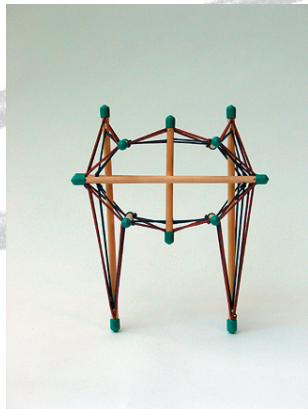


# Double Tensioned Pelvis

model 05-DTP-4.1

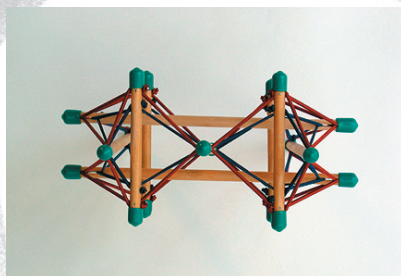
## A Biotensegrity Explanation for Structural Dysfunction in the Pelvis

With the Single Tensioned Pelvis model, it is possible to distort one or more tensile components, equivalent to ligaments and muscles, and then observe the overall effect on the structure. A change of length in only one tensile component causes significant distortions to occur throughout the structure in all three axes.

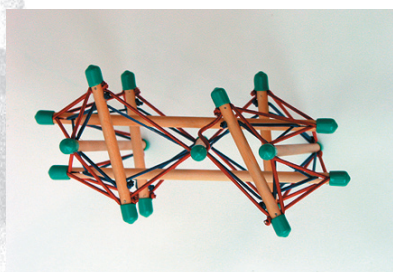


front view

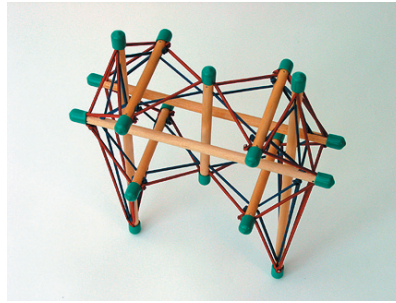
The Double Tensioned Pelvis extends the analogy by building a double tension net; a deep layer and a more superficial layer, corresponding to the structure of the body. The deeper tension net (blue elastic) is under a higher level of tension than the superficial tension net (red elastic) on the assumption that the deeper layers of ligaments and muscles are holding a



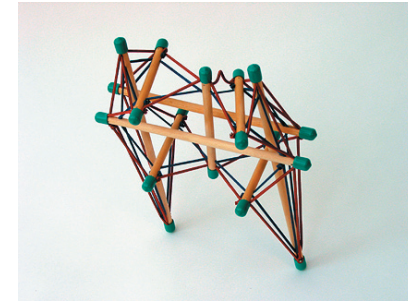
top view



top view - distorted



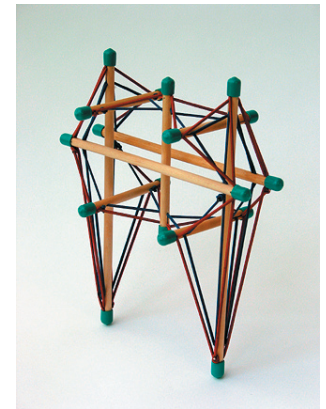
3/4 top view - normal



3/4 top view - distorted

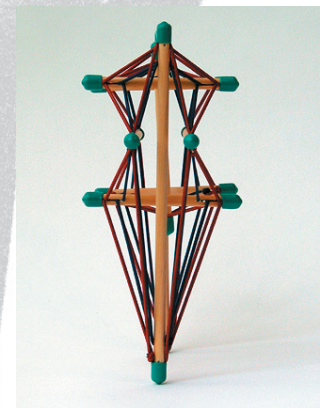
greater tensile load than the superficial muscles.

Curiously, when a distortion is introduced to the deep layer (increased tension or shortening of one component), the superficial layer immediately above responds by loosening. On the opposite side the reverse is the case and the surface tension increases. This suggests that the superficial layer on the opposite side takes up a portion of the work that the deeper layer was doing, perhaps to its detriment. Thus, point specific pain may not indicate the origin of the dysfunction. Overall, a balance of forces is maintained even if the figure is obviously distorted.



3/4 view

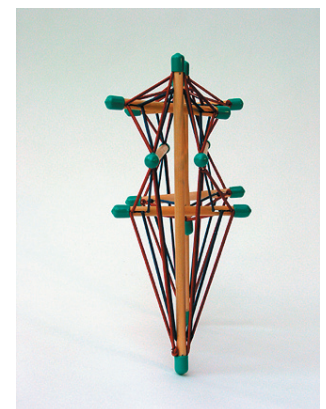
Based upon these observations the implications for function and dysfunction of the pelvis are intriguing. As the body's tensegrity system is layered, it appears that there are multiple paths of accommodation. A complex and dynamic stability can be maintained in spite of injury. This accounts for why we can suffer deep insults to our musculo-skeletal system and still manage to remain relatively mobile.



side view

This model also demonstrates gait and torsional movement, revealing the tensile net operating in the pelvis. As you articulate the struts, which represent the femurs, to simulate walking, you will notice the corresponding torque in the struts (x, y axes) which are the ilia. By distorting a single tension element you can then observe the corresponding distortion in gait or rotation.

Biomechanical function from a tensegrity perspective is a whole system explanation. Better description means better prescription, which allows for successful treatment methods to benefit patients and clients.



side view - distorted