

Jump Forces

When jumping upwards, there are two times when force comes into play. The first is when you attempt to lift off the ground. The second is when you come back down and land. In this lab, you will investigate both of these with an eye towards bigger rules that might apply in other forceful situations.

During the lab, investigate one or both of these questions:

1. What are the effects of changing the amount of liftoff force you use? How does this affect the force vs. time graph and how does it affect the time you spend in the air? Does it affect the height to which you rise?
2. How can you change the amount of force that acts on you when you land? Demonstrate landings from similar takeoffs that have different force characteristics. Describe the differences, citing the data you gather, and what you did to accomplish them.

Materials

Force Plate
Interface
Data collection program
Video camera (optional)
Motion Detector (optional)



Suggestion

Consider using *triggering* with the Force Plate to help you gather the data you need to answer your question(s). Go to Help > Logger Pro Help. Click on the Index tab and start typing Triggering in the space. The topic of Triggering will be selected and you can double click on it to learn about this powerful technique. For example, you could set triggering to occur only after the force exceeded 50 N. Once you press Collect, the interface sends data at your prescribed rate to the CPU but none of it is recorded. Once the force goes over 50 N, all the forces you asked the program to record will be read and recorded in the data table.