

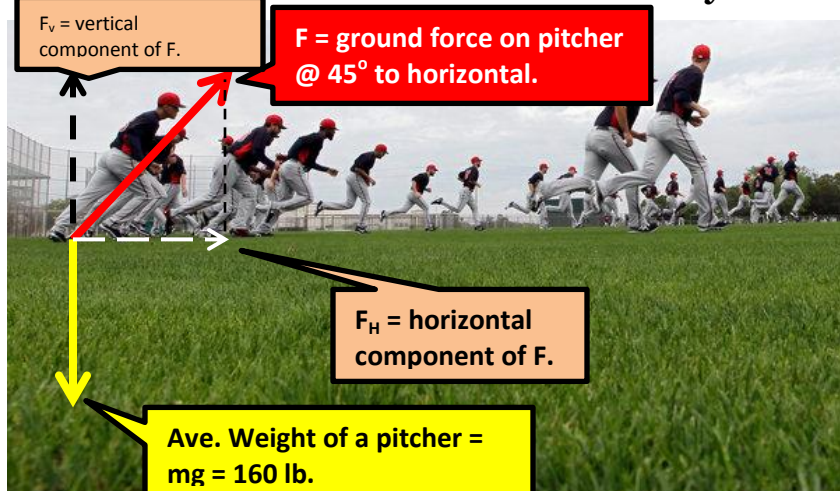
NEWTON'S 2ND LAW

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ON BASEBALL

Another Renovation for Twins' Ryan



The Twins' Terry Ryan is looking to his pitchers to turn things around.

INTRODUCTION: Notice in graphic at left how runners typically start running with F @ 45° to horizontal. Thus, the runners have the required net horizontal force F_H to accelerate. Vertically there is no acceleration. Thus, the Vertical forces on the running pitchers add up to zero. The average pitcher running has a weight $mg = 160$ lb. Notice after some **acceleration distance X**, the runners are more upright in their running since they have attained a constant velocity V . **They run at constant V in a 60 yard dash in 6.50 seconds.** Assume this V is the same as their final **velocity** after accelerating from rest over the **acceleration distance X**.

QUESTIONS: (a) Find mass of a runner? (b) Find F_H ? , (c) Find horizontal acceleration of a runner? , (d) Convert 60 yards into ft.? (e) Find constant V of runners after accelerating over distance X ? (f) Find the distance X through which the runners accelerated?, (g) Is answer (f) plausible?

HINTS: Weight = mg , $g=32$ ft/ s^2 , $X=vt$,
 $V^2 = V_0^2 + 2ax$ $F_{net} = ma$

ANSWERS: (a) 5 slugs, (b) 160 lb.,(c) 32 ft./ s^2
(d) 180 ft., (e) 27.71 ft./s , (f) 12 ft., (g) yes!
Why?

The bronze likeness of Terry Ryan smiles from a plaque behind home plate, on the concourse level at Hammond Stadium in a display for the [Scouts Hall of Fame](#). His biography includes a [10-0 record as a minor leaguer](#) for the [Minnesota Twins](#) in 1973, before an arm injury ended his playing career. “For me, **you can’t lose 90-plus games and not look to make some sort of change**,” Ryan said, adding later, “It’s tough for me to just move on after 96 losses or 99 losses and say everything’s fine. No, it’s not.” Ryan was widely admired in the late 1990s for refusing to make excuses as he tried to revive the Twins. He has no plans to start now. Salaries are higher today, but so are the Twins’ revenue streams. Identifying talent — the same principle that led to the Twins’ past success, the same trait that gave Ryan his plaque — still matters most. “There isn’t any shortcut to get where we want to go,” Ryan said. “I don’t think there’s any doubt about that.”