

Special Issue

Symmetry and Asymmetry in Biomechanics: Bridging Biological Structure, Mechanical Function and Clinical Insight

Message from the Guest Editors

Symmetry is a fundamental principle in the structural and functional organization of living systems, observable across all scales—from cells to whole-body movements. Conversely, asymmetry—whether morphological, functional, biomechanical, or pathological—often reflects adaptation, compensation, or dysfunction. Investigating both symmetry and asymmetry in biomechanics offers key insights into the mechanisms of movement, development, and the performance of the musculoskeletal system. This Special Issue aims to explore the multifaceted roles of symmetry and asymmetry in biomechanics through experimental, numerical, clinical, and theoretical approaches. A particular focus will be placed on the integration of multiple scales (from tissue to organism), diverse contexts (healthy vs. pathological, natural vs. artificial), and interdisciplinary perspectives. Topics of interest include, but are not limited to, the following:

- Symmetry and asymmetry in gait, posture, and movement disorders;
- Joint mechanics and the impact of asymmetry on joint function and degeneration (e.g., osteoarthritis, dysplasia);
- Mechanobiological responses...

Guest Editors

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About the Journal

Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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