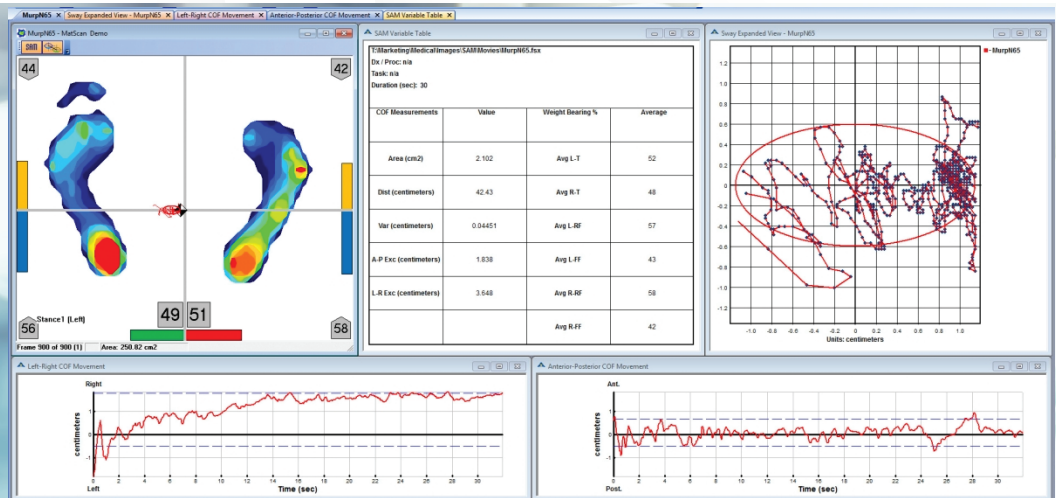


# Sway Analysis Module™ (SAM™)

## Software Add-on for Sway Analysis

SAM provides insight into sway area and Center of Force (CoF) movement.



## WHAT IS SAM?

SAM™ (Sway Analysis Module) is an add-on software module to FootMat™, Presto-Scan™, F-Scan™, and Strideway™ software. It is the ideal tool to analyze sway and assess postural stability by detecting and measuring key stability parameters such as center of force (CoF) motion, left/right foot weight distribution and front-to-back weight distribution. Sway analysis can help to uncover any underlying dysfunctions such as musculoskeletal and neurological problems.

## EASILY CAPTURE AND ANALYZE DATA

The SAM software prompts the user through step-by-step instructions to record data.

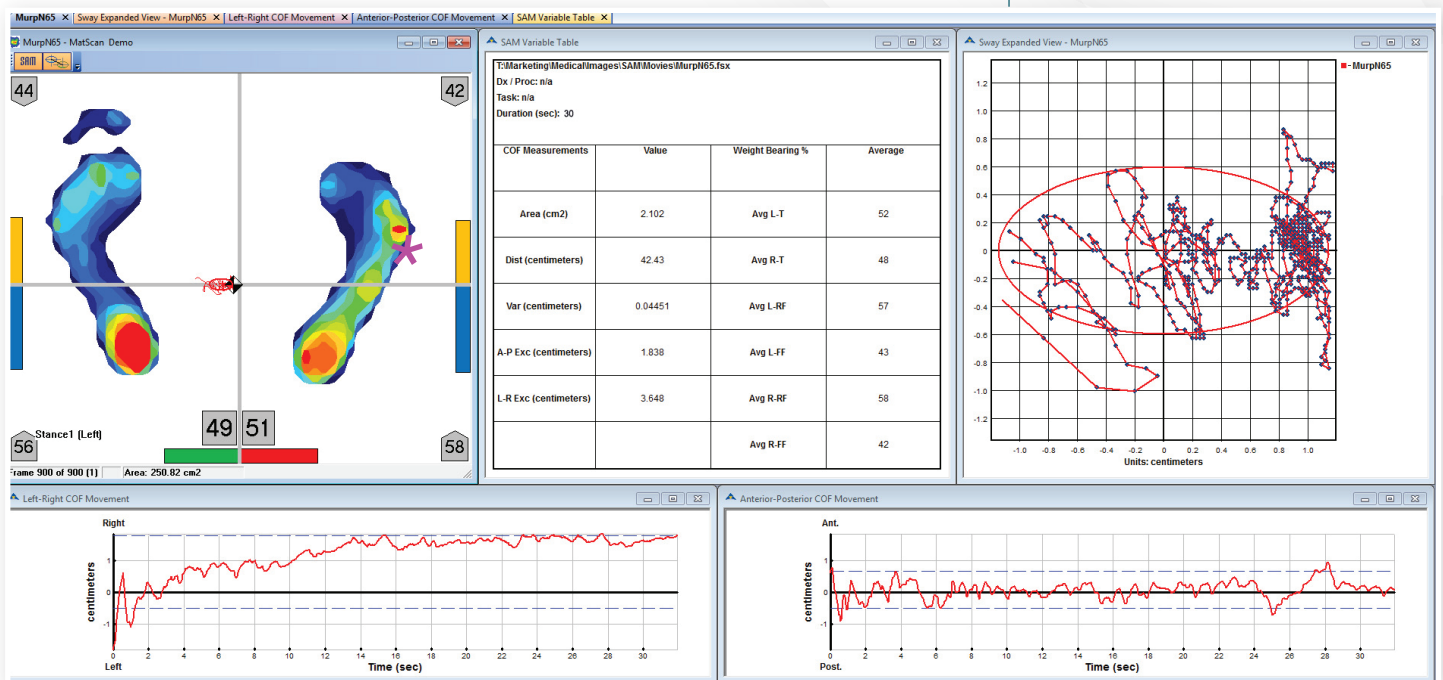
- 1) The subject simply stands on the mat platform (in natural standing or desired fixed position). Typical recording events include:
  - Standing with eyes open
  - Standing with eyes closed
  - Standing with teeth clenched
  - Standing pre- and post-treatments or conditions
  - Standing on one foot
- 2) With just the click of your mouse, the software displays:
  - Area and direction of sway
  - Elliptical pattern of sway (95% confidence area)
  - Distance and direction traveled by center of force (CoF)
  - Variability in distance traveled by CoF
  - Weight-bearing percentage (left/right, fore/rear foot)
  - Pressure distribution profiles
- 3) Print the displayed data for recorded events for pre- versus post-treatment assessments. These printouts help document before and after analysis for patient records or for illustrating findings in a research setting.

# KEY PARAMETERS FOR ANALYSIS

SAM allows you to observe how the proprioceptors and sensorimotor systems function, both effecting and controlling body swaying and postural alignment while maintaining balance. Key parameters for analysis include:

- **Area** – the elliptical region in which the CoF spent 95% of its time during the recording
- **Dist (Distance)** – the length of the path traveled by the CoF during the recording
- **Var (Variability)** – the standard deviation of the individual movements of the CoF from frame to frame during the recording
- **Weight bearing %** – the average percentage of total body weight on the left foot versus right foot and the foot segments rearfoot versus forefoot

Expanded view showing CoF trajectory and the ellipse (area) in which the CoF traveled (swayed) during the recording. The center for the ellipse is set at the median position of the trajectory for the CoF.



Provides the medial-lateral (left-right) and the anterior-posterior (front-back) excursion or distance (length) traveled (swayed) by the CoF during the recording. Area between the hashed lines represent the 95% confidence interval.

# SWAY ANALYSIS APPLICATIONS

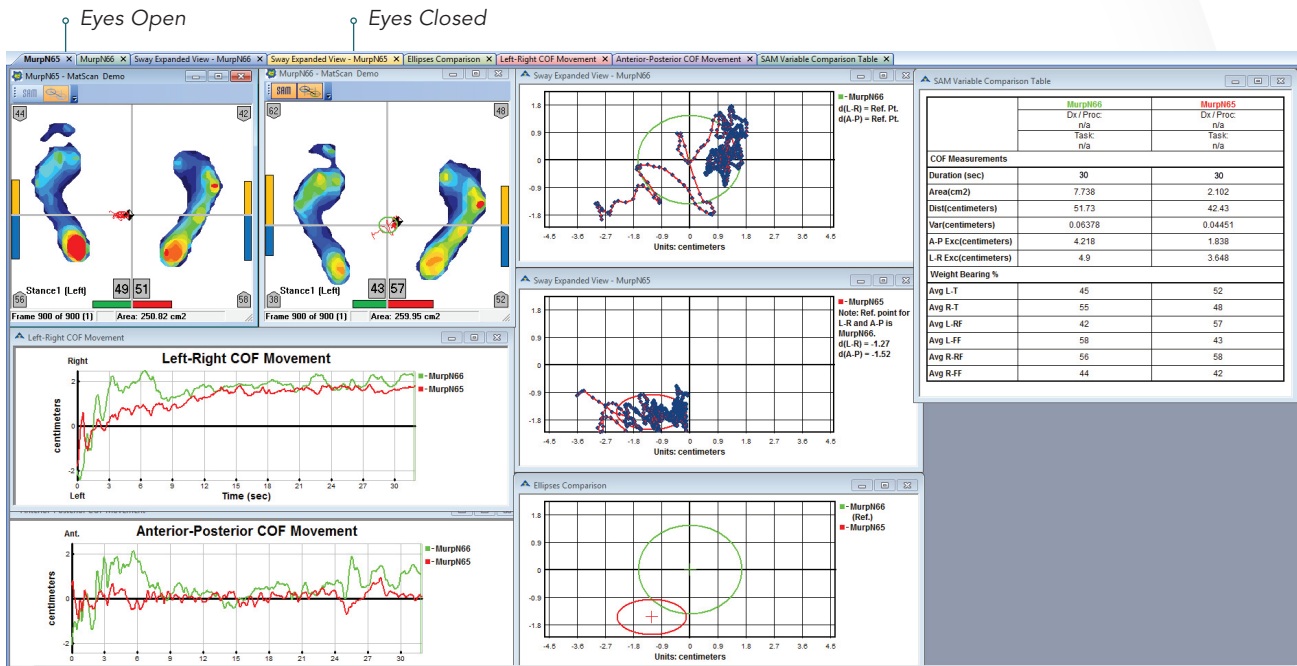
SAM parameters can be used to assess and treat instability, proprioceptor and sensorimotor systems dysfunction, and posture and balance disorders. Clinicians can assess and document pre- and post-treatments in relation to the patient's sway, posture, and/or balance control systems. Researchers can conduct sway analysis and posture assessment studies to investigate conditions that affect sway, posture, and balance. The following are disciplines and applications for clinical assessments and treatments, research studies, and investigations:

- Physical/Occupational Therapy and Rehabilitation
- Sports Podiatry, Athletic Training, and Injury Management
- Chiropractics
- Fall Risk Assessment and Prevention for Diabetic and Elderly Populations
- Orthopedics (joint, ankle, knee, hip) Stability Pre- and Post-Surgery
- Treatments, Prosthetic, and Orthotic interventions
- Dentistry and Orthodontics (Occlusion and TMJ Joint Disorders)
- Kinesiology and Osteopathy (Neuromusculoskeletal Dysfunctions and Back Problems)
- Neurology and Physiatry (Neuromusculoskeletal Pathologies and Physical Disabilities)

# SWAY ANALYSIS APPLICATIONS

The patient below swayed differently and to a greater extent, as shown in the Variance Comparison Table:

- The area of sway is greater (almost two-fold) with eyes closed
- Distance and excursions for the CoF are greater with eyes closed
- Weight bearing and pressure distribution shifted with eyes closed



Note: The A-P excursions for the CoF eyes closed are more than double the excursions with eyes open, while the M-L excursions differ slightly. This indicates that vision and the associated sensorimotor systems affect the sway pattern and play a role in maintaining balance and posture. It also indicates plausible presence of other perturbed proprioceptors and sensorimotor mechanisms in the control of sway, maintenance of posture and balance.

 **CONTACT US | FREE DEMONSTRATION**

+1.617.464.4281 | 1.800.248.3669 | info@tekscan.com | www.tekscan.com/medical