

Posture as a model of mechanosensitivity: the “Biotensegrity”

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The *Human body* must be considered as a complex motor biosystem where homeostasis and regional state or segmental state functions are inseparable from general ones and the control circuit is not linear-causality type, ie stimulus and reaction, but it is an interactive system made up of a large number of interconnected circuits.

Recent research paves the way for a new interpretation of connective tissue functions, understood as a true “communicative network” within the model of mechanical sensitivity that sees cells as a kind of “metal mesh” where elastic fibers, from cytoplasmic space, reach internal structures such as chromatin, allowing the cell to respond directly and immediately to the forces applied to the cell membrane. Moreover, we know today that, through specific membrane proteins (integrins), the connective system is able to interact with cellular mechanisms. Unlike the nervous system, the endocrine and the immune system, the myofascial apparatus presents a more archaic but not least important method of communication: the mechanical one. It “simply” pulls and pushes communicating thus from fiber to fiber, from cell to cell and from internal and external environment through mechanical signal transduction systems. We can, therefore, speak of biotensegrity bone-muscle-fascial system, that is the faculty of a system to stabilize mechanically through a game of tension and decompression forces that are divided and equilibrated.

The alterations of these forces determine pathological conditions that may affect the various sensory, central, motor, soft tissues subsystems with a progressive deterioration of the delicate compensatory mechanisms, causing the onset of postural disorder that is exacerbated by tissue suffering and results also in a morfological damage.

References

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