



## Understanding the bell-ringing of concussion

Some topics we review in the *Journal* are as relevant and interesting to us as “people” as they are to us in our professional roles. Concussion, discussed by Stillman et al on page 623 in this issue, is one of these.

We well recall, back in the day, getting our “bell rung” from some form of sports-related head contact. If we could count the coach’s fingers clearly, run fast and straight, and know the plays, we could happily go back into the game. There was little additional thought given to short-term or lasting effects. I recall hearing tales from my grandfather, a boxing enthusiast, of retired punch-drunk fighters working as bouncers and greeters at sports-focused restaurants and clubs. I certainly didn’t draw any link to a few episodes of personally feeling spacey or dizzy after playing football.

But now, as parents, we are all highly tuned in to the issue of wrongly minimized “minor” head contact and concussion in our children playing sports. There is a growing research-based understanding of the mechanisms of concussion, which remains a clinical syndrome diagnosed on the basis of symptoms and sometimes subtle objective findings that occur in the appropriate environmental context. Intracranial brain impact sets the stage for locally spreading firing of neurons outside their usual pattern. This can result in a diffuse jamming of some normal electrochemical pathways of cognitive function, as well as create additional mismatch between neuronal metabolic needs and the local blood flow providing oxygen and nutrients. This disruption in autoregulation of blood flow sets the stage for enhanced brain sensitivity to any second injurious event, even a minimal one. Hence the aggressive implementation of enforced rest and recovery time for athletes and others with concussion.

It is critical to realize that the patient may not have had a loss of consciousness. Equally important is to consider the need for imaging and protection of patients who are not recovering as expected in 7 to 10 days, as well as for initial imaging of those with severe head impact or baseline neurologic disease, the aged, and those on anticoagulation.

A handwritten signature in black ink that reads "Brian Mandell". The signature is fluid and cursive, with a long horizontal stroke at the end.

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