HealthManagement.org
Promoting Management and Leadership

Imaging study provides further insight into subconcussion

New research from Indiana University finds clear differences in the brains of athletes playing contact sports compared to those who play noncontact sports. The findings published in the journal NeuroImage: Clinical contribute important information to research on subconcussion.

Subconcussive blows or "microconcussions" are common in sports such as football, soccer, ice hockey, snowboarding and skiing, says senior author Nicholas Port, an associate professor in the IU School of Optometry. Interest in subconcussions has grown significantly in recent years as the long- and short-term risks of concussions – or mild traumatic brain injury – have become more widely known and understood.

"The verdict is still out on the seriousness of subconcussions, but we've got to learn more since we're seeing a real difference between people who participate in sports with higher risk for these impacts," Port explains. "It's imperative to learn whether these impacts have an actual effect on cognitive function – as well as how much exposure is too much."

The brain differences in athletes playing contact versus noncontact sports were observed as both groups were given a simple visual task. In the study, Port and researchers in the IU Bloomington Department of Psychological and Brain Sciences scanned the brains of 21 football players and 19 cross-country runners using fMRI technology. The study focused on these sports because football is a physical game in which small but repeated blows to the head are common, whereas cross-country is extremely low risk for such impacts. The contact sport players did not have a history of concussion, but these sports are known to lead to repeat subconcussive blows.

The researchers also scanned the brains of 11 non-college-level athletes from socioeconomic backgrounds similar to the football players to ensure their scan results were not rooted in factors unrelated to their sport.

The differences in football players' versus cross-country runners' brains were specifically seen in regions of the brain responsible for visual processing. These regions were much more active in football players versus cross-country runners or volunteers who did not play college sports.

"The differences in this study may reflect a lifetime exposure of subconcussive blows to the head, or they could simply be the result of playing a visually demanding sport where you're constantly using your hands and tracking the ball," Port points out. The ideal way to find the root cause of these differences, he says, is to have a similar analysis using only football players.

The next generation of wearable accelerometers to measure physical impact during play will greatly enhance researchers' ability to confidently sort players of the same sport into groups based on exposure to subconcussions.

Port is a member of the Concussion In Sport Group, an international affiliation of experts that creates the guidelines used by physicians and trainers to diagnose and manage concussion. He also conducts research on using eye-tracking technology to detect concussions on the sidelines of sports events to immediately assess athletes for concussion following impact.

Source: Indiana University
Image Credit: Indiana University

Published on : Tue, 10 Apr 2018