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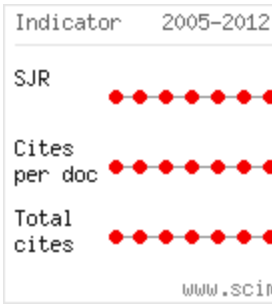

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A model for active drag force exogenous variables in young swimmers

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Abstract

The aim of the current study was to develop a structural equation modeling (i.e., path-flow analysis model) for active drag force based on anthropometric, hydrodynamic and biomechanical variables in young swimmers. The theoretical model was developed according to main review papers about these determinants. Sixteen male swimmers (12.50±0.51 years-old; Tanner stages' 1-2) were evaluated. It was assessed: (i) anthropometrical variables such as body mass, height, frontal surface area; (ii) hydrodynamic variables

including drag coefficient and active drag with the velocity perturbation method; (iii) the biomechanical variables stroke length, stroke frequency and swimming velocity after a maximal 25-m bout. Path-flow analysis was performed with the estimation of linear regression standardized coefficients between exogenous and endogenous variables. To verify the model fit, root mean square residual was computed. The active drag presented significant association with all exogenous variables, except for stroke length and stroke frequency. Confirmatory model excluded the frontal surface area (RMSR>0.1). Even so, 95% of active drag was explained by remaining variables in the model. Confirmatory path-flow model can be considered as not suitable of the theory. In order to increase the model fit, in a near future it is advice to develop new frontal surface area estimation equations specific for young

swimmers rather than using models developed with adult/elite swimmers.

Key words: aged-groups; biomechanics; anthropometrics; hydrodynamic

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1. Morphometric Study for Estimation and Validation of Trunk Transverse Surface Area To Assess Human Drag Force on Water

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