



DIFFERENCES IN SWIMMING FORCE METRICS, INDUCED BY GENDER

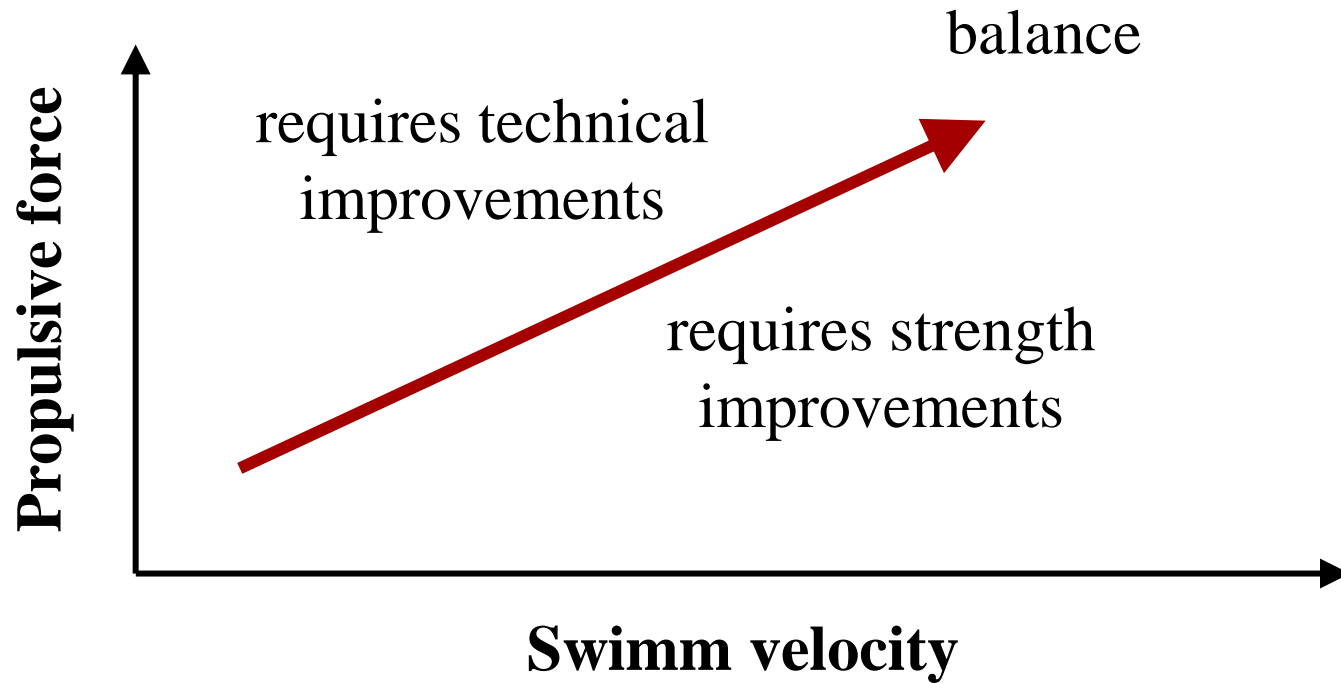
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Representation of the relationship between maximum force in tethered swimming and swimm velocity (adapted with permission from the author and the journal; Keskinen, 1997).

Previous studies point that, in adolescence, boys are taller and heavier than girls; taking advantage in swimming performance with that anthropometric difference (Morouço et al., 2012).



FINA JUNIOR WORLD CHAMPIONSHIPS RECORD

The aim of this study was to identify possible differences between performance (personal best at 50m freestyle) and parameters obtained in tethered swimming tests (force and impulse), between genders.

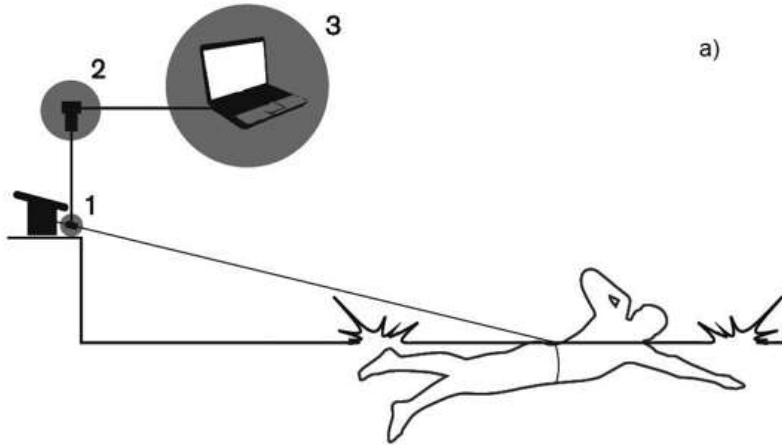
METHODS

	age (years)	body mass (kg)	height (m)	arm span (m)
male ($n = 14$)	14.6 ± 1.2	53.1 ± 9.0	1.66 ± 0.1	$1.69 \pm 0.1\text{m}$
female ($n = 8$)	13.9 ± 2.10	46.3 ± 9.2	1.57 ± 0.1	$1.57 \pm 0.1\text{m}$

Each participant performed a 30 s maximal front crawl tethered swimming test (described in detail by Morouço et. al, 2011) and a 50m in-water maximal bout.

After normality assumption checked, speed in 50m in-water maximal bout (s50) and force metrics (average force – F_{avg} ; maximum force – F_{max} ; and impulse of force – F_{imp}) were assessed for each group.

METHODS



RESULTS

	male	female	p
50m speed (m/s)	1.52 ± 0.13	1.69 ± 0.11	p=0.004
average Force (N)	78.1 ± 17.1	56.0 ± 14.5	p=0.006
maxim Force (N)	200.8 ± 51.4	141.4 ± 35.48	p=0.009
impulse Force (N)	74.7 ± 15.6	52.8 ± 16.3	p=0.006

No differences were found in body mass, height and arm span ($p > 0.05$).

DISCUSSION

It is assumed that body mass and height differences among males and females intensively increase after puberty (Kraemer et al., 1989).

Thus, it is pointed that at these ages males are capable to produce more strength (Schneider & Meyer, 2005).

However, in the present study no anthropometrical differences were noticed, and still performance and force exertion in-water were higher for the males group.

DISCUSSION

These results suggest that other variables, rather than body constitution, should be considered when evaluating adolescent swimmers.

The higher values in tethered swimming metrics may imply that male swimmers had higher muscle strength levels and/or a greater capacity to apply propulsive force to water.





Thank you for your attention!

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