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Swimming to the music improves performance

An applied research project by a University of Lethbridge digital audio arts student has shown competitive swimmers swim more efficiently when they listen to music.

Spencer Simkin, who will complete his degree this spring, wanted to find a way to bridge his love of music, and his digital audio arts education, with his love of sports, and his work as a swimming coach. An applied research class gave him the opportunity to investigate the use of music synchronicity in swimming.

“Music synchronicity is being used in other rhythmic sports like running and rowing, but no one was talking about or using it for swimming,” says Simkin. “I came up with the idea of using underwater headphones to work with the swimmers and have them swim to the rhythm of songs.”

Music synchronicity is the process of linking rhythmic movement with the rhythm or other features of music. Simkin chose four songs based on their rhythms and their inspirational nature. He tested four music parameters — tempo, rhythm, volume and lyrics — over the course of four weeks. Five swimmers, ranging in age from 12 to 20, participated in the project. As they swam the 400-metre freestyle, the swimmers, outfitted with a set of bone conduction headphones, listened to the Indiana Jones theme song in the first week and Michael Jackson’s ‘Beat It’ in the second week. Week three was devoted to Eminem’s ‘Lose Yourself’ and the swimmers listened to ‘Code Name Vivaldi’ by The Piano Guys during the final week of the study.

Simkin measured the swimmers’ strokes per minute both with and without music. Their stroke rates without music were typically around 37 to 40 but their stroke rates increased to 42 to 43 when they listened to music.

“The study showed promising results. We did see a boost in the stroke rate, which is great, on the beginning songs,” says Simkin. “The final song I chose for the swimmers was dramatically faster and it was more or less a test to see how much I could push their stroke rate. The older swimmers, who were 15 to 20, managed to hold on to a stroke rate of around 55 a lot better than the younger swimmers. For the younger swimmers, the stroke rate went up to 46 but that dropped off relatively quickly after about the 200-metre mark.”

He says the swimmers seemed to be far more focused when they listened to music and they identified most with the rhythm of the music, rather than the tempo, volume, or lyrics.

“I’d like to see my results used to help younger swimmers focus harder on their stroke technique and their stroke-making,” he says. “I would love to see composers get involved and create specialized pieces of music that fit with both the rhythm and the beat and the overall motion of a 200- or 400-metre freestyle race plan.”

Rises and dips in the music could give the athletes cues for the race, to know when their stroke rate should rise and when they can ease off, for example. Athletes in other sports could use similar techniques to train for their particular sport.

“It’s another training tool, but it’s one you can take away from the pool, making it even more useful,” he says. “I have a better understanding now of what is going on musically that these athletes can use. The best part of this research was finding out that music does play a role and you can use music to help improve performance.”

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