

Nintendo Wii game controllers help diagnose vision disorder

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Wii remotes are not all about fun and games. Scientists can use them to assess and diagnose children with an abnormal head position caused by eye diseases. As described in a recent *Investigative Ophthalmology & Visual Science* article, researchers developed a low-cost digital head posture measuring device with Nintendo Wiimotes to help diagnose this condition, medically called ocular torticollis.

"Torticollis occurs in about 1.3% of children," said author, Jeong-Min Hwang, MD, of Seoul National University College of Medicine. "Accurate measurement of the angle of the abnormal head position is crucial for evaluating disease progression and determining treatment or surgical plans in parties with ocular torticollis."

Hwang and his colleagues point out that in clinical practice where it can be difficult to get reliable data from children whose heads move constantly, a digital head posture measuring systems using electronic devices such as the motion tracking capability offered by Wiimotes would be an ideal alternative.

The researchers used two [Wii](#) controllers to develop an infrared optical head tracker (IOHT) that automatically measures and records the angle of the head in real-time. The remotes were connected to a monitoring computer with an infrared camera and Bluetooth connectivity. The IOHT was evaluated for accuracy, validity and reliability by comparing it with the CROM device, one of the most widely used head posture measuring devices in hospitals.

Results demonstrated that in measuring the head posture of normal adult subjects, the measurement of the one-dimensional and three-dimensional (3-D) positions of a human head with IOHT were very close to those of CROM. There were slightly more deviations of measurements between IOHT and CROM than the researchers expected in 3-D

movement of the head, which the researchers contribute to the structural nature of CROM rather than inaccurate measurement of IOHT.

In looking at the future, the research team hopes this new tool will play a key role in diagnosing ophthalmic patients. "Considering its high performance, ease of use and low cost, we believe IOHT has the potential to be widely used as a head posture measuring device in clinical practice."

More information: www.iovs.org/

Provided by Association for Research in Vision and Ophthalmology

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