DIFFERENCES IN PERFORMANCE CHARACTERISTICS IN SPRINT HURDLES BETWEEN HURDLERS AND DECATHLETES IN ASIAN GAMES 2006

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INTRODUCTION: Hurdling technique may not be the main factor to explain the differences in race performance between world-class hurdlers (Brüggemann et al. 1999). However, it is likely that technical factors play a more important role in hurdling performance in less skilled athletes. Therefore, we examined the differences in hurdling performance between the specialized (hurdlers, HRDS) and non-specialized (decathletes, DECS) athletes.

METHOD: All the 110m hurdles heats and finals of the 15th Asian Games (Doha, Qatar) were filmed by three digital video cameras (50 Hz) set perpendicular to the track at the 3rd (H3), 6th (H6) and 10th hurdle (H10). Cameras were synchronized by the smoke of the starting gun and they were panned with the athletes throughout the race.

Average split velocities were calculated from the split times to each hurdle (touch-down after the hurdle, TD), taken from the video recordings. For assessing hurdling technique, hurdle clearance times (from take-off (TO) to TD) were calculated. In addition, for the H3, H6 and H10, the distance from the TO and TD points was determined. Anthropometric data and final/ reaction times were obtained from the organizer's web site: (http://www.dohaasiangames.org/).

RESULTS AND DISCUSSION: As expected, HRDS had a higher maximum split velocity (by ~9 %)($P<.001$) and shorter average hurdle clearance time (by ~14 %) ($P<.001$) (Table 1), but also shorter reaction time than DECS (0.165±0.034 vs. 0.201±0.030 s, $P<.05$, respectively).

Table 1 Athlete data and selected performance characteristics (n=24)(Mean±SD)

	Height (m)	Weight (kg)	Age (yrs)	Final time (s)	Max split vel ($m \cdot s^{-1}$)	H clear time (s)
HRDS (n=13)	1.84±0.03	75±4	24±3	13.97±0.47	8.61±0.33	0.36±0.02
DECS (n=11)	1.86±0.06	84±7	25±2	15.31±0.46	7.80±0.29	0.41±0.04

Average hurdle clearance time was significantly related to the final time for DECS ($R=.80$, $P<.01$) but not for HRDS ($R=.43$). This indicates a different role of hurdling technique in competition performance between less and highly skilled hurdlers. Surprisingly, the TO distance to the hurdle was longer for DECS than HRDS (2.32±0.20 vs. 2.08±0.13 m for H3, $P<.01$, 2.23±0.17 vs. 2.10±0.13 m for H6, $P<.05$ and 2.22±0.14 vs. 2.04±0.11 m for H10, $P<.01$, respectively). Possibly DECS had a greater centre of mass vertical lift and loss of horizontal velocity during hurdle clearance, as compared to HRDS (Salo et al. 1997), that is likely to increase towards the end of the race due to the reduction in TD distance (1.73±0.22, 1.60±0.29 and 1.44±0.26 m for H3, H6 and H10, $P<.05$). No change was observed in TD distance for HRDS (1.64±0.18 m, 1.61±0.14 m and 1.60±0.12 m, respectively).

CONCLUSION: Hurdling technique seems to play a more important role in competition performance for DECS than for HRDS due to their more inconsistent hurdle clearance.

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