

Analysis of Women's Pole Vault Final - Preliminary Results



Brief data capture details

- Seven digital video cameras were placed in the stands around the stadium to capture footage for 3D motion analysis. The cameras recorded between 60 and 200 frames per second.
- The athletes were recorded for each vault, and their highest vault was selected for analysis. For this presentation the top 6 finalists are included.
- Key run-up and take-off variables have been selected for this flash report, as well as bar clearance heights. More detailed data are to follow in a written report.

Results – comparisons with Season's Best (SB)

Athlete	Position	SB 2017 (m)	World Championship – London 2017 (m)	Difference (%)
Stefanídi	1	4.85	4.91 (O)	+1.24%
Morris	2	4.84	4.75 (O)	-1.86%
Peinado	3	4.65	4.65 (XO)	0.00%
Silva	3	4.82	4.65 (XO)	-3.53%
Ryzih	5	4.75	4.65 (XO)	-2.11%
Bradshaw	6	4.81	4.65 (XXO)	-3.33%

Results – comparisons with Season's Best (SB)

Athlete	Position	SB 2017 (m)	World Championship – London 2017 (m)	Difference (%)
Newman	7	4.71	4.65 (XXO)	-1.27%
Mullina	8	4.67	4.55 (O)	-2.57%
McCartney	9	4.83	4.55 (XO)	-5.80%
Bengtsson	10	4.65	4.55 (XO)	-2.15%
Büchler	11	4.73	4.45 (O)	-5.92%
Newell	12	4.65	4.45 (XO)	-4.30%

Results – Run-up analysis

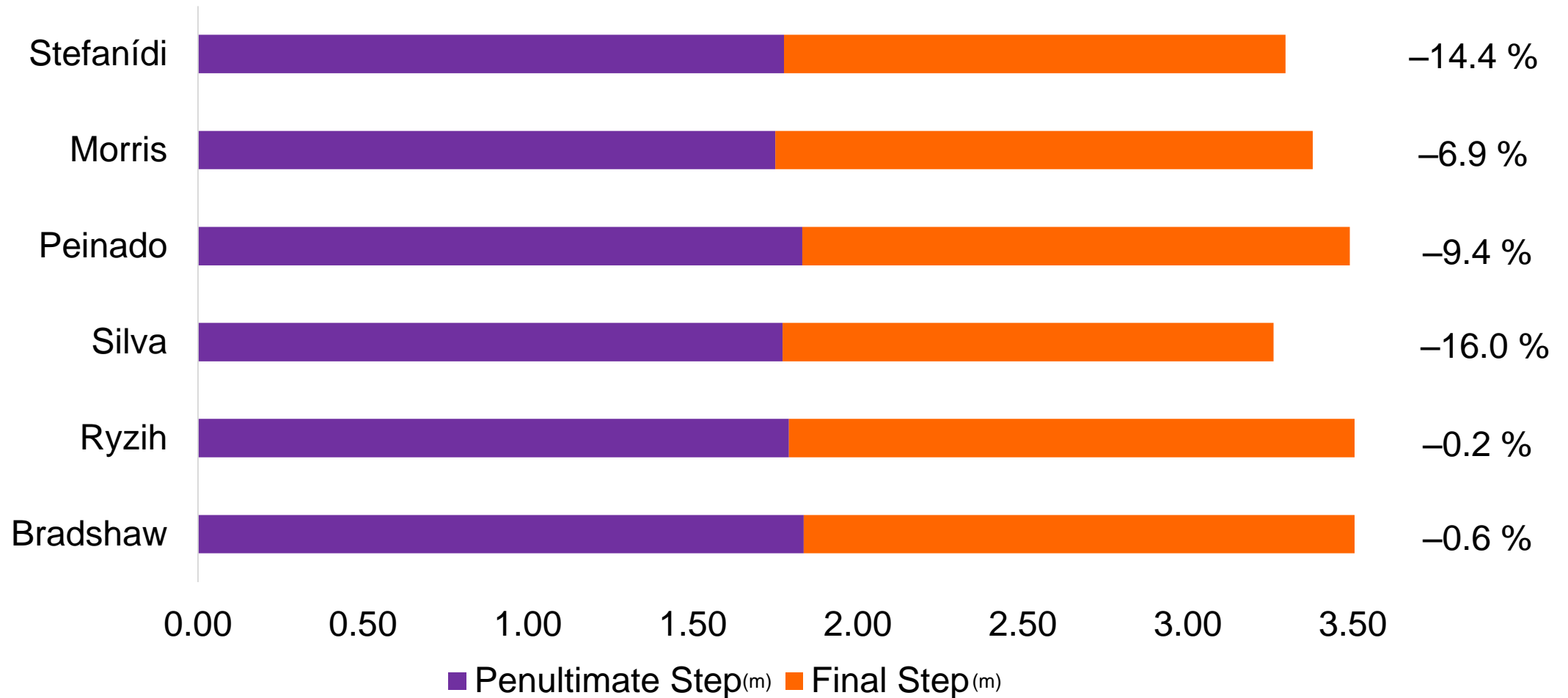
Athlete	Result (m)	Run up steps (#)	Run up velocity (m/s)*	Contact time at TO (s)	TO position (m) †
Stefanídi	4.91	16 (2=)	7.44 (3)	0.14 (1=)	3.21 (6)
Morris	4.75	15 (5)	7.76 (1)	0.12 (3)	4.04 (1)
Peinado	4.65	16 (2=)	7.51 (2)	0.10 (5=)	3.34 (5)
Silva	4.65	16 (2=)	7.17 (5)	0.14 (1=)	3.58 (4)
Ryzih	4.65	14 (6)	7.01 (6)	0.10 (5=)	3.68 (3)
Bradshaw	4.65	17 (1)	7.23 (4)	0.11 (4)	3.77 (2)

(#) indicates ranking position for individual variables

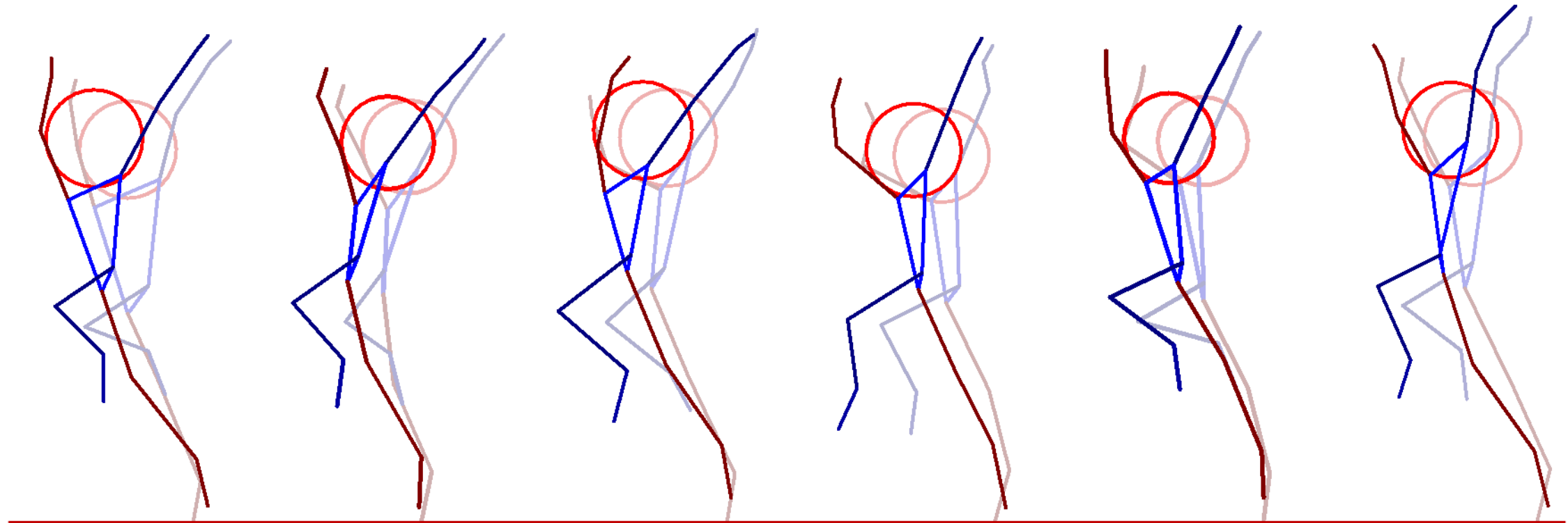
* Run-up velocity was calculated between 5 and 10 m before the box.

† TO position is the distance from the box to the athlete's foot at take-off.

Comparison between last two step lengths



Results – Take-off angle (all finalists)



Stefanídi

27.5°

Morris

21.3°

Peinado

21.3°

Silva

15.4°

Ryzih

14.4°

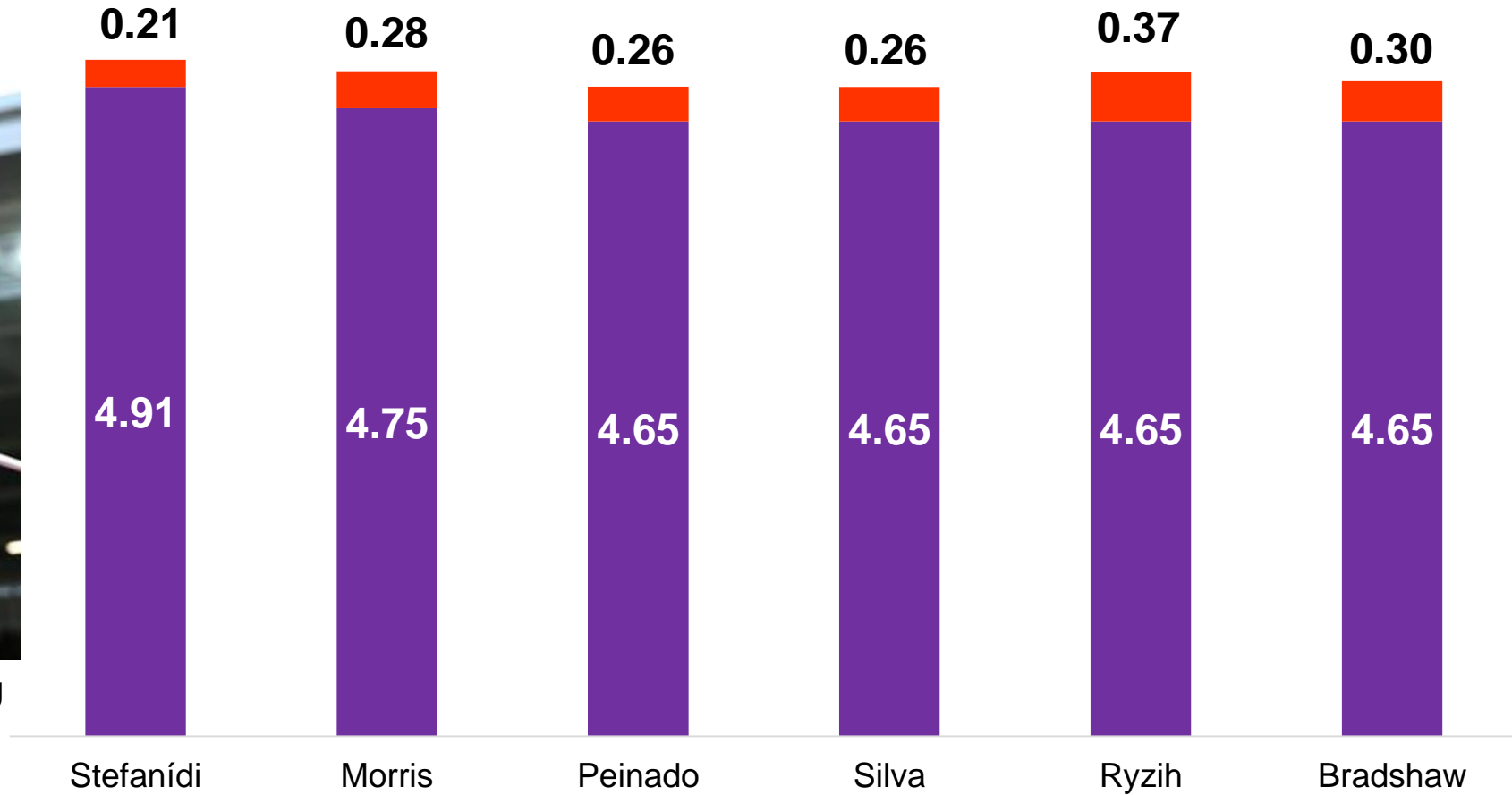
Bradshaw

14.5°

Bar Clearance Heights (m)



www.iaaf.org



■ Bar Height

■ Peak COM Height from bar

Summary

- Run-up velocity ranged between 7.01 and 7.76 m/s across the top six finalists. Take-off angle generally increased with higher vaults with all medallists achieving angles over 20°. This was noticeably different between the winner (27.5°) and the other finalists (14.4 – 21.3°).
- Stefanidi approached the box with a lower speed compared to the other medallists. This perhaps facilitated a take-off position closer to the box and a steeper take-off angle. The contact time of the leading leg was longer than those of the other medallists, something that possibly explains her steeper take-off pathway and the bar clearance height.
- Previously, biomechanical reports of the pole vault have predominantly focused on the run-up variables. The imminent written report will extend these concepts to include data associated with take-off and clearance over the bar.