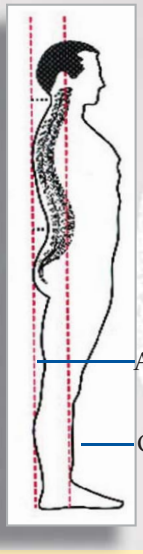
Using the *MatScan* as a **Rehabilitation Tool**

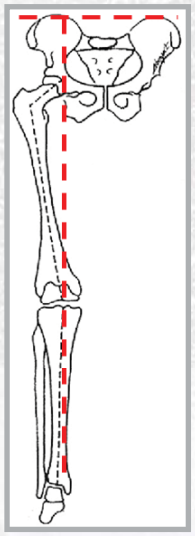
To help re-align the lower limb & maintain optimal posture

Using the *MatScan* to assess plantar pressure, weight distribution and Center of Force (CoF) while the patient is standing or performing knee flexions helps identify muscle balance and lower limb alignment. The physiological method of muscular training to re-align posture or align the lower limb is often neglected and is a cause leading to the failure of successful re-alignments. With the patient in the desired position on the *MatScan*, determine which muscles are weak and identify training, and then provide a plan for rehabilitation. The patient will then be on the way to recovery.

Balanced Musculature with **Optimal Alignment** of the Lower Limb



Optimal Alignment



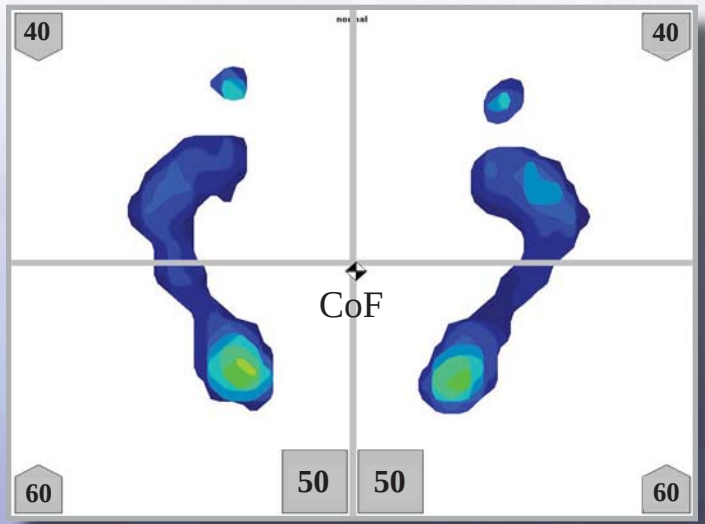
Observations in assessing for optimal alignment:

Are the knees frontal and do the feet have a similar angle of opening?

Is the rearfoot (subtalar joint) in neutral?

Is the shank (mid-line) perpendicular to the foot, in vertical, and perpendicular to the horizontal between the superior aspect of the iliac crests (hip)?

Is the horizontal between the iliac crests perpendicular to the vertical, and parallel with the ground?



With balanced musculature and optimal alignment, left and right plantar pressure profiles and weight distribution are symmetrical and CoF is located at about mid-line between the feet and at mid-tarsal level.

Tekscan

307 West First St., South Boston, MA 02127 • 617.464.4500/800.248.3669 • www.tekscan.com

In the Clinic - Assessment and Training of Alignment and Muscle Activity

PHASE 1 In-Clinic Assessment & Patient Awareness

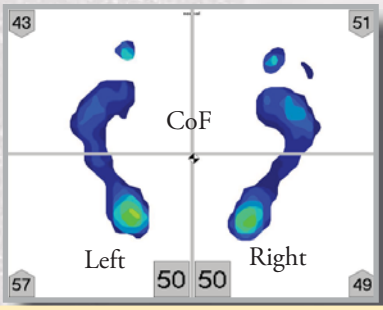
Natural Standing

a. With the patient standing barefoot on the *MatScan*, assess plantar pressure, weight distribution, and location of the CoF with both feet, then standing on the left and on the right only.

Have the patient stand on the mat.

b. Have the patient stand on the left foot only and repeat (3-4 times) knee flexions as low as possible while maintaining full plantar foot contact (heel and forefoot) with the ground, and with arms extended forward and the off-loaded leg extended backwards to achieve and maintain balance.

c. Assess plantar pressure, weight distribution, and CoF, as well as the movement of the knee, and the position of the rearfoot.



With the patient standing, assess plantar pressure, weight-bearing, and CoF.

d. Ask the patient to point to where he/she feels the muscles working in the legs, then view the pressure profile and weight distribution, observe CoF movement, and feel the active muscles.

e. Inform the patient to now repeat the flexions, but this time keeping the knee in line with the foot (prevent internal and external rotation or translation motion).

f. Ask the patient to point to where he/she now feels the muscles working in the legs, then view the pressure profile and weight distribution, observe CoF movement, and feel the active muscles.

Have the patient stand on the left foot only and perform knee flexions. Repeat with right foot.

Standing with rearfoot in neutral position

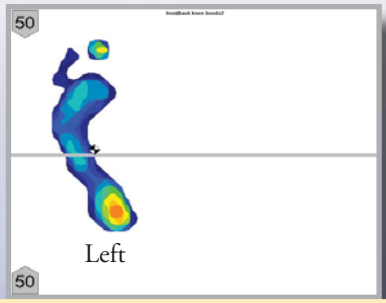
a. Align the rearfoot in neutral position.

b. Repeat steps A through F above while maintaining the knee in line and rearfoot in neutral position.

PHASE 2 Physical Training (Rehabilitation)

Become aware of which muscles are weak

Educate the patient on the relationship between the position of the foot, pressure profile, weight distribution, CoF location and the working muscles when the knee flexions are performed while the rearfoot is in neutral position and the knee is in line with the foot.



During knee flexion, assess plantar pressure, weight-bearing, and CoF.

Train until muscles are stronger and the knee flexions are in line with the foot

Ask the patient to repeat the knee flexions at home with the rearfoot in the neutral position and the knee in line with the foot, and add a standing vertical side stretch as a warm-up and cool-down.

Tekscan

307 West First St., South Boston, MA 02127 • 617.464.4500/800.248.3669 • www.tekscan.com

RevA_111609