

Editorial: Advancing Inclusivity in Biomechanical Engineering Research

In the pursuit of improving human health through biomechanical engineering, it is imperative that our efforts are not only innovative but also inclusive. The *ASME Journal of Biomechanical Engineering* stands as a platform committed to showcasing research that embraces diversity in both its subject matter and its approach. This Special Section serves as a testament to our dedication to fostering inclusivity within the field, as it brings together a diverse array of original research articles and reviews from researchers with different backgrounds, experiences, and perspectives. By focusing on the theme of "Inclusive Science and Engineering," this collection not only amplifies the voices of underrepresented communities in biomechanics research but also broadens our understanding of biomechanical principles through diverse perspectives and methodologies.

Several contributions in this Special Section enrich our collective understanding of biomechanical engineering by illuminating essential aspects of human health through the perspective of inclusivity. From investigations into regional differences in arterial stiffening across age and sex to the exploration of sex differences in biological responses of cardiovascular cells, each study not only addresses pressing health concerns but also underscores the importance of considering diverse populations in research design and interpretation. Indeed, a meta-analysis of sex inclusivity in biomechanics research included in the collection serves as a reminder of the ongoing need to address disparities in study populations. Despite efforts to promote sex-balanced study designs, the findings underscore the persistent underrepresentation of female subjects, emphasizing the importance of a more inclusive approach in research design and implementation.

Other contributions in this Special Section are specifically focused on biomechanical considerations for females and studies involving women's health. Research on the musculoskeletal effects of pregnancy and lactation underscores the importance of considering reproductive history in understanding sex disparities in joint health. By evaluating tendon mechanics and bone microstructure, this study provides valuable insights into the long-term consequences of biological reproduction, thereby informing clinical approaches to musculoskeletal disorders. Similarly, an examination of the impact of menopause on the mechanical properties of the vagina, as outlined in the review, sheds light on an often-overlooked aspect of women's health and offers crucial insights for future research and treatment strategies. Additionally, findings on the impact of surgery and osteoarthritis on joint function in the female hand highlight the significance of examining the intersection between biomechanical factors and health outcomes, thus contributing to our understanding of disease processes and potential interventions.

Lastly, a detailed exploration of the biomechanical and technological challenges faced by the blind and low vision community in accessing tactile information highlights the need for inclusive design innovations. By bridging the gap between technological advancements and user requirements, this review advocates for a convergence approach that prioritizes accessibility and usability.

As editors of this Special Section, we are inspired by the breadth and depth of research presented herein. By encompassing a wide range of topics, methodologies, and demographic considerations, this collection advances our understanding of biomechanical principles in ways that are both comprehensive and inclusive. It is our hope that these contributions also begin to

foster a more inclusive and equitable approach to research and development focused on engineering for human health. Through collaboration and continued dialogue, we can pave the way for a future where biomechanical innovations benefit all members of society.

Sincerely,

Matthew R. Bersi, Darryl A. Dickerson, and Sara Roccabianca

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