



Journal of  
Biomechanical  
Engineering

# Editorial

## Annual Special Issue: 2023 in Review and the 2024 Richard Skalak Award and the Editors' Choice Papers

The ASME *Journal of Biomechanical Engineering* had an exceptional year. The journal received 412 paper submissions in 2023, which was a significant increase from 2022. The average time a paper spends in review remains just under 3 months, which is in line with our peer journals. The Editors-in-Chief are committed to further reducing the time spent in review.

We sincerely thank all the Associate Editors (AEs) for their hard work and dedication. This year, the following AEs completed their terms: Anton Bowden, Sandra Shefelbine, and Sarah Vigmostad. We thank each of them for their service. We welcomed new AEs: Peter Cripton, Byron Erath, Luke Timmins, Jolanda Wentzel, Adrian Buganza Tepole, and Elizabeth Rapp van Roden. We also welcomed back many AEs for a second term: Craig Goergen, Nicole Hashemi, Songbai Ji, Ethan Kung, Matthew Panzer, David Pierce, Francesco Travascio, and Tishya Wren. Persons at Associate Professor or higher rank, or with equivalent industrial positions/experience, are encouraged to contact Vicky and Ross if they are interested in possibly becoming an Associate Editor for Journal of Biomechanical Engineering (JBME).

We welcomed Byron Erath as a social media director and Spencer Szczesny as a Diversity Advocate. We would like to acknowledge and thank Hannah Dailey, Daryl Dickerson, Byron, and Spencer for their considerable time and effort to improve the Journal's reach and impact. Byron is working with Hannah to publicize newly published papers on LinkedIn and X (@JBMEjournal). Darryl organized a highly successful JBME-sponsored workshop at SB3C 2023, entitled "Demystifying the Review and Editing Process." Spencer and Daryl are organizing a workshop, "Acknowledging and Addressing Bias in the Peer Review Process," at SB3C 2024. All are welcome to join and contribute to the conversation. JBME has offered authors the option for a double-blind review process for 2 years. The option has been very popular with our authors. Darryl and Spencer will be studying the impact of the double-blind option on the review process and outcomes.

The journal published a special section and three special issues in 2023:

- Current Trends in Impact and Injury Biomechanics (Guest Editors: Matt Panzer, Barclay Morrison, and Francisco Jose Lopez Valdes).
- Education in Biomechanics (Guest Editors: Debanjan Mukherjee and Victor Lai).
- Advancing Inclusivity in Biomechanical Engineering Research (Guest Editors: Sara Roccabianca, Daryl Dickerson, and Matthew Bersi).
- Annual Special Issue (Guest Editor: Joao S. Soares).

JBME welcomes proposals for special issues and review articles on emerging topics and on computational and experimental methods in biomechanics and bio-engineering. Persons interested in organizing a special issue are encouraged to contact Ross and Vicky.

### 2024 Skalak Award and Editors' Choice Papers

Each year, the associate editors of the ASME *Journal of Biomechanical Engineering* identify the most meritorious papers published in the Journal in the previous calendar year. An external committee then selects the best paper of the year from this list of Editors' Choice Papers [1–22]. The authors of this paper are the recipients of the Richard Skalak Award, named after an early leader within the ASME Bio-engineering community. Richard Skalak (1923–1997) played a leadership role in the formative decades of the discipline of biomedical engineering through his technical contributions in biomechanics, his educational influence on students, and his service to many developing societies and journals. Richard Skalak believed in several central approaches to bio-engineering and several central values in working with people. In bio-engineering, these were (1) the useful combination of mathematical and computational modeling with experimental results, to better inform the new biological understanding that is derived, and (2) the inclusion of both microscale and macroscale phenomena in understanding complex biological systems. In terms of mentoring students and collaborating with colleagues, these were (1) share ideas freely, (2) listen to ideas of others and integrate the best into new developments, and (3) show tolerance and respect for others at all times. These tenets help to guide us as a community and as a journal, and we are honored by the opportunity to contribute to Richard Skalak's legacy by giving an award bearing his name.

The Editors sincerely thank the 2024 Skalak Award committee: Ian Sigal (chair), Stephanie Cone, Andrew Feola, Soham Ghosh, Chung-Hao Lee, Yanhui Ma, Lucas Timmins, Ryan Pedrigi, Edward Sander, Joao Soares, Adrian Buganza Tepole, and Joseph van Batenburg-Sherwood. The members of the committee are invited by the Chair of the Skalak Committee and are external to the Editorial Board of the Journal at the time of deliberations. Congratulations to the authors of the Skalak Award winner, to the paper selected for honorable mention (runner-up for the Skalak award), and to the authors of all the Editors' Choice papers!

**The 2024 Skalak Award Winner.** Nowak, J. F., Kerns, A., Patel, P., Batzinger, K., Tong, X., and Samuel, J., 2022, "The Construction of Biologically Relevant Fiber-Reinforced Hydrogel Geometries

Using Air-Assisted Dual-Polarity Electrospinning,” *ASME J. Biomech. Eng.*, **145**(1), p. 011009.

**Honorable Mention for the 2024 Skalak Award.** Camargo, J., Bhakta, K., Herrin, K., and Young, A., 2023, “Biomechanical Evaluation of Stair Ambulation Using Impedance Control on an Active Prosthesis,” *ASME J. Biomech. Eng.*, **145**(2), p. 021007.

**Thao D. Nguyen**  
**Johns Hopkins University,**  
**125 Latrobe Hall,**  
**3400 N. Charles St.,**  
**Baltimore, MD 21218**  
**e-mail: vicky.nguyen@jhu.edu**

**C. Ross Ethier**  
**Georgia Institute of Technology,**  
**315 Ferst Dr NW IBB,**  
**Atlanta, GA 30332**  
**e-mail: ross.ethier@bme.gatech.edu**

## References

- [1] Czerpak, C. A., Ling, Y. T. T., Jefferys, J. L., Quigley, H. A., and Nguyen, T. D., 2023, “The Curvature, Collagen Network Structure, and Their Relationship to the Pressure-Induced Strain Response of the Human Lamina Cribrosa in Normal and Glaucoma Eyes,” *ASME J. Biomech. Eng.*, **145**(10), p. 101005.
- [2] Chakraborty, A., Sahare, K. D., Datta, P., Majumder, S., Roychowdhury, A., and Basu, B., 2022, “Probing the Influence of Hybrid Thread Design on Biomechanical Response of Dental Implants: Finite Element Study and Experimental Validation,” *ASME J. Biomech. Eng.*, **145**(1), p. 011011.
- [3] Jolas, E., Simonsen, M. B., and Andersen, M. S., 2023, “Simulated Increase in Monoarticular Hip Muscle Strength Reduces the First Peak of Knee Compression Forces During Walking,” *ASME J. Biomech. Eng.*, **145**(10), p. 101011.
- [4] Camargo, J., Bhakta, K., Herrin, K., and Young, A., 2022, “Biomechanical Evaluation of Stair Ambulation Using Impedance Control on an Active Prosthesis,” *ASME J. Biomech. Eng.*, **145**(2), p. 021007.
- [5] Roberge, C. L., Kingsley, D. M., Cornely, L. R., Spain, C. J., Fortin, A. G., and Corr, D. T., 2022, “Viscoelastic Properties of Bioprinted Alginate Microbeads Compared to Their Bulk Hydrogel Analogs,” *ASME J. Biomech. Eng.*, **145**(3), p. 031002.
- [6] Aiyangar, A., Gale, T., Magherhi, S., and Anderst, W., 2023, “How Many Trials Are Needed to Estimate Typical Lumbar Movement Patterns During Dynamic X-Ray Imaging?,” *ASME J. Biomech. Eng.*, **145**(7), p. 074503.
- [7] Boiczuk, G. M., Pearson, N., Kote, V. B., Sundaramurthy, A., Subramaniam, D. R., Rubio, J. E., Unnikrishnan, G., Reifman, J., and Monson, K. L., 2023, “Rate- and Region-Dependent Mechanical Properties of Göttingen Minipig Brain Tissue in Simple Shear and Unconfined Compression,” *ASME J. Biomech. Eng.*, **145**(6), p. 061004.
- [8] Kamble, Y., Raj, A., and Thakur, A., 2023, “Artificial Neural Network-Aided Computational Approach for Mechanophenotyping of Biological Cells Using Atomic Force Microscopy,” *ASME J. Biomech. Eng.*, **145**(7), p. 071007.
- [9] Ziemnicki, D. M., McDonald, K. A., Wolf, D. N., Molitor, S. L., Egolf, J. B., Gupta, M., and Zelik, K. E., 2023, “Combining an Artificial Gastrocnemius and Powered Ankle Prosthesis: Effects on Transtibial Prosthesis User Gait,” *ASME J. Biomech. Eng.*, **145**(6), p. 061009.
- [10] Huber, C. M., Patton, D. A., Rownd, K. R., Patterson Gentile, C., Master, C. L., and Arbogast, K. B., 2023, “Neurophysiological Effects of Repeated Soccer Heading in Youth,” *ASME J. Biomech. Eng.*, **145**(9), p. 091005.
- [11] Changsheng, L., Haiquan, F., Kun, W., Xiaotian, W., and Yonggang, W., 2022, “Influence of the Anatomical Structure on the Hemodynamics of Iliac Vein Stenosis,” *ASME J. Biomech. Eng.*, **145**(1), p. 011013.
- [12] Ateshian, G. A., Petersen, C. A., Maas, S. A., and Weiss, J. A., 2022, “A Numerical Scheme for Anisotropic Reactive Nonlinear Viscoelasticity,” *ASME J. Biomech. Eng.*, **145**(1), p. 011004.
- [13] Zhu, Y., Wilkerson, R. J., Pandya, P. K., Mullis, D. M., Wu, C. A., Madira, S., Marin-Cuartas, M., Park, M. H., Imbrie-Moore, A. M., and Woo, Y. J., 2022, “Biomechanical Engineering Analysis of Pulmonary Valve Leaflet Hemodynamics and Kinematics in the Ross Procedure,” *ASME J. Biomech. Eng.*, **145**(1), p. 011005.
- [14] Nowak, J. F., Kerns, A., Patel, P., Batzinger, K., Tong, X., and Samuel, J., 2022, “The Construction of Biologically Relevant Fiber-Reinforced Hydrogel Geometries Using Air-Assisted Dual-Polarity Electrospinning,” *ASME J. Biomech. Eng.*, **145**(1), p. 011009.
- [15] Shim, J. J., Maas, S. A., Weiss, J. A., and Ateshian, G. A., 2023, “Finite Element Implementation of Computational Fluid Dynamics With Reactive Neutral and Charged Solute Transport in FEBio,” *ASME J. Biomech. Eng.*, **145**(9), p. 091011.
- [16] Zdero, R., Djuricic, A., and Schemitsch, E. H., 2023, “Mechanical Properties of Synthetic Bones Made by Synbone: A Review,” *ASME J. Biomech. Eng.*, **145**(12), p. 121003.
- [17] Moshage, S. G., McCoy, A. M., and Kersh, M. E., 2023, “Elastic Modulus and Its Relation to Apparent Mineral Density in Juvenile Equine Bones of the Lower Limb,” *ASME J. Biomech. Eng.*, **145**(8), p. 081001.
- [18] Ren, P., Chen, P., Reeves, R. A., Buchweitz, N., Niu, H., Gong, H., Mercuri, J., Reitman, C. A., Yao, H., and Wu, Y., 2023, “Diffusivity of Human Cartilage Endplates in Healthy and Degenerated Intervertebral Disks,” *ASME J. Biomech. Eng.*, **145**(7), p. 071006.
- [19] Vu, V., Rossini, L., del Alamo, J. C., Dembitsky, W., Gray, R. A., and May-Newman, K., 2023, “Benchmark Models of Patient-Specific Intraventricular Flow During Heart Failure and LVAD Support,” *ASME J. Biomech. Eng.*, **145**(11), p. 111010.
- [20] Kang, S., Song, Z., Yang, X., Li, Y., Wu, H., and Li, T., 2023, “A Rate-Dependent Cell Microinjection Model Based on Membrane Theory,” *ASME J. Biomech. Eng.*, **145**(9), p. 091007.
- [21] Fan, H., Cai, Q., and Qin, Z., 2023, “Measurement and Modeling of Transport Across the Blood–Brain Barrier,” *ASME J. Biomech. Eng.*, **145**(8), p. 080802.
- [22] Sharif-Ahmadian, A., Beagley, A., Pearce, C., Saliken, D., Athwal, G. S., and Giles, J. W., 2023, “Statistical Shape and Bone Property Models of Clinical Populations as the Foundation for Biomechanical Surgical Planning: Application to Shoulder Arthroplasty,” *ASME J. Biomech. Eng.*, **145**(10), p. 101004.