, according to employees, OG should be mandatory by the company.

Figure 5: Occupational Gymnastics - OG at CDD



Source: SESMT Correios/GO 2018

According to Lima (2007), Occupational Gymnastics (OG) does not lead to worker fatigue because it is of short duration. Therefore, it is expected to prevent muscle fatigue, reduce the rate of work accidents, correct postural defects, increase the employee's disposition at the beginning and upon returning to work, and prevent diseases due to cumulative trauma.

The implementation of ergonomic improvements has led to a reduction in pain complaints reported by employees in various body segments. According to their reports, the physical sensations expressed are: "less pain in the cervical spine, joints, and upper and lower limbs"; "reduction of fatigue, discomfort, and muscular problems".

In the study conducted with employees, the majority of them would recommend the same ergonomics actions and improvements in the work environment to other companies. Investing in employee well-being will bring a significant return to institutions, such as increased productivity and profits, which would lead to providing a favorable work environment for employees, making them more satisfied. The cost-benefit ratio undoubtedly justifies investments in the field of Ergonomics for the company's management. Studies in the field of Ergonomics are geared towards continuous improvement. They are developed according to the needs and demands of the areas, aiming for the comfort, health, and well-being of the employees.

7. CONCLUSION

The study proposed in this article highlights the concern for the health, safety, and well-being of mail carriers and other professionals working at ECT, which remains the primary reason for the improvement of the company's furniture and equipment. These improvements were designed so that professionals can make the most of all the resources provided, thereby significantly enhancing working conditions, comfort, and productivity.

Based on the studies conducted, it is evident that ergonomic practices as a whole - investment in new equipment, the practice of Occupational Gymnastics, and constant employee training aimed at preventing and anticipating potential occupational diseases - bring significant benefits to the company by reducing absenteeism. Employees benefit physically, socially, and psychologically, experiencing an improved Quality of Work Life as they become more motivated and skilled in their work, resulting in greater financial gain for the company.

It is clear that innovations in the workplace are causing considerable changes in work patterns, prompting companies to better study the man-machine-environment relationship. Beyond merely complying with legislation, the objective of these ergonomic changes and adaptations is to demonstrate to society the relevance of ECT as a Public Company that prioritizes the social well-being of its employees, customers, and society as a whole.

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