Walking

Clinician

Assessment 26.09.2026

Patient details

Name	
Age	10
Sex	Female
Height	157cm
Weight	53kg
Shoe size	38

Stride Quality Index (SQI)	Gait Variability Index (GVI)	Fall Risk	Symmetry
87	L: 116 R: 113 80 - 120	Low	87%

Cadence	Speed	Distance
95 106 - 127 steps/min	3.4 4.0 - 5.3 km/h	73.5 m

Summary

Patient Profile 10-year-old female patient (157 cm, 53 kg). No pathology was reported in the analysis.

Key Findings

The patient's gait is notable for a **slow pace**, **shortened stride length** and **long stance time**. - **Double support time ratio** is very long (**14.6%**), suggesting a protective strategy aimed at maintaining balance. - **Step rate** is very low (**1.583 steps/s**), indicating overall movement inefficiency. - **Stride length** is very short for both feet (**1.18 m** left, **1.2 m** right). - **Stance time ratio** is very long for both feet (**64.7%** left, **64.5%** right), indicating a weak propulsion phase. - **Foot-flat time** is long for both feet (**0.395 s** left, **0.404 s** right), revealing early and prolonged contact of the sole of the foot. - **Propulsion ratio** is high on the left foot (**15%**) and average on the right foot (**11%**), showing that the plantar flexors are used more on the left foot.

Mild asymmetries are present in ankle movements, but they are not clinically significant.

Conclusions

The **slowing**, **shortened stride length** and **long stance time** in the patient's gait pattern point to overall movement inefficiency and possible muscle weakness. In the long term, this may lead to **increased joint stress** and **muscle imbalances**. In addition, the **long double support time** may be an indicator of concern

about balance.

Recommendations

- Ankle and plantar flexor strengthening exercises are recommended. This may improve the efficiency of the propulsion phase and help shorten stance time.

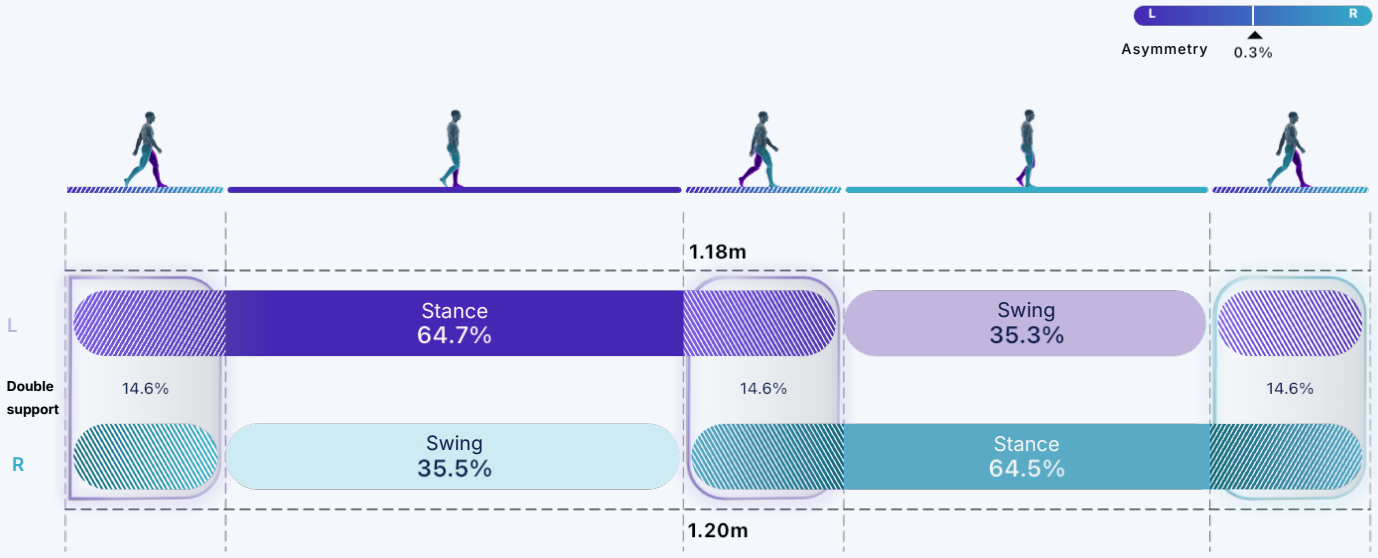
- Balance and proprioception exercises may help reduce double support time and improve overall gait stability.

- Gradually increasing walking speed may help improve stride length and overall movement efficiency.

Metrics of Interest - Foot-flat time - Propulsion ratio - Double support time ratio - Step rate - Stride length - Stance time ratio

Gait profile

Average duration of the stance and swing phases relative to total cycle time.
Normal: stance 60% and swing 40%
In the case of an asymmetry, compensation by the stronger leg (longer stance time) and possible limping are seen.



Stride time (ms)



Stride length (cm)



Swing time (ms)



Contact time (ms)



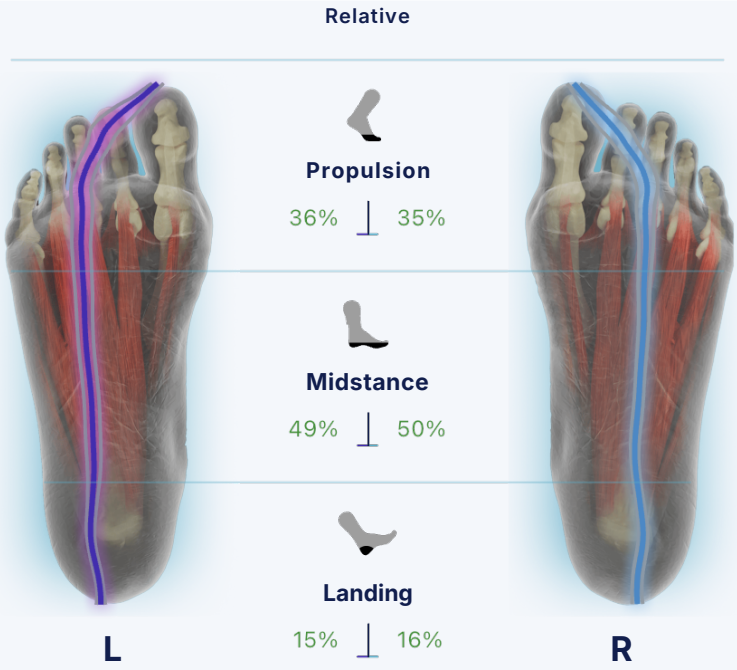
Gait Profile AI Insights

The patient shows a pattern in which **foot–ground contact time during gait (stance time ratio) is markedly increased** and **strides (stride length) are very short**. This points to **a slow, cautious gait strategy that**

may be related to concern about staying balanced. The **long double support (double support time ratio)** also supports this interpretation. These findings may indicate **stability problems that could increase the risk of falling** or **compensation mechanisms due to muscle weakness**. The **long stride duration (stride time)** also confirms the slow walking speed and **may adversely affect energy efficiency**. The findings reveal **a gait pattern that requires detailed clinical assessment**.

Gait line

Projected trajectory of the centre of pressure during the stance phase. Also provides the average duration of each sub-phase of the contact phase (loading, midstance, propulsion)



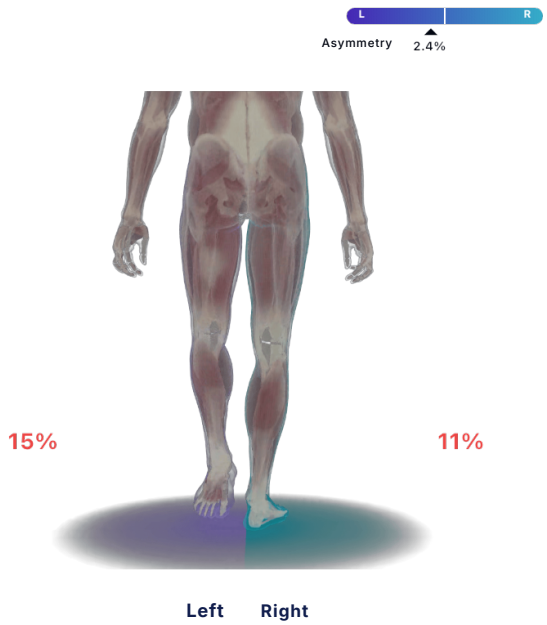
Gait Line AI Insights

The patient shows a gait pattern characterised by **increased foot-flat time** and **a prolonged propulsion phase**. The *foot-flat time*, above normal in both feet at **0.395 s (left) and 0.404 s (right)**, prolongs the contact of the sole with the ground and delays the transition to the propulsion phase. This contributes in particular to the *propulsion time*, measured at **0.294 s (left) and 0.282 s (right)**, being above normal. This combination reduces gait efficiency and may place additional load on the musculoskeletal system.

In addition, **mild asymmetry in the propulsion phase** (7.6% in favour of the right foot) is observed. This asymmetry points to an imbalance in the distribution of propulsive force and may, in the long term, increase the risk of repetitive stress or ankle/lower-limb injury. The *low gait variability* suggests an overly controlled, rigid movement; particularly in children, this may limit the development of natural flexibility and adaptive gait patterns.

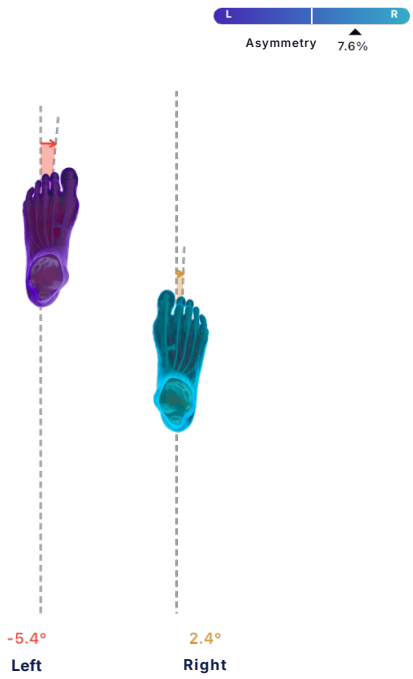
Propulsion ratio

Stress distribution between the hips and the plantar flexors during gait



Foot progression angles

Foot progression angle: measures how far the foot turns in or out relative to the direction of travel.
Normal values are between 4.6° and 16.6°.
Should be read with the pronation-supination angles to better understand overall foot motion in stance.



Propulsion Ratio AI Insights

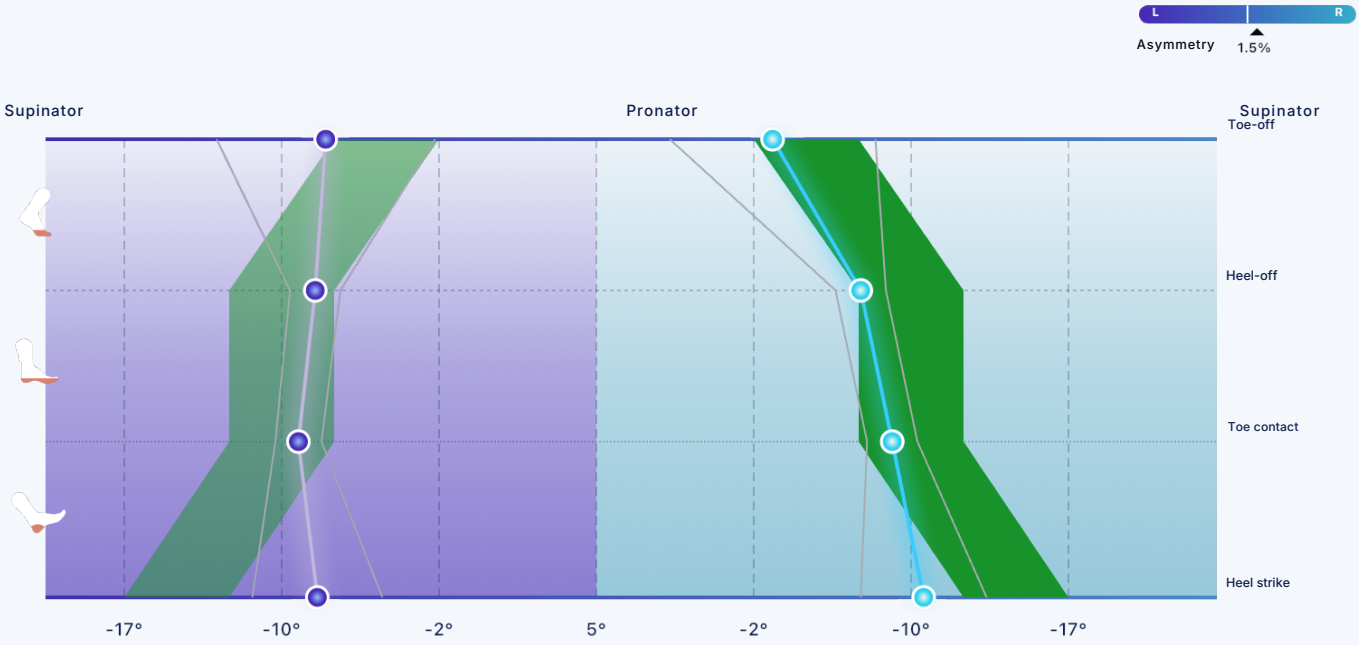
Foot Progression Angles AI Insights

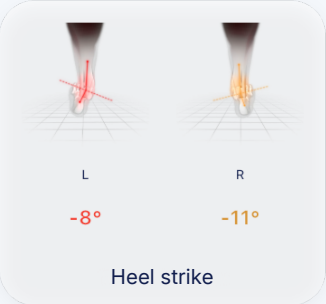
In both legs, the hip flexors are used more than the ankle plantar flexors (triceps surae) to generate the propulsive force of the movement. An increase in the propulsion ratio was found – mild in the left leg (15%) and moderate in the right leg (11%). This shows that, particularly in the right leg, the plantar flexors are not sufficiently engaged and that reliance on the hip flexors increases during the propulsion phase. In the long term, this imbalance may adversely affect ankle stability and gait efficiency.

The mild asymmetry in foot progression angle (7.6% higher on the right) and the very narrow progression angle of the left foot (-5.4 degrees) are noteworthy. Particularly in the early stages of gait during childhood, this may be regarded as a potential risk factor that could affect the development of ankle and lower-limb biomechanics. It should be borne in mind that these findings may later lead to ankle instability or lower-limb alignment problems.

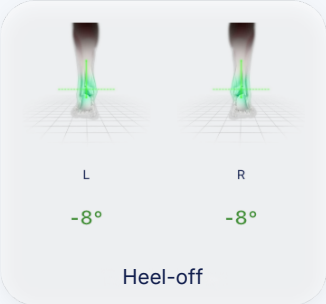
Pronation/Supination angles

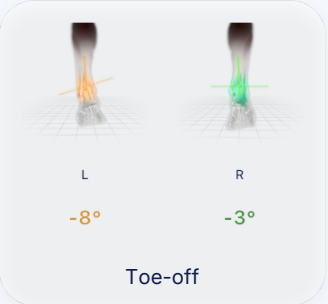
Provides the pronation/supination angles at the 4 main stages of the stance phase (heel strike, toe contact, heel-off, toe-off).
The chart shows the mean values (coloured lines) as well as the standard deviations (thin lines) and the statistical norms (green corridor).











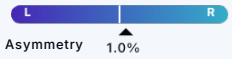
Pronation/Supination Angles AI Insights

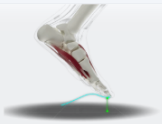
Excessive supination at strike and increased pronation angles – an unbalanced foot contact pattern, more marked in the right foot – together with insufficient slight supination in the propulsion phase, show that foot stability and propulsion efficiency are reduced. Under prolonged loading, this increases stress on the foot and lower limb and raises the risk of micro-trauma, particularly in the medial and lateral ankle structures. The

near-zero variability in the gait data shows that the movement is overly controlled and rigid, with limited natural adaptability. This rigid pattern may lead to muscle fatigue and localised overloading.

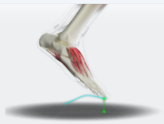
Clearance

Strike: the angle formed between the foot and the ground at heel strike.
Normal if the angle is around 20° or above: the patient strikes with the heel
Pathological if less than 20° or equal to 0°; indicates excessive ankle plantar flexion or a lack of knee extension.





Left 0.9cm



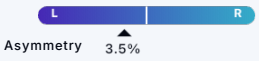
Right 1.0cm

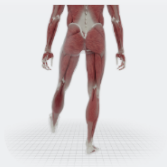
Clearance AI Insights

Foot clearance height is within normal limits for both feet and shows no asymmetry. This supports that foot movement in the swing phase is adequate and that the risk of tripping is low.

Circumduction

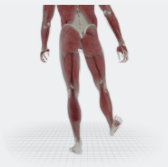
Measures the lateral outward movement of the foot during the swing phase.
If >5.2 cm, it may indicate increased hip external rotation, compensation for reduced toe clearance, limited knee flexion or a neurological disorder.





2.2cm

Left



1.5cm

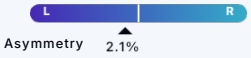
Right

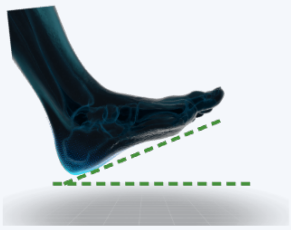
Circumduction AI Insights

During movement, both feet have a **narrow swing width** (0.022 m left, 0.015 m right), showing that the feet travel closer to the midline during stepping and that balance is potentially being optimised. The swing width asymmetry is not clinically significant (3.5%). These findings indicate that gait is performed in a controlled and stable manner; however, the narrow step width may, in the long term, cause limitations in ankle stability or in activities requiring agility.

Contact angle

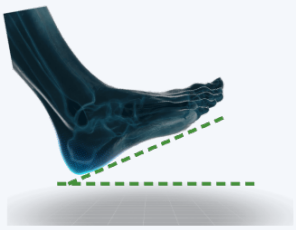
Strike: the angle formed between the foot and the ground at heel strike.
Normal if the angle is around 20° or above: the patient strikes with the heel
Pathological if less than 20° or equal to 0°; indicates excessive ankle plantar flexion or a lack of knee extension.





22.0°

Left



23.1°

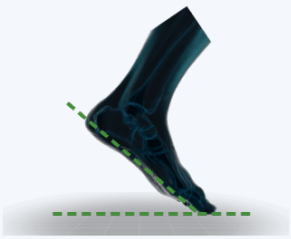
Right

Contact Angle AI Insights

The foot contact angle is within normal limits for both feet (left: -22°, right: -23.1°) and shows a slight asymmetry of 2.1% in contact symmetry. This asymmetry is not clinically significant and supports that ankle flexion at contact is balanced on both sides.

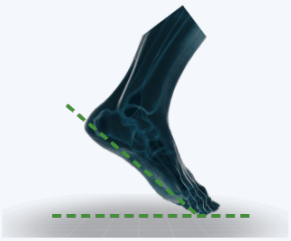
Toe-off flexion angle

Foot angle at push-off



62.0°

Left



60.7°

Right

Toe-off Flexion Angle AI Insights

The patient shows **an unbalanced stance and marked weakness in the propulsion phase**. Although the ankle joint angles at the moment of leaving the ground (left: 62°, right: 60.7°) are within normal limits, movement efficiency is reduced because of **insufficient propulsive force** and **a high variation averaging 6 degrees** (an indicator of instability). Considered together with the **midfoot collapse (pronation)**, which is more marked in the left foot, this may lead to increased stress in the lower-limb kinetic chain. These irregularities during gait may, in the long term, increase the risk of ankle sprains or knee/hip pain.

Comments