



symmetry

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Biomechanics and Energetics of Human Motion When Walking with Lower Limb Orthoses, Prosthesis, and Exoskeletons

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Message from the Guest Editor

Lower limb assistance devices, including prostheses, orthoses, and exoskeletons, are developed to help subjects with impaired locomotion function to restore mobility. In the last decade, powered assistance devices have attracted substantial attention from academics and industries, as these devices can better aid users in regaining a more natural gait compared to traditional passive devices. In addition, it is reported that powered transtibial and transfemoral prostheses can improve users' self-selected walking speed, and decrease the metabolic cost of the process.....As a universal human activity, walking is considered an important research area. Many research papers have demonstrated that the able-bodied always have a symmetrical gait. However, stroke patients and amputees often experience asymmetrical behavior of the lower extremities, significantly increasing the load of the sound side or the dominated side, decreasing the walking speed, and requiring greater human effort in walking.

This Special Issue will present studies considering the symmetry, biomechanics, and energetics of human motion with lower limb orthoses, prostheses, and exoskeletons.



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Special Issue



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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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