

### Question of the Day

Which defensive player generates the largest tackling force?



DB 5'-11" 203 lb (92 kg)  
4.35 s 40-yd dash  
 $a = 33.63 \text{ m/s}^2$



LB 5'-10" 224 lb (101 kg)  
4.94 s 40-yd dash  
 $a = 29.60 \text{ m/s}^2$

ME 231: Dynamics

DB

$$v_{avg} = \frac{\Delta d}{\Delta t} = \frac{(40\text{yd})\left(\frac{0.9144\text{m}}{1\text{yd}}\right)}{4.35\text{s}} = \frac{36.58\text{m}}{4.35\text{s}} = 8.41\text{m/s}$$

$$a = \frac{\Delta v}{\Delta t} = \frac{(8.41 - 0)\text{m/s}}{0.25\text{s}} = 33.63\text{m/s}^2$$

$$F = ma = \left[ (203\text{lb})\left(\frac{0.4536\text{kg}}{1\text{lb}}\right) \right] (33.63\text{m/s}^2) = 3096.97\text{N}$$

LB

$$v_{avg} = \frac{\Delta d}{\Delta t} = \frac{(40\text{yd})\left(\frac{0.9144\text{m}}{1\text{yd}}\right)}{4.94\text{s}} = \frac{36.58\text{m}}{4.94\text{s}} = 7.40\text{m/s}$$

$$a = \frac{\Delta v}{\Delta t} = \frac{(7.40 - 0)\text{m/s}}{0.25\text{s}} = 29.60\text{m/s}^2$$

$$F = ma = \left[ (224\text{lb})\left(\frac{0.4536\text{kg}}{1\text{lb}}\right) \right] (29.60\text{m/s}^2) = 3007.66\text{N}$$

DB generates roughly 90 N larger force than LB