CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

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Project Number
S0201

Project Title
Got Traction?

Abstract

Objectives/Goals
The objective of the project is to determine whether the cost of a basketball shoe affects the co-efficient of static friction the sole of the shoe possesses.

Methods/Materials
In order to simulate a basketball court, polyurethane finish was applied to a wooden plank. Then, using a spring scale, the shoe was weighed. If the shoe weighed less than 500 grams, marbles were added until it weighed 500 grams. Then, the shoe was placed on the edge of the wooden plank and the plank was lifted so that it made an angle with the floor. When the shoe started to slip, the angle measurement (between the wooden plank and the floor) was taken. Then, using summation equations on the x and y axis and separating all the forces into x and y components, the co-efficient of static friction was solved for. This was repeated 5 times per shoe, and 50 shoes were tested in all.

Results
The results were that the TX traction shoe, which cost $50, had the greatest coefficient of friction, followed by the Iverson Off the Clock ($80) and the Spalding Dynasty ($50). However, the shoes with the lowest co- efficients of static friction were the Nike Cruise Force ($60), followed by the Nike Air Zoom Uptempo ($100). Finally, the shoe with the smallest co- efficient of static friction was the Nike Air Uptempo Player ($80).

Conclusions/Discussion
In conclusion, no definite correlation between the cost of the shoe and its coefficient of static friction was determined. The least expensive shoe and the most expensive shoe had virtually the same co-efficient of static friction. Also, the third least expensive shoe had the highest co- efficient of static friction. Though the coefficient of static friction is one of the main factors in determining the cost of a shoe, it is not the only factor. Comfort, durability, and sometimes even brand names all contribute to the overall price that the consumer pays. It was concluded from this experiment that the costlier shoe does not necessarily have the highest coefficient of static friction.

Summary Statement
The purpose of this project is to see whether the cost of a basketball shoe affects the co-efficient of static friction between the sole of the shoe and the court.

Help Received