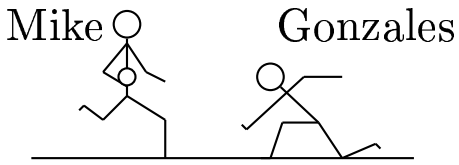
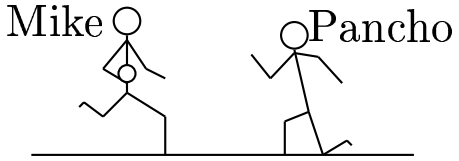



Mike(200 lb , 8 ft/s) Gonzales(100 lb , 16ft/s)




Mike(200 lb , 8 ft/s) Pancho(400 lb , 4ft/s)

Who will be more effective in stopping and hurting Mike?

A) stopping: Gonzales and hurting: Gonzales.

B) stopping: Pancho and hurting: Pancho.

C) stopping: both and hurting: Gonzales.

D) stopping: both and hurting: Pancho.

The sum of the initial momenta equals the final momentum of the two athletes who are now together; *i.e.*,

$m_1\,v_1 + m_2\,v_2 = (\,m_1 + m_2\,)\,v_f$. From Mike: $p = m\,v = 1600$ lbft/s.

Gonzales: $p = 1600$ lbft/s.

So for both cases the sum of initial momentum vectors is 0, so $v_f = 0$.

Both cases are equally effective in stopping Mike.

The kinetic energy, $K = \dfrac{m\,v^2}{2} = \dfrac{p^2}{2\,m}$.

Gonzales' weight is 4 times lighter than that of poncho.

Having the same momentum, Gonzales' kinetic energy is 4 times greater.

Upon collision, the kinetic energy is dissipated through work done on the opponent's body.

Thus $K = F\,s$, where $F$ is the average force exerted on Mike, $s$ is the distance of compression.

The greater the kinetic energy, the stronger the force and farther the compression is expected.

In turn the collision hurts Mike more.

Answer **C**.