# Development of an augmented treadmill for the rehabilitation of children with cerebral palsy: pilot perspectives from young healthy adult users

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## ABSTRACT

A Real-time Treadmill Speed Control Algorithm (RTSCA) has been developed for gait rehabilitation of children with cerebral palsy (CP). The objective of the work described in this paper was to investigate the feasibility of the RTSCA prior to use by children with CP. Thirteen healthy subjects aged between 19 and 25 were recruited to walk on the treadmill using conventional speed buttons without the virtual reality (VR) environment, and the RTSCA with and without VR. The participants were asked to undertake three treadmill tests and to complete a questionnaire to provide feedback on the control of the treadmill. The descriptive results show that for 10 participants changing walking speed from stationary when using the RTSCA was similar or more comfortable to using conventional treadmill speed control buttons. For those who found it less comfortable the core issue was insufficient time to practise with the system. All the participants were satisfied with the safety and the performance of the RTSCA when incorporated into the VR scenario. A Wilcoxon test was conducted to examine whether there was a significant difference between walking speeds on the treadmill when using the conventional speed buttons and the RTSCA. The results showed that participants walked at significantly higher speeds when using the RTSCA. This may suggest that they walked more naturally or confidently on the treadmill when using the RTSCA as compared to the use of conventional treadmill speed control buttons.

**Full papers will be published in the Conference Proceeding s and will be available to delegates at the conference on Sept. 10.**

**Full papers will be released on-line in the ICDVRAT archive on March 15.**