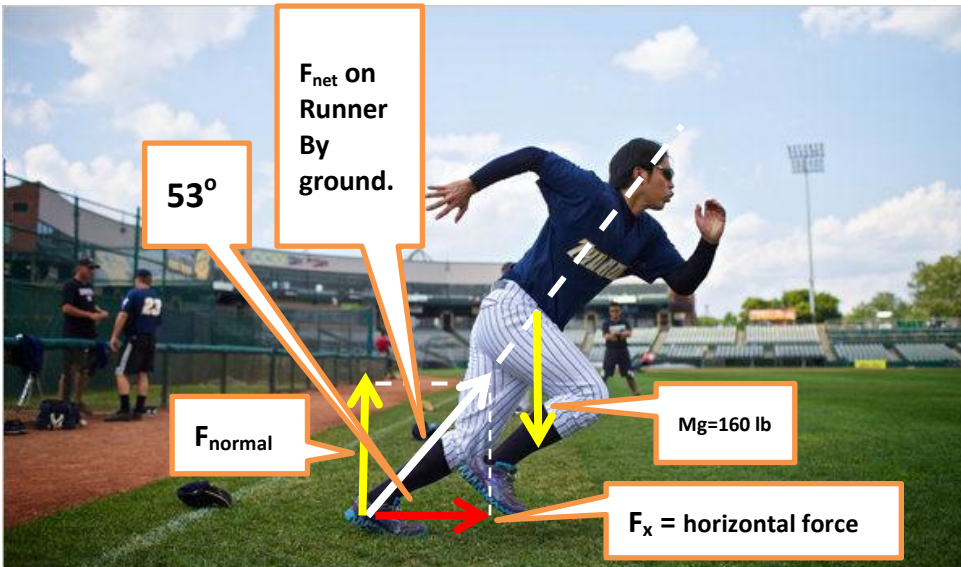


NEWTON'S 2ND LAW

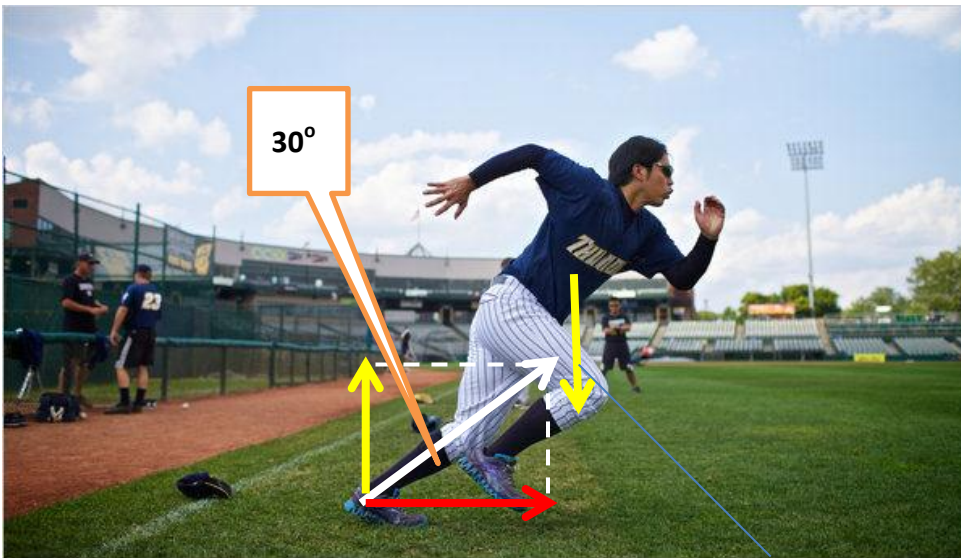
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Kei Igawa: The Lost Yankee



Kei Igawa keeps a strict exercise regimen in addition to his workouts with the team. He is often already doing sprints in the outfield or running stadium steps when his teammates arrive. [acce](http://www.acce.edu)



INTRODUCTION: This runner Pushes with his left foot on the ground and ground pushes back with force F_{net} on runner. In this case F_{net} is exerted at a 53° to the horizontal. The runner is not accelerating vertically. Thus, weight $Mg(160 \text{ lb.})$ must = F_{normal} . The components of F_{net} are F_{normal} and F_x . Knowing F_{normal} and 53° angle we can find F_x using the tan function to be 120.6 lb. Also, using the sin function We can find F_{net} to be 200 lb. Also, acceleration of runner can be found knowing F_x and mass of runner. In this case if we apply Newton's second law: $F_x = ma$ we have $120.6 \text{ lb} = (160 \text{ lb}/32 \text{ ft/s}^2) a$. Solving for $a = 24 \text{ ft/s}^2$.

QUESTIONS: If runner acceleration at a higher acceleration than 24 ft/s^2 the angle between F_{net} and F_x might be as low as 30° as shown at left. ..(a) In this case F_x ? (b) in this case Find F_{net} ?, (c) Find his acceleration In this example at left?

ANSWERS: (a) 277.13 lb., (b) 320 lb. , (c) 55.43 ft/s^2

TRENTON — In the middle of a bright Manhattan summer afternoon, the [Yankees'](http://www.yankees.com) \$46 million pitcher steps from his fashionable East Side apartment building and slips into a waiting Lexus for a chauffeured ride to the ballpark. But the car does not turn north for the five-mile drive to Yankee Stadium. The destination is instead Trenton or Scranton, Pa., where for the last five years Kei Igawa has pitched for two Yankees minor league teams. Day after day, start after start, complete with the return trip to Manhattan. Plucked from a Japanese baseball all-star team roster in 2007 and introduced at a lavish news conference, Igawa was expected to be a staple in the Yankees' starting rotation. He lasted 16 games, most of them regrettable outings that were sometimes spectacularly inept. Boomed off the field, he was called one of the worst free-agent signings in Yankees history. After his last, losing appearance for the Yankees in early 2008, he was banished to the farm system and he has not come back. Except for his nightly returns to Manhattan. But Igawa's unusual commute is only part of a long, strange journey.