General Foot Function & Gait Analysis Using the Murphy 4P Method with F-Scan®

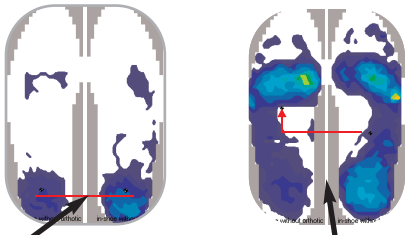
By Norman Murphy, Ph.D.

- **Progressive Clinicians who assess, evaluate and/or treat foot dysfunctions, gait abnormalities and/or postural related disorders use the *F-Scan*; a bi-pedal in-shoe force/pressure measurement system for foot function and gait related analysis. The *F-Scan* captures foot plantar tactile contact time and force, and displays a selection of calculated data for analysis including:**
  - **Pressure maps (image profiles) of pressure distribution on plantar surface.**
  - **Pressures and Forces during gait displayed in Time graphs.**
  - **Position and Trajectories for Center of Force (CoF) during stance phases of gait.**
  - **Force and Pressure time Integrals (impulse).**
- **When timing, trajectory and/or symmetry in foot function, gait and/or posture is off, torque is generated, and stress is transmitted along and within the tendons and muscles, ligaments and bones. Torque and stress are mechanical components that for which continuous over-time, wear and tear body tissues.**
- **The Murphy 4P Method provides an analytical protocol that helps confirm if asymmetrical foot function and gait via one, some or all of four biomechanical parameters (timing, trajectory, symmetry, integral) for each of and between the left & right feet have been reduced. Thus, meeting desired and expected treatment outcomes.**

Just look at what you can find out and treat in minutes when using the Murphy 4P Method

TIMING

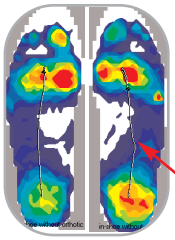
- Timing refers to the pivotal speed by which the feet move.
- To analyze for Timing, compare positions for CoF (·) during stance phase.



At heel-strike, similar position, but then moves faster for left foot.
- Desired and successful treatment outcome is where pivotal speeds of the left & right feet are to be made similar as possible.

TRAJECTORY

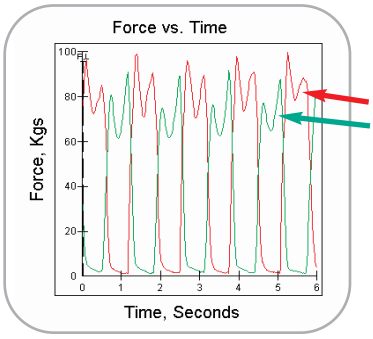
- Trajectory refers to the path that the CoF travels from heel strike to toe-off.
- To analyze for Trajectory, compare pattern of paths for CoF during stance phase.



Trajectory for CoF for right foot shows a lateral deviation with respect to the left.
- Desired and successful treatment outcome is where CoF trajectories of the left & right feet are to be made similar as possible.

SYMMETRY

- Symmetry refers to the pattern exhibited by the gait curve (total vertical ground reaction force) from heel strike to toe-off.)
- To analyze for Symmetry, compare patterns (peaks and slopes) of curves.



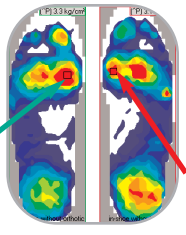
Right foot gait curve pattern is different than left foot pattern.
Right foot peak forces at heel strike higher than at toe-off, vice-versa for the left foot.

- Desired and successful treatment outcome is where gait curve patterns of the left & right feet are to be made similar as possible.

INTEGRAL

- Integral (impulse) refers to the relationship between the amount of force, and time, that the force is acting on plantar surface.
- To analyze for Integral, compare reported Integral and Peak Pressure values.

*Left foot Integral is 0.91 kg*sec Peak Pressure at 3.3 kg/cm2 1st methead*



*Right foot Integral is 0.91 kg*sec Peak Pressure at 3.1 kg/cm2 1st methead*

- Desired and successful treatment outcome is where integral values of the left & right feet are to be made similar as possible, and with lowest values.

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