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Biography

Dr. Koljonen is Consultant in the Division of Spine Surgery, and Deputy Chief of Service of the Department of Orthopaedics & Traumatology at Queen Mary Hospital. He also holds the title of Honorary Clinical Associate Professor at The University of Hong Kong, and is actively engaged in clinical practice, research, and education within the field of spinal surgery and spinal rehabilitation.

Dr. Koljonen graduated with Phi Beta Kappa Honor from Johns Hopkins University and subsequently pursued his medical studies at The University of Hong Kong. He furthered his expertise in Orthopaedics and Traumatology at Queen Mary Hospital, obtaining joint fellowships from The Hong Kong College of Orthopaedic Surgeons and The Royal College of Surgeons of Edinburgh in 2015. Dr. Koljonen is fully subspecialized and operates exclusively in the area of spinal surgery.

Dr. Koljonen's clinical interests span a wide range of spinal conditions, including adult and paediatric spinal deformities, cervical pathologies, degenerative spine disorders, spinal tumours, spinal trauma, and spasticity

management. Dr. Koljonen's research endeavours focus on various aspects of spine care such as degenerative cervical myelopathy, paediatric cervical disorders, and neurological rehabilitation.

As an educator, Dr. Koljonen plays a key role in mentoring medical students, residents, nurses, and spine fellows – both locally and internationally. He spearheads the *Get Up and Walk Campaign* at the Department of Orthopaedics & Traumatology at HKU, a fundraising initiative that has raised significant funds to support research, clinical services, and community projects for individuals with spinal cord injuries.

Beyond his clinical and educational responsibilities, Dr. Koljonen is actively involved in hospital administration. He holds key positions such as Consultant-in-Charge at the Duchess of Kent Children's Hospital, Deputy Hospital Chief Executive at Macle hose Medical Rehabilitation Centre, as well as Deputy Chief of Service at The Department of Orthopaedics & Traumatology at Queen Mary Hospital.

Recognized for his outstanding contributions, Dr. Koljonen has received several prestigious awards, including the Young Achiever Award from the Hospital Authority for his work on developing spinal cord injury clinical management protocols in Hong Kong public hospitals. He has also led his team to win the Hospital Authority Outstanding Team Award for Spinal Cord Injury rehabilitation services in Hong Kong, and has been honoured with the Distinguished Young Fellow Award from the Hong Kong Academy of Medicine and The Hong Kong College of Orthopaedic Surgeons.

Dr. Koljonen currently sees patients at various healthcare facilities, including Queen Mary Hospital, The Duchess of Kent Children's Hospital, Macle hose Medical Rehabilitation Centre, and The Children's Hospital of Hong Kong.

Clinical Interests

- Paediatric and adult spine deformity
- Cervical spine disorders
- Revision spine surgery

- Spinal tumours
- Degenerative spine conditions
- Multimodal management for back and neck pain
- Management of spasticity in cerebral and spinal pathologies
- Comprehensive acute and rehabilitation services for spinal cord injury

Research Interests

- Degenerative cervical myelopathy
- Atlantoaxial rotatory dislocation in children
- Exoskeleton walking for spinal cord injury

Selected Publications

Spinal Cord Injury

1. Hachem, Laureen; Zhu, Mary; Aarabi, Bizhan; Davies, Benjamin; DiGiorgio, Anthony; Evaniew, Nathan; Fehlings, Michael; Ganau, Mario; Graves, Daniel; Guest, James; Ha, Yoon; Harrop, James; Hofstetter, Christopher; **Koljonen, Paul Aarne**; Kurpad, Shekar; Marco, Rex; Martin, Allan; Nagoshi, Narihito; Nouri, Aria; Rahimi-Movaghar, Vafa; Rodrigues-Pinto, Ricardo; Ter Wengel, PV; Tetreault, Lindsay; Kwon, Brian; Wilson, Jefferson. *A Practical Classification System for Acute Cervical Spinal Cord Injury Based on a Three-Phased Modified Delphi Process from the AOSpine SCI Knowledge Forum*. Global Spine Journal. Accepted July 2022. Manuscript ID: GSJ-22-0352.R1.
2. Chor Yin Lam* and **Paul Aarne Koljonen** (co-first author), Christopher Chun Hei Yip, Ivan Yuen Wang Su, Yong Hu, Yat Wa

Wong and Kenneth Man Chee Cheung, *Functional Recovery Priorities for Spinal Cord Injury Individuals of Chinese Ethnicity and Cultural Background*. Front. Neurol. – Neurorehabilitation. Accepted on 28th June 2022. Manuscript ID: 941256

3. Christopher Yip, Lam Chor Yin, Kenneth Cheung, Wong Yat Wa, **Paul A. Koljonen***. *Knowledge gaps in biophysical changes after powered robotic exoskeleton walking by individuals with spinal cord injury – a scoping review*. Neurol. March 2022 | Volume 13 | Article 792295. doi: 10.3389/fneur.2022.792295
4. Chang Meng Zhang, Victor Kam Ho Lee, Jeremy Man Leung Yu, Jason Pui Yin Cheung, **Paul Arne Koljonen**, Graham Ka Hon Shea. *Length of cervical stenosis, admission ASIA motor scores, and BASIC scores are predictors of recovery rate following central cord syndrome*. Spine (Phila Pa 1976) 2022 Feb 1;47(3):212-219. doi:10.1097/BRS.0000000000004178.
5. **Koljonen PA***, Sternin A, Jeong Y, McKinley M, Latorre JM, Caballero A, Hu Y, Wong YW, Cheung KMC, Kazerooni H. *Outcomes of a Multicenter Safety and Efficacy Study of the SuitX Phoenix Powered Exoskeleton for Ambulation by Patients with Spinal Cord Injury*. Neurol. 12:689751. doi: 10.3389/fneur.2021.689751
6. Pi, Jimin, **Koljonen, PA**, Hu, Yong, Shi, Bertram E. *Dynamic Bayesian Adjustment of Dwell Time for Faster Eye Typing*. IEEE Transactions on Neural Systems and Rehabilitation Engineering. 2020-10, Vol.28 (10), p.2315-2324.
7. **Koljonen PA***, Creasey GH. *Management of Spinal Cord Injury – Where is the Breakthrough?* (Book chapter). Current Progress in Orthopaedics 3rd Edition. ISBN: 978-93-83989-63-8.
8. Cho N, **Koljonen PA***, Burns A. *Clinical trials in spinal cord injury: rehabilitation approaches* (Book chapter). Neural Repair and Regeneration in Spinal Cord Injury and Spinal Trauma 1st Edition, Feb 2022. ISBN: 9780128198353.

Cervical spine surgery and degenerative cervical myelopathy

9. Andy Hon Fai Yee, Changmeng Zhang, **Paul Aarne Koljonen**, and Graham Ka Hon Shea. *Paired and matched analysis of neurological outcomes in revision surgery for cervical myelopathy following delayed neurological decline*. J Spine Surg. 2024 Mar 20; 10(1): 89–97. Published online 2024 Mar 14. doi: 21037/jss-23-116 PMID: 38567002
10. Ting Yick, Victor Hin, Zhang, Changmeng, Him Wong, Janus Siu, Lik Ng, Samuel Yan, San Tung Wong, Nicholas, Wang, Hongfei, **Koljonen, Paul Aarne**, Hon Shea, Graham. *Neurological Survivorship Following Surgery for Degenerative Cervical Myelopathy: A Longitudinal Study on 195 Patients*. J Bone Joint Surg Am. 2023 Feb 1;105(3):181-190. doi: 10.2106/JBJS.22.00218. Epub 2022 Dec 2. PMID: 36723463
11. Timothy F. Boerger, Allison S. Hyngstrom, Julio C. Furlan, Sukhvinder Kalsi-Ryan, BScPT, MSc PhD, Armin Curt, Brian K. Kwon, Shekar N. Kurpad, Michael G. Fehlings, James S. Harrop, Bizhan Aarabi, Vafa Rahimi-Movaghar, James D. Guest, Jefferson R. Wilson, Benjamin M. Davies, Mark R. N. Kotter, and **Paul A. Koljonen***. *Developing Peri-Operative Rehabilitation in Degenerative Cervical Myelopathy: An Unexplored Opportunity?* Global Spine Journal 2022, Vol. 12(1S) 97S–108S, DOI: 10.1177/21925682211050925.
12. Benjamin M. Davies, Oliver Mowforth, Helen Wood, Zahabiya Karimi, Iwan Sadler, Lindsay Tetreault, Jamie Milligan, Jamie R. F. Wilson, BM, Sukhvinder Kalsi-Ryan, Julio C. Furlan, Yoshiharu Kawaguchi, Manabu Ito, Carl Moritz Zipser, Timothy F Boerger, Alexander R. Vaccaro, Rory K. J. Murphy, Mike Hutton, Ricardo Rodrigues-Pinto, **Paul A. Koljonen**, James S. Harrop, Bizhan Aarabi, Vafa Rahimi-Movaghar, Shekar N Kurpad, James D. Guest, Jefferson R. Wilson, Brian K. Kwon, Mark R. N. Kotter, and Michael G. Fehlings. *Improving Awareness Could Transform Outcomes in*

- Degenerative Cervical Myelopathy*. Global Spine Journal 2022, Vol. 12(1S) 28S–38S, DOI: 10.1177/21925682211050927.
13. Aref-Ali Gharooni, Brian K. Kwon, Michael G. Fehlings, Timothy F. Boerger, Ricardo Rodrigues-Pinto, **Paul Aarne Koljonen**, Shekar N. Kurpad, James S. Harrop, Bizhan Aarabi, Vafa Rahimi-Movaghar, Jefferson R. Wilson, Benjamin M. Davies, Mark R. N. Kotter, and James D. Guest. *Developing Novel Therapies for Degenerative Cervical Myelopathy: Opportunities From Restorative Neurobiology*. Global Spine Journal 2022, Vol. 12(1S) 109S–121S DOI: 10.1177/21925682211052920
 14. Bryn Hilton, Emma L. Gardner, Zhilin Jiang, Lindsay Tetreault, Jamie R. F. Wilson, Carl Moritz Zipser, K. Daniel Riew, James D. Guest, James S. Harrop, Michael G. Fehlings, Ricardo Rodrigues-Pinto, Vafa Rahimi-Movaghar, Bizhan Aarabi, **Paul A. Koljonen**, Mark R. N. Kotter, Benjamin M. Davies, and Brian K. Kwon. *Establishing Diagnostic Criteria for Degenerative Cervical Myelopathy* Global Spine Journal 2022, Vol. 12(1S) 55S–63S DOI: 10.1177/21925682211030871
 15. Ricardo Rodrigues-Pinto, Thiago S. Montenegro, Benjamin M. Davies, So Kato, Yoshiharu Kawaguchi, Manabu Ito, Mehmet Zileli, Brian K. Kwon, Michael G. Fehlings, **Paul A. Koljonen**, Shekar N. Kurpad, James D. Guest, Bizhan Aarabi, Vafa Rahimi-Movaghar, Jefferson R. Wilson, Mark R. N. Kotter, and James S. Harrop. *Optimizing the Application of Surgery for Degenerative Cervical Myelopathy*. Global Spine Journal 2022, Vol. 12(1S) 147S–158S DOI: 10.1177/21925682211062494
 16. **Koljonen PA***, Cheung KMC. *Concomitant atlantoaxial and atlanto-occipital rotatory dislocation in children: Radiological features, diagnostic pitfalls, and long-term outcome*. Journal of Orthopaedic Surgery. 2021 May 12;29(2):23094990211015502.
 17. Graham Ka Hon Shea, **Paul Aarne Koljonen**, Ying Shing Chan, Kenneth Man Chee Cheung. *Prospects of cell replacement therapy for the treatment of degenerative cervical myelopathy*. Rev Neurosci. 2020 Dec 18;32(3):275-287

18. Cheung JPY, **Koljonen PA**, Luk KDK. *Surgical complications with the Posterior Approach. Non-traumatic Cervical Myelopathy: Pathologies, surgical techniques and nuances (Book Chapter)*. Nova Science Publishers Inc. LCCN 2019059705 (print), ISBN 9781536172515.

General spine surgery and others

19. Tam WK, Cheung JP, **Koljonen PA**, Kwan KY, Cheung KM, Leung VY. *Slow twitch paraspinal muscle dysregulation in adolescent idiopathic scoliosis exhibiting HIF-2 α misexpression*. JOR spine. 2022 Dec;5(4):e1227. DOI: 10.1002/jsp2.1227.
20. **Koljonen P.A.***, Chan S.H.S., Liu T., Ho A.C.C., Chim S., Tsoi N.S., Wong Y.W. *Intrathecal Baclofen Pump Infection With Meningitis: Effective Treatment by Radical Debridement and Intrareservoir Baclofen–Vancomycin Co-Infusion*. Neuromodulation 2021; E-pub ahead of print. DOI:10.1111/ner.13369.
21. Leung CN, Cheung WH, Lau G, Lau ST, Luk KDK, Wong YW, Cheung KMC, **Koljonen PA**, Cheung JPY. *Over 20-years of Experience of a Multidisciplinary Programme for Rehabilitation of Chronic Low Back Pain – Factors Predicting Successful Re-integration and Return to Work*. BMC Musculoskeletal Disorders volume 22, Article number: 251 (2021). <https://doi.org/10.1186/s12891-021-04122-x>.
22. Kuong Evelyn E, Gardner William T, **Koljonen Paul A**, Mahapatrad, Sudhir K, Chow Wang. *Normal Radiographic Parameters in Paediatric Pelvic Radiographs from a Chinese Population*. Journal of Pediatric Orthopaedics B: July 2017 – Vol 26, Issue 4, p336–339