

## Chapter 37

# *RACEM* Game for PC for Use as Rehabilitation Therapy for Children with Psychomotor Disability and Results of its Application

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### **ABSTRACT**

*Present work develops a PC simulation game to conduct a study with the main objective to train children with psychomotor disabilities (coordination, equilibrium and movements). The child interacts with simulated environments which contain the needed stimulus to develop the eye-hand coordination, the child responds to the game with mouse movements by means of audible orders. The main objective for the present work is to enhance the child's psychomotricity with more precise movements. Converting the game in a mean to children rehabilitation, this can be used in homes aided by child's parents. Another purpose is to have a didactical tool for professors of special education.*

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## **INTRODUCTION**

### **The Game Translated Into a Rehabilitation Therapy**

The purpose of this paper is to describe the followed process to develop a PC game oriented to help motorize disable people and its diverse variations. The first focus approach is on the study of different disabilities that may be present, the on development methods used to overcome such disability. And finally it describes the acquired experience by the investigation, game development, and the use of it to serve as a didactical tool. Final results are presented with the goal to increase the fine motor skill of impeded people.

There are children with mental and/or physical disorders thus hinder them to interact with everyday's objects. Creating a familiar dependency even taught for the simplest activities. Children with equilibrium deficiencies, such as coordination and motor, are considered as psychomotor handicapped.

Games are one of the most important activities for a child. He or she depends on it to develop their physical growth, if there are limitations, he or she will be physically diminished. To play with the ball, run, jump, a person uses the gross motor skill, or the motor area that has relation with changes in equilibrium and position. To play games, such as "pin the tail on the donkey", the child needs the fine motor skill, which is the one in charge of motor coordination

The grade of difficulty to play will depend on the affection and disorder levels. A child with Down syndrome, who wants to play football, has the physical strength to hit the ball, but not the intellectual capacity to make accurate passes and be prepared according to the team's strategy. An autistic child may play with a ball by repeated and continuous movements, the same happens with console games leading a character who jumps and moves in a scenario, this is done

by pressing control buttons repetitively making it fun and easy for the child.

Now let us to imagine a hearing impaired child interacting with a game, without the ability to listen instructions or sounds that are produce by the game. A person with physical disability, impeded to use his/her hands, cannot manipulate a mouse or a joystick, how does he/she will manipulate the controls to play? Another person with cerebral palsy who has no movement in his limbs, but his intellect allows him to fully understand how to use the program, and he has the desire to do it, how will he interact with the console or PC?

It is very difficult to use a PC game or specialized software for children with physical disability. In some way they can interact, acquiring necessary skills, by stimuli present in games, because for them the sounds, colors, animations represent challenges to move to the next level. This motivates them to continue playing. This is another problem they must face.

Thinking on them, we have created an environment that gives them access to console or PC games. In this case the game can serve as an alternative therapy for disabled children with coordination problems, such as balance and precision movements (psychomotor disabilities).

## **BACKGROUND**

The motor is defined as the combination of nerve and muscle functions that allow mobility and coordination among members, movement and locomotion. The motor can be classified into fine motor skill and gross motor skill.

Gross motor skill or global, refers to control of general body muscle movements or so-called mass, it makes the child to move his/her self by their own or being dependent at all. (Head control, to sit, roll over, crawl, stand, walk, jump and throw a ball). Fine motor skill, refers to the

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