CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)

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Project Number

22484

Project Title

Second Skin: Testing the Drag Coefficient of Swim Suit Materials

Abstract

Objectives/Goals

Many new materials for swimsuits are being created constantly that are less resistant than human skin or faster than normal material. This led me to my problem; do the fancy new materials cause just as mux drag as the old polyester suits? I plan to test the drag from each material and to see if the manufacturers€ are truly being honest.

Methods/Materials

In order to test the amounts of drag each material has in water, I made a plastic cylinder and filled it wit€ water to drop my dummy (a pot) down. I placed different suit materials on the same pot and dropped them 175cms down a guide rod. I measured the time it took to reach the bottom and compared. The fox different suit materials were the powerflow, aquapel, normal polyester, and the drag suit. As the constant I used the pot without any material.

Results

The aquapel was the fastest with an average time of 4.142s followed closely by the powerflow (4.155sx no suit (4.207s), the normal suit (4.675s), and the slowest was the drag suit with 5.727s.

Conclusions/Discussion

The use of the new material suits stretched over the pot made the system more streamline thus eliminating drag from the angles of the pot, similar to a suit smoothing out the flow surface over a human body. The fastest material was the aquapel by about one hundredth of a second to the powerflow. They were thex least resistant materials and went the fastest even though they weighed less than the slower suits and had less gravitational pull. The aquapel also weighs slightly more than the powerflow. If the two materials had weighed the same there is a possibility that the powerflow would have beaten the other. As I said, the weight of the suits may have changed the outcome, but it is all relative to the materials on the humx body. I also based the timing system off of humans. If I could do it differently I would use some type of electronic timing system which involved touch pad so that the human error factor would be eliminated.

Summary Statement

I tested the drag of different suit materials by timing how long they took to travel a fixed distance through a column of water.

Help Received

Father dropped pots during experiment.