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Spine Biomechanics

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The spine is the primary structural component of the human musculoskeletal system, playing a primary role in enabling the movement of the torso, maintaining an upright posture, and transferring loads between the upper and lower body. To fulfil these functions, it must endure a wide range of forces and mechanical stresses while exhibiting specific material characteristics and complex motion patterns. Despite its essential role in human biomechanics, the spine is also highly susceptible to various disorders, with back pain ranking among the leading causes of disability worldwide.

A deeper understanding of spinal biomechanics is therefore essential for improving both the prevention and treatment of related musculoskeletal disorders. In this context, the Special Issue “Spine Biomechanics” provides an overview of recent advances and insights in this field. It encompasses a broad spectrum of research, including clinical (in vivo) studies, experimental (in vitro) investigations, and computational (in silico) modelling approaches. Moreover, it highlights the development and validation of innovative research methods, explores emerging technologies and devices for orthopaedic and trauma-related spinal care, and examines how factors such as aging, degeneration, and injury influence spinal biomechanics.



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