

SDSU presents a thesis defense for
Master of Science degree in
Computer Science

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1:30pm GMCS 405

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Game Based Rehabilitation

Abstract

Impaired standing balance and stroke incidences occur 800,000 every year and are expected to rise as the population ages. The neurological impairments that can result from a stroke incident include hemiparesis (paralysis of one side of the body), coordination difficulties, apraxia (inability to perform particular purposive actions), and impairments in postural control that have a detrimental effect on a person's functional ability and increase their risk of falling.

The use of exercise and conventional physical therapy is one way and is considered the standard way of improving the standing balance. Although the conventional physical therapy is often been shown to improve balance and mobility, poor adherence and inadequate exercise techniques often result in poor outcome for the patient and delay their balance recovery.

There is growing evidence that the game based rehabilitation for balance control improves the body balance. The primary measure to balance stability is the center of pressure of the body. Currently the physical therapist has no validated system to precisely quantify center of pressure, an important component for standing balance. However Nintendo Wii Balance Board (WBB) is able to measure this center of pressure and it can be used to monitor sensitive change in the balance. Hence coupling the game based rehabilitation with the WBB results in a useful rehabilitation tool for recovering standing balance. Given that the WBB is portable, widely available, and a low cost, it can provide the average clinician with a standing balance game based rehabilitation tool suitable for the clinical setting.

Thesis Committee

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