

## Wearable clip tells parents, coach about head impact

September 5 2014, by Nancy Owano



According to the U.S. Centers for Disease Control and Prevention, a concussion is a type of injury caused by a bump, blow, or jolt to the head that can change the way your brain normally works. Concussions may occur from a blow that causes the head and brain to move quickly back and forth. Sport-related concussion has been a frequent topic in the media as professionals have expressed concern over incidents that may go underreported. While football has a high incidence, girls have higher concussion rates than boys do in similar sports. Concussions happen in collision sports, such as football, rugby, or ice hockey but also in contact sports such as soccer, basketball, wrestling, and lacrosse. On Friday, for



example, in just one U.S. state, the Star Tribune reported that Minnesota's high school athletes suffered about 3,000 sports-related concussions in the past school year, with nearly half of them involving football players and one in 20 resulting in severe symptoms that lingered for more than two weeks, based on a tally by the state Department of Health. Doctors in general would agree to never <u>ignore</u> a head injury, no matter how minor.

What if parents and coaches could track and evaluate their children's head impact realtime? What started out as an engineering lab project at MIT has developed into a proposed solution seeking crowdfunding, called Jolt Sensor. This is a clip that can attach to head-worn athletic equipment. When an athlete's head accelerates in a potentially dangerous way, the sensor vibrates to alert the athlete. It also connects wirelessly to parents' and coaches' smartphones, using Bluetooth Low Energy, to alert them on the sidelines. The range is over 100 yards. Next step: the athlete can be evaluated on the sideline with the app's cognitive test and concussion symptom checklist. Results along with impact data are contextualized and presented in simple terms for parents and coaches. The sensor enclosure has a rounded silicone rubber exterior and is waterproofed with a multi-week battery life. It can be recharged via micro USB port.

The creators have turned to Kickstarter to help them move the Jolt Sensor forward. "Due to the small size of our final design, we can no longer manufacture our prototypes by hand," said the team. With funding, they said they can use third-party manufacturers to produce production-quality boards for final testing and certification. Also, the alpha version of the iOS mobile app is built and has been used to test the current prototypes. With a successful campaign, they hope to create the Android version of the app.



They said they decided to work with domestic supplier and manufacturers, and to source local options wherever possible. In addition to supporting local businesses, this offers practical benefits, they said, "and will prove crucial as we solve problems that will no doubt arise and help us to meet our anticipated shipping dates for all <u>sensors</u>. We put a lot of work into trying to account for everything and set a realistic timeline that we are confident we can meet."

The founders also note that Jolt Sensor is not a <u>concussion</u> diagnostic tool but it does provide a measure of the magnitude of head impact forces. They said Jolt Sensor is intended to direct athletes toward timely medical assessments. "Concussions can only be diagnosed by a trained medical professional," they stated. For a \$100 pledge, the supporter gets a Jolt Sensor with estimated delivery of May next year.





More information: — pediatrics.aappublications.org ... ntent/126/3/597.full

- www2.aap.org/sections/schoolhe ... hiveseptember11.html
- www.startribune.com/lifestyle/ ... ealth/273974781.html
- www.kickstarter.com/projects/2 ... -detection-for-youth
- www.cdc.gov/concussion/
- www.joltsensor.com/

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