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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Mechanical behavior and properties of adipose tissue -- Mathematical models of adipose tissue dynamics -- Mechanical stretching and signaling pathways in adipogenesis- Role of mechanical stimulations in directing mesenchymal stem cell adipogenesis -- The vicious cycle of estrogen consumption and obesity: The role of mechanotransduction -- Extracellular matrix remodeling and mechanical stresses as modulators of adipose tissue metabolism and inflammation -- The Impact of Obesity and Weight Loss on Gait in Adults -- Excessive Weight Bearing Compromises Foot Structure and Function across the Lifespan -- Obesity, Osteoarthritis and Aging: The Biomechanical Links -- Impaired neutrophil mechanoregulation by fluid flow: A potential

contributing factor for microvascular dysfunction in obesity -- Mechanotransduction and the myogenic response in diabetes -- Role of adipose cells in tumor microenvironment.

Sommario/riassunto

This volume describes the state-of-knowledge in the study of the relationships between mechanical loading states in tissues and common pathophysiologies related to increase in mass of adipose tissues and/or hyperglycemia which eventually lead to obesity, diabetes, insulin resistance, hyperlipidemia, metabolic inflammations, certain types of cancer and other related diseases. There appears to be an interaction between the loading states in tissues and cells and these chronic conditions, as well as with factors such as age, gender and genetics of the individual. Bioengineering has made key contributions to this research field in providing technologies for cell biomechanics experimentation, microscopy and image processing, tissue engineering and multi-scale, multi-physics computational modeling. Topics at the frontier of this field of study include: the continuous monitoring of cell growth, proliferation and differentiation in response to mechanical factors such as stiffness of the extracellular matrix (ECM) and mechanical loads transferred through the ECM; mechanically-activated signaling pathways and molecular mechanisms; effects of different loading regimes and mechanical environments on differentiation fates of mesenchymal stem cells (MSCs) into myogenic and osteogenic versus adipogenic lineages; the interactions between nutrition and mechanotransduction; cell morphology, focal adhesion patterns and cytoskeletal remodeling changes in adipogenesis; activation of receptors related to diabetes by mechanical forces; brown and white adipose plasticity and its regulation by mechanical factors.