CLINICAL CASE

Posture and gait analysis

with an ocular prosthesis

Neurosensory and biomechanical analysis



Three-month follow-up

CLINICAL CASE

Neurosensory, postural and biomechanical analysis • Three months of rehabilitation

1. Overview and clinical reasoning

The patient wears a right ocular prosthesis and has no visual function in the right eye. This was considered central to understanding her postural and motor organization during the clinical assessment.

The loss of right-sided visual input creates a sensory asymmetry. The nervous system must reorganize how it integrates visual, vestibular, somatosensory and proprioceptive information to support spatial orientation, balance, posture and movement. On examination, the trunk rotated predominantly to the right. Clinically, this was interpreted as an adaptive compensation related to the right-sided visual deficit.

A key point in the assessment was that this rotation could represent a functional compensation for orienting the body and using the available visual field. The therapeutic goal was to reorganize movement around the compensation, reduce its cost and improve load distribution, avoiding any rigid correction of the rotation.

The clinical hypothesis linked reduced sensory input on the right to asymmetric neurosensory and neuropostural organization. In functional terms, the left side of the body appeared to take on more of the work and more load, particularly in the myofascial system. This reasoning guided treatment.

2. Symptoms and clinical rationale

Symptoms were almost exclusively on the left side. They were interpreted in the context of the overall compensatory pattern. The right side received less visual information and required a specific sensory reorganization, while the left side took on greater mechanical and postural demands.

- Left hip pain.
- Predominantly left-sided neck pain.
- Paresthesia and altered sensation on the left.
- Myofascial tension and hypertonia.
- Overload of the left myofascial chain.
- Functional difficulty on the left side of the body.

The clinical rationale therefore considered the interaction between sensory asymmetry, rotational compensation, neuropostural mechanisms, neuromotor control and left-sided fascial overload. Treatment aimed to help both sides contribute to the organization of movement and reduce functional reliance on the left.

Clinical reasoning in more detail

The patient has a right ocular prosthesis and complete loss of vision in the right eye. Assessment showed a marked tendency to turn the body and trunk to the right. Clinically, this was interpreted as a physiological and functional compensation that helped her make fuller use of the available visual field in the left eye.

The rightward rotation was therefore initially treated as a necessary adaptation to the loss of visual input on the right. The therapeutic goal was to accommodate this visual compensation while reducing its biomechanical, fascial and neuromuscular cost.

Clinically, maintaining this rotational pattern was associated with predominant overload of the left myofascial chain. This corresponded to the location of virtually all the symptoms, including hip and neck pain, paresthesia, altered sensation and myofascial tension.

At the same time, the right side contributed less to neurosensory and neuropostural organization. In practice, she found it difficult to redistribute movement and load toward the right and continued to use a left-sided pushing strategy that placed more demand on the left.

On this interpretation, the patient struggled to move out of the left-sided pushing pattern because the right side contributed less effectively to sensory, proprioceptive and neuropostural organization. Treatment therefore combined offloading the left myofascial system with reactivating and enriching sensory and proprioceptive input from the right, improving its integration into neuropostural mechanisms and giving the nervous system more options for organizing movement.

The ultimate goal was for the patient to retain the visual compensation she needed while reducing her reliance on the left to organize posture and movement. This meant encouraging a more balanced contribution from both sides and a rotational strategy that was more adaptable and placed less strain on the body.

3. Initial assessment

3.1. Mobility test and initial functional assessment



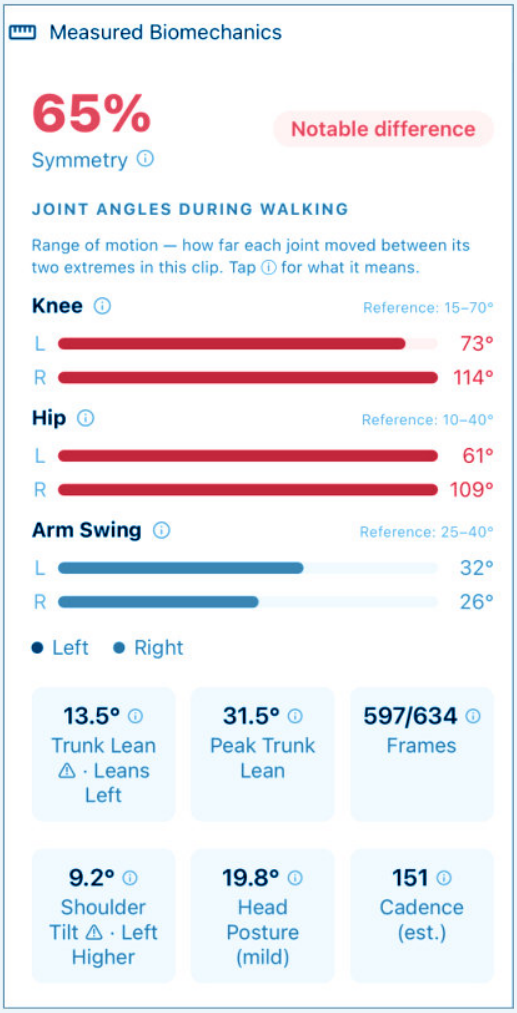
Forward bend • Initial assessment



Hip and lower-limb mobility • Initial assessment

These cropped clinical photographs document the functional baseline. The forward bend shows how far the hands initially reached toward the floor. The supine test records initial hip and lower-limb mobility. Both served as references for later comparison.

3.2. Initial gait test



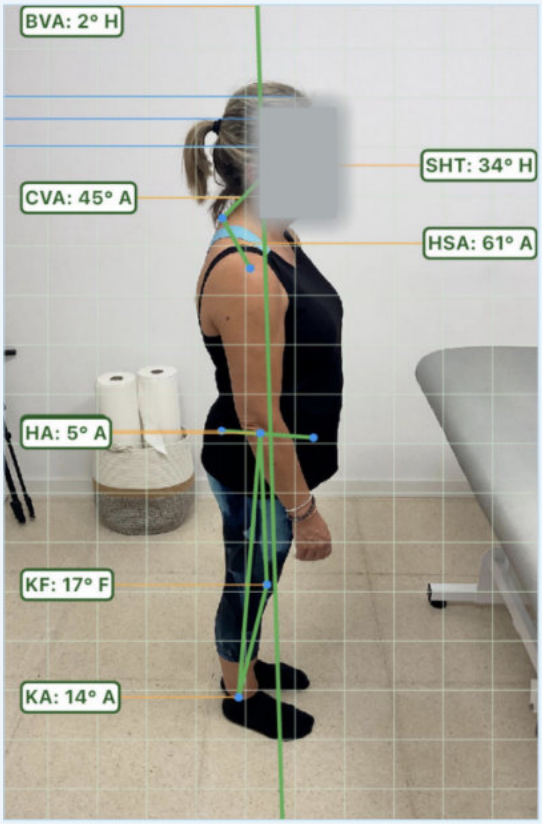
The initial biomechanical analysis showed 65% overall symmetry, with a marked difference between sides. Asymmetry was particularly apparent at the hip and knee, with further differences in arm swing and shoulder tilt.

Measure	Left	Right	Asymmetry
Knee	73°	114°	41°
Hip	61°	109°	48°
Arms	32°	26°	6°
Shoulders	–	–	9.2°

The initial pattern confirmed a side-to-side imbalance in movement distribution, consistent with the rotational strategy and the greater functional demand observed on the left.

The assessment images retain the original report labels.

3.3. Initial postural assessment



Initial postural record



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Informe de análisis postural

Datos generales

Nombre	
Sexo	Mujer
Fecha	6/9/2026 15:51

Cuerpo - Derecha

Ángulo	Valor	Inclinación
Sagittal Head Tilt	34°	Hacia atrás
Craniovertebral	45°	Adelante
Head Shoulder	61°	Adelante
Pelvic Tilt	4°	Adelante
Hip Alignment	5°	Adelante
Knee Alignment	14°	Adelante
Knee Flexion	17°	Flexionado
Vertical Alignment	2°	Hacia atrás

Initial postural report

The initial lateral assessment recorded 34° of sagittal head tilt, a 45° craniovertebral angle, a 61° head-to-shoulder angle, 4° of pelvic tilt, 5° of hip alignment, 14° of knee alignment, 17° of knee flexion and 2° of backward deviation from vertical.

The findings showed that several segments shifted forward. The overall postural strategy was interpreted in light of the rotational component, sensory asymmetry and predominantly left-sided symptoms.

The assessment images retain the original report labels.

4. Rehabilitation process

4.1. Neurosensory and neuropostural reorganization

A central part of treatment focused on balancing sensory and motor contributions from both sides. Special attention was paid to the right to enrich available proprioceptive and somatosensory input and improve its integration with visual and vestibular information.

- Targeted sensory and proprioceptive stimulation of the right side.
- Work on perception, body schema and spatial orientation.
- Integration of available visual input, vestibular and somatosensory information, and motor responses.
- Work on neuropostural mechanisms to promote a more balanced response on both sides.
- Improved neuromotor control and ability to transfer load.
- Greater functional involvement of the right side to reduce excessive demand on the left.

4.2. Rotational control

Rotation was a major focus of rehabilitation. Rightward rotation was respected as an adaptive strategy. At the same time, work focused on expanding the ability to rotate, control and organize the body toward the left, giving the patient alternatives to a single dominant pattern.

- Targeted work on cervical, thoracic and trunk rotation.
- Regaining and actively controlling leftward rotation.
- Integrating rotation of the shoulder and pelvic girdles.
- Developing independent movement of the trunk, pelvis and lower limbs.
- Carrying rotational control over to posture and gait.

The aim was to give the system more movement options while accommodating the compensation. This helped reduce the rigidity of the dominant strategy and promote more adaptable rotational control.

4.3. Ocular–proprioceptive integration and spatial orientation

The ocular–proprioceptive and neurosensory components were also given particular attention. With visual function absent in the right eye, the work focused on using the information still available. The goal was to improve how the nervous system integrated that information to orient the head, trunk and body in space.

- Coordination of head and trunk orientation with the available visual field.
- Right-sided proprioceptive stimulation during orientation and postural control tasks.
- Eye–head–trunk integration within the patient's functional abilities.
- Reorganization of postural responses to sensory stimuli and changes in position.

4.4. Myofascial offloading and biomechanical work

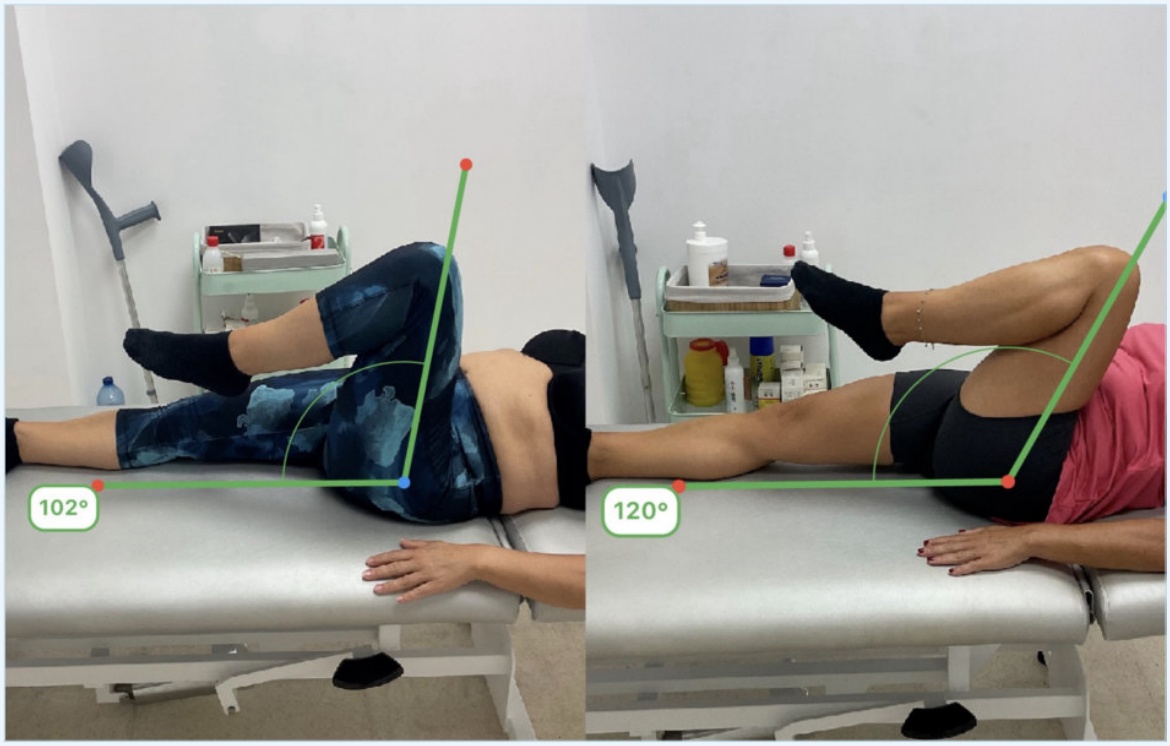
Work also focused on offloading the left myofascial chain, where most symptoms were concentrated, and improving the mechanical distribution of movement.

- Offloading the left myofascial chain and reducing tension.
- Pain relief and reduction of hypertonia.
- Improving overall stability and lower-limb control.
- Integrating fascial work with rotational and proprioceptive control.
- Working toward a more symmetrical, fluid and efficient gait.

The rehabilitation process brought together neurosensory, neuropostural, proprioceptive, rotational, biomechanical and myofascial work to make the compensation more efficient, expand the system's options for movement organization and reduce overload on the left.

5. Reassessment and results

5.1. Mobility at baseline and follow-up

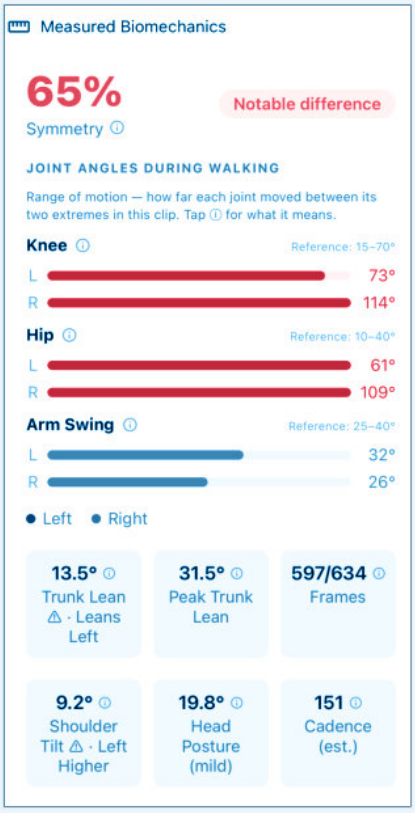


In the documented mobility test, the range increased by 18°, from 102° to 120°. The follow-up image shows the greater range available.

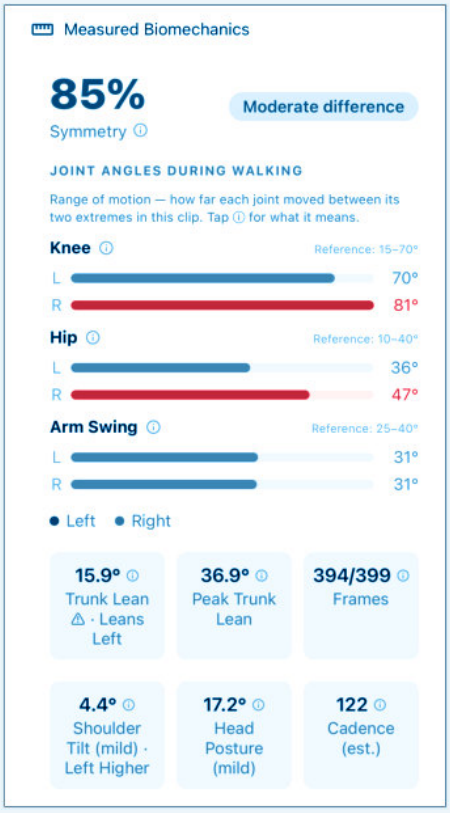


In the forward trunk bend, the hands reach closer to the floor at follow-up, showing a functional improvement in overall mobility.

5.2. Gait at baseline and follow-up



Baseline • 65% symmetry



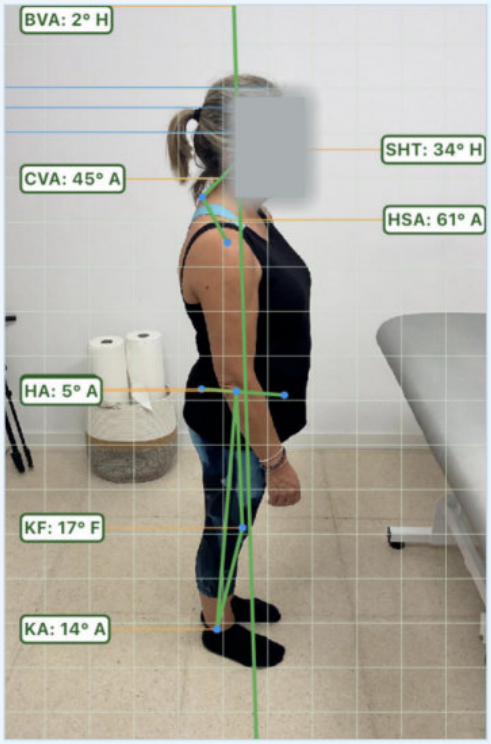
After three months • 85% symmetry

Measure	Baseline	Follow-up	Change
Overall symmetry	65%	85%	+20 points
Knee asymmetry	41°	11°	−30°
Hip asymmetry	48°	11°	−37°
Arm asymmetry	6°	0°	Symmetrical
Shoulder asymmetry	9.2°	4.4°	−4.8°

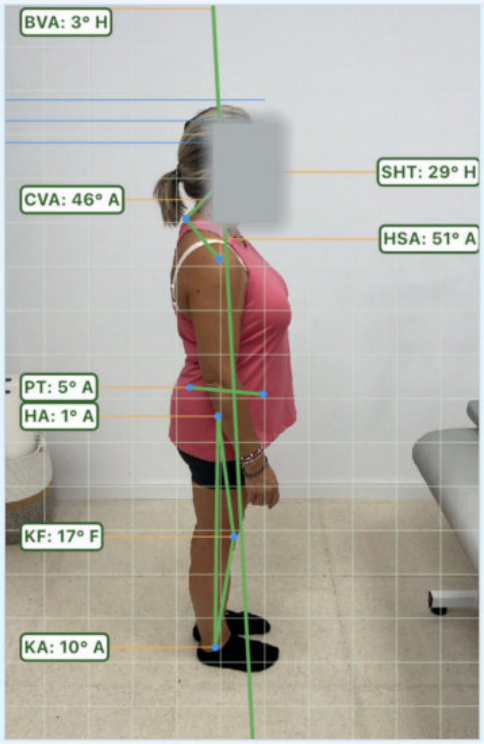
Follow-up gait showed a substantially more balanced distribution of movement across both sides. Symmetry increased from 65% to 85%, with markedly smaller differences at the hip and knee and symmetrical arm swing.

The assessment images retain the original report labels.

5.3. Posture at baseline and follow-up



Baseline assessment



Follow-up assessment

Measure	Baseline	Follow-up	Favorable change
Sagittal head tilt	34°	29°	5°
Craniovertebral angle	45°	46°	1°
Head-to-shoulder angle	61°	51°	10°
Hip alignment	5°	1°	4°
Knee alignment	14°	10°	4°
Knee flexion	17°	17°	Stable

The head-to-shoulder relationship improved, sagittal head tilt decreased, and the hip and knee moved closer to their alignment axis. Together, these findings are consistent with more efficient postural organization.

The assessment images retain the original report labels.

6. Conclusions

After three months of treatment, reassessment documented an overall improvement in mobility, posture and the biomechanical distribution of movement.

- Gait symmetry increased from 65% to 85%.
- Knee asymmetry decreased from 41° to 11°.
- Hip asymmetry decreased from 48° to 11°.
- Arm swing showed a final difference of 0°.
- The shoulder difference decreased from 9.2° to 4.4°.
- Posture improved at the head, head-to-shoulder relationship, hip and knee.
- Mobility increased by 18° in the documented test, from 102° to 120°.
- The photographs showed a functional improvement in forward bending.
- Rotational control improved, with a greater ability to organize and distribute rotations and less reliance on the dominant rightward pattern.
- Neurosensory organization improved, with greater proprioceptive and motor participation on the right during the activities addressed.
- The final load distribution was more balanced between the two sides.

Understanding the compensation for the right-sided visual deficit and working with it was central to the process. The approach combined neurosensory and neuropostural mechanisms, proprioception, available visual orientation, rotational control, biomechanics and myofascial work to expand the nervous system's movement strategies and reduce left-sided overload.

Overall, at the end of the rehabilitation process the patient demonstrated greater symmetry and mobility, better postural control, and more balanced and adaptable movement organization.