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Thrust and power measurements of Olympic swimmers TIMOTHY WEI, University of Nebraska - Lincoln, VICKI WU, RPI, SEAN HUTCHISON, Ikkos Training, RUSSELL MARK, USA Swimming — Elite level swimming is an extremely precise and even choreographed activity. Swimmers not only know the exact number of strokes necessary to take them across the pool, they also plan to be a precise distance from the wall at the end of their last stroke. Too far away and they lose time by drifting into the wall. Too close and their competitor may slide in before their hand comes forward to touch the wall. In this context, it is important to know, in detail, where and how a swimmer propels her/himself through the water. Over the past decade, state-of-the-art flow and thrust measurement diagnostics have been brought to competitive swimming. But the ability to correlate stroke mechanics to thrust production without somehow constraining the swimmer has here-to-fore not been possible. Using high speed video, a simple approach to mapping the swimmer's speed, thrust and net power output in a time resolved manner has been developed. This methodology has been applied to Megan Jendrick, gold medalist in the 100 individual breast stroke and 4 x 100 medley relay events in 2000 and Ariana Kukors, 2009 world champion and continuing world record holder in the 200 individual medley. Implications for training future elite swimmers will be discussed.

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