

Functional Movement Screen® evaluation: comparison between elite and non-elite juvenile swimmers

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ABSTRACT

BACKGROUND: The FMS® test battery has been used to identify and assess the stability and mobility standards required for any athlete seeking improvements in functional movement patterns^[1]. Specifically in swimming, it is used to test athlete's performance^[2]. Swimming performance can be influenced by several factors such as physiological, biomechanical, and anthropometric characteristics^[3]. Assessing physical skills of young swimmers is in the interest of sports professionals and practitioners^[4]. **OBJECTIVES:** The current study aimed to assess and compare FMS® values in elite and non-elite young swimmers, as well as to verify their relationship with performance level. **METHODS:** 32 swimmers, aged between 13 and 16 years old (14.99 ± 0.13 years old) were classified as elite group and 17 swimmers, aged between 13 and 15 years old (14.65 ± 0.19 years old) were non-elite group. FMS® was applied to each swimmer individually before training by two experienced researchers. The test battery was composed by seven exercise patterns assessed in a scale of 0 to 3. Each swimmer performed each exercise three times and the best result was recorded for further analysis. Data normality was tested using Shapiro-Wilk and Kolmogorov-Smirnov tests. Mann-Whitney U-test and t-test were used to compare FMS® values between groups. Pearson's coefficient (r) and coefficient of determination (r^2) were used to verify correlations between performance and FMS® values. The strength of the relationship and magnitude of effects were also calculated. **RESULTS:** The total score obtained for the elite group was higher than the non-elite group (17.03 ± 1.81 vs. 14.59 ± 1.94 , $p = 0.000$). Statistical significance was set at $p \leq 0.05$. The elite group presented better results in all tests performed, except for the left shoulder mobility test (2.53 ± 0.62 vs. 2.65 ± 0.61 , for elite and non-elite, respectively). Statistical differences were found between the elite and non-elite groups in the deep squat ($p = 0.005$), right hurdle step ($p = 0.005$), left hurdle step ($p = 0.002$), as well as trunk stability push up ($p = 0.000$). There was a positive relationship ($r = 0.6$, $r^2 = 40.9\%$, $p = 0.000$) between performance level (FINA points) and total FMS® score in these swimmers. **CONCLUSION:** The results suggested that total FMS® score is affected by different competitive performance levels, namely the

elite and non-elite level. Elite swimmers showed higher values and a positive relationship was found between performance and total score.

Keywords: *movement screen, functional performance, juvenile swimmers, elite and non-elite swimmers*

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