

The Force vs. Time (F/T) double hump curve (often referred to as the gait curve) is the classic demonstration of the vertical loads occurring during walking (Figure 1). For any given step, the subject being measured weighs exactly the same when the step begins and ends. However, the changes in the shape of these curves are not exclusively related to absolute weight, but in large part to the motion of the body and its relationship to the support surface. The F-Scan® is capable of creating graphic displays of these forces. The areas of the heel and metatarsal heads can be "boxed" or outlined to create individual force curves that would present each site's loading uniqueness. During a normal walking step, these curves will rise as the loads increase to their peak and fall as they decrease. By contrast, if one were to stand still, these curves would instead show a flat horizontal line since the loading would be constant. This is basically the same thing you see as you step onto a bathroom scale. The numbers rise as you step on, stay constant when you look down to see the weight, and then decreases as you step off. Motion, relative position, and weight all combine to create forces that F-Scan can capture and then display for analysis and interpretation.

**Force vs. Time (Gait) Curve with the F-Scan® In-Shoe Pressure/Force System**

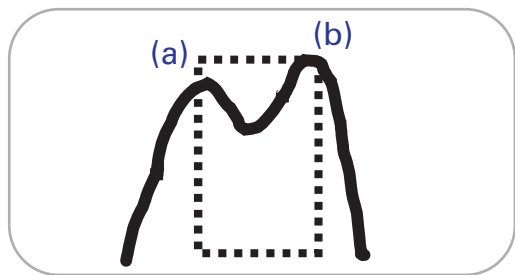


Figure 1: The curve above represents the classic double hump Force vs. Time curve associated with normal foot function during walking. The first peak (a) is the heel peak, and the second (b), the forefoot peak. The area within the dotted line box indicates the period of single support phase where one foot only is on the ground.

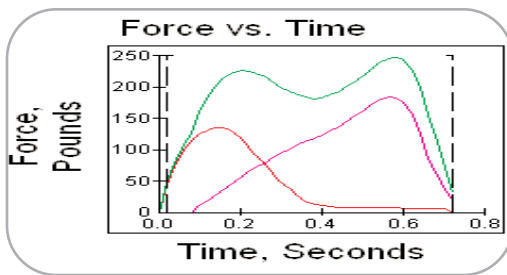


Figure 2: The force curves above represent the loading pattern for the heel (red curve) and the forefoot (pink curve) as these make contact and lift off the ground. Note the rise and fall in the curves, which are associated with loading rate. The (green curve) represents the gait curve, which is the total loading of the foot.

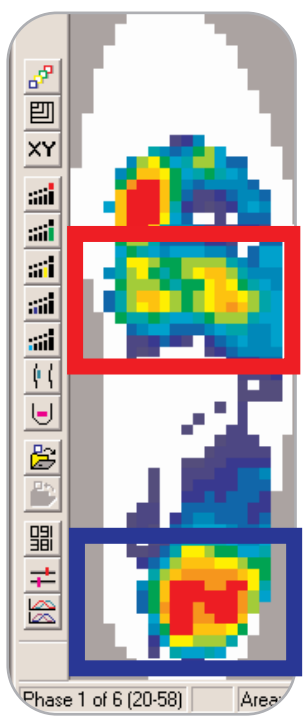


Figure 3: The display at left is a right foot pressure profile taken from an F-Scan recording. Note the boxes surrounding the forefoot (in red) and heel (in blue).  
  
The picture to the right (Figure 4) shows where the boxes at the forefoot and rearfoot correspond.

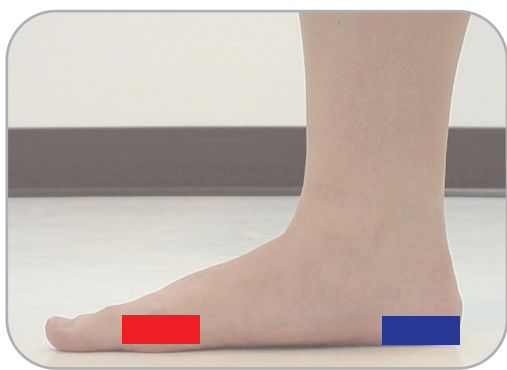


Figure 4: The picture above shows placement for the forefoot and heel "boxes" (as displayed in Figure 3) on the foot. Graphs (as displayed in Figure 2) can then be displayed to assess motion via the force curve patterns of both segments (heel and forefoot) during the gait cycle.