Detecting concussions in real-time

Implementation of sensors in mouth guards to detect forces directly upon impact.

Traumatic brain injuries are common in contact sports and a major public health problem.

Approximately one half of concussions go undetected or unreported.

Integrating sensors in directly in a player’s mouth guard would allow for accurate analyzation of impact forces instantly.

**How?**

- Integrated sensors that can calculate impact forces
- Bluetooth transmission of data to phone or tablet
- Waterproof device and charging mechanism
- Custom fit using protective material
Creating an Instrumented Mouthguard

**STEP BY STEP**

1. **Use dental putty to create custom teeth impressions at home**

2. **Create a cast from the teeth impression**

3. **Use vacuum sealing machine to form thermoplastic over cast to create a custom retainer**

4. **Attach circuit board to clear retainer using dental-grade adhesive**

5. **Repeat step 3 to cover sensors using a protective layer of material**

6. **Connect 3D printed flexible strap that houses the charging wires and can attach to a helmet**