A 2003 update of bone physiology and Wolff's Law for clinicians

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Research Article

Beckman Conference. Physiology and Pathophysiology of Bone Remodeling. Lawrence G. Raisz. Published August 1999. “Remodeling” of bone begins early in fetal life, and once the skeleton is fully formed in young adults almost all of the metabolic activity is in this form. The bone remodeling cycle (2) involves a series of highly regulated steps that depend on the interactions of two cell lineages, the mesenchymal osteoblastic lineage and the hematopoietic osteoclastic lineage. The initial “activation” stage involves the interaction of osteoclast and osteoblast precursor cells (Fig. Wolff’s law states that healthy load bearing bone (LBB) responds to strain by ‘placing or displacing themselves (at a mechanical level) in the direction of the functional pressure, & increase or decrease their mass to reflect the amount of functional pressure’, often muscular strain and/or weight bearing pressures (Mays 1999: 3). As a part of this Frost (2004: 3) argues that the ‘mechanostat’, a tissue level negative feedback system, involves ‘two thresholds that make a bone’s strains determine its strength by switching on and off the biologic mechanisms that increase or decrease its str... Frost, H. M. 2004. (A 2003). Update on Bone Physiology and Wolff’s law for Clinicians. Angle Orthodontist. February 2004.