

Professor J. Patrick Neary

PhD, MA (Exercise Physiology), BEd

Research specialisation: Pathophysiology of sport-related concussion (mild traumatic brain injury).

Experience: Patrick has 27 years of academic and research experience in the area of exercise physiology. Prior to joining the Faculty of Kinesiology & Health Studies at the University of Regina in 2005, he worked at the University of New Brunswick in Fredericton, NB (2002-2005), and Malaspina University-College in Nanaimo, British Columbia (1990-2002). His teaching involvement includes Introductory Exercise Physiology, Advance Exercise Physiology, Principles of Exercise Testing, Training and Prescription, and Clinical Exercise Physiology. He has taught at the International Coaching School & Conference, and has taught courses for the National Coaching Institute related to the Canadian National Coaching Certification Program (NCCP) to certify coaches in Canada (1987-2012). He himself has coached minor league sports in ice hockey, basketball, soccer and volleyball. In addition to his research and teaching responsibilities at the University of Regina, Patrick was the Executive Director of the Dr Paul Schwann Applied Health & Research Centre for cardiac rehabilitation from 2006-2014. He is also an active member of Canadian Institute for Public Safety Research and Treatment (CIPSRT) at the University of Regina, with a focus on heart rate variability and post-traumatic stress disorder in First Responders.



Research overview: Patrick has basic science training and an applied exercise research background. He completed his PhD research in muscle and cardiovascular physiology as it is related to Tapering (peaking) for competition. His Taper research lead him to become a visiting professor at the Australian Institute of Sport (AIS) in Canberra, and the University of the Sunshine Coast in Queensland in 2000-2001 while on sabbatical leave. He has developed an independent research program to examine the *pathophysiology of mild traumatic brain injury or sport-related concussion* which was funded nationally by the Canadian Institutes of Health Research (CIHR), and provincially by the Saskatchewan Health Research Foundation (SHRF) and Heart & Stroke Foundation (H&SF). His research in this area has confirmed that transient cerebrovascular (blood flow regulation, cerebral oxygenation) and cardiovascular (heart rate variability, blood pressure) disturbances occur following a concussion. He has also held funding from the Natural Sciences and Engineering Research Council of Canada (NSERC) for his research to investigate the *physiological mechanism(s) associated with cerebral, skeletal and cardiac muscle fatigue during exercise*. His applied research in this area has been used to understand the effects of physical stress in occupational fields such as firefighting and shift work. He has also been funded by the Canadian Government Department of National Defense to examine factors related to neck strain and muscle fatigue in helicopter pilots using night vision goggles. He is a member in good standing in the Canadian Society for Exercise Physiology (CSEP), and the European College of Sport Science (ECSS).

Postgraduate supervision: Patrick has graduated more than 15 Masters and PhD students as the primary supervisor during his tenure. Currently he is supervising 5 Masters Students. Research topics are related to the effects of exercise on physiological function.

Research publications: Patrick has published more than 200 peer-reviewed abstracts, papers, book chapters during his 27 year career. Example publications:

Bishop, S.A., **Neary, J.P.** (2017). Assessing prefrontal cortex oxygenation after sport concussion with near-infrared spectroscopy. *Clin Physiol Funct Imag*, doi: 10.1111/cpf.12447

Bishop, S.A., Dech, R.A., Baker, T., Butz, M., Aravinthan, K., **Neary, J.P.** (2017). Parasympathetic Baroreflexes and Heart Rate Variability during Acute Stage of Sport Concussion Recovery. *Brain Injury*, 31(2):247-259.

Steimers A, Vafiadou M, Koukourakis G, Geraskin D, **Neary J.P.**, Kohl-Bareis M. (2016). Muscle Oxygenation During Running Assessed by Broad Band NIRS. *Adv Exp Med Biol*. 876:41-7. doi: 10.1007/978-1-4939-3023-4_5.

University
of Regina

J. Patrick Neary, PhD
Professor

Faculty of Kinesiology & Health Studies
University of Regina
Centre for Kinesiology, Room 164.23
Regina, SK, Canada, S4S 0A2
Phone: 1-306-585-4844
Fax: 1-306-585-4854
E: Patrick.neary@uregina.ca

- Harrison, M.F., Forde, K., Albert, W.J, Croll, J.C., **Neary, J.P.** (2016). Posture and helmet load influences on neck muscle activation. *Aviat Space Environ Med.* 87:48-53. (DND)
- Bishop, S., **Neary, J.P.** (2015). Autonomic, Cerebrovascular, and mTBI Physiology: Linkages and Future Applications. *Current Research: Concussion*, 2(2):49-58. (CIHR, SHRF)
- Neary, J.P.**, Salmon, D.M., Dahlstrom B.K., Casey E.J., Behm, D.G. (2015). Effects of an inverted seated position on single and sustained isometric contractions and cardiovascular parameters of trained individuals. *Human Movement Science* 40: 119–133. (NSERC)
- Len, T.K., **Neary, J.P.**, Asmundson, G.J.G., Candow, D.C., Goodman, D., Bjornson, B., Bhambhani, Y.N. (2013). Serial monitoring of CO₂ reactivity following concussion using hypo- and hypercapnia. *Brain Injury*, 27(3):346-353. (CIHR; SHRF; H&SF).
- Silbernagel, J.E., Bend, P.A., Ruland, J.L., Miller, K.T., Ludlow, J.M., Neary, J.P. (2013). Functional improvements following a combined aerobic and resistance training cardiac rehabilitation program. *Research Matters*, 1(1):10-17
- Dahlstrom, BK., Duff, W.R., Poloskei, S., Schaerz, S., Len, T.K., **Neary, J.P.** (2013). Neuromuscular changes following simulated high-intensity cycling performance in moderate hypoxia. *Journal of Exercise Science & Fitness* 11:78-84 (NSERC).
- Salmon, D.M., Harrison, M.F., Sharpe, D., Candow, D.G., Albert, W.J., **Neary, J.P.** (2013). Exercise therapy for improved neck muscle function in helicopter aircrew. *Aviat Space Environ Med* 2013; 84:1046 – 54 (DND).
- Vogt, E.S.M., MacQuarrie, **Neary, J.P.** (2012). Using ballistocardiography to measure cardiac performance: a brief review of its history and future significance. *Clin Physiol Funct Imag*, 32:415-420
- Harrison, M.F., **Neary, J.P.**, Albert, W.J, Croll, J.C. (2012). A Predictive Logistic Regression Equation for Neck Pain in Helicopter Aircrew. *Aviat Space Environ Med.* 83:604–8. (DND)
- Neary, J.P.**, MacQuarrie, D.S., Jamnik, V., Gledhill, N., Gledhill, S., Busse, E.F. (2011). Assessment of mechanical cardiac function in elite athletes. *The Open J Sports Med*; 5:38-44. (CIHR)
- Harrison, M.F., **Neary, J.P.**, Albert, W.J, Croll, J.C. (2011). Neck Pain and Muscle Function in a Population of CH-146 Helicopter Aircrew. *Aviat Space Environ Med.* 82:1125-1130. (DND).
- Len, T.K., **Neary, J.P.**, Asmundson, G.J.G., Goodman, D., Bjornson, B., Bhambhani, Y.N. (2011). Cerebrovascular reactivity impairment following sport-induced concussion. *Med Sci Sports Exerc.* 43(12), 2241–2248. (CIHR; SHRF)