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The use of Human Activity Simulation contextualized by the Ergonomic Analysis of Work in Production Systems.

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Abstract
The use of human activity simulation software contextualized by the ergonomic analysis of the work in projects of productive systems contributes in this stage of the project. In this research, it was analyzed three case studies that used some software for this purpose, the first being the design of a service desk, the second a workstation project to supply surgical needles and the third a project regarding a particular activity performed in automotive industry.

Key words:
Ergonomics, Human Activity, Simulation.

Introduction

The use of software that simulates the human activity contextualized by the ergonomic analysis of the work in projects of production systems is intended to allow information about the ergonomic parameters to be used on the workstation before the study be implemented, making it possible to develop a "reactive" method instead of a "proactive" method, because with the aid of computer-aided design (CAD) software, designers are able to develop analyzes that minimize the risks of an operator even before they operate in a particular job[1]. From effects such as modeling of the work environment, equipment and people in three dimensions, it is possible to represent anthropometric variables and, consequently, postures, which allow the designer to manipulate the operators and their respective work environments. Therefore, the overall objective of the present project was to analyze the use of human activity simulation software integrated with ergonomics and, through researches on case studies which applied this software in production systems projects, perform an analysis of the contributions of their use in project processes production systems.

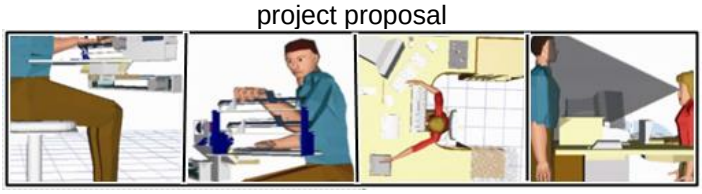
Results and Discussion

The accomplishment of the present project had as the methodology the search for case studies already made about the subject. To do this, data base searches were initially carried out, especially in the Capes, ProQuest and Web of Science portals on the topic in the last eighteen years, using the following keywords: ergonomics, simulation, human activity, software and design. The keywords mentioned above were searched in an associated manner or not, using, when necessary, the AND and OR ballers. From the analysis of the results obtained, it was possible to validate the initial hypothesis. Altogether, twenty results were found on average when the keywords mentioned above were inserted in each of the databases. After reading the summaries of these results, it was possible to verify that only a relatively small amount, about ten, was valid for the purpose of the present research, that is, some were of a more theoretical nature and did not have case studies. Therefore, it was possible to carry out the complete reading and the recording of some of these results, and finally, based on the level of detail of the case studies present in the surveys (greater amount of information, such as in which company the study was applied and the characteristics of they, the initial demand, characteristics of the population, among others), three of these were selected to be shown in the present research. The table below shows some contributions of the use of human activity simulation in the three case studies analyzed in a summarized way.

Chart 1. Some contributions of the use of simulation of human activity

Definition of dimensions and shape of work surface
Height adjustment of counter top
Support for the lower and posterior limbs
Ease of communication
Table Geometry
Reduction in overall project time

Image 1. Some simulations carried out to develop the project proposal



Fonte: MOURA, 2004.[2]

Conclusions

This research was based on the study of human activity simulation software contextualized by the Ergonomic Analysis of Work, as well as the bibliographical review regarding mainly ergonomics and simulation. It was possible to conclude that the result obtained by the research coincided with the initial hypothesis stipulated since the case studies came to validate this.

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