Shoe μ Lab

Objective: Students will use known dynamic relationships to evaluate the static friction coefficient of multiple shoes.

Procedure:

* Students will use a spring scale (used to measure force) and their understanding of dynamics to find both the μs and μk­ of their shoes.
* Students should place 500g masses inside each shoe.
* Students should find the μ’s of a shoe from each person in the group
* Students should find the *lateral* μ’s and *longitudinal* μ’s of each shoe.
* Students should make all measurements deemed necessary on *two different surfaces.*
* Students should use this information to devise a procedure to discover the desired values.

Materials available:

* Spring scales
* Masses
* 3 Beam Balances
* Paperclips
* Tape
* String

Suggested Discussion Questions:

* Do you think it would be most beneficial to have a higher longitudinal or lateral μ?
* What types of shoes tested had higher μ’s? Lower? Is this what you would expect?
* Use the standard deviation of the μ of each different shoe to prove precision (or suggest improvement is needed)