

Tensegrity Viewpoint for Load Transfer Through the Sacroiliac Joint

Pardehshenas, Maroufi, Sanjari, Parnianpour, and Levin's (2014) study proposed a tensegrity viewpoint for load transfer through the sacroiliac (SI) joints. Pardehshenas et al. (2014) compared lumbopelvic muscle activation patterns (using electromyography, EMG) between one- and two-legged standing with and without loading. SI dysfunction may contribute to low back pain (LBP) (Pardehshenas et al., 2014).

Pardehshenas et al. (2014) described a traditional model using a Roman arch analogy where the pelvis is the arch and the sacrum is the keystone wedged between the two iliac bones. The Roman arch model supports two-legged standing. However, the arch model fits less-well with one-legged standing where architecturally, one of the imposts are missing (Pardehshenas et al., 2014).

Another model (tensegrity) more compatible with one-legged standing is the bicycle wheel with tension-loaded spokes transmitting forces to the frame (rim) and ground--the hub (sacrum) is suspended (Pardehshenas et al., 2014). After Pardehshenas et al. (2014) EMG studies, the wheel model seemed to be a better fit where ligaments/muscles act as the spokes suspending the sacrum (hub) and extending to the rim (ilia). The pelvic ring, according to Pardehshenas et al. (2014) is open at the top (as opposed to rigidly closed) at the pubic symphysis.

Pardehshenas et al. (2014) noted that treatment for SI joint dysfunctions usually focus narrowly on those joints. However, if the tensegrity model is proven to be a better descriptor, then one may need to consider more global treatment methods.

References

Pardehshenas, H., Maroufi, N., Sanjari, M. A., Parnianpour, M., & Levin, S. M. (2014). Lumbopelvic muscle activation patterns in three stances under graded loading conditions: Proposing a tensegrity model for load transfer through the sacroiliac joints. [*Journal Of Bodywork & Movement Therapies*, 18\(4\)](#), 633-642.