VECTOR SCIENTIFIC, INC.

CURRICULUM VITAE
JACK D. SEIFERT

EDUCATION

2025	PhD	MARQUETTE UNIVERSITY AND MEDICAL COLLEGE OF WISCONSIN Biomedical Engineering (Specialization: Biomechanics)
2019	BS	SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY Mechanical Engineering

PROFESSIONAL EXPERIENCE

2025 – DATE	VECTOR SCIENTIFIC, INC. *Biomechanical Engineer / Research and Testing* *Injury Biomechanics*
2020 – 2025	MEDICAL COLLEGE OF WISCONSIN ZVAMC LAB *Research Assistant*
2020 – 2021	MARQUETTE UNIVERSITY *Graduate Student Teaching Assistantship, Biomedical Engineering Biomechanics Laboratory*
2019 – 2020	JOHN ZINK HAMOWRTHY COMBUSTION *Design Engineer, Coen Group*

LICENSES AND CERTIFICATES

2019 / May	FUNDAMENTALS OF ENGINEERING (FE), MECHANICAL LICENSE *National Council of Examiners for Engineering and Surveying*

REFEREED JOURNAL PUBLICATIONS

Seifert J, Frazer L, Shah A, Maiman D, Yoganandan N, King K, Sheehy J, Paskoff G, Bentley T, Nicolella DP, Stemper BD. Mechanical Characterization of Annulus Fibrosus Damage from Cyclic Loading. *Acta Biomaterialia.* (In Review)

Seifert J, Koser J, Shah A, Frazer L, Pintar F, Yoganandan N, Nicolella D, Bentley T, Stemper BD. Impactor Displacement as a Predictor of Thoraco-Abdominal Organ Injury: Comparison of Isolated Organ to Whole Body Tests. *Ann Biomed Eng*. (In Review)

Seifert J, Maiman D, Frazer L, Shah A, Yoganandan N, King K, Sheehy J, Paskoff G, Bentley T, Nicolella DP, Stemper BD. Mechanical Characterization of Non-Degraded Porcine Annulus Fibrosus Material Properties. *Ann Biomed Eng* (2024). https://doi.org/10.1007/s10439-024-03629-3.

Seifert J, Koser J, Shah AS, Frazer LL, Yoganandan N, Shender BS, Sheehy JB, Paskoff G, Bentley T, Nicolella DP, Stemper BD. Response of Thoraco-Abdominal Tissue in High-Rate Compression. *J Biomech Eng*. 2023 Mar 01;145(3).

Seifert J, Shah AS, Harezlak J, Rowson S, Mihalik JP, Riggen L, Duma S, Brooks A, Cameron KL, Giza CC, Goldman J, Guskiewicz KM, Houston MN, Jackson JC, McGinty G, Pasquina P, Broglio SP, McAllister TW, McCrea MA, Stemper BD. Time Delta Head Impact Frequency: An Analysis on Head Impact Exposure in the Lead Up to a Concussion: Findings from the NCAA-DOD Care Consortium. *Ann Biomed Eng*. 2022 Nov;50(11):1473-1487. PMCID: PMC9652163.

Stemper BD, Shah A, Chiariello R, McCarthy C, Jessen K, Sarka B, Seifert J, Budde MD, Wang K, Olsen CM, McCrea M. A Preclinical Rodent Model for Repetitive Subconcussive Head Impact Exposure in Contact Sport Athletes. *Front Behav Neurosci*. 2022;16:805124. PMCID: PMC8965565.

ORAL PRESENTATIONS

Seifert J, Frazer L, Shah A, Maiman D, Yoganandan N, King K, Sheehy J, Paskoff G, Bentley T, Nicolella DP, Stemper BD: Mechanical and Structural Changes to the Annulus Fibrosus in Response to Repetitive Loads Representative of Military Rotary Wing Exposures. IRCOBI 2024, Stockholm, Sweden. September 11-13, 2024.

Seifert J, Frazer L, Shah A, Maiman D, Yoganandan N, King K, Sheehy J, Paskoff G, Bentley T, Nicolella DP, Stemper BD: Mechanical and Structural Changes to the Annulus Fibrosus in Response to Cyclic loading. SB3C 2024, Lake Geneva, WI. June 11-14, 2024.

Seifert J, Frazer L, Shah A, Maiman D, Yoganandan N, King K, Sheehy J, Paskoff G, Bentley T, Nicolella DP, Stemper BD: Mechanical Damage to the Annulus Fibrosus from Cyclic Loading May Tie to Neck and Back Pain Onset. Aerospace Medical Association Annual Meeting 2024, Chicago, IL. May 6-9, 2024.

Seifert J, Shah A, Chiariello R, Budde MD, Olsen C, McCrea M, Stemper BD: Blast, Acceleration, and Repeated Subconcussive Exposure Mechanisms of Traumatic Brain Injury Produce Different Behavioral Phenotypes and Pathological Characteristics. Biomedical Engineering Society Annual Meeting 2022, San Antonio, Tx. October 12-15, 2022.

Seifert J, Koser J, Shah A, McCarthy C, Muench J, Frazer L, Nicolella D, Pintar F, Sheehy J, Humm J, Yoganandan N, Shender B, Bentley T, Stemper BD: Thoracic Organ Injury Tolerance from Blunt Impacts. 2022 Military Health System Research Symposium, Kissimmee, Fl. September 12-15, 2022

Seifert J, Olsen C, Shah A, Chiariello R, McCarthy C, Jessen K, Sarka B, Wang K, Budde M, McCrea M, Stemper BD: Preclinical modeling of sport-related repetitive subconcussive head impact exposure in the rodent. 9th World Congress of Biomechanics, Taipei, Taiwan, July 10-14, 2022.

Seifert J, Koser J, Shah A, McCarthy C, Muench J, Frazer L, Nicolella D, Pintar F, Sheehy J, Humm J, Yoganandan N, Shender B, Bentley T, Stemper BD: Thoracic Organ Injury Tolerance from Blunt Impacts. 59th Rocky Mountain Bioengineering Symposium, Virtual, April 8-9, 2022

Seifert J, Shah A, Harezlak J, Rowson S, Mihalik JP, Riggen L, Duma S, Brooks A, Cameron K, Guskiewicz K, Giza C, Goldman J, Houston M, Jackson J, McGinty G, Pasquina P, Broglio S, McAllister T, McCrea M, Stemper BD: Head Impact Exposure May Influence Post Concussion Acute Clinical Outcomes In NCAA Division I Football Players: Findings From The NCAA-DoD Care Consortium. Neuroscience 2021, Chicago, IL. November 13-16, 2021.

Seifert J, Shah A, Harezlak J, Naganobori H, Muench J, Rowson S, Duma S, Guskiewicz K, Mihalik JP, Riggen L, Brooks A, Giza C, Goldman J, McGinty G, Jackson J, Cameron K, Houston M, Pasquina P, Broglio S, McAllister T, McCrea M, Stemper BD: Elevated Rate Of Head Impacts At Time Of Injury In Concussed NCAA Division I American Football Players: Findings From The NCAA-DOD Care Consortium. 2021 Virtual World Congress on Brain Injury, Virtual, July 28-30, 2021.

Seifert J, Shah A, Muench J, Harezlak J, Rowson S, Mihalik JP, Duma S, Pasquina P, Broglio SP, McAllister TW, McCrea M, Stemper BD: The Effect of Head Impact Exposure in NCAA Division I Football On Concussion Symptom Severity. Summer Biomechanics, Bioengineering, & Bio transport Conference, Virtual, June 14-18, 2021.

OTHER ABSTRACTS AND POSTERS

Frazer L, Shaffer S, Seifert J, Stemper BD, Nicolella D: Multiscale Modeling for Intervertebral Disc Fatigue Prediction During Long Flight. SBC 2025, Santa Ana Pueblo, New Mexico. June 22-25, 2025.

Gasiorowski V, Seifert J, Curry WH, Frazer L, Bentley T, Nicolella D, Yoganandan N, Pintar FA, Stemper BD: Porcine Vertebral Endplate Biomechanical Analysis Under Four-Point Bending. SBC 2025, Santa Ana Pueblo, New Mexico. June 22-25, 2025.

Frazer L, Shaffer S, Seifert J, Stemper BD, Nicolella D: Reactive Viscoelastic Material Model of the Annulus Fibrosus – Applications for Fatigue Modeling. 19th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Vancouver, Canada. July 30-August 1, 2024.

Shaffer SK, Frazer L, Seifert J, Stemper B, Nicolella D, Bentley T: Probabilistically Validated Constitutive Model of the Annulus Fibrosus. Orthopaedic Research Society Annual Meeting 2024, Long Beach, CA. February 2-6, 2024.

Seifert J, Frazer L, Shah A, Maiman D, Yoganandan N, King K, Sheehy J, Paskoff G, Bentley T, Nicolella DP, Stemper BD: High Strain Magnitude Cyclic Loading Does Not Affect Ultimate Strength of the Annulus Fibrosus. Orthopaedic Research Society Annual Meeting 2024, Long Beach, CA. February 2-6, 2024.

Seifert J, Shah A, Frazer L, Yoganandan N, Shender B, Sheehy J, Paskoff G, Bentley T, Nicolella DP, Stemper BD: Annulus Fibrosus Quasi-Static Failure and Mechanical Degradation from Sub-Failure Cyclic Loading. 2023 Military Health System Research Symposium, Kissimmee, Fl. September 14-17, 2023.

Seifert J, Shah A, Frazer L, Yoganandan N, Shender B, Sheehy J, Paskoff G, Bentley T, Nicolella DP, Stemper BD: Mechanical Failure Properties of Porcine Annulus Fibrosus. SB3C 2023, Vail, CO. June 4-8, 2023.

Frazer L, Seifert J, Stemper BD, Bentley T, Nicolella DP: A Novel Material Model of the Annulus Fibrosus with Applications in Long-Duration Loading. ORS 2023, Dallas, TX. February 10-14, 2023.

Seifert J, Shah A, Chiariello R, Budde MD, Olsen C, McCrea M, Stemper BD: Head Impact Exposure Causes Dose Dependent Axonal Damage That is Correlated to Behavioral Disruptions. Neuroscience 2022, San Diego, CA. November 11-15, 2022.

Cutlan R, Seifert J, Shah A, Harezlak J, Muench J, Rowson S, Duma S, Mihalik J, Riggen L, Brooks A, Pasquina P, Broglio S, McAllister T, McCrea M, Stemper BD: Football Game Players May Experience More Head Impact Exposure in the Practices Leading Up to Games than Bench Players: A Study from the NCAA-DOD CARE Consortium. Biomedical Engineering Society Annual Meeting 2022, San Antonio, TX. October 12-15, 2022.

Sipek K, Seifert J, Shah A, Frazer L, Zhang Y, Yoganandan N, Sheehy J, Shender B, Nicolella D, Bentley T, Stemper BD: Degradation of Intervertebral Disc Annulus Material Properties with Repeated Loading. Biomedical Engineering Society Annual Meeting 2022, San Antonio, Tx. October 12-15, 2022.

Seifert J, Olsen C, Shah A, Chiariello R, McCarthy C, Jessen K, Sarka B, Wang K, Budde M, McCrea M, Stemper BD: Blast, Acceleration, and Repeated Subconcussive Exposure Mechanisms of Traumatic Brain Injury Produce Different Behavioral Phenotypes and Pathological Characteristics. 2022 Military Health System Research Symposium, Kissimmee, Fl. September 12-15, 2022.

Seifert J, Shah A, Harezlak J, Naganobori H, Muench J, Rowson S, Duma S, Mihalik JP, Riggen L, McGinty G, Jackson J, Cameron K, Houston M, Pasquina P, Broglio S, McAllister T, McCrea M, Stemper BD: Elevated Head Impact Exposure Rate on Day of Injury in Concussed Division I USAFA And USMA Football Athletes: Findings From The NCAA-DOD Care Consortium. 2021 Military Health System Research Symposium, Kissimmee, Fl. August 23-26, 2021.

Seifert J, Shah A, Muench J, Pasquina P, Broglio S, McAllister T, McCrea M, Stemper BD: The Effect of Head Impact Exposure in Concussion Symptom Severity. 30th Annual MCW Graduate School Research Poster Session, Wauwatosa, WI, February 5, 2021.

AWARDS AND HONORS

2023 Annals of Biomedical Engineering Athanasiou Student and Post-Doc Award

2021 31st Annual MCW Graduate School Poster Session Award Winner – Neuroscience

PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

Member Biomedical Engineering Society (BMES), 2022 – Present

Member Tau Beta Pi, 2017 – Present

Reviewer Annals of Biomedical Engineering, 2024 – Present