Researchers engineer a winning strategy for the Rottnest Channel Swim

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Training regularly and vigorously in the lead up to the Rottnest Channel Swim (this Saturday 24 February) may sound like the main key to success, but a group of researchers from The University of Western Australia has a strategy it says will maximise performance on the day.

The scientists, who are used to crunching numbers and simulating complex interactions in the ocean, applied their engineering and marine expertise to come up with a strategy to use during the race. Unlike most other relays, the Rottnest Channel Swim allows team members to take it in turns to swim and enter the water as often as they like.

UWA Oceans Graduate School researcher Dr. Scott Draper said if people were to split the distance between four people, so that everyone swam about five kilometres continuously, the swimmers would need to pace themselves.

"But if you do short swims, you can effectively go about 25 percent faster," Dr. Draper said. "However, there are other factors to consider, for example if the swim is too short then repeatedly getting into and out of the support boat can be difficult and tiring."

Dr. Draper and UWA research colleagues will take part in the Rottnest swim as a team. They tested their theory by jumping into the deep end – literally – in Perth's Swan River, and collected data by swimming many hours with different relay swim distances.

"We found that swimmers who completed around 100m (or 1-2 minute) bursts at close to their sprinting speed could recover sufficiently between their successive legs to maintain a very high average swimming speed," he said. "This increase in average speed was also maintained when the swimmers simulated getting into and out of a boat between bursts."

Based on this, it appears that the ideal approach is to try for the shortest bursts possible throughout the race, noting that there can sometimes be limits to the change-over speed, depending on congestion. If solving it from an endurance aspect was not enough, the scientists also threw a bunch of other factors into their experiment, including oceanographic data on wave motion and ocean currents.

They used Zermelo's navigation problem which determines the fastest route for a swimmer/boat to travel between two locations, accounting for ocean currents using ocean current data provided by UWA Professor of Coastal Oceanography Professor Chari Pattiaratchi.

Professor Pattiaratchi, who has been making current predictions for the Rottnest swim for many years, said ocean currents were a critical factor as the swimmers approached the island where currents were strongest.

"Usually, currents flow from south to north and occasionally as seen last year, currents flow from north to south sweeping swimmers to the south of the island so they are not able to complete the swim. Therefore understanding the currents is vital so that you can choose a route that maximises your chances of success."

After the event, the researchers will compare their own data against their predictions and share their experiment with colleagues as a publication in a scientific journal.

Provided by University of Western Australia