

SAJAL CHIRVI



Specialized Professional Competence

Biomechanics including analysis of human injury mechanism, causation, and tolerance. Occupant kinematics. Accident reconstruction. Biomechanics of falls, under-body loading and ballistic impacts. Dynamic experimental test design and analysis. Data acquisition and analysis.

Background and Professional Honors

B.S. (Biomedical Engineering), University of Mumbai, India
M.S. (Biomedical Engineering), University of Texas, Arlington
Ph.D. (Biomedical Engineering), University of Texas, Arlington

Engineer,
Talas Engineering, Inc.
Research Scientist,
Medical College of Wisconsin, Wauwatosa
Scientist-Systems,
Dynamic Connections LLC, San Diego
Graduate Student Researcher,
Department of Biomedical Engineering, University of Texas, Arlington
Graduate Student Assistant,
Department of Biomedical Engineering, University of Texas, Arlington
Biomedical Engineering Lecturer,
PDM College of Engineering, India

Professional Activities & Memberships

Member, Association for the Advancement of Automotive Medicine (AAAM)

Journal Reviewer:

- Annals of Biomedical Engineering
- Clinical Biomechanics
- PLOS ONE
- ASME Journal of Biomechanical Engineering
- Biomedical Sciences Instrumentation (& Guest Editor 2019)
- Computer Methods in Biomechanics and Biomedical Engineering
- Journal of the Mechanical Behavior of Biomedical Materials

Conference Co-Chair (2019). Rocky Mountain Bioengineering Symposium, Milwaukee.

Injury Biomechanics Session Chair (2019). Rocky Mountain Bioengineering Symposium, Milwaukee.

Poster Judge (2014). Ohio State Injury Biomechanics Symposium, Ohio.

Grant

Soldier lethality and protection: Experimental, analytical, and computational methods characterizing biological materials. Sponsor: Army contracting agency; PI: Pintar, F. A., Co-PD/ PI: Chirvi, S. (2020-2024)

Awards

Tau Beta Pi (engineering honor society, 2008)
Best student award, undergraduate degree (2002, 2003, 2004)

Selected Publications & Presentations

Journal Articles

LeSueur, J., Hampton, C., Koser, J., Chirvi, S., & Pintar, F. A. (2022). "Surface wave analysis of the skin for penetrating and non-penetrating projectile impact in porcine legs." *Forensic Science Medicine and Pathology*, PMID: 36100841.

Koser, J., Chirvi, S., Banerjee, A., Pintar, F. A., Hampton, C., & Kleinberger, M. (2022). "Repeated measures analysis of projectile penetration in porcine legs as a function of storage condition." *Journal of Forensic and Legal Medicine*, PMID: 35863258.

Chirvi, S., Pahapill, N., Yoganandan, N., Curry, W., Stemper, B., Kleinberger, M., & Pintar, F. A. (2022). "Calcaneus fracture pattern and severity: role of local trabecular bone density." *Journal of the Mechanical Behavior of Biomedical Materials*, PMID: 35987107.

Chirvi, S., Pintar, F. A., Yoganandan, N., Stemper, B., & Kleinberger, M. (2020). "Trabecular bone mineral density correlations using QCT: central and peripheral human skeleton." *Journal of the Mechanical Behavior of Biomedical Materials*, PMID: 32911222.

Yoganandan, N., Chirvi, S., Pintar, F. A., Banerjee, A., & Voo, L. (2018). "Injury risk curves for the human cervical spine from inferior-to-superior loading." *Stapp Car Crash Journal*, PMID: 30608997.

Yoganandan, N., Chirvi, S., Pintar, F. A., Baisden, J. L., & Banerjee, A. (2018). "Preliminary female cervical spine injury risk curves from PMHS tests." *Journal of the Mechanical Behavior of Biomedical Materials*, PMID: 29709826.

Stemper, B., Chirvi, S., Doan, N., Baisden, J., Maiman, D., Curry, W., Yoganandan, N., Pintar, F. A., Paskoff, G., & Shender, B. (2018). "Biomechanical tolerance of whole lumbar spines in straightened posture subjected to axial acceleration." *Journal of Orthopedic Research*, PMID: 29194745.

Yoganandan, N., Chirvi, S., Voo, L., Pintar, F. A., & Banerjee, A. (2018). "Role of age and injury mechanism on cervical spine injury tolerance from head contact loading." *Traffic Injury Prevention*, PMID: 28738168.

Chirvi, S., Pintar, F. A., Yoganandan, N., Banerjee, A., Schlick, M., Curry, W., & Voo, L. (2017). "Human foot-ankle injuries and associated risk curves from under body blast loading conditions." *Stapp Car Crash Journal*, PMID: 29394438.

Yoganandan, N., Chirvi, S., Voo, L., DeVogel, N., Pintar, F. A., & Banerjee, A. (2017). "Foot-ankle complex injury risk curves using calcaneus bone mineral density data." *Journal of the Mechanical Behavior of Biomedical Materials*, PMID: 28505593.

Yoganandan, N., Chirvi, S., Pintar, F. A., Uppal, H., Schlick, M., Banerjee, A., Voo, L., Merkle, A., & Kleinberger, M. (2016). "Foot-ankle fractures and injury probability curves from post-mortem human surrogate tests." *Annals of Biomedical Engineering*, PMID: 27052746.

Conference Articles

Chirvi, S., Pahapill, N., Pintar, F. A., Stemper, B., & Kleinberger, M. (2019). "Morphometric analysis of hind foot ankle bones." *Biomedical Sciences Instrumentation*, 55, 355-360.

Dausman, K., Chirvi, S., Pintar, F. A., & Kleinberger, M. (2019). "Morphomic and material properties of female human foot-ankle specimens." *Biomedical Sciences Instrumentation*, 55, 491-496.

Koser, J., Chirvi, S., Shah, A., Pintar, F. A., Yoganandan, N., & Stemper, B. (2019). "Effect of time on the mechanical properties of caprine organ tissue." *Biomedical Sciences Instrumentation*, 55, 299-303.

Hampton, C., Chirvi, S., & Kleinberger, M. (2019). "Influence of trabecular density on calcaneus fracture in axial pendulum impacts." *Biomedical Sciences Instrumentation*, 55, 361-366.

Paris, M., Koser, J., Stemper, B., Chirvi, S., Pintar, F. A., & Kleinberger, M. (2019). "Preliminary comparison of projectile size and material for penetration thresholds in porcine leg tissue." *Biomedical Sciences Instrumentation*, 55, 304-309.

Yoganandan, N., DeVogel, N., Chirvi, S., Pintar, F. A., Baisden, J. L., Banerjee, A., & Voo, L. (2018). "Human cervical spine responses under vertical dynamic loading." *International Research Council on Biomechanics of Injury Asia Conference*.

Chirvi, S., Pintar, F. A., & Yoganandan, N. (2016). "Human surrogate leg response with and without military boots." *Personal Armor Systems Symposium*.

Yoganandan, N., Pintar, F. A., Chirvi, S., Chancey, V. C., & McEntire, B. J. (2016). "Lower neck injury criteria from post-mortem human subject tests using an injury mechanism approach." *International Research Council on Biomechanics of Injury*.

Chirvi, S., Pintar, F. A., & Yoganandan, N. (2015). "An examination of isolated and interaction-based biomechanical metrics for potential lower neck injury criteria." Proceedings of the ASME International Mechanical Engineering Congress and Exposition, 3, 52108.

Yoganandan, N., Pintar, F., Banerjee, A., Schlick, M., Chirvi, S., Uppal, H., Merkle, A., Voo, L., & Kleinberger, M. (2015). "Hybrid III lower leg injury assessment reference curves under axial impacts using matched-pair rests." Biomedical Sciences Instrumentation, PMID: 25996722.

Book Chapter

Goodwin, B., Chirvi, S., & Pintar, F. A. (2017). "Injury mechanisms in traffic accidents." In: Müller B, Wolf S, Eds. *Handbook of Human Motion*. Springer: Amsterdam, 1-37.

Selected Presentations

Chirvi, S., Hampton, C., Somasundaram, K., Yoganandan, N., McEntire, B.J., & Pintar, F.A. (2022). "Human surrogate leg response with and without military boots." Military Health System Research Symposium.

Chirvi, S., Yoganandan, N., & Pintar, F. A. (2020). "Human neck injury tolerance: role of sex and age." Center for the Advancement of Women in Science and Medicine Conference. Milwaukee.

Chirvi, S., Pahapill, N., Koser, J., Pintar, F. A., Yoganandan, N., Stemper, B., & Kleinberger, M. (2019). "Regional susceptibility of calcaneus BMD explains injuries from axial loading." Biomedical Engineering Society.

Chirvi, S., Pintar, F. A., Yoganandan, N., & Kleinberger, M. (2018). "Do clinical hip and lumbar bone mineral density measures predict foot-ankle injury risk?" Military Health System Research Symposium.

Yoganandan, N., Chirvi, S., Pintar, F. A., Banerjee, A., & Voo, L. (2018). "Injury risk curves for the human cervical spine from inferior-to-superior loading." 62nd Stapp Car Crash Conference.

Chirvi, S., Pintar, F. A., Yoganandan, N., Banerjee, A., Schlick, M., Curry, W., & Voo, L. (2017). "Human foot-ankle injuries and associated risk curves from under body blast loading conditions." 61st Stapp Car Crash Conference.

Chirvi, S., Pintar, F. A., Yoganandan, N., Banerjee, A., Schlick, M., & Curry, W. (2017). "Foot-ankle injury patterns & severity during under-body blast loading conditions." The Inaugural Annual Meeting for the Joining Forces Program, from the Community to the Battlefield, Medical College of Wisconsin.

Chirvi, S., Schlick, M., Arun, M., Yoganandan, N., & Pintar, F. A. (2014). "Foot-ankle response with and without military boot after plantar surface impact." World Congress of Biomechanics.