

# THE ERGONOMICS OF BUILT ENVIRONMENT IN PHYSIOTHERAPY ROOMS FOR CHILDREN WITH CEREBRAL PALSY: A SYSTEMATIC REVIEW

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## 1. Context

Ergonomic, seen as a scientific multidiscipline with interaction in many interest areas, is the starting point to this research. It is foreseen important environment-using aspects, all connected to them – that might be physical, cognitive, anthropometrics, of accessibility, psychosocial, and cultural – meaning to minimize faults, even in projetual phases.

Built Environment Ergonomic is a recent path that focus in activities and environment adequacy to users' needs, showing how important is concerning with relationship between human-environment-activity. This research fits into that way and contributes with other areas like design, ergonomic and architecture, in order to identify characteristics that might be benefic and to point parameters that helps patients with cerebral palsy during their treatments.

The problematic is establish through question: which elements, related to built environment ergonomic, have right and positive influence at the therapeutic daily treatment to patients with cerebral palsy in order to stimulate them? This research aims to improve this treatment making a real comparative at characteristics presents in space and reaction provided by them.

A systematic review conflicted key words associated with mean theme and others connected at specified environmental elements. It aims to find states of art and identify what kind of research has been made in the world in this context to create a guideline for next researches.

## 2. Method

A systematic review is an important instrument used in all kinds of research to make a compilation of articles and studies that revels states of art and lines settled in order to theme. This paper used a method created by Cochrane Collaboration (<http://www.cochrane.org> or <http://brazil.cochrane.org/>) which purpose to obtain the most relevant publication for a specific subject.

Divided in three stages: planning and formalization, conduct and protocol's execution and summarization. This article searched information in Periodic Portal CAPES with international parameters always associated with an advanced research tool. Were selected articles published in the last five years (2015-2020), in English and peer reviewed. As not expected, were founded so many results and it was necessary analyses the first fifty articles that presents more relevance.

To guide this work, it was necessary to answer the following question: Related at elements of built environment ergonomic, in which conditions are make researches with cerebral palsy patients and their interaction with therapy spaces? Key words related with subject were: physiotherapy room; physiotherapy clinic; physiotherapy; physical therapy; rehabilitation NOT drugs; cerebral palsy. Connected with built environment ergonomic were: human factors; environment interaction; environment influence; built environment; environment enrichment; ergonomic.

At all, were 7.376 articles founded. First relevance test, were seen titles, abstracts and conclusions in order to exclude what didn't matter for research. Thirty articles left after this test, all of them were completely read and after that six remained to this paper analyzation.

### **3. Results**

The six articles analyzed came from Pakistan, USA, Canada and Sweden showing more strength in North American countries. Some of them brought interesting evidences for influences perceived by users in built environment.

First one introduces some aspects of a virtual reality tool at the physiotherapy's performance associated with simulated environment. A software exhibited some preferences for virtual reality that seems to be opposites of the common. During the tests, biological sensors showed some errors with insignificants effects at the game.

Second brings an investigation about a robot projected for help children with several cerebral palsy in their activities. To conclude, children with several cerebral palsy demonstrated a good engagement that can be used in the future for the same application.

Third shows interferences of environmental factors in emotions and experiences known as negatives during the childhood making a comparative study. In the analyzed cases, first two years of life, the atmosphere (environment) influences in subject emotions.

Fourth come up with the therapist's perspective and progress in youth patients based at experience with environment interaction. For this paper, therapists have a preconception of emergency services when they worked and make decisions about how do an intervention.

Fifth shows a qualitative study with patient's opinions related to activities developed in to treatment and their perception at this point. In addition, concludes that they prefer active treatments in most.

Last one focus at rehabilitation centers for patients with cerebral palsy in Brazil and the working process explained by their coordinators and employees. It deduces that this system need to be better integrated with children needs right in the first meeting and cares.

### **4. Conclusion**

These studies showed a gap in investigation through this theme, mainly when related with interaction between children with cerebral palsy and environment. At nowadays, despite crescent number of researches that involves this patients, rarely the study is focus in this relation.

This review concludes absence in researches at built environment ergonomic for these patients, and a shy contribution at characteristics in spaces aspects. This gap needs to be deleted with an investment in inquiry for bring significant and potential results in this area that will contribute to improve lives of those involved.

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