Name(s)

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Project Number

J0323

Project Title

On Course: A New Device in Backstroke Efficiency

Abstract

Objectives/Goals

Beginning backstroke swimmers are having a difficult time swimming straight and preventing collisions. If these swimmers were given the ability to see where they were headed, would they swim straighter and/or faster? Will making special goggles that would change the direction of focus using prisms and mirroring allow backstroke swimmers to see where they were going and give them a better sense of direction? The prism goggles will reflect images at different angles. The refracted images will be viewed by the eyes of the swimmer, which will give them the ability to see behind them.

Methods/Materials

Using store-purchased goggles as the base for the invention, I glued and sealed prisms with silicon glue to the lenses of the goggles. Test subjects were videoed swimming a 50m backstroke once without the prism goggles in order to obtain a baseline, and three times with them using the prism goggles. The subjects# accuracy and speed were determined by analyzing the film.

Results

My hypothesis regarding the improvement of accuracy was proven to be correct. Out of seventeen test subjects, nine showed improvements in swimming straighter in their assigned swim lane. I believe that this is a result of the ability to see where they were going with enhanced visual awareness. My hypothesis regarding the improvements in speed was not proven to be correct. Out of seventeen test subjects, only one test subject showed improvements in time while using the prism goggles.

Conclusions/Discussion

In conclusion, the prism goggles that I engineered did have a positive impact on the abilities of novice backstroke swimmers. The ability to see where they were headed allowed the swimmers to swim in a straighter line. Further testing with improved conditions and more subjects would better support my hypothesis. I hope to continue my experimentation using my prism goggles to enhance the performance of beginning backstroke swimmers.

Summary Statement

I created prism swimming goggles to improve backstroke accuracy in novice swimmers by allowing them to see where they were headed.

Help Received

I was supported by interviewing swim coaches & optometrists and my science teacher guided my research and results.