



Using the Wii for Vestibular Rehabilitation

Clinical Observations

By Margaret Fitzpatrick, PT, DPT, OCS, and Lynne Harding, PT, (Willow Grove Physical Therapy) and the Vestibular Disorders Association

The Nintendo Wii is a popular video game console that permits users to be more physically active during what has traditionally been a sedentary activity. Wiis include a hand controller that senses players' movements; for instance, players may see an image of a bowling lane with a group of pins, and a hand that corresponds to their own hand's position holding a ball. To knock the pins down, players will use the same physical motions required during an actual bowling game: drawing an arm back and then moving forward in order to "throw" the virtual ball. This element of real-life movement has inspired people of all ages to use the Wii as a tool for physical fitness.

A recent case study noted that the use of the Wii for physical rehabilitation produced improvements in visual-perceptual processing, postural control, and functional mobility (Deutsch et al, 2008). Now physical therapists are using the console to help patients recover balance. At our clinic, the integration of dynamic balance, visual stimulation, and realistic arm motions in a controlled environment has made the Wii a valuable component of our vestibular rehabilitation

program. Before introducing the Wii into therapy, we typically start patients with clinically proven exercises to improve gaze stabilization and balance. Once patients are able to perform vestibulo-ocular reflex exercises that involve head-shaking while in front of a busy visual background, the Wii can be introduced as a progression into more demanding activities.

Using the Wii for vestibular therapy requires a balance board called the WiiFit. When patients stand on the WiiFit, the board's sensors record their foot and leg movements. Before starting a program, patients create personal profiles with their individual statistics, including height, weight, age, and basic balance skills. A physical therapist can then work together with each patient to create a treatment plan of activities.

Program choices that have been successfully used at our clinic include "Tightrope Walk," an activity where patients have to stay balanced when walking and jumping over obstacles while experiencing visual distractions, such as birds flying by. "Soccer Heading" involves patients shifting weight

to hit soccer balls while avoiding shoes and other flying objects that are racing toward them. "Table Tilt" requires very refined weight shifts which move marbles across a board and into holes without losing them over the side of the board. These games are effective at providing visual stimulation while simultaneously challenging balance. Another activity, the Wii Sports game, includes everything from the previously mentioned bowling to boxing. The game can be used as an adjunct to traditional static and dynamic balance exercises to help prepare patients for resuming their regular activities.

The relatively inexpensive Wii provides patients with visual and balance challenges in a safe and fun environment. After using the Wii in our clinic for the past six months, our experience has been that many patients have enjoyed it so much that they purchase a unit for their home, and their compliance with therapy and resulting outcomes are improved. One particular patient, who had a left-side vestibular weakness and was using the Wii in conjunction with traditional balance and visual exercises, improved her balance in one leg stance from 8–14 seconds to 30 seconds. Her ability to walk tandem with eyes closed improved from 3–5 steps to 15 steps, and her Dizziness Handicap Inventory score decreased to 16% from 56%. This all occurred over a

four-week period and with only eight sessions of therapy. Overall, we have found the Wii to be an exciting option in the treatment of vestibular disorders.



A patient improves her balance while playing the WiiFit game "Soccer Heading."

Reference

Deutsch JE et al. Use of a low-cost, commercially available gaming console (Wii) for rehabilitation of an adolescent with cerebral palsy. *Phys Ther.* 2008; 88(10):1196–1207.

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