at different percents of the CV (90, 95, 100, 103 and 105%), in random order, with 90 s of passive rest, to obtain PE. For statistics analysis Friedman and Wilcoxon tests were used. Correlations among variables were verified by Spearman test. Student t-test was used to compare different percents of the CV, prescribed critical velocity (CVP), and real velocity (SVR). When differences were observed, real CV was compared to the percent immediately above. $\alpha < 0.05$. RESULTS: Differences occurred at 90% (91.9±1.0), 95% (96.2±1.8) and 100% (101.0±1.5) of the CV when compared to SVR and between percents immediately above, indicating that protocol used was validly. PE presented significant difference among percents of the CV. Significant correlation between PE with percents of the CV was observed (rho=0.785, $p<0.01$). Results suggest that PE increases (from 12 to 17 points) as percent of the CV increases, but it is a non-linear relationship. DISCUSSION: Results are in agreement with others studies that founded correlation between CV and PE during incremental swimming tests (Ueda and Kurokawa, 1995; Lima et al., 2006). Little increases in swimming velocity (5% of the CV) can justify the difference founded in PE. Lowest correlation value observed between CV and PE in the present study compared to the literature could be explained by the PE role in exercise intensity tolerance control. It seems that PE does not necessarily increase when percent of the CV increase throughout short-duration interval training in front crawl. REFERENCES: 1. Lima MCS, Junior PB, Gobatto CA, Junior JRG, Ribeiro LFP (2006). Incremental test proposal based on the rating of perceived exertion to determine metabolic thresholds and mechanical parameters of free style. Braz J Sports Med, 12:1-5. 2. Ueda T, Kurokawa T (1995). Relationships between perceived exertion and physiological variables during swimming. Int J Sports Med, 16:385-9.

P-071

Tracking the 2004-2008 Olympic Cycle Performance in Long Distance Freestyle Events

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INTRODUCTION: As world records are being broken so often, tracking the swimmer's performance is important to analyze its progression between competitions, and help coaches to define realistic goals and training methods. The aim of this study was to track the long distance freestyle events performance during the 2004-2008 Olympic Cycle. METHODS: For the 400-m and 1500-m, an overall of 181 swimmers and 905 race times were analyzed. FINA's male top-150 ranking for long course in the 2007-2008 season was consulted in each freestyle event to identify the swimmers included in it. Best performances during the Olympic cycle seasons (between 2003-2004 and 2007-2008) were collected from ranking tables. This tables were provided by the National Swimming Federations of each swimmer identified, and when appropriate were also collected from a public swimming database (www.swimrankings.net). Performance progression was analyzed based in two approaches: (i) mean stability; (ii) normative stability. For mean stability assessment, descriptive statistics and ANOVA repeated measures followed by a post-hoc test were computed. Normative stability was analyzed with Pearson Correlation (Malina, 2001) and the Cohen's Kappa tracking index (Landis and Koch, 1977). RESULTS: ANOVA repeated measures revealed significant variations in the swimming performance for the 400-m event [$F(1,91) = 67.89$; $P < 0.01$] and 1500-m event [$F(1,90) = 91.81$; $P < 0.01$] throughout the Olympic Cycle. Bonferroni post-hoc tests confirmed significant performance enhancement ($P < 0.01$). The K values expressing the stability throughout the Olympic Cycle were moderate [400-m event (K = 0.43 ± 0.05) and 1500-m event (K = 0.44 ± 0.05)]. Self-correlations revealed that high stability is achieved at the third season in the 1500-m event (r = 0.61) and at the fourth season in the 400-m event (r = 0.73). DISCUSSION: World-ranked swimmers performance went through a great improvement during the 2004-2008 Olympic Cycle. Stability and prediction based on overall Olympic Cycle period is moderate. When more strict time frames are used, swimming performance stability and prediction increases, starting at the third season in the 1500-m and at the fourth season in the 400-m. REFERENCES: 1. Landis JR, Koch GG. The measurement of observer agreement for categorical data. Biometrics 1977; 37:439-446 2. Malina RM. Adherence to physical activity from childhood to adulthood: a perspective forma tracking studies. Quest 2001; 53:346-355

P-072

Changes of Competitive Performance, Training Load and Tethered Force During Tapering in Young Swimmers

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INTRODUCTION: Training load changes during a taper may have an impact on performance2 and can be estimated using a session-RPE method.3 Moreover, since tethered swimming force is related to performance,1 combined changes of training load and tethered force may explain performance changes. The aim of the study was to examine tethered force and session-RPE load changes before and during a taper. METHODS: During the four-week period before the National Championship (NC), the session-RPE training load of 12 swimmers (age: 14.2±1.3yrs) was recorded daily and summarised for each week. Thirty-four (T1), twenty (T2) and six days (T3) before the NC the swimmers' tethered swimming force (TF) during a 15 s maximum effort test, the hand-grip strength (HG) and percentage of body fat (BF) were evaluated. Backward multiple linear regression analysis was used to examine the relationship of NC performance change with session-RPE training load, TF, HG and BF changes between T3-T1 and T3-T2. RESULTS: Performance was not changed after the taper (0.11±1.6%, 95%CI: -0.9 to 1.1%, $p>0.05$). The session-RPE load difference of week 4 minus week 1 (W4-W1) was related with the percentage change of performance during the taper ($r=0.63$, $p<0.05$). HG, TF and BF were not changed during the T1, T2, T3 and their percentage changes were not related to the percentage change of performance (TF: 112±38, 114±41, 115±41 N, HG-right arm: 35±11, 34±11, 34±12 kg; HG-left arm: 33±9, 32±8, 33±9 kg, BF: 20.1±6.3, 19.1±5.9, 19.5±5.9%, $p>0.05$). The variation in percentage change of performance was attributed by 40% to changes in session-RPE (W4-W1, multiple $r=0.63$, $r^2=0.40$, SEE=1.37%, $p<0.05$). HG, F and BF changes did not contribute significantly to the model. DISCUSSION: Session-RPE estimated training load is a useful parameter affecting changes of performance time. This method of training load calculation may help coaches for a better planning of training before an important competition. REFERENCES: 1. Hooper SL, Traeger L, Mackinnon LT, Ginn E. (1998). Effects of three tapering techniques on the performance, forces and psychometric measures of competitive swimmers. Eur J Appl Physiol, 78:258-263. 2. Mujika I, and Padilla S. (2003). Scientific bases for precompetition tapering strategies. Med Sci Sports Exerc, 35(7):1182-1187. 3. Wallace LK, Slattery KM, Coutts AJ. (2009). The ecological validity and application of the session-RPE method for quantifying training loads in swimming. J Strength Cond Res, 23(1):33-38.