On the Tensegrity Perspective

The interconnectedness of nature—spanning the inorganic and organic—is evidenced from the basic molecular building blocks of life (e.g. carbon, hydrogen, oxygen, nitrogen and phosphorus) to fractal patterns, chaos theory, geodesic and tensegrity (tension-integrity) structures that appear to self-assemble (or self-organize) (Ingber, 1998). Scarr (2012) described tensegrity structures as "distinct compression elements (struts) that appear to float within a tensioned network (cables)" and hence, every part influences the other and one may consider the structure "a system" in equilibrium (p. 54). Scarr (2012) compared a traditional biomechanical understanding of the elbow structures with one using tensegrity.

From a tensegrity standpoint, Scarr (2012) noted that due to the somewhat high attachment and insertion on the distal radius, the brachioradialis seemed to create a distraction force (like a shunt) between the humerus and ulna with the triceps tendon and collateral ligaments acting as "containers". The anconeus would act as a counter joint distraction (Scarr, 2012). Scarr (2012) noted that traditionally, synovial joints were thought of as transferring compression forces, it but it may be possible that joint surfaces maintain contact by sliding instead with the brachioradialis and anconeus attenuating the pressure across the humero-ulnar joint.

Bones were the "struts" in Scarr's (2012) tensegrity model of the elbow with the muscles and fascia as the "cables". Scarr (2012) noted that from a tensegrity stance, every component makes a contribution to structural stability throughout movement as opposed to thinking of components functioning discretely (e.g. this muscle's job description is A, B, C; that muscle's job description is D, E, F). Scarr (2012) summarized that "tensegrity is a complete and inclusive structural system" (p. 63).

This article helped me understand better how the tensegrity perspective may be applied to a traditional biomechanical model. Scarr's (2012) side-by-side comparison was very helpful. Reexamining a scenario using a new perspective (such as a tensegrity approach) may allow new discoveries to be made with better fitting theories on form and function.

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References

Ingber, D. E. (1998). Architecture of life. *Scientific American*,*278*(1), 4857. Retrieved from http://time.arts.ucla.edu/Talks/Barcelona/Arch_Life.htm

Scarr, G. (2012). A consideration of the elbow as a tensegrity structure. *International Journal Of Osteopathic Medicine, 15*(2), 53-65.