

"Time/Speed of a person"

Subject: Physics

Overview:

Measuring the speed of a person running can be very difficult with small light gates. Pressure mats enable the speed or time of a person to be found by triggering each mat as the person runs over the top of them. This simple procedure shows how the time of a person running around a track can easily be found.

Equipment required: LogIT DataLogger
2 pressure mats
Protective carpet or similar
Computer
Thin ply Boards (used to provide a smooth surface to place the mats on if required)



Hazards:

If using the mats on the floor to time races make sure that they are secured to avoid them slipping when walked or run on either by placing light weight mats or carpet squares over them or tape them down. Always check your local regulations or the school advisory service such as CLEAPSS or SSERC for guidance on the use of any hazardous material or source.

Suggested setup:

1. Connect the pressure mats to the datalogger.
2. Place the mats into a position such that they are triggered by the feet of the person. In the photo we have placed the mats side by side. The right one starts and the left one stops timing.
3. Connect the datalogger to the computer.
4. Start the timing software (see LogIT Lab or Insight manual) and select 'Time' from sensor 1 to 2.

Note: Connect the Pressure Mats to the datalogger in the order that they are to be activated. For example, put the first mat in channel 1 and the second mat in channel 2 (or indeed any channel higher than 1). Try not to place the mats too far apart or at an awkward distance such that the person may have to take more/less steps than is natural. If using DataVision, select timing and setup the timing from sensor 1 to sensor 2.

Suggested method:

1. Start the timing software.
2. Start running and press the start mat (right) with the running shoe.
3. Run round the track and then press the stop mat (left) with the running shoe.
4. The time of the lap should be displayed.

Results:

From the time, the average speed can be calculated by dividing the distance run by the time taken.

Going further:

Was this an accurate test? If not why not?
What other tests could you perform on the runner?

