

BIOMECHANICAL ASSESSMENT REPORT

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Hop and hold (single-leg vertical hop)

DATE	AGE	SPORT	PROFESSIONAL
6 October 2026	35 years	Running and football	Sarah Lee

We assessed how you land a hop on one leg and how steady you are afterwards.

Your summary

For each exercise, the traffic light sums up what we saw. Below we explain, in plain words, what is going well, what we can improve and where to focus your training.

● Good ● Keep an eye on ● To work on ● No reference

Hop and hold (single-leg vertical hop)

● Keep an eye on

Your movement is generally good, with a few points to improve that can be addressed with training.

● WHAT IS GOING WELL

- Knee on landing: within the expected range.
- Pelvic stability: within the expected range.
- Trunk posture: within the expected range.

● WHAT WE CAN IMPROVE

- Time to steady: notable difference between sides, less favourable on the left leg.

● SUGGESTED TRAINING FOCUS

- Single-leg exercises with extra work on the less favourable side, to reduce the difference between sides.

Notes from your professional

Sample report with fictitious data.

This video assessment is a movement screen, not a diagnosis. Results should be interpreted by your health professional together with the clinical assessment.

TASK 1 OF 1

Hop and hold (single-leg vertical hop)

Keep an eye on

Single-leg vertical hop in place, landing on the same leg and holding still for 3 s, in front view. It assesses landing valgus, pelvic and trunk control and stability while holding.

CAPTURE QUALITY

Valid repetitions: R 3 · L 3 · Tracking 100 % · 60 fps

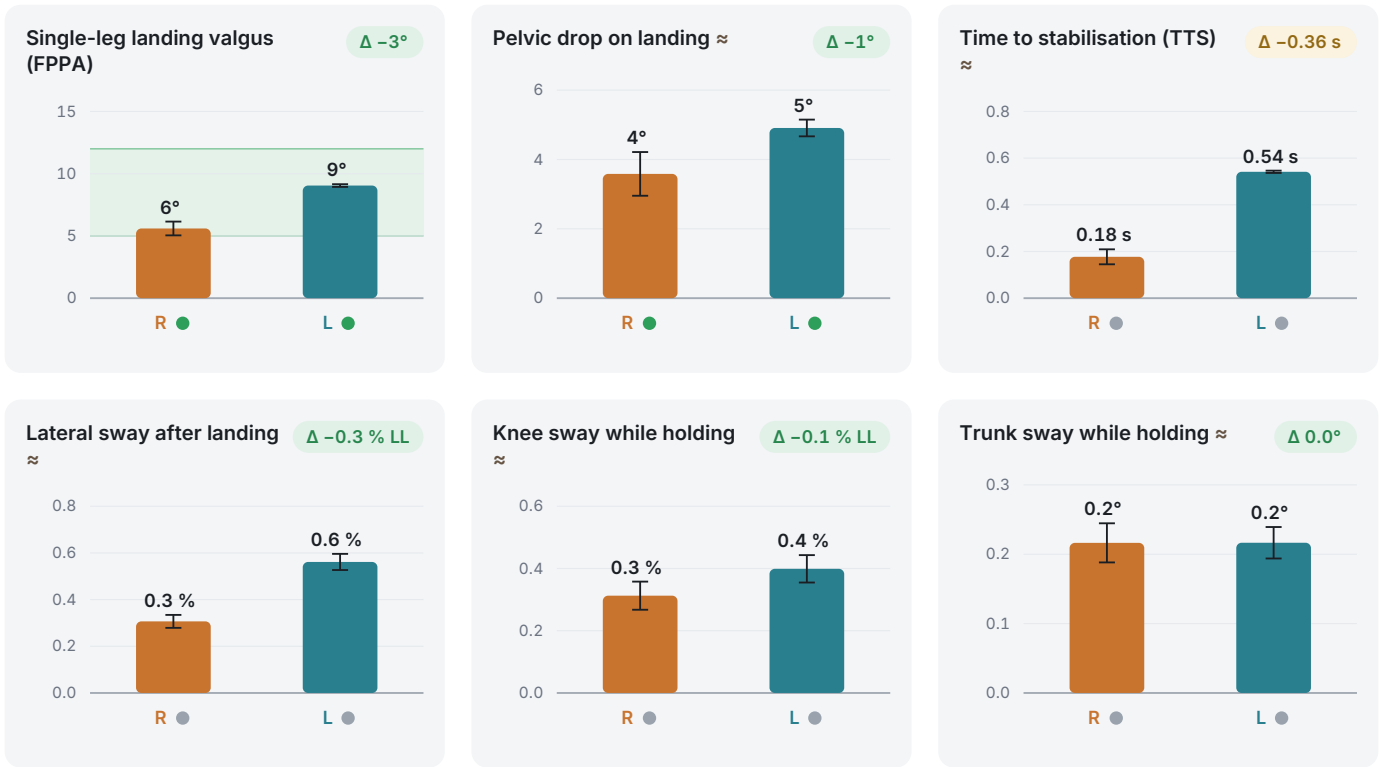
Results

Metric	Right	Left	Asymmetry LSI · R – L	Reference
Single-leg landing valgus (FPPA)	● 6° ± 0.6	● 9° ± 0.1	● -3°	5–12° Herrington & Munro 2010; Herrington 2014
Pelvic drop on landing ≈	● 4° ± 0.6	● 5° ± 0.2	● -1°	No 2D norm: compare sides and progress Dingenen 2015
Lateral trunk lean on landing ≈	● 3° ± 0.1	● 3° ± 0.0	● 0°	No 2D norm: compare sides and progress Dingenen 2015
Time to stabilisation (TTS) ≈	● 0.18 s ± 0.03	● 0.54 s ± 0.00	● -0.36 s	No 2D norm: compare sides and progress Ross 2005; Frasz 2015
Lateral sway after landing ≈	● 0.3 % ± 0.0	● 0.6 % ± 0.0	● -0.3 % LL	No 2D norm: compare sides and progress Ross 2005; Frasz 2015 (método diferente: comparar lados)
Knee sway while holding ≈	● 0.3 % ± 0.0	● 0.4 % ± 0.0	● -0.1 % LL	No 2D norm: compare sides and progress
Trunk sway while holding ≈	● 0.2° ± 0.0	● 0.2° ± 0.0	● 0.0°	No 2D norm: compare sides and progress Dingenen 2015 (tronco na recepção unipodal)
Pelvic tilt sway while holding ≈	● 0.5° ± 0.1	● 0.5° ± 0.1	● 0.0°	No 2D norm: compare sides and progress
Successful landing holds *	● 100 %	● 100 %	● LSI 100 %	100 %
Stability index (hop and hold) *	● 100	● 94	● LSI 94 %	70–100 KINESTA (índice de triagem)

● within reference ● borderline ● outside reference ● no norm (compare sides)
* threshold proposed from published mean ± SD (to be validated)
≈ no reliable 2D norm: compare sides and track over time
Asymmetry: LSI = smaller side ÷ larger side × 100 %; or difference R – L (right – left).
Values: mean ± SD of valid repetitions/cycles.

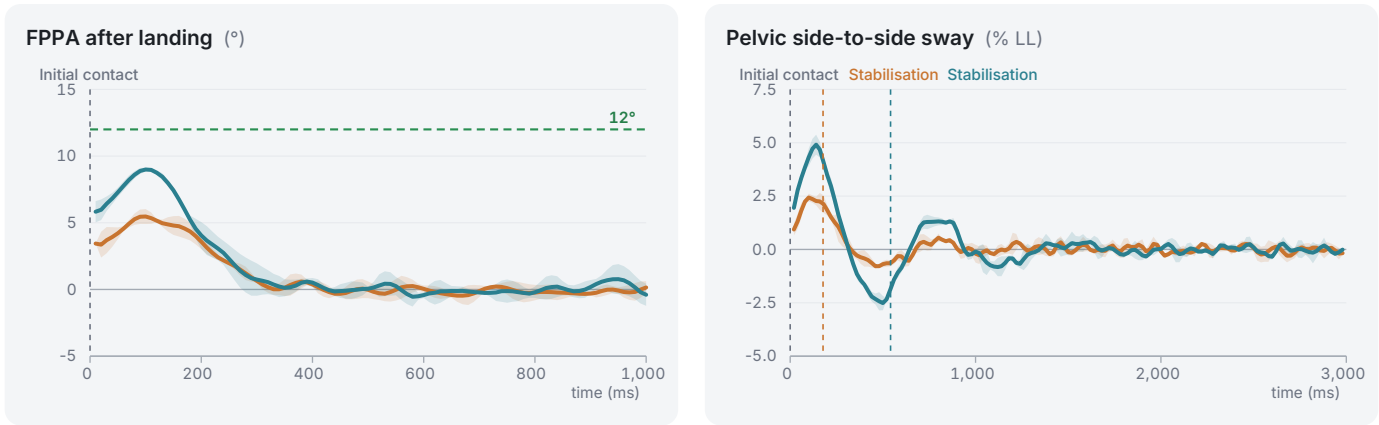
Right vs left

Right Left Reference range

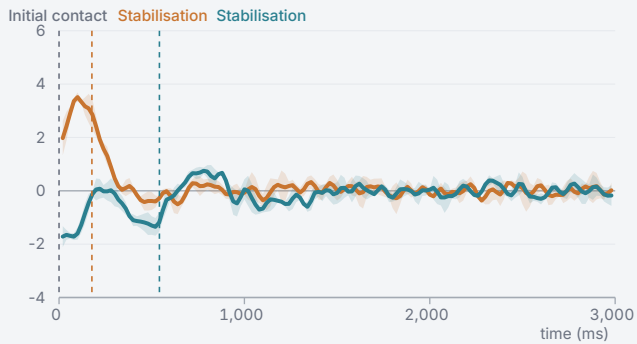


Throughout the movement

Right Left mean $\pm$ SD reference limit



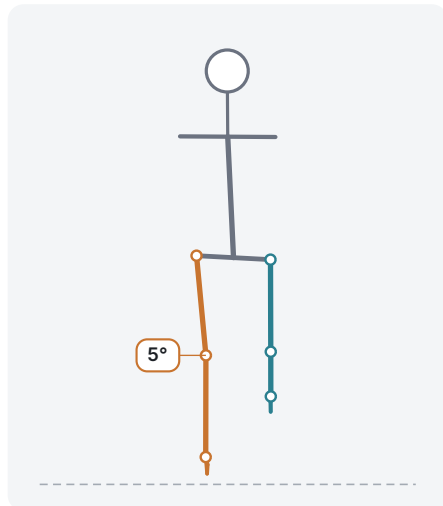
Knee side-to-side sway (% LL)



Key positions

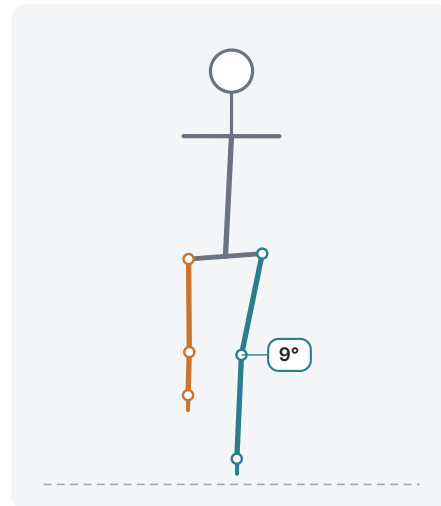
Front view: the client's right side appears on the left of the image.

Landing: peak valgus **Right leg**



● Single-leg landing valgus (FPPA) · R: 5°

Landing: peak valgus **Left leg**



● Single-leg landing valgus (FPPA) · L: 9°

Methods and references

How the assessment was done

The assessment used 2D video recorded on an iPhone. A pose-estimation model automatically detects the joints in every frame; angles, distances and times are the mean of the valid repetitions or cycles on each side. Curves show the mean $\pm$ standard deviation normalised to 0–100 % of the repetition or cycle (or in milliseconds after contact).

Limitations

Angles measured in 2D are projections onto the camera plane and depend on camera alignment and distance, clothing and lighting. Compared with reference 3D analysis, the typical error of 2D pose estimation is 4–7° (Stenum 2021). Differences between assessments smaller than the measurement error should be interpreted with caution.

How to read the results

Traffic light: green = within reference; amber = borderline, keep an eye on it; red = outside reference, to work on; grey = no reliable 2D norm — compare both sides and track over time. Asymmetry is given by the limb symmetry index (LSI = smaller side $\div$ larger side $\times$ 100 %) or by the right – left difference.

References: unmarked values are published norms; * = threshold proposed from published means $\pm$ standard deviation or measurement error (to be clinically validated); $\approx$ = no reliable 2D norm. References depend on sex and profile (athlete or general population).

This assessment is a movement screening, not a diagnosis. Results should be interpreted by the health professional together with the clinical history and physical examination.

References cited

1. Dingenen 2015. Clin Biomech. doi:10.1016/j.clinbiomech.2015.06.013
2. Fransz 2015. Gait Posture. doi:10.1016/j.gaitpost.2014.08.018
3. Herrington & Munro 2010. Phys Ther Sport. doi:10.1016/j.ptsp.2009.11.004
4. Herrington 2014. Knee. doi:10.1016/j.knee.2013.11.011
5. Ross 2005. J Athl Train. PMID 16404451
6. Stenum 2021. PLoS Comput Biol. doi:10.1371/journal.pcbi.1008935