

## Possible ways to reduce CTE

- Rugby vs Football
  - Fewer concussions in rugby
  - In rugby, they don't wear helmets so players are far less likely to use their head in contrast to football.
  - Helmets give football players the illusion that they can use their head
  - The "protective" gear in football actually make the hits harder
  - Injury rates in rugby are lower than football
  - Proper tackle technique is far more emphasized in rugby. Less leading with the head
  - The NFL has already put a lot of new rules regarding helmet contact
    - No helmet to helmet contact
    - Can't lower helmet or initiate tackle with helmet



New helmet a lot more NFL stars are wearing

Instead of having a hard outside shell, it has a soft outside shell which acts as a "car bumper"  
It flexes and bounces back on impact

Incorporates the physics concept **impulse**

**Force x time = change in momentum**

**So if the time of contact increases the force is decreased.**

### **Final Conclusion:**

- **Removing helmets and pads in football could be the solution.**
- **Push the youth more towards flag/touch football/rugby**
- **Emphasize proper technique**
- **Hockey - never check to head and hit from behind**
  
- Soccer
  - In the US, heading is banned in youth soccer for participants under the age of 11
  - Women are at higher risk from heading the soccer ball
  - **Possible Solutions:**
    - **Make a global law where heading is banned for children under a certain age**
    - **Reduce the amount of heading in practices and games**
    - **When teaching heading in practice to youth, use lighter balls (eg.beach ball) to reduce force**

**Placing padding** on hard surfaces such as goalposts, walls behind basketball hoops to avoid hard collisions, more padding on wrestling mats

**Start teaching the importance of sportsmanship to kids at a young age**

### **Boxing**

- One of the most dangerous sports when it comes to CTE and brain damage
- Referees are more strict now with stoppages
- For younger kids, reduce the amount of sparring and just teach technique
- If sparring, only do body hits
- Only leave sparring to serious fighters who want to have boxing as a career
- Reduce the number of rounds in a fight

## After watching interviews :

- Common behaviours
  - Lots of stuttering and struggling to form sentences (aphasia
    - Injuries to the parietal lobe, temporal lobe and frontal lobe
  - Weak social skills

divorces also happen after due to the mood swings and behavioural issues that come with brain damage

- Lots of players reported :
  - Sudden releases of strong emotion physically and verbally
  - Mood swings
  - Displaying negative behaviour
  - Spontaneous behaviour
  - Trouble remembering things (short term)
  - Anxiety
  - Sensitivity to light and noise
  - frequent headaches

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