

Is shoulder rotator strength and balance affected by a single swim practice?

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INTRODUCTION

Dry-land training programs that focus on preventing shoulder rotators injuries are essential for swimmers. Normally, training routines comprise strength programs before (Batalha et al., 2015) or after (Ramsi et al, 2004) the swimming session. However, it is unclear if one swimming session will induce fatigue and impair muscle strength and balance. This study aimed to analyse the acute effects in shoulder rotators strength and balance after a standard swim practice.

METHODS

Seventy-two male swimmers (16.28 ± 1.55 years; 63.97 ± 6.85 Kg; 174.1 ± 7.89 cm) performed strength tests targeting both shoulders before and after a standardized swim practice (with 4600m of total swimming volume in long course swimming pool: 900m of warm-up with low intensity tasks, 800m of technical training, 400m of

velocity training, 1000m of aerobic training capacity, 600m of aerobic power training, and 900m of recovery tasks). A microFET2 hand-held dynamometer (Hoggan Scientific LLC, Utah) was positioned proximal to the ulnar styloid process on the posterior surface of the forearm to assess external (ER) and internal (IR) rotators strength. Maximal isometric strength and ER/IR ratios were assessed in prone position, as previously described (Ramsi et al. 2014). Prior to these tests a test-retest was performed in order to calculate the interclass correlation coefficients (ICC) of the IR and ER evaluation. All ICC results were high (>0.90).

RESULTS

No significant differences were found between strength values before and after the swim practice (table 1).

Table1

ER, IR and ER/IR ratios values before and after the swim practice.

	Dominant shoulder			
	Pre-intervention (Mean \pm SD)	Post-intervention (Mean \pm SD)	Difference Mean (95% CI)	<i>p</i>
ER-PT (N)	151.15 \pm 30,54	150.31 \pm 32,99	- 0.84 (-5.47 to 7,16)	0.791
IR-PT (N)	196.30 \pm 37.54	191.7 \pm 40.61	- 4,60 (-2.06 to 11,27)	0.173
ER/IR ratio (%)	77.61 \pm 11.73	79.51 \pm 14.59	1.90 (-5.07 to 1.27)	0.236
	Non-dominant shoulder			
	Pre-intervention (Mean \pm SD)	Post-intervention (Mean \pm SD)	Difference Mean (95% CI)	<i>p</i>
ER-PT (N)	137,73 \pm 23,94	137,05 \pm 24,63	- 0,68 (-3.67 to 5,04)	0.755
IR-PT (N)	200,83 \pm 42,88	196,43 \pm 45,19	- 4.40 (-2,41 to 11,21)	0.202
ER/IR ratio (%)	70.22 \pm 12.80	71.62 \pm 13.83	1.40 (-4,49 to 1,68)	0.369

p –paired sample T-test

CONCLUSION

The shoulder rotators strength and balance do not seem to be impaired after performing a standard swim session. Our

results suggest that coaches can plan a shoulder rotators dry-land strength training program instantly after the swimming session.

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Body Fat estimation among young football players: DXA versus Bioimpedance

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INTRODUCTION

Accurate assessment of body composition is an important issue among sports athletes. Different methodologies used in the evaluation of body composition originate controversial results, leading to a deep uncertainty on individual exercise prescription. Thus, this study aims to identify the differences between a widely used method, such as bioelectrical impedance (BIA), and a clinical method, highly accurate, Dual-energy X-ray absorptiometry (DXA), among elite young football players.

METHODS

Observational study, recruited 38 male Football athletes with mean (sd) age of 16.7 (0.87) years, involved in the Portuguese national competition of U16 (n=13) and U19 (n=25). Study participants were invited to visit the *Escola Superior de Desporto e Lazer* to be evaluated on several sports performance determinants. Objective measures of body composition, muscle strength and football skills, were collected by trained technicians. Body composition was assessed using the electrical bioimpedance (Tanita BC-418, Tanita Corp., Tokyo, Japan), in agreement with all the evaluation premises, in order to reduce the error in the estimation of the different body compartments. Additionally, all athletes

were evaluated using the clinical method DXA scanner using a General Electric Hologic Discovery (Hologic Inc., Waltham, MA, USA). Spearman correlation and the mean difference between the two methods used to assess body composition was calculated. The agreement between both methods was illustrated using the Bland and Altman plots.

U16 and U19 athletes

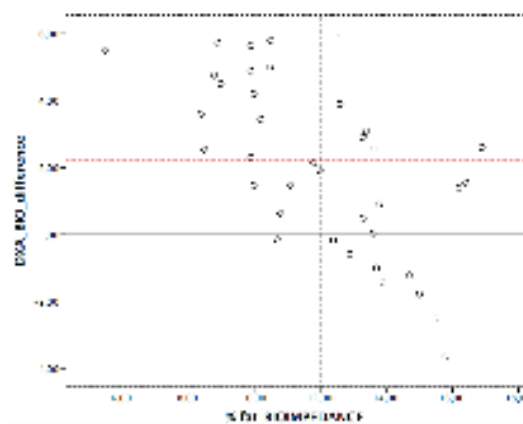


Figure 1. Bland–Altman plots.

RESULTS

Despite the moderate correlation between methods ($r=0.33$) to estimate the percentage of total fat, the median of the difference between methods (DXA vs BIA) was relevant in clinical terms, 2.9% and 1.47% for U16 and U19 athletes respectively. The Bland and Altman plots, showed a clear tendency in the evaluations using the BIA, namely among athletes with better body composition profile (8-12% of