Researchers are constantly trying to identify the factors that can predict with higher accuracy the swimming performance. This massive research has given special emphasis to the energetic and biomechanical assessments as the main determinants to enhance swimming performance (e.g., Barbosa et al., 2008). A very recent review study suggested a hierarchical relationship between these factors. The performance is strongly linked to the energetic assumptions, since these, in turn, are dependent on the biomechanical behaviour and the motor strategies adopted by the swimmer (Barbosa et al., 2010). Tracking changes in energetic and/or biomechanical variables is quite important for swimmers and coaches, because might help those finding realistic goals and training procedures. Main advantages are: (i) monitoring the progression of swimmers’ energetic and biomechanical profile during or between seasons or; (ii) determine a hierarchical contribution for the variables that can better predict the swimming performance during a season or during swimmers career; and (iii) establish temporal relationships between swimmers energetic and biomechanical profiles. For two consecutive seasons was reported a significant improvement in biomechanical and energetic factors for young male (Latt et al., 2009a) and female (Latt et al., 2009b) swimmers. Authors also stated that biomechanical factors (stroke index) best characterized the 400-m freestyle performance in both genders. Monitoring changes in test measures for 3.6±2.5 years, the stroke frequency at 4 mmol.L⁻¹ blood lactate concentration (SF@V4) for males and the skinfolds for females showed to be reliable parameters to predict the breaststroke performance of (Swimming). At the moment, a couple of papers investigated longitudinal data concerning the changes in energetic or biomechanical variables. However, those earlier studies only focused their attention in a single domain (energetics or biomechanics), and/or measured very few parameters. So, the aim of this study was to analyze the changes in elite swimmers’ energetic and biomechanical profile during a winter season.

**SUBJECTS:** Seven elite male swimmers (19.6±3.8 years of age; 1.72±0.05 m of body height; 72.7±7.55 kg of body mass) volunteered to serve as subjects. Swimmers had regular participation in national and international competitions in the last two years.

**STUDY DESIGN:** Subjects were assessed in two different evaluation moments: November (EM1) and March (EM2) of the 2009-2010 season. In a single session an incremental and international competitions in the last two years.

**RESULTS AND DISCUSSION:** The SI@V4 and the np@V4 presented stable without significant variations: SL@V4=4.64±1.9; SI@V4=2.56±0.22; np@V4=3.77±0.33; SL@V4=3.70±0.34; np@V4=41.83±4.06; np@V4=40.6 6±4.9. We can appoint the training process as the main reason for this V4 enhancement during the winter season as suggested in previous studies (e.g., Reis & Alves, 2006). On the other hand, the motor control and stagnation in the anthropometric characteristics are reasons that can explain the significant increase in SF@V4 and the stagnation in SL@V4. At some point of the competitive season, elite swimmers reach maximal standard of technical ability, were improvements in swimming velocity only are capable by increasing the SF and maintaining the SL. Similar results about the stagnation in biomechanical parameters were reported during a training season for young swimmers (Minghelli & Castro, 2006). However in our study, when concerning an individual analysis, four of the seven swimmers have increased their np@V4. So, we can state that each swimmer as an individual optimal capacity to combine this key biomechanical elements to improve their performance.

**REFERENCES**


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