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Peachtree Corners, GA 30092

Cornel U. de Jongh, Ph.D., Int.P.E., Pr.Eng
SENIOR CONSULTANT

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Dr. Cornel de Jongh is a biomedical engineer and licensed professional engineer in mechanical engineering with 20 years' experience in injury biomechanics and related projects. He specializes in injury biomechanics, mechanisms of injury and injury causation, motocross and motorcycle safety and analysis, sports-related injury, passive occupant restraints, biomechanical analysis, and computational modeling. Prior to joining ESi, he has been involved in the design, development, and testing of safety products, particularly for the head, neck, shoulder, knee, and ankle. He has conducted research in injury mechanics of the neck as a Senior Lecturer at Stellenbosch University – Stellenbosch, South Africa, where he also taught various biomedical and mechanical engineering courses. Dr. de Jongh continues to act as an external examiner for the University of Cape Town's Faculty of Health Sciences.

Dr. de Jongh is listed as the co-inventor in four granted patents and four patent publications, of which one has gone on to win numerous trade awards for motorcycle safety innovation. He has been invited to present his work on neck injury prevention at international conferences and as a keynote speaker, including at the Mayo Clinic (Rochester MN) and the International Spinal Cord Society's (ISCOS) annual scientific meeting, where he was invited to present his work on the development of a novel neck brace to reduce the risk of cervical spine injury in off-road motorcycle riding.

Dr. de Jongh has testified in trial as a subject-matter expert witness in the USA ("30(b)(6)") and South Africa and has acted as a consulting expert in the field of injury biomechanics and product design on many other occasions.

Dr. de Jongh is fluent in English and Afrikaans.

Areas of Specialization

Biomechanics

Biomechanical Instrumentation and Data Acquisition

Human Tolerance to Vibration

Hybrid-III Anthropomorphic Test Devices (ATDs/Crash Test Dummies)

Impact Biomechanics

Injury Causation and Mechanisms of Injury

Injury Incidence

Injury Intolerance

Motorcycle and Motocross Safety and Analysis

Orthopedic Medical Devices

Passive Restraint Development

Personal Protective Equipment (PPE) Design Development and Analysis

Safety

Sports & Exercise Equipment

Sport-Related Injury

Education

Stellenbosch University, Stellenbosch, Western Cape, South Africa:

Ph.D., Mechanical Engineering, Institute for Biomedical Engineering (IBE)
MScEng., Mechanical Engineering, Biomedical Engineering Option (*cum laude*)
BEng, Mechanical Engineering, Minor - Human Tolerance to Vibration

Professional Licenses

Licensed Professional Engineer (Pr Eng)

ECSA - Engineering Council of South Africa (as part of the Washington Accord, South Africa and the USA and IPEA/ International Professional Engineers Agreement)

License Number: 20150274

Licensed International Professional Engineer (Int.P.E.)

ECSA - Engineering Council of South Africa (as part of the IPEA/ International Professional Engineers Agreement and International Engineering Alliance)

Licensed International Professional Engineer (IntPE) – one of approximately 700 in the USA and only 10 in South Africa

License Number: 20150274

Professional Affiliations/Honors

American Society of Biomechanics (ASB)

Member

Institute for Biomedical Engineering (IBE) – Stellenbosch University

Member, Reviewer

International Journal for Numerical Methods in Biomedical Engineering

Reviewer

SAE International Journal of Commercial Vehicles

Reviewer

Sports Engineering

Reviewer

Stellenbosch University – Dept of Mechanical and Mechatronic Engineering

Postgraduate Supervisor and Reviewer

University of Cape Town – Faculty of Health Sciences

External Examiner

Positions Held

Engineering Systems Inc. (ESi) - Norcross, Georgia

Senior Consultant, 2022 – Present

Stellenbosch University – Stellenbosch, South Africa

Senior Lecturer, Department of Mechanical and Mechatronic Engineering, 2019 – 2021

Leatt Corporation – Cape Town, South Africa / Santa Clarita, California, USA

Biomedical Engineer – Senior Project Manager – Injury Biomechanics, 2008 – 2019

Ergonomics Consultants (ErgoTech) – Pretoria, South Africa

Ergonomics Consultant, 2008

Southern Medical – Pretoria, South Africa

Biomedical Engineer, 2005

Classroom Teaching Experience

Biomedical Engineering 874 – Postgraduate Module

Mechanical Design (Systems Engineering) 444

Machine Design B344

Engineering Drawings 123

MEng and MEngSc – Major in Biomedical Engineering Research, Supervisor/Advisor

Continued Education

Crash Reconstruction for the Engineer

Northwestern University Center for Public Safety, Ann Arbor, Michigan

Simcenter Madymo Introduction (TR94001)

SIEMENS Xcelerator Academy Certification

Hybrid III ATD Certification and Training

Humanetics Europe GmbH – Delft, Netherlands

Motorcycle Accident Analysis and Reconstruction

SAE International – Phoenix, Arizona

Biomechanics of Brain Injury

Council for Scientific and Industrial Research (CSIR) – Pretoria, South Africa

MSC. ADAMS (ADM701) + LifeMOD Simulation Course

Esteq Engineering – Pretoria, South Africa

Strain Gauge Technology Course

Esteq Engineering – Pretoria, South Africa

Advanced MSC. ADAMS (ADM701) + LifeMOD Simulation Course

Esteq Engineering – Pretoria, South Africa

Professional Educational Development of Academics Certification, *PREDAC*

Stellenbosch University – Stellenbosch, South Africa

Workshop on the Protective Innovations of New Equipment for Enhanced Rider Safety – Powered Two Wheelers

International Research Council on Biomechanics of Injury, *IRCOBI*, Florence, Italy

Siemens NX Essentials – CAD Workshop

Esteq Engineering – Pretoria, South Africa

Publications/Public Reports

C.U. de Jongh, Basson, A., Knox, E., and Leatt, C., "Toward a Test-Based Methodology to Evaluate Unrestrained Torso Neck Braces Using the Hybrid III ATD and MATD Neck," SAE Int. J. Trans. Safety 12(3), 2024.

C.U. de Jongh, A.H. Basson, E.H. Knox, C.J. Leatt, "A Methodology to Evaluate Unrestrained Torso Neck Braces for Near Vertex Impacts," SAE Int. J. Trans. Safety 12(3):2024.

Clarke, V.P., **C.U. de Jongh**, Optimising the Tether Angle of a Head and Neck Restraint, International Journal of Crashworthiness, October 2023. DOI: 10.1080/13588265.2023.2272823

C. Leatt, **C.U. de Jongh**, P. Keevy (Leatt Corporation), “White Paper: Research and Development Efforts towards the Development of the Leatt ® Turbine System”, February 2018.

C. Leatt, **C.U. de Jongh**, P. Keevy (Leatt Corporation), “White Paper: Research and Development Efforts towards the Production of the Leatt ® C-Frame Carbon Knee Brace”, August 2014.

C. Leatt, **C.U. de Jongh**, P. Keevy (Leatt Corporation), “White Paper: Research and Development Efforts Towards Production of the Leatt-Brace Moto GPX Unrestrained Torso Neck Brace”, May 2012.

C.U. de Jongh, C. Sheffer and A.H. Basson, “Predictive Modelling of Cervical Disc Implant Wear”, Journal of Biomechanics, Vol. 41(15), p. 3177-3183, 2008.

C.U. de Jongh, A.H. Basson, C. Sheffer, “Dynamic Simulation of Cervical Spine Following Single-Level Cervical Disc Replacement”, submitted to the 29th IEEE EMBS Annual International

Conference August 23-26, 2007, Cite Internationale, Lyon, France.

Conference Presentations/Proceedings

C.U. de Jongh, Stellenbosch University's Role Models in Engineering - Keynote Presentation, 2014.

C.U. de Jongh, RAPDASA (Rapid Prototyping) Conference (Keynote Speaker), 2013.

C.U. de Jongh, "The Leatt-Brace Design Rationale, International Motocross Safety Summit at the MXoN, September 24, 2010, Lakewood, Colorado, USA.

C.U. de Jongh (Leatt® Corporation), "Biomechanics of the Cervical Spine and the Example of the Leatt® Brace in Testing and Simulation", presented at the Esteq Annual Engineering User Forum (Keynote Speech), November 6, 2009, Stellenbosch, South Africa.

C.U. de Jongh (Leatt® Corporation), "Biomechanics of the Cervical Spine and the Example of the Leatt® Brace in Testing and Simulation", presented at the Esteq Annual Engineering User Conference November 4, 2009, Pretoria, South Africa.

C.U. de Jongh (Leatt® Corporation), "Differential Biomechanics of Cervical and Thoracic Spine Injuries", presented at the 48th ISCOS Annual Scientific Meeting October 21-24, 2009, Firenze, Italy.

C.U. de Jongh, Mayo-Clinic International Motocross Safety Summit (Guest speaker), Rochester, MN, 2009.

Patents

US Patent Grant US-D649649-S1

> **de Jongh, C. U.**, Leatt, C. J., Hopkins, M. E., Meyer, C. S., & Keevy, P. A. (2011). Neck Brace (US-D649649-S1). U.S. Patent and Trademark Office.

US Patent Grant US10888129/ European Patent Grant EP3419453B1

> **de Jongh, C. U.**, Leatt, C. J., & Meyer, C. S. (2021). Neck Protection Devices (US Patent No. 10,888,129). U.S. Patent and Trademark Office.

WO Patent Grant WO2017109732/ European Patent Grant EP3393289A1

> **de Jongh, C. U.**, Meyer, C. S., Steffens, J. P., & Leatt, C. J. (2016). Footwear Article with Lockable Ankle Protection (International Patent Publication No. WO2017109732). World Intellectual Property Organization.

European Patent Grant EP3003233B1

> **de Jongh, C. U.**, Keevy, P. A., Leatt, C. J., & Steffens, J. P. (2016). Prophylactic Knee Brace (International Patent Publication No. WO2014191895). World Intellectual Property Organization.

WO Patent Publication WO2013061308A2

> **de Jongh, C. U.**, Leatt, C. J., Keevy, P. A., Landman, W. A., & Wucher, T. (2013). Child Restraint System (International Patent Publication No. WO2013061308A2). World Intellectual Property Organization.

WO Patent Publication WO2014002023A1

de Jongh, C. U., Keevy, P. A., & Roche, S. J. L. (2013). Protective Devices for Shoulders (International Patent Publication No. WO2014002023A1). World Intellectual Property Organization.

U.S. Patent Publication Number US20180368513A1

de Jongh, C. U., Meyer, C. S., Steffens, J. P., & Leatt, C. J. (2018). Footwear Article with Lockable Ankle Protection (U.S. Publication No. US20180368513A1). U.S Patent and Trademark Office.

U.S. Patent Publication Number US20160128860A1

de Jongh, C. U., Keevy, P. A., Leatt, C. J., & Steffens, J. P. (2016). Prophylactic Knee Brace (U.S. Publication No. US20160128860A1). U.S Patent and Trademark Office.