

INTRODUCTION

Lacrosse has seen an uptake in participation in the last two decades and a small, sided variant (sixes lacrosse (SL)) of the game which is being considered for inclusion in future Olympic events could increase this further. With SL having only been developed in the last 2 years little is known about the physical demands of the sport.

The purpose of this study is to identify competitive match and in-house training match demands of international SL using global positioning system (GPS) technology.

METHODS

17 international male outfield SL players (26.00 ± 3.08 years, 181.47 ± 6.75 cm, 89.84 ± 8.93 kg) participated within the present study, 13 international matches in three international tournaments were observed (n = 111). Six in-house training matches were observed (n = 45). Match and training characteristics were determined using GPS technology (S7 Vector, Catapult, Leeds, UK) sampling at 10 Hz. GPS units were worn in a fitted sports bra between the shoulder blades underneath protective equipment. Total distance (TD) (m), average velocity (AV) (m/min), max velocity (MV) (m/s), high speed running (HSR) distance between 5.5-7 m/s (m), very high-speed running (VHSR) distance >7.00 m/s (m), acceleration efforts (AE) >2 m/s/s, deceleration efforts (DE) >2 m/s/s, peak work in 1 min (m), peak work in 2 min (m), peak work in 3 min (m) were observed. Mean and SD for each match and training characteristics were calculated. Independent samples t-tests and Hedge's g effect sizes (ES) were used to determine the significance and magnitude of differences. An a priori alpha level was set at p<0.05. Hedge's g ES and 95% confidence intervals were interpreted as trivial (<0.19), small (0.20–0.59), moderate (0.60–1.19) and large (>1.20).

RESULTS

Significant, small to moderate difference were observed for AV (Figure), MV (Figure), AE (Figure), DE (Figure) and peak 2-min distance (Table 1). Non-significant, trivial-small differences were observed for TD (Figure), VHSR, peak 1-min distance and peak 3-min distance (Figure) (Table 1).

Table 1. Mean ± standard deviation and statistical difference for GPS measures in competitive SL matches and in house training matches.

Measure	Match	Training	p	Hedge's g (95% CI)	Interpretation
Total Distance (m)	2654 ± 476.63	2681.79 ± 878.12	0.274	0.19 (-0.25, 0.60)	Trivial
Average velocity (m/min <sup>-1</sup> )	116.60 ± 12.79	108.34 ± 29.41	0.014	-0.42 (-0.77, 0.04)	Small
Maximal Velocity (m/s <sup>-1</sup> )	7.27 ± 0.65	6.76 ± 0.86	<0.001	-0.70 (-1.03, 0.35)	Moderate
High-speed running distance between 5.5-7 m/s <sup>-1</sup> (m)	111.09 ± 61.10	89.39 ± 63.31	0.013	-0.71 (-0.74, -0.05)	Small
Very High-speed running distance between >7 m/s <sup>-1</sup> (m)	19.58 ± 13.98	15.78 ± 14.86	<0.279	-0.27 (-0.70, 0.31)	Small
Acceleration efforts >2m/s <sup>-2</sup> (count)	32.99 ± 12.18	25.42 ± 13.77	<0.001	-0.60 (-0.96, -0.22)	Moderate
Deceleration efforts >2m/s <sup>-2</sup> (count)	27.46 ± 10.85	22.02 ± 12.54	0.005	-0.48 (-0.85, -0.13)	Small
Peak 1 min distance (m)	155.57 ± 52.21	156.02 ± 49.95	0.959	0.00 (-0.34, 0.30)	Trivial
Peak 2 min distance (m)	233.60 ± 88.86	245.12 ± 92.93	0.001	0.58 (0.15, 0.97)	Small
Peak 3 min distance (m)	328.58 ± 75.51	288.73 ± 149.75	0.327	-0.30 (-0.72, 0.22)	Small

CI = confidence intervals

CONCLUSIONS

Between in-house training matches and competitive matches, TD and peak 1-min distance are similar with only trivial differences. However, training matches are not meeting the higher intensity running demands of SL, with small to moderate differences for MV, AV, HSR, VHSR, AE, DE peak 2-min distance.

PRACTICAL APPLICATION

Training should aim to meet the physical demands experienced within the sport, this is especially true for the worst-case scenario demands of the sport, demonstrating that training should be manipulated to mimic competition scenarios to meet competition intensity.

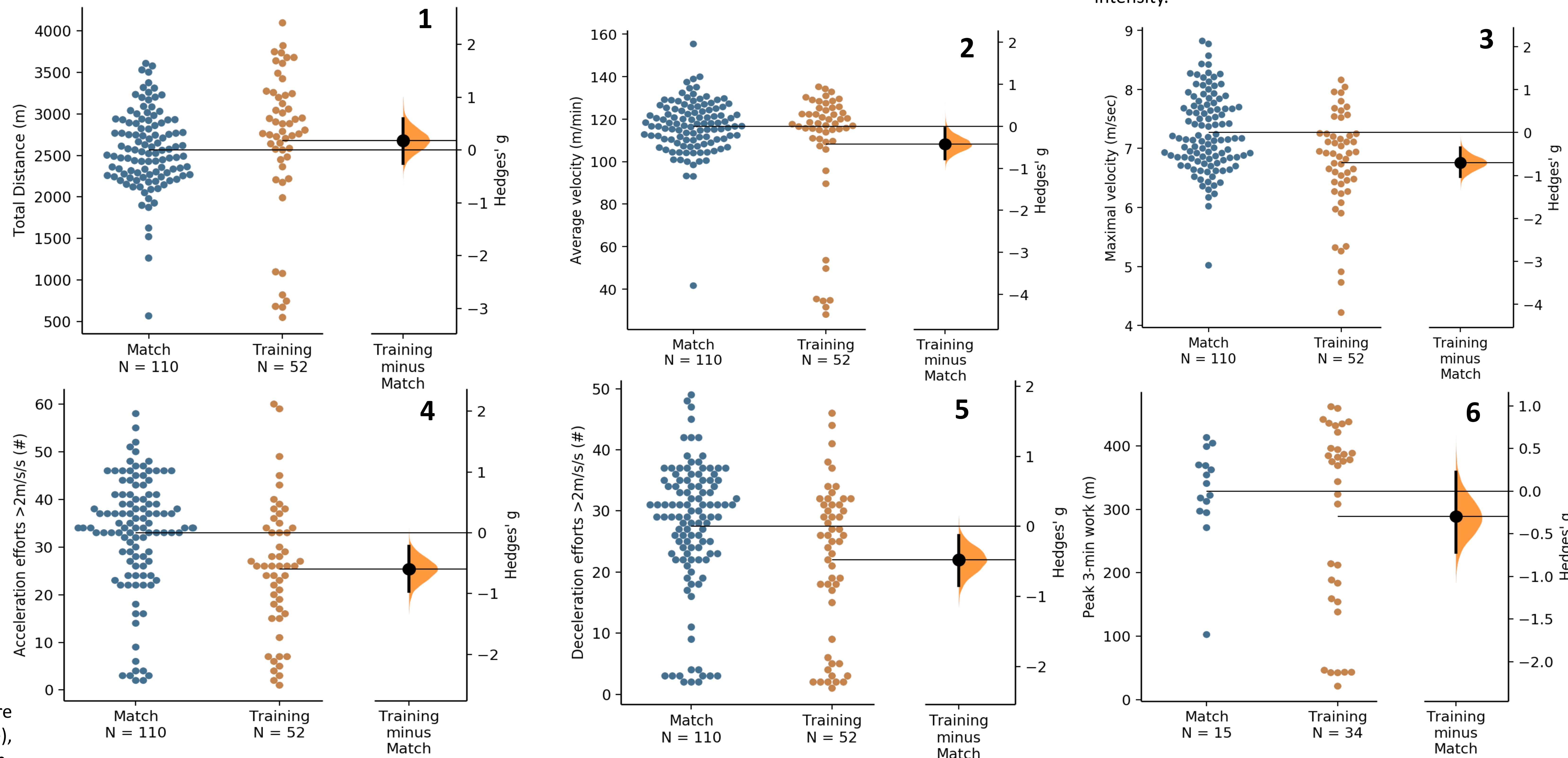


Figure 1-6. Gardener and Altman estimation plots illustrating the difference between match and training games for GPS variables 1) total distance (m), 2) average velocity (m/min), 3) maximal velocity (m/sec), 4) acceleration efforts (#), 5) deceleration efforts (#) & 6) peak 3-min work.