Joost Op ‘t Eynde, Ph.D.

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Brillouin

PROFESSIONAL PROFILE

Dr. Joost Op ‘t Eynde is a biomedical engineer with an emphasis in biomechanical engineering. Dr. Op ‘t Eynde has expertise in blunt impact trauma, body armor and helmet systems, spine injury biomechanics, blast injury biomechanics, injury risk development, injury detection, and biomechanical experimental testing (cadaver, anthropometric test device, and animal). Prior to his professional career in failure analysis, Dr. Op ‘t Eynde earned a Ph.D. and M.S. in Biomedical Engineering from Duke University while conducting research in the Injury Biomechanics Laboratory. For his dissertation research, Dr. Op ‘t Eynde investigated injury risks and mechanisms related to behind armor blunt trauma. He also has extensive research experience in spine injury biomechanics, personal protective equipment for blast and blunt impact, blast neurotrauma, viscoelastic material properties, acoustic injury detection, biomechanical scaling, and injury mechanisms.

POSITIONS

Brillouin Consulting — **Orange County Area, CA**
Senior Associate — Sep 2025 - Present
Biomechanical, product, medical device, and expert focused in industrial and failure analysis files for corporate, government and legal clients.

Engineering Systems Inc. — **Irvine, CA**
Staff Consultant — Aug 2024 - Aug 2025
Conducted biomechanical analyses to support expert witness testimony in civil and criminal cases. Authored detailed scientific investigative reports used in legal proceedings. Presented technical findings and testimony to attorneys and leadership. Performed site inspections to document physical evidence. Designed experimental test plans to reconstruct accident/crime scenarios. Prepared technical literature reviews to validate methods and findings. Evaluated, summarized, and critiqued opposing expert witness opinions.

OTHER PROFESSIONAL EXPERIENCE

Duke University — **Durham, NC**
Research Associate — 2016 - 2017

Chiro — **Koersel, Belgium**
Youth Leader Volunteer — 2011 - 2016

Groen — **Brussels, Belgium**
Administrative Assistant — 2012

TEACHING EXPERIENCE

Teaching Assistant for Blasts and Ballistics – Duke University

Teaching Assistant for Viscoelastic Biomechanics – Duke University

LANGUAGES

- English
- Dutch
- French

ACADEMIC CREDENTIALS

Duke University — **Durham, NC**
Ph.D., Biomedical Engineering — 2023

Duke University — **Durham, NC**
M.S., Biomedical Engineering — 2016

KU Leuven — **Leuven, Belgium**
B.S., Mechanical Engineering — 2015

HONORS AND AWARDS

- Belgian American Educational Foundation Fellow (selected as one of the first two master student recipients of a Gustave Boel – Sofina; Scholarship to fund study in the US).
- Blast Injury Conference Best Poster Award, London, UK (primary blast wave protection in combat helmet design).
- IRCOBI Conference Travel Grant.
- Injury Biomechanics Symposium Travel Grant.

JOURNAL PUBLICATIONS

- Op 't Eynde J, Yu AW, Eckersley CP, Bass CR (2020). Primary blast wave protection in combat helmet design: A historical comparison between present day and World War I. PLOS One.
- Ortiz-Paparoni MA, Op 't Eynde J, Eckersley CP, Morino CF, Abrams MZ, Pang DY, Kait JR, Pintar FA, Yoganandan N, Moore J, Barnes D, Loftis KL, Bass CR (2024). Expanded combined loading injury criterion for the human lumbar spine under dynamic compression. Annals of biomedical engineering.
- Morino CF, Middleton ST, Op 't Eynde J, Dimbath ED, Kait JR, Luck JF, Bass CR (2024). Primary creep characterization in porcine lumbar spine subject to repeated loading. Annals of Biomedical Engineering.
- Kote VB, Frazer LL, Hostetler ZS, Jones DA, Davis M, Op 't Eynde J, Kait JR, Pang DY, Bass CR, Koser J, Shah AS, Yoganandan N, Stemper B, Bentley T, Nicollella DP (2024). Investigating the impact of blunt force trauma: A probabilistic study of behind armor blunt trauma risk. Annals of Biomedical Engineering.
- Morino CF, Schmidt AL, Dimbath ED, Middleton ST, Shridharani JK, Kait JR, Ortiz-Paparoni MA, Klinger J, Op 't Eynde J, Bass CR (2024). Human and porcine lumbar endplate injury risk in repeated flexion-compression. Annals of Biomedical Engineering.
- Ortiz-Paparoni MA, Morino CF, Bercaw J, Op 't Eynde J, Nightingale RW, Bass CR (2024). Translating cadaveric injury risk to dummy injury risk at iso-energy. Annals of Biomedical Engineering.
- Ortiz-Paparoni MA, Op 't Eynde J, Kait JR, Bigler BR, Shridharani JK, Schmidt AL, Cox CA, Morino CF, Pintar FA, Yoganandan N, Moore J, Zhang J, Bass CR (2021). The human lumbar spine during high-rate under seat loading: a combined metric injury criteria. Annals of biomedical engineering.
- Shridharani JK, Ortiz-Paparoni MA, Op 't Eynde J, Bass CR (2021). Acoustic emissions in vertebral cortical shell failure. Annals of Biomedical Engineering.
- Eckersley CP, Op 't Eynde J, Abrams MZ, Bass CR (2021). Using wavelet analysis to distinguish cavitation acoustic emissions from blunt impact noise. Journal of Biomechanical Engineering.

CONFERENCE PUBLICATIONS

- Op 't Eynde J, Shah AS, McMahon JA, Pang DY, Stemper B, Yoganandan N, Salzar RS, McEntire BJ, Bass CR (2023). Scaling animal to human injury response for use in improved behind armor blunt trauma injury criteria. Personal Armour Systems Symposium Proceedings. Podium presentation in Dresden, Germany.
- Op 't Eynde J, Pang DY, Morino CF, Abrams MZ, Kait JR, Salzar RS, Bentley TB, Shender BS, Bass CR (2023). The fundamental limitations of clay for assessing human response for behind armor blunt trauma. Personal Armour Systems Symposium Proceedings. Poster presentation in Dresden, Germany.

- Op ‘t Eynde J, Eckersley CP, Salzar RS, Stemper BD, Shender BS, Bentley TB, Bass CR (2020). Behind armour blunt trauma indenter simulating high-velocity impacts from rifle rounds on hard body armour. Personal Armour Systems Symposium Proceedings. Podium presentation in Copenhagen, Denmark.
- Op ‘t Eynde J, Eckersley CP, Bass CR (2019). High-rate viscoelastic shear model of porcine skin, lung, and liver tissue. International Research Council on Biomechanics of Injury Proceedings. Podium presentation in Florence, Italy.
- Op ‘t Eynde J, Yu AW, Eckersley CP, Bass CR (2018). The lessons of history: helmets and primary blast. Personal Armour Systems Symposium Proceedings 218. Podium presentation in Washington, DC, United States.
- Op ‘t Eynde J, Ortiz-Paparoni MA, Lucas SR, Bass CR (2018). Novel fractional viscoelastic model of ligaments for high strain rates. International Research Council on Biomechanics of Injury Proceedings. Podium presentation in Athens, Greece.
- McMahon JA, Berthelson PR, Salzar RS, Shah A, Op ‘t Eynde J, McEntire JB (2023). Development of impulse-based rib fracture injury criterion for behind armor blunt trauma. International Research Council on Biomechanics of Injury Proceedings.
- Shah AS, McMahon JA, Op ‘t Eynde J, Salzar RS, Johnson B, McEntire JB (2023). Data filtering for the analysis of biological tests for behind armor blunt trauma studies. Personal Armour System Symposium Proceedings.
- McMahon JA, Berthelson PR, Salzar RS, Shah AS, Op ‘t Eynde J, McEntire JB (2023). Development of impulse-based rib fracture injury criterion for behind armor blunt trauma. International Research Council on Biomechanics of Injury Proceedings.
- Morino CF, Schmidt AL, Dimbath ED, Middleton ST, Kait JR, Shridharani JK, Ortiz-Paparoni MA, Klinger J, Op ‘t Eynde J, Bass CR (2023). Human and porcine lumbar endplate injury risk in repeated flexion-compression. International Research Council on Biomechanics of Injury Proceedings.
- Morino CF, Middleton ST, Dimbath ED, Op ‘t Eynde J, Kait JR, Bass CR (2023). Modelling viscoelastic creep response of porcine lumbar spinal units exposed to repeated flexion-compression loading. International Research Council on Biomechanics of Injury Proceedings.
- Ortiz-Paparoni MA, Morino CF, Op ‘t Eynde J, Kait JR, Bass CR (2022). Translating post-mortem human subject injury risk to dummy injury risk at iso-energy. International Research Council on Biomechanics of Injury Proceedings.
- Eckersley CP, Op ‘t Eynde J, Abrams MZ, Yu AW, Li M, Yao J, Bass CR (2020). Acoustic detection of blunt-induced cavitation in the head. International Research Council on Biomechanics of Injury Proceedings.

OTHER CONFERENCE PRESENTATIONS

- Op ‘t Eynde J, Shah AS, McMahon JA, Pang DY, Salzar RS, Bass CR, Yoganandan N, McEntire BJ (2023). Behind armor blunt trauma injury risks, risk curves, and injury criteria using cadaver and animal surrogates. Podium presentation at SAFE Symposium. Virginia Beach, VA.
- Op ‘t Eynde J, Pang DY, Morino CF, Abrams MZ, Kait JR, Salzar RS, Bentley TB, Shender BS, Bass CR (2022). The severe limitations of clay for assessing human response for behind armor blunt trauma. Podium presentation at Military Health System Research Symposium. Orlando, FL.
- Op ‘t Eynde J, Yu AW, Eckersley CP, Bass CR (2021). Primary blast wave protection in combat helmet design: a historical comparison between present day and WWI. Poster presentation at Blast Injury Conference. London, United Kingdom.
- Op ‘t Eynde J, Eckersley CP, Salzar RS, Stemper BD, Shender BS, Bentley TB, Bass CR (2021). Behind armor blunt trauma indenter simulating high-velocity impacts from rifle rounds on hard body armor. Podium presentation at Injury Biomechanics Symposium. Columbus, OH.
- Op ‘t Eynde J, Eckersley CP, Bass CR (2019). Injury test model for behind armor blunt trauma. Podium presentation at SAFE Symposium. Reno, NV.
- Op ‘t Eynde J, Eckersley CP, Bass CR (2019). High-rate viscoelastic shear model of porcine skin, lung, and liver tissue. Poster presentation at Injury Biomechanics Symposium. Columbus, OH.

- Op ‘t Eynde J, Shridharani JK, Ortiz-Paparoni MA, Kait JR, Voo LM, Bass CR (2018). Characterization of acoustic emissions in cervical spinal compression injury. Poster presentation at World Congress of Biomechanics. Dublin, Ireland.
- Op ‘t Eynde J, Yu AW, Eckersley CP, Bass CR (2018). Blast wave protection in combat helmet design: a historical comparison. Podium presentation at Injury Biomechanics Symposium. Columbus, OH.
- Pang DY, Op ‘t Eynde J, Salzar RS, Bass CR (2023). Thoracic deformation under backface impact in hard body armor: clay vs human cadaver. Podium presentation at Military Health System Research Symposium. Orlando, FL.
- Shah AS, Yoganandan N, Stemper BD, Op ‘t Eynde J, Bass CR, McMahon JA, Salzar RS, McEntire JB (2023). Use of different types of biological human surrogates to develop regional tolerances for behind armor blunt trauma: preliminary liver test results. Podium presentation at Military Health System Research Symposium. Orlando, FL.
- Berthelson PR, McMahon JA, Shah A, Op ‘t Eynde J, Salzar RS, McEntire JB (2023). Comparison of preliminary behind armor blunt trauma-induced rib fracture risk for porcine cadavers and post-mortem human subjects. Podium presentation at Military Health System Research Symposium. Orlando, FL.
- Morino CF, Schmidt AL, Dimbath E, Middleton ST, Kait JR, Shridharani JK, Ortiz-Paparoni MA, Klinger J, Op ‘t Eynde J, Bass CR (2023). Human and porcine lumbar endplate injury risk in repeated flexion-compression. Biomedical Engineering Society Annual Meeting. Seattle, Washington.
- Ortiz-Paparoni MA, Morino CF, Op ‘t Eynde J, Kait JR, Bass CR (2022). Translating Injury Metrics from Cadaver to Test Surrogate Using an Iso-energy Approach. International Research Council on Biomechanics of Injury. Porto, Portugal.
- Ortiz-Paparoni MA, Morino CF, Op ‘t Eynde J, Kait JR, Bass CR (2022). Translating Injury Metrics from Cadaver to Test Surrogate Using an Iso-energy Approach. World Congress of Biomechanics. Taipei, Taiwan (online).
- Morino CF, Ortiz-Paparoni MA, Op ‘t Eynde J, Kait JR, Abrams MA, Pintar FA, Yoganandan N, Moore J, Loftis KL, Barnes DR, Bass CR (2022). Expanded Combined Lumbar Injury Criterion Due to Underbody Blast. Poster presentation at Ohio State Injury Biomechanics Symposium. Columbus, OH.
- Schmidt AL, Morino CF, Shridharani JK, Op ‘t Eynde J, Kait JR, Ortiz-Paparoni MA, Shender BS, Bentley TB, Bass CR (2022). Long-term lumbar spine loading flexion/compression injury and response. Military Health System Research Symposium. Kissimmee, FL.
- Ortiz-Paparoni MA, Bigler BR, Cox CA, Schmidt A, Shridharani J, Kait J, Op ‘t Eynde J, Voo LM, Bass CR (2018). Rate and posture effects on the cervical spine stiffness during high rate vertical loading. Podium presentation at World Congress of Biomechanics. Dublin, Ireland.
- Yu AW, Op ‘t Eynde J, Bass CR (2017). Investigation of CSF cavitation as an injury mechanism of traumatic brain injury. Poster presentation at Annual National Neurotrauma Symposium. Snowbird, UT.