



***Investigation of the Max Power Model
and the Velocity Perturbation Model
for Assessing Resistive and Propulsive
Forces in Swimming***

Josh C. White and Joel M. Stager

*Human Performance Laboratory, Department of
Kinesiology, Indiana University*

INTRODUCTION

- The study of swimming has long centered upon the two determinants of swimming speed: the resistive forces experienced by the swimmer and the propulsive forces that the swimmer can generate.
- While much research has already been done into the factors that affect these two determinants, a single method to measure either of the two has yet to be widely accepted.

Current Methods

- Four primary categories of quantifying resistive and propulsive forces are prevalent in the literature
 - Extrapolation of oxygen consumption to resting values
 - Use of the MAD System
 - Video analysis
 - Swimming either with or against an external force (assisted or resisted swimming; ARS).

PURPOSE

- The goal of this study is twofold. First, a new method (the Max Power Model) for measuring resistive and propulsive forces using ARS will be created and refined.
- Second, the responses of the Max Power Model (MPM) and the EPM to a variety of known and unknown changes in resistive and propulsive forces during swimming will be examined in an effort to establish greater validity.