

# Using F-Scan® with CoM to Treat Bilateral Tibialis Posterior Tendonitis/Dysfunction

Bob Fleck - Specialist in Biomechanics,  
Department of Orthopedics, Freeman Hospital, Newcastle

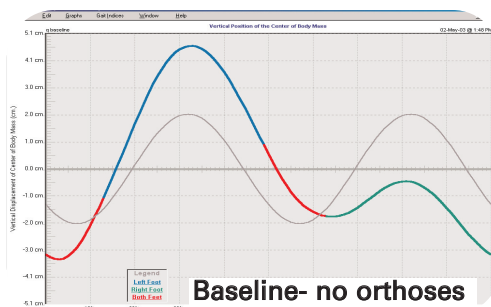
The patient has had two opinions and has been given two sets of commercial laboratory custom foot orthoses neither of which helped the symptoms. Referred for second opinion- evaluation and assessment assisted by F-Scan® and CoM'nalisis® programs.

Tibialis Posterior Dysfunction / Tendonitis - Treatment comparing custom orthoses with non - custom orthoses using F-Scan and CoM'nalisis to quantify pre and post treatment function.

Patient referred for a 2nd opinion with bilateral Tibialis Posterior tendonitis that had failed to respond to conservative treatment with 2 sets of custom foot orthoses prescribed by others without in-shoe pressure mapping equipment. F-Scan and CoM'nalisis used to identify reason for orthotic failure and help optimize orthotic function to solve clinical problem - suggests that prescription is more important than actual product for treatment success.

## Data from CoM'nalisis program reading F-Scan data analyzing the vertical displacement of the Center of Mass

BEFORE



Baseline CoM'nalisis with no correction - The closer the coloured line to the grey reference line the more efficient the gait based on the vertical displacement of the centre of mass.

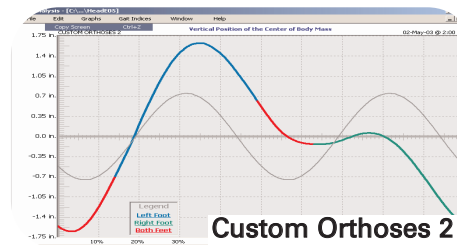
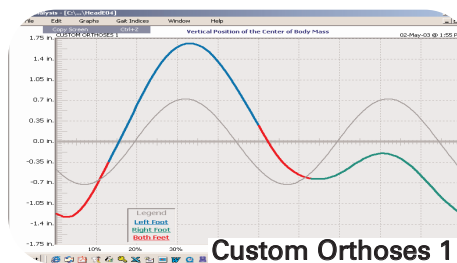
**Red** - double support

**Blue** - left foot support / right swing

**Green** - Right support / left swing

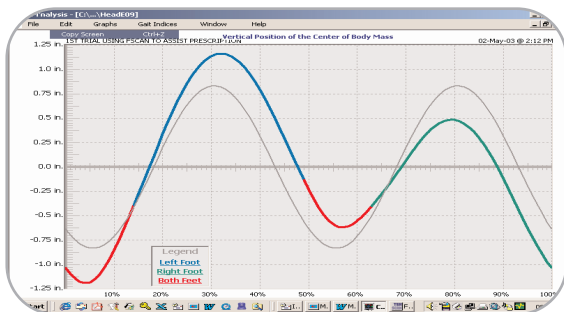
This 'Pre-Rx' scan is useful as a starting point to quantify mechanical function

BEFORE



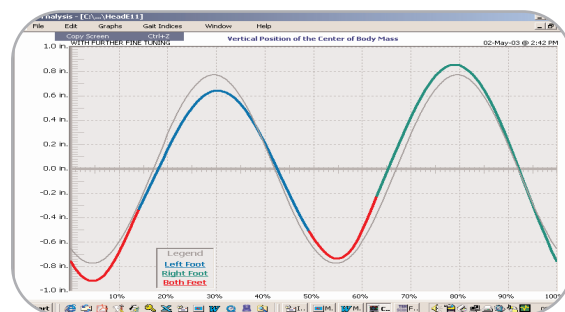
These custom orthoses actually made mechanical function worse - this may explain why the patient has not improved symptomatically - see below for statistics

AFTER

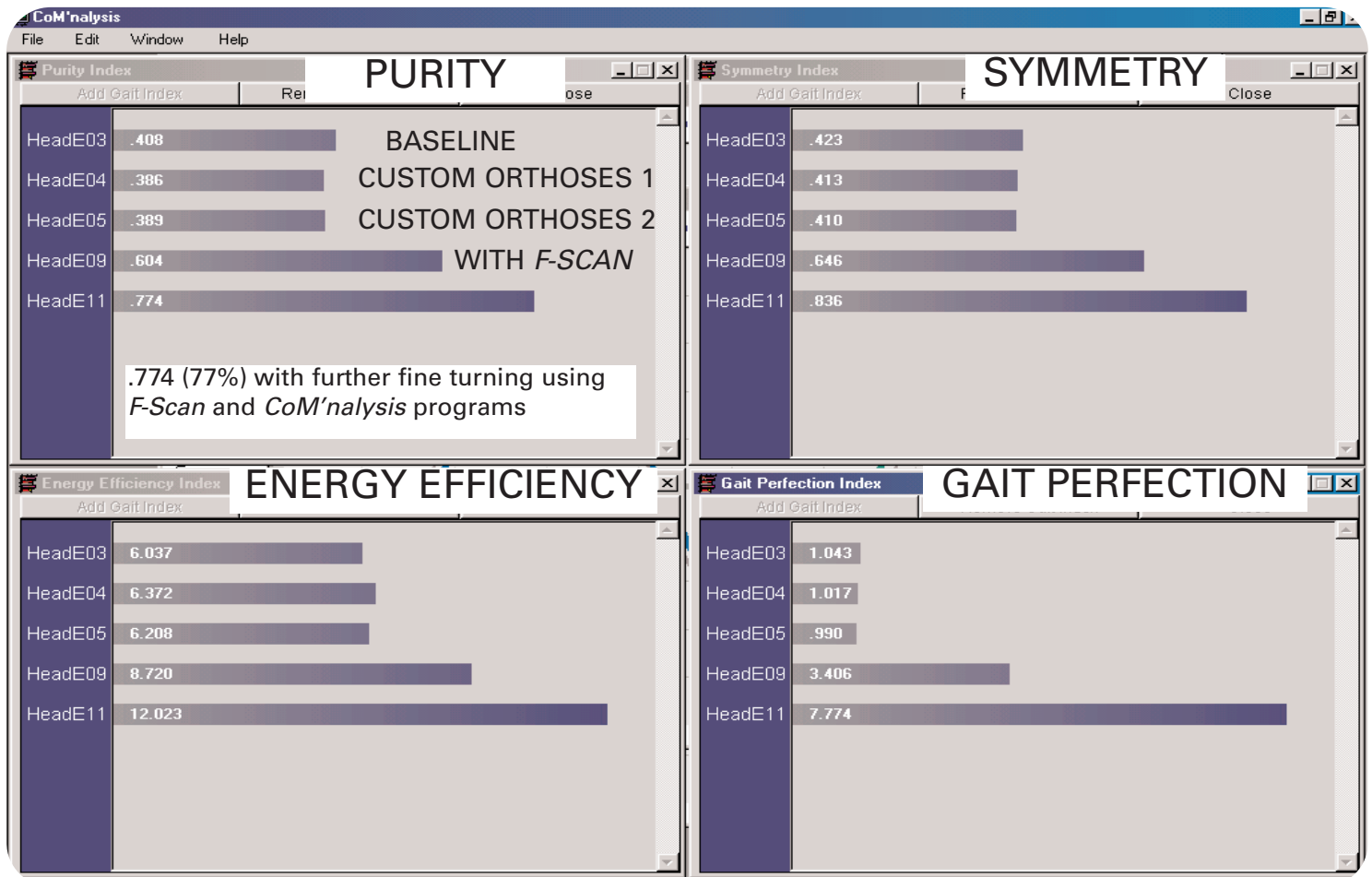


1st Rx using F-Scan and CoM'nalisis to optimize function - note that the gait function is closer to the grey reference line than in the baseline test above with no orthoses and in the tests above right showing gait with previously prescribed custom orthoses

AFTER



Results with further fine-tuning using F-Scan and CoM'nalisis - orthotic function has optimized the patient's gait. This data can be expressed in % improvement, see below  
 Baseline - **40% efficiency with no correction**  
 Custom orthoses 1 - **38% - worse function**  
 Custom orthoses 2 - **38% - worse function**  
 1st Rx using F-Scan and CoM'nalisis - **60%**  
 Fine-tuning with F-Scan and CoM'nalisis - **77%**  
**PATIENT SYMPTOM FREE IN 10 DAYS**



**PURITY** - The closer this is to the number 1, 'the less energy the patient is using with each step'.

**SYMMETRY** - The closer this is to the number 1 the more symmetrical the gait

**ENERGY EFFICIENCY** - Suggested that the less vertical motion of the body's COM the less overall energy expenditure. The body will not work so hard against gravity. THE LARGER THE NUMBER THE MORE ENERGY CONSERVED DURING GAIT. The index is open-ended.

**GAIT PERFECTION** - The sum of the above 3 indices. It simply is used to compare overall improvement or worsening of mechanical function and therefore the value is open-ended.

The indices in the above graph show the results of the respective treatments. The 'Gait Perfection' index shows the sum of all the respective indices and illustrates the overall functional improvement using *F-Scan* and *CoM'nalysis* programs to assist the practitioner in a more quantified evaluation of treatment.