

Concussion risks

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Concussion, a traumatic brain injury resulting in a disturbance of brain function, most commonly occurs in driving accidents and in some sports. Yet little in-depth research exists on the resilience of brain tissue and how it responds to a concussive injury. The news that the [Dublin City University](#) centre for medical engineering research, with other research centres, is studying the stiffness of brain tissue, its resistance to tearing injuries and its response to twisting forces, is most welcome. When tested, brain tissue turns out to be 10-20 times less resistant to shearing forces than ordinary gelatin. Although encased in a solid bony enclosure, the brain can still be shaken and stretched by pressure waves following an impact. But the conditions set in train by a concussion event are poorly understood. These might include high stress waves, swelling, altered biochemical signals and even damage at the level of individual brain cells.

Although a risk in many contact sports, much recent attention has focused on concussion in rugby. Estimated to occur at a rate of one concussion in every six professional games and once in every 21 games involving amateur players, there has been criticism of the effectiveness of a pitch-side “five-minute rule” in deciding whether players can return to the pitch following a suspected concussion. But the recent publication of the results of a two-year follow-up of a pitch-side assessment tool endorsed by the [International Rugby Board](#) (IRB) is reassuring. It found the tool was good at identifying and removing players with concussion and that it correlated well with later, more comprehensive, clinical assessment.

However concerns persist in many sporting codes when it comes to the evaluation of traumatic brain injury in adolescents. Many concussions in teenagers may remain undetected. With their brains still developing, they are far more susceptible to concussive injuries than adults. It would be helpful for Irish research institutions to focus their efforts on the protection of younger players.