Presentation Abstract

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Session:	E-36-Sport Biomechanics
	Friday, Jun 04, 2010, 7:30 AM -12:30 PM
Presentation:	2612 - **A Path-flow Analysis Model For Active Drag Force Determinant Variables In Age-group Swimmers**
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Abstract:	**The role of drag force in competitive swimming is one of the main topics for researchers and field practitioners as it allows enhancing performance. The development of "flow chart" models confirming the relationships between drag force and other determinant variables was never attempted in competitive swimming. Moreover, main research groups dedicate little attention to age-group swimming. PURPOSE: The aim was to develop a structural equation modeling (i.e., path-flow analysis**

model) for active drag force (Da) based on anthropometric, hydrodynamic and biomechanical determinants in young swimmers. The theoretical model was developed according to main review papers about these determinants. METHODS: 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 (FSA); (ii) hydrodynamic variables including drag coefficient and Da with the velocity perturbation method; (iii) the biomechanical variables stroke length (SL), stroke frequency (SF) and swimming velocity after a maximal 25-m bout. It was computed the Spearmen´s Rank Correlation Coefficient between exogenous and endogenous variables. Path-flow analysis was performed with the estimation of linear regression standardized coefficients between exogenous and endogenous variables. When appropriate, according to the theoretical model, simple or multiple linear regression models were computed. The standardized regression coefficients (β) were considered and the significance of each β was assessed with the student's t-test ($p<0.05$). The effect size of the disturbance term for a given endogenous variable, which reflects unmeasured variables was 1 -R^2. To verify the model fit, root mean square residual was computed (RMSR < 0.1). RESULTS: The Da presented significant association with all exogenous variables, except for SL and SF. Confirmatory model excluded the FSA (RMSR > 0.1). Even so, 95% of Da was explained by remaining variables in the model. CONCLUSION: Confirmatory path-flow model can be considered as not suitable of the theory. For a near future it is advice to develop new FSA estimation equations specific for young swimmers rather than using models developed with adult/elite swimmers.

Disclosures: **T.M. Barbosa**, None.