

SwayWatch: A Smartphone App to Quantify Balance

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- Medical/Health

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- Traumatic Brain Injury

According to the Center for Disease Control and Prevention, the number of sports related traumatic brain injury (TBI) visits to hospital emergency rooms grew to 248,416 children (age 19 or younger) in 2009, an increase of 57 percent compared to 2001. In addition, TBIs were recently linked to costly and life altering medical problems such as Alzheimer's. Many sports leagues have taken an initiative to reduce TBI related risks by implementing new rules, but these guidelines are very subjective and difficult to determine. Therefore, there is a need for low-cost technology that can quickly and accurately determine the severity of head injuries.

Researchers at Purdue University have developed an application for smartphones where the camera captures the motion of markers on the feet and/or ground while a person is standing. The motion of the markers is directly correlated to the person's trunk motion, which is used to quantify the body sway. The body sway can be used to quantify changes in balance resulting from a TBI in athletes. In addition, this technology can be used as a biomarker for diseases, such as Alzheimer's and autism. This technology is an effective and economical alternative given it relies solely on a smartphone.

Advantages:

- Superior accuracy
- Simple and economical compared to current solutions
- Better quantification of sway

Potential Applications:

- Capture the motion/sway of a person standing
- Biomarker for diseases, such as Alzheimer's and autism

-Monitor athletes following a TBI

People:

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