Swimming seems to be one of the most studied sport among Sport Sciences, for its total of 905 race times were analyzed. It was considered as inclusion criteria to be a FINA's male top-150 world-ranked swimmer for long course during the 2007-2008 season, in any of the freestyle events presented. It was defined as exclusion criteria: (i) not be a swimmer from the FINA's top-150, (ii) to be a swimmer from the FINA's top-150, but authors did not have access to season best performance in the five consecutive seasons (iii) be a swimmer from the FINA's top-150 but have not swam the event at least one time per season from 2003-2004 to 2007-2008 for some reason.

DATA COLLECTION: For each free-style event, FINA's male top-150 ranking for long course in the October 2007/September 2008 season was obtained, to identify the swimmers that were included in it. After that, ranking tables provided by the National Swimming Federation of each swimmer identified in the top-150 were used to collect the season best performance, between 2003-2004 and 2007-2008 (Beijing's Olympic Games season). Only race times from official competitions at local, regional, national or international levels were considered. When suitable or appropriate, race times were also collected from a public internet swimming database (www.swimrankings.net).

STATISTICAL PROCEDURES: The normality of the distributions was assessed with the Shapiro-Wilk test. Longitudinal assessment was made based on two approaches: (i) mean stability; (ii) normative stability. For mean stability, mean plus one standard deviation and quartiles were computed. Data collection was analyzed with ANOVA repeated measures followed by a post-hoc test (Bonferroni test). The normative stability was analyzed with the Cohen's kappa (κ) and the Pearson Correlation Coefficient. The qualitative interpretation K value was made according to Landis and Koch (1977) suggestion: (i) excellent if K ≥ 0.75; (ii) moderate if 0.40 < K < 0.75 and; (iii) low if K < 0.40. Qualitative stability based on Pearson Correlation was considered as high if r ≥ 0.60; (ii) moderate if 0.30 ≤ r < 0.60 and; (iii) low if r < 0.30, as suggested by Malina (2001).

World-ranked swimmers' performance went through a great improvement during the 2004-2008 Olympic Cycle. Stability and prediction based on overall Olympic Cycle period was 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.