

F-Scan® Analysis of Medial Tibial Stress Syndrome (MTSS)

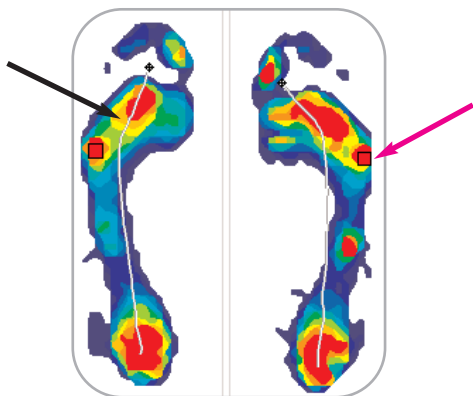
by Jayne Arlett, B Sc Pod Med, FASMF, FAAPSM

This case demonstrates how the F-Scan® In-Shoe Pressure Analysis System can be used to assist in the management of podiatric sports injury patients. The patient is a 22 year old female elite basketballer with a two year history of MTSS and tibial stress fractures. Previous treatments including physical therapy, "off-the-shelf" orthotics, rest and anti-inflammatory treatments have failed to resolve the condition.

Biomechanical analysis revealed the following: normal ROM all joints of foot and lower limb, Foot Posture Index of +9 (moderate to severe pronation), pronounced lumbopelvic instability during gait with heavy and loud heel strike, laterally unstable heel strike, and excessive pronation during the propulsive phase of gait.

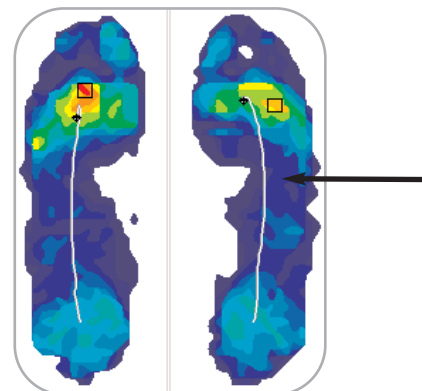
Below, F-Scan® data showing improved Center of Force (CoF) trajectory during propulsive phase of gait with orthotics compared to barefoot. Force-Time curves show improved symmetry with orthotics.

B
A
R
E
F
O
O
T



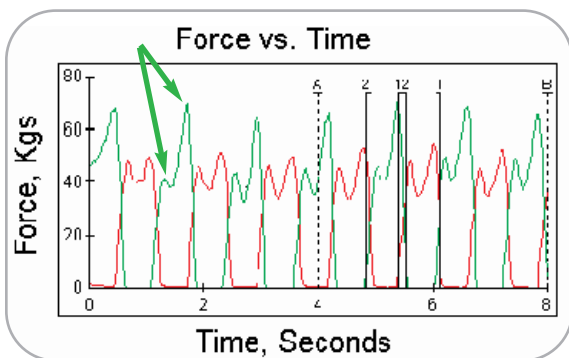
Note marked medial deviation of Center of Force (CoF) trajectory (black arrow) during propulsive phase of gait indicating excessive propulsive pronation. Also note high peak pressures on 5th MTPJ (pink arrow) and laterally unstable heel strike.

W
I
T
H
O
R
T
H
O
T
I
C
S



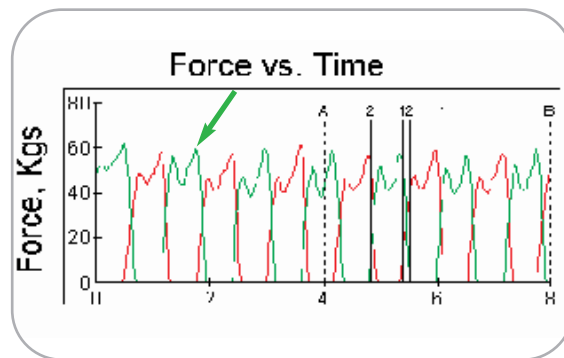
The CoF trajectory is more linear (black arrow) during the propulsive phase of gait and there is much better distribution of plantar pressures with reduced peak pressures.

B
A
R
E
F
O
O
T



The asymmetry of the force-time curve is noted with green representing right foot and red the left foot. The green curve shows an asymmetrical shape with the magnitude of the second half of the curve being greater than the first half (green arrows). There is an obvious difference in the shape of the curve between the left and right feet. Biomechanically, asymmetry can translate into torque or stress contributing to wear and tear.

W
I
T
H
O
R
T
H
O
T
I
C
S



There is now much improved symmetry between the left and right feet. The green curve propulsive phase is now more in proportion to the heel strike phase (green arrow). There is much greater symmetry in the overall appearance of the curves. This would translate biomechanically to less torque being produced in the body and therefore less wear and tear. In this case the improved biomechanics allowed an elite basketballer to play pain free.