

## Design of a Virtual Reality System for Children with Developmental Coordination Disorder

**Authors :** Ya-Ju Ju, Li-Chen Yang, Yi-Chun Du, Rong-Ju Cherng

**Abstract :** Introduction: It is estimated that 5-6% of school-aged children may be diagnosed to have developmental coordination disorder (DCD). Children with DCD are characterized with motor skill difficulty which cannot be explained by any medical or intellectual reasons. Such motor difficulties limit children's participation to sports activity, further affect their physical fitness, cardiopulmonary function and balance, and may lead to obesity. The purpose of the project was to develop an exergaming system for children with DCD aiming to improve their physical fitness, cardiopulmonary function and balance ability. Methods: This study took five steps to build up the system: system planning, tasks selection, tasks programming, system integration and usability test. The system basically adopted virtual reality technique to integrate self-developed training programs. The training programs were developed to brainstorm among team members and after literature review. The selected tasks for training in the system were a combination of fundamental movement tor skill. Results and Discussion: Based on the theory of motor development, we design the training task from easy ones to hard ones, from single tasks to dual tasks. The tasks included walking, sit to stand, jumping, kicking, weight shifting, side jumping and their combination. Preliminary study showed that the tasks presented an order of development. Further study is needed to examine its effect on motor skill and cardiovascular fitness in children with DCD.

**Keywords :** virtual reality, virtual reality system, developmental coordination disorder, children

**Conference Title :** ICVR 2018 : International Conference on Virtual Rehabilitation

**Conference Location :** Paris, France

**Conference Dates :** October 29-30, 2018