

BROADCAST- OSF Innovation preparing to test concussion diagnosis gaming app

Many athletes who suffer a hard hit during play want to stay in the game, so they downplay symptoms. Or, they over-emphasize improvements so they can return to play after being held out following a concussion.

Researchers at the OSF Children's Innovation Lab at the Jump Simulation and Education Center in Peoria are getting close to testing a gaming app called FlightPath. Dr. Adam Cross, an OSF HealthCare pediatrician and an informaticist – someone who analyzes data and figures out better workflows. Dr. Cross says his app doesn't rely on the user to report symptoms.

“Because they want to keep playing - we term that ‘sandbagging.’ And the current tests that we have really don't protect against sandbagging. They're so reliant on people being honest with their symptoms that if somebody doesn't want to tell you, there's not a whole lot you can do. But this application that we're using is meant to test all of the different ways in which a concussion can manifest, and there are many.” (:24)

The game asks the user to capture a virtual hummingbird within the player's actual environment – which is how the “mixed reality” is created on the app that can be downloaded onto a smart phone or other device.

“We have a set of complex algorithms that determine how the bird should fly in that space to better test your abilities. If it detects you're having trouble in a certain way, it actually will go back and test that kind of movement to get a good sense of what's going on with that particular impairment.” (:17)

The mixed reality system also requires the individual to move around physically to follow the hummingbird which tests the user's coordination and balance.

“That actually requires you to not only move your hands and arms up and down but also move throughout the room (or location). You have to walk, you have to turn, you have to look up and down and all that requires vision; it requires reaction time to move with the hummingbird. It requires balance and it also requires a little bit of memory as you watch the bird leave the screen and figure out where it was going if it goes very quickly. It adapts itself to your performance in order to best test that threshold where you start having trouble.” (:28)

The game lasts only two-minutes and so it can be done on the sidelines or a playground to help assess traumatic brain injury. Dr. Cross hopes to secure additional funding outside of a grant from the [Jump ARCHES program](#) so he can provide small incentives to get anyone to download and use the app. That'll provide needed baseline data against which others suspected of concussion can be measured.

Testing of the FlightPath app could take six months or more, and then Dr. Cross will submit the app to the federal Food and Drug Administration to be approved for clinical use.