GAIT AND MOTION ANALYSIS LAB

BALANCE ANALYSIS

ACCURATE ASSESSMENTS FOR EMPOWERING STABILITY

Maintaining good balance is key to staying independent and preventing falls, especially in older adults or those with neurological conditions. This report uses advanced, objective tools to accurately assess your postural control.

Even when you think you're standing completely still, your body is always making tiny adjustments to stay upright. These small, natural movements of your body to keep itself balanced when you're standing still is called as SWAY. We've used AMTI force plates that are the gold standard for measuring the subtle shifts in your body's center of pressure or sway—details that often go unnoticed in visual exams.

Then we use advanced computational techniques to estimate parameters like sway velocity, sway area and sway index. Such data is especially valuable for identifying early signs of balance issues in conditions like Parkinson's or age-related decline.

The Modified CTSIB helps us understand how your body relies on vision, vestibular, and somato-sensory input to maintain balance. Alongside this, the Functional Reach Test evaluates your ability to stay steady while reaching forward. The limits of stability test identify the directions where the balance is most impaired.

Together, these tools provide a detailed, personalized view of your balance, far beyond what traditional clinical tests offer—helping us better guide your care and reduce fall risk.

Clinical Evaluation Form

Date of Evaluation:
Name: John Doe **ID:**
Age: **Gender:**
Diagnosis:

Subjective Complaints (Check all that apply)

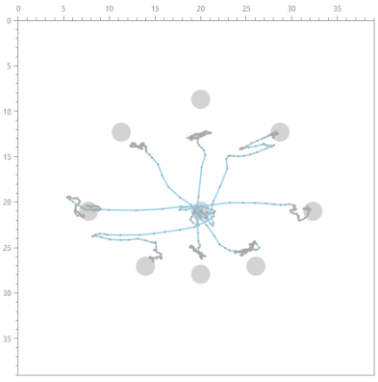
☐ Dizziness/Vertigo
☐ History of Falls
☐ Unsteady Gait
☐ Difficulty Standing
☐ Fear of Falling
☐ Lower Extremity Weakness

☐ Sensory Loss
☐ Use of Assistive Devices (Specify): _____

Functional Reach test

☐ >25 cm (Normal) ☐ 15–25 cm (Moderate Risk) ☐ <15 cm (High Risk)

Limits of Stability Test



	Forward	Forward-Right	Right	Backward-Right	Backward	Backward-Left	Left	Forward-Left
Distance (mm)								

Modified Clinical Test of Sensory Interaction and Balance

The Modified Clinical Test of Sensory Interaction in Balance (mCTSIB) assesses how well a person uses sensory input—vision, proprioception, and vestibular function—to maintain balance. It involves standing under four conditions: eyes open and closed on both firm and foam surfaces, to isolate how each sensory system contributes to postural stability. This test helps clinicians identify which sensory systems may be impaired or relied upon more heavily.

*The force plates assess the **center of pressure (CoP)** for the subject. It is the point under your feet where your body's weight is focused and shifts as you move to keep your balance. The shift of CoP is called as Sway.*

Usually, individuals sway greater when their eyes are closed as compared when their eyes are open. Similarly, individuals sway greater when standing on unstable surfaces like foam as compared to when they are standing on a firm surface.

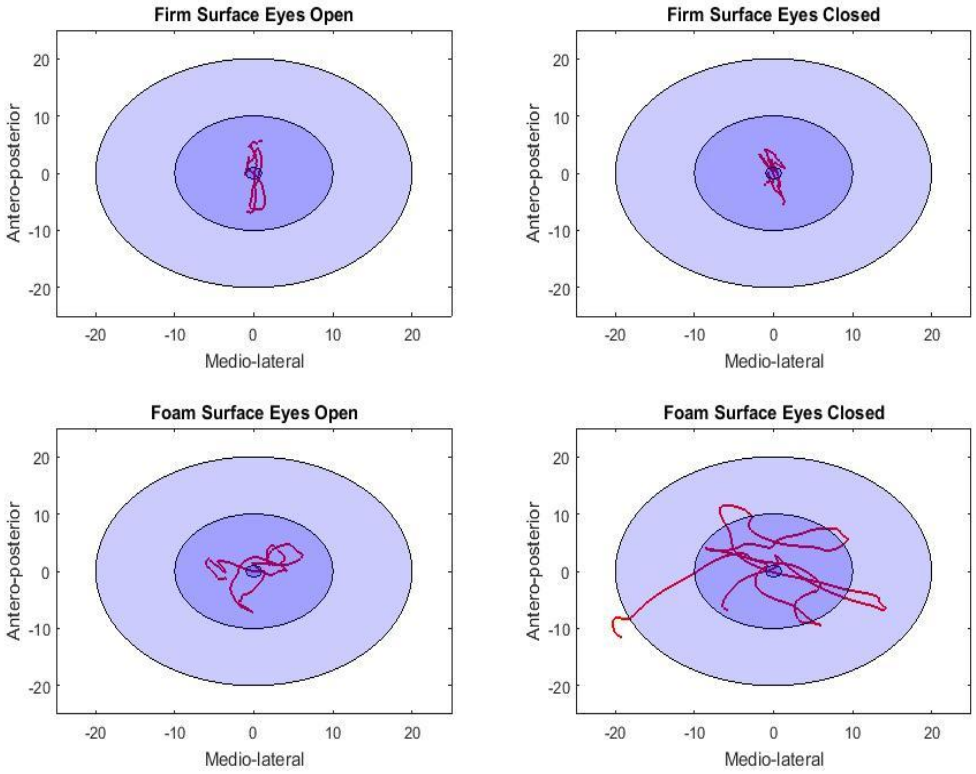
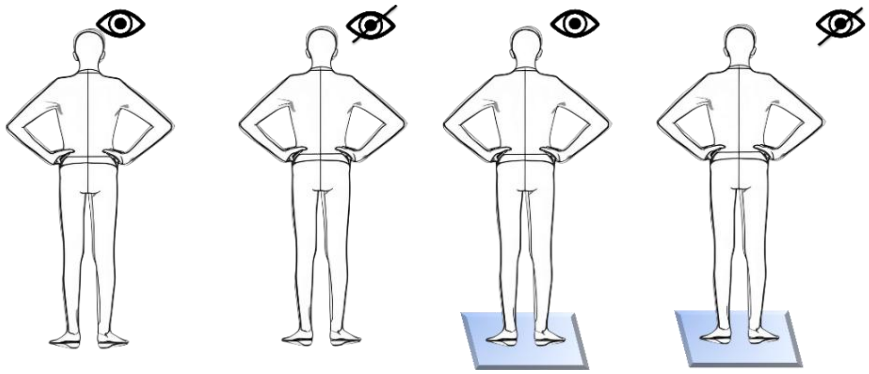


Figure 1*The figure describes the sway of the Center of Pressure (CoP) for the subject under various conditions. The X axis describes the sideways or mediolateral sway. The Y Axis describes the forward backward or antero-posterior sway.*

The trace in red colour within the inner darker circle indicates that balance is within normative limits.

Modified Clinical Test of Sensory Interaction and Balance



	Firm Surface Eyes Open	Firm Surface Eyes Closed	Foam Surface Eyes Open	Foam Surface Eyes Closed
Sway area (mm2)				
Mean Distance from Center of Cop (mm)				
Normative values	**2.12 to 5.56**	**1.48 to 5.03**	**3.74 to 10.37**	**6.27 to 14.68**
Sway Velocity (mm/second)				
Normative values	**0.96 to 11.49**	**0 to 10.64**	**2.29 to 20.17**	**0 to 26.59**

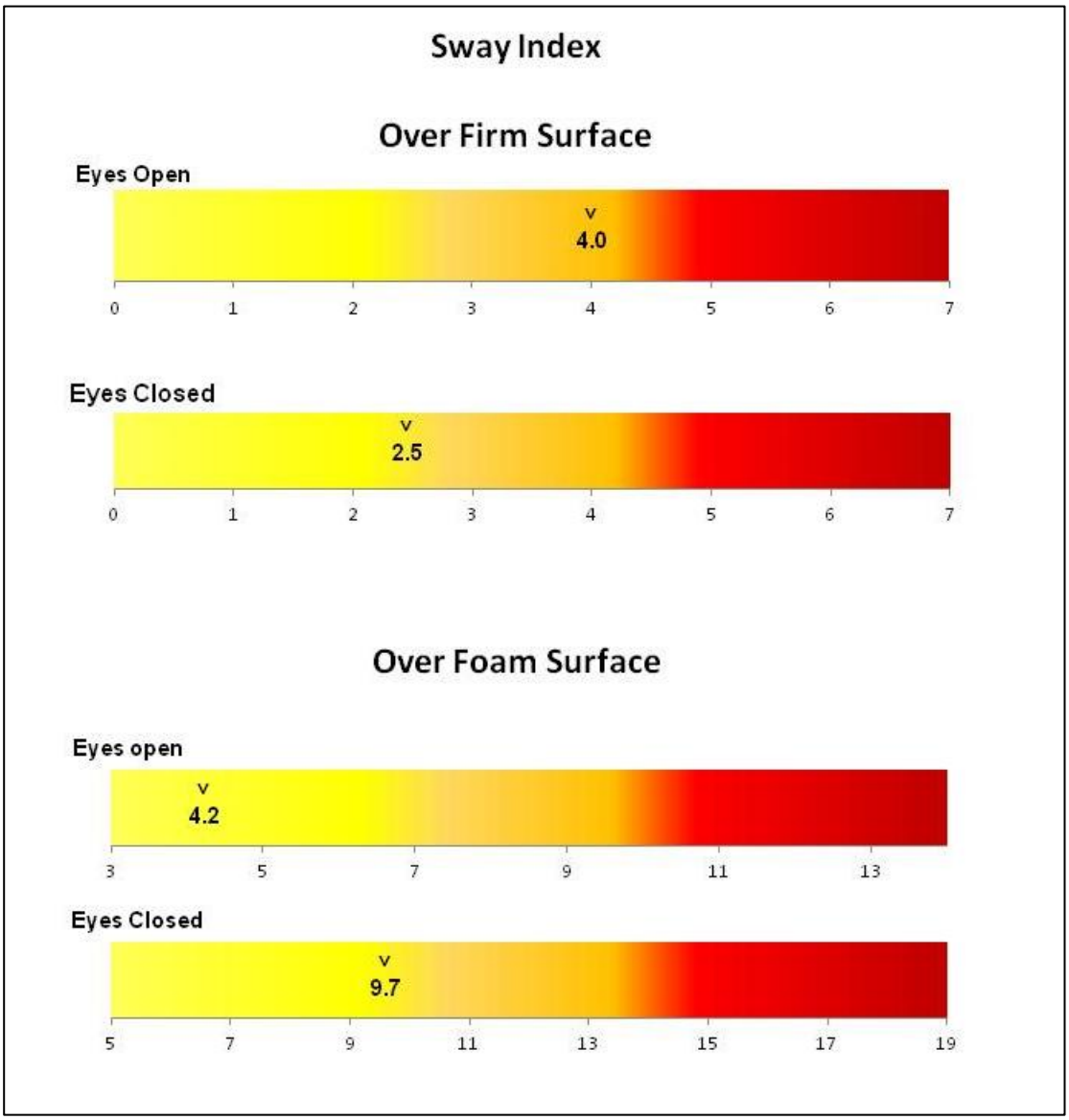


Figure 2 *The Sway index calculated as the root mean square difference of the sway coordinates from the center of COP. A lower score with yellow orange bands suggests good balance. A score within darker area suggests poor stability and balance control*

Interpretations and Recommendations

The balance analysis was performed using ground embedded AMTI forceplates and Airex balance pad.

Below, we discuss our main findings.

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Disclaimer
The results presented in this balance analysis are based on comparisons with normative data published in scientific literature and data collected at our facility. This report is intended to be interpreted by trained healthcare professionals. All findings should be considered in the context of the individual's unique physical and medical characteristics. Only single trials for balance analysis are collected, trial to trial differences may exist