Influence of morphological variation on brain impact responses among youth and young adults

Improving concussion identification and diagnosis is needed to address the underreporting of sport concussion symptoms and premature return-to-play

101 subject-specific finite element (FE) head-brain models based on CT scans

Variations between people in the inner skull and scalp predicted the influence of brain impact response.

Future research is needed to improve real-time identification of concussive versus non-injurious head impacts

Brain volume explained the largest variance (>51.3%)

Estimates of tissue-level brain impact responses (maximal principal strain) under 3 head impact conditions

Individualized head/brain FE models are better at discriminating between concussive and non-injurious head impacts as compared to mid-sized male FE models and head kinematics alone.