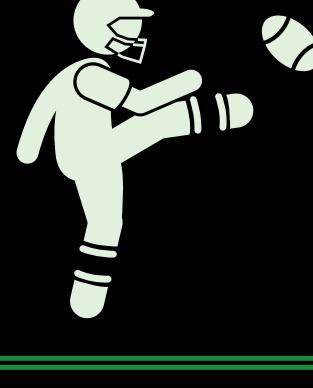


# NFL KICKOFFS:

The Physics of the most dangerous play in the NFL.



**1600 LBS**



Force generated by a 200 LB player during a tackle.

Source: Timothy Gay

**23.1 MPH**



(Raheem Mostert)

Fastest speed recorded by a ball carrier in 2020.

Source: NFL



NFL Research shows that concussions were five times more likely to occur on kickoffs than any other play. Modern players are bigger, faster, and stronger than ever, and they often collide at full speed during kickoffs.

Source: ESPN

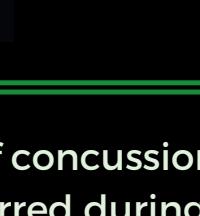
**49% BIGGER**



The average weight comparison between lineman blockers and smaller players trying to make a tackle.

Source: PFF

**51% STRONGER**



The average bench press comparison between lineman blockers and smaller players trying to make a tackle.



Two-thirds of concussions suffered during kickoffs occurred during wedge blocks. Wedge blocks often involve two 300-lb linemen double-teaming smaller players.

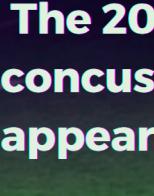
Source: ESPN

## HOW ARE KICKOFFS CHANGING?

In response to the statistics about concussions on kickoffs, the NFL made changes in 2018 that both slowed down players and (by banning wedge blocks) reduced the average size of players on kickoffs.

- Kickoff teams were no longer given a running start
- Double-teaming wedge blocks were banned. This effectively replaced larger players with smaller ones

By lowering both the speed and mass of players during kickoffs, the force generated during tackles was reduced



**35% DECREASE IN CONCUSSIONS ON KICKOFFS**

The 2018 rule change resulted in a 35% decrease in concussions on kickoffs for the 2018 season and appeared to have made kickoffs somewhat safer.

