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Education

Ph.D. (Cerebrovascular Physiology), 2015, University of British Columbia, Kelowna, BC
M.Sc. (Cerebrovascular Physiology), 2011, University of British Columbia, Kelowna, BC
B.Sc. (Biology), 2004, University of Victoria, Victoria, BC

Grants

TBI in Survivors of IPV – Funded by Department for Women and Gender Equality (Co-Investigator), 2019-2024	$1 000 000
SHRed Concussions – Funded by the National Football League (Co-Investigator), 2018-2021	$12 440 000
TBI in Survivors of IPV – Funded by Status of Women Canada (Co-Investigator), 2018	$30 000

Awards and Fellowships

Michael Smith Foundation in Health Research, Post-Doc Fellowship 2019-2020 -- MSFHR Fellowship Accepted in title only --	$71 000
Innovations in Wellness, Post-Doctoral Fellowship 2016-2017	$45 000
MITACS Accelerate Internship, 2015-2017	$30 000
Canadian Traumatic Brain Injury Research Consortium Travel Grant, 2017	$1 000
UBCO Post-Doc International Travel Grant, 2016	$1 000
UBCO Dean's Thesis Fellowship, 2015	$6 000
Izaak Walton Killam Memorial Pre-Doctoral Fellowship, 2013-2015	$20 000
NSERC PGS-D2, 2013-2015	$42 000
UBCO Graduate Fellowship, 2012-2015	$24 000
Physiological Society International Travel Grant, 2011, 2015	$1 800
UBCO Ph.D. International Travel Grant, 2013, 2015	$3 000
Special UBCO Award PhD Fellowship, 2012	$1 500
UBCO Ph.D. Tuition Award, 2011-2012	$2 500
UBCO Graduate Entrance Scholarship, 2011	$5 000
UBCO TREK Excellence Undergraduate Scholarship, 2009	$1 500

Refereed Publications

1. ***Smirl, J.D.,*** Jones, K.E., Copeland, P., Khatra, O., van Donkelaar, P. Comparison of traumatic brain injury assessment tools in survivors of intimate partner violence. *Brain Injury.* (In Press).

2. Fraser S., Wright A.D., van Donkelaar P., ***Smirl J.D.*** Cross-sectional comparison of spiral versus block integrated curriculums in preparing medical students to diagnose and manage concussions. *BMC Medical Education.* Jan. 9:19(1):17. (2019).

3. Dierijck J., Kennefick M., ***Smirl J.D.,*** Dalton B.H., van Donkelaar P. Attention is required to coordinate reaching and postural stability during upper limb movements generated while standing. *Journal of Motor Behaviour.* Mar 27:1-10 (2019).

4. Bailey, D.M., Brugniaux, J., Filipponi, T., Marley, C., Stacey, B., Soria, R., Rimoldi, S.F., Cerny, D., Rexhaj, E., Pratali, L., Salmon, C., Jauregui, C.M., Villena, M., ***Smirl, J.D.,*** Ogoh, S., Pietri, S., Scherrer, U., Sartori, C. Exaggerated systemic oxidative-nitrosative-inflammatory stress in chronic mountain sickness is associated with cognitive decline and depression. *Journal of Physiology.* 597(2):611-629. (2019).

5. Lewis, N., Gelinas, G., Ainslie, P.N., ***Smirl, J.D.,*** Agar, G., Melzer, B., Douglass Rolf, J., Eves, N. Cerebrovascular function in patients with chronic obstructive pulmonary disease: The impact of exercise training. *American Journal of Physiology – Heart and Circulatory Physiology.* 316(2):H380-H391. (2019).

6. Labrecque L, Rahimaly K, Imhoff S, Paquette M, Le Blanc O, Malenfant S, Drapeau, A., ***Smirl J.D.,*** Bailey D.M., Brassard P. Dynamic cerebral autoregulation is attenuated in young fit women. *Physiological Reports.* 7(2):e13984. (2019).

7. ***Smirl J.D.,*** Wright A.D., Ainslie P.N., Tzeng Y.C., van Donkelaar P. Differential systolic and diastolic regulation of the cerebral pressure-flow relationship during squat-stand manoeuvres. *Acta Neurochir Suppl.* 126:263-268. (2018)

8. Fraser, S., Wright, A.D., van Donkelaar, P., ***Smirl, J.D.*** Speaking to patients about concussions: Does our terminology impact recovery outcomes? *B.C. Medical Journal.* 60(1):8-10. (2018).

9. van Donkelaar, P., Dierijck, J., Wright, A.D., ***Smirl, J.D.*** A history of concussion does not lead to an increase in ocular near point of convergence. *International Journal of Sports Medicine.* 39(9):682-687. (2018).

10. Wright, A.D., ***Smirl, J.D.,*** Bryk, K., Fraser, S., Jakovac, M., van Donkelaar, P. Cerebral autoregulation is disrupted following a season of contact sports participation. *Frontiers of Neurology*. 9:868 (2018).

11. Wright, A.D., ***Smirl, J.D.,*** Bryk, K., Fraser, S., Jakovac, M., van Donkelaar, P. Sport-related concussion alters indices of dynamic cerebral autoregulation. *Frontiers of Neurology*. 9:196 (2018).

12. Wright A.D., ***Smirl J.D.,*** Bryk K., van Donkelaar P. Systolic and diastolic regulation of the cerebral pressure-flow relationship differentially affected by acute sport-related concussion. *Acta Neurochir Suppl.* 126:303-308 (2018)

13. Wright, A.D., ***Smirl, J.D.,*** Bryk, K., Jakovac, M., van Donkelaar, P. A prospective transcranial Doppler ultrasound-based evaluation of the effects of repetitive subconcussive head trauma on neurovascular coupling dynamics. *Clinical Journal of Sport Medicine* (In Press). (2018).

14. Wallace, C., ***Smirl., J.D.,*** Zetterberg, H., Blennow., K., Bryk., K., Burma., J., Dierijck., J., Wright, A.D., van Donkelaar., P. Heading in soccer increase serum neurofilament light protein and SCAT3 symptom metrics. *British Medical Journal Open Sport and Exercise Medicine.* 4(1):e000433 (2018).

15. Dierijck J., Wright A.D., ***Smirl J.D.,*** Bryk K., van Donkelaar P. Sub-concussive trauma, acute concussion, and history of multiple concussions: effects on quiet stance postural control stability. *International Journal of Psychophysiology.* 132(Pt A):74-80 (2018)

16. Kennefick M., Wright A.D., ***Smirl J.D.,*** van Donkelaar P. Anticipatory postural adjustments as a function of response complexity in simple reaction time tasks. *Neuroscience Letters.* 684:1-5. (2018)

17. Wright A.D., ***Smirl J.D.,*** Bryk K., van Donkelaar P. A prospective transcranial Doppler ultrasound-based evaluation of the acute and cumulative effects of sport-related concussion on neurovascular coupling response dynamics. *Journal of Neurotrauma.* 34(22):3097-3106. (2017).

18. Labrecque L, Rahimaly K, Imhoff S, Paquette M, Le Blanc O, Malenfant S, Lucas S.J.E., Bailey D.M., ***Smirl J.D.,*** Brassard P. Diminished dynamic cerebral autoregulatory capacity with forced oscillations in mean arterial pressure with elevated cardiorespiratory fitness. *Physiol Rep.* 5(21):1-12. (2017).

19. Brassard, P., Ferland-Duti H., ***Smirl, J.D.,*** Paquette M., Le Blanc O., Malenfant S., Ainslie, P.N. Evidence for hysteresis in the cerebral pressure-flow relationship in healthy men. *American Journal of Physiology Heart Circ Physiol.* 312(4):H701-H704 (2017).

20. ***Smirl, J.D.,*** Wright, A.D., Bryk, K., van Donkelaar, P. *Where's Waldo?* The utility of a complicated visual search paradigm for transcranial Doppler-based assessments of neurovascular coupling. *Journal of Neuroscience Methods.* 270:92-101 (2016).

21. ***Smirl, J.D.,*** Hoffman, K., Tzeng, Y.C., Hansen, A., Ainslie, P.N. The relationship between cerebral blood flow and blood pressure during supine cycling: influence of aging. *Journal of Applied Physiology*. 120(5):552-63. (2016).

22. Kostoglou K, Wright A.D., ***Smirl J.D.,*** Bryk K., van Donkelaar P., Mitsis G.D. Dynamic cerebral autoregulation in young athletes following concussion. Conference Proceedings IEEE Engineering in Medicine and Biology. 2016:696-699 (2016).

23. ***Smirl, J.D.,*** Hoffman, K., Tzeng, Y.C., Hansen, A., Ainslie, P.N. Methodological comparison of active and passive oscillations in blood pressure; implications for assessment of cerebral pressure-flow relationships. *Journal of Applied Physiology*. 119(5):487-501. (2015).

24. ***Smirl, J.D.,*** Haykowsky M.J., Marsden, K.R., Nelson, M.D., Jones, H., Ainslie, P.N. The relationship between cerebral blood flow and blood pressure in long-term heart transplant recipients. *Hypertension*. 64(6):1314-20. (2014).

25. Numan, T., Bain, A., Hoiland, R., ***Smirl, J.D.,*** Lewis, N.C., Ainlsie, P.N. Static autoregulation in humans: a review and reanalysis. *Medical Engineering and Physics.* 36(11):1487-95. (2014).

26. ***Smirl, J.D.,*** Tzeng, Y.C., Monteleone, B.J. and Ainslie, P.N. Influence of cerebrovascular resistance on dynamic pressure-flow relationships in humans. *Journal of Applied Physiology.* 116(12):1614-22 (2014).

27. ***Smirl, J.D.,*** Lucas, S.J.E., Lewis, N.C.S., duManoir, G.R., Smith, K.J., Sherpa, N., Basnyat, A.S., and Ainslie, P.N. Cerebral Pressure-Flow Relationship in Lowlanders and Natives at High Altitude. *Journal of Cerebral Blood Flow and Metabolism.* 34(2):367 (2013).

28. ***Smirl, J.D.,*** Haykowsky, M.J., Nelson, M.D., Altamirano-Diaz, L.A., Ainslie, P.N. Resting and Exercise cerebral blood flow in long-term heart transplant recipients. *Journal of heart and lung transplant.* 31(8): 906-8. (2012).

29. Bailey D.M., Jones D.W., Sinnott A., Brugniaux J.V., New K.J., Hodson D., Marley C.J., ***Smirl J.D.***, Ogoh S., Ainslie P.N. Impaired cerebral haemodynamic function associated with chronic traumatic brain injury in professional boxers. *Clinical Science*. 124(3):177-89. (2012).

30. Gelinas J.C., Marsden K.R., Tzeng Y.C., ***Smirl J.D***., Smith K.J., Willie C.K., Lewis N.C., Binsted G., Bailey D.M., Bakker A., Day T.A., Ainslie P.N. Influence of posture on the regulation of cerebral perfusion. *Aviat Space Environ Med*. 83(8): 751-7. (2012).

31. Tzeng Y.C., Ainslie P.N., Cooke W.H., Peebles K.C., Willie C.K., Macrae B.A., ***Smirl J.D.,*** Horsman H.M., Rickards C.A. Assessment of cerebral autoregulation: the quandary of quantification. *Am J Physiol Heart Circ Physiol.* 303(6):H658-71. (2012).

32. Smith, K.J., Wong, L.E., Eves, N.E., Koelwyn, G., ***Smirl, J.D.,*** Willie, C.K., Ainslie, P.N. Regional cerebral blood flow distribution during exercise: influence of oxygen, *Respir Physiol Neurobiol.* 184(1):97-105. (2012).

33. Marsden, K.R., Haykowsky, M.J., ***Smirl, J.D.***, Jones, H., Nelson, M.D., Altamirano-Diaz, L.A., Tzeng, Y.C., Smith, K.J., Willie, C.K., Ainslie, P.N. Influence of againg on cerebral blood flow velocity during progressive cycling to volitational exhaustion. *AGE.* 34(3):725-35. (2011).

34. Willie, C.K., Colino, F.L., Tzeng, Y.C., Binsted, G. Jones, L.W., Haykowsky, M.J., Bellapart, J., Ogoh, S., Smith, K.J., ***Smirl, J.D.***, Ainslie, P.N. Utility of transcranial Doppler ultrasound for the integrative assessment of cerebrovascular function. *Journal of Neuroscience Methods.* 196(2):221-37 (2011).

35. Cheng, D., DeGrosbois, J., ***Smirl, J.D.***, Heath, M., Binsted, G. Preceeding trial effects on sequential aiming. *Experimental Brain Research.* 215(1):1-11. (2011).

Commentaries

1. Labrecque L, ***Smirl J.D.,*** Brassard P. Letter to the Editor: On the need of considering cardiorespiratory fitness when examining the influence of sex on dynamic cerebral autoregulation. *AJP Heart and Circ.* 316(5):H1229. (2019).

2. Brassard P., Bailey D.M., ***Smirl J.D.*** CrossTalk Commentary: Quantification of dynamic cerebral autoregulation: the whole is more than the sum of the parts! *Journal of Physiology*. Online Supplement (2017).

3. ***Smirl, J.D****.,* Wright, A.D. CrossTalk Commentary: Transcranial Doppler ultrasound still has a role in cerebrovascular research…. *Journal of Physiology*. Online Supplement (2016).

4. ***Smirl, J.D****.,* Kennefick, M., Wright, A.D. CrossTalk Commentary: HIIT and Aerobic training are like apples and oranges… both are better than being sedentary. *Journal of Physiology*. Online Supplement (2016).

Manuscripts in Review/Prep

1. ***Smirl, J.D.,*** Peacock, D., Kates, J., Wright, A.D., Bouliane, K., Dierijck J., Burma J., van Donkelaar, P. An acute bout of controlled soccer heading results in subtle alterations to neurovascular coupling metrics. *J Neurotrauma.* (Submitted).

2. Burma, J.S., Macaulay, A., Copeland, P., Khatra, O., Bouliane, K., ***Smirl, J.D.*** Comparison of cerebrovascular reactivity recovery after high intensity interval training and moderate intensity continuous training. *Journal of Applied Physiology.* (In Prep).

3. Burma, J.S., Copeland, P., Macaulay, A., Khatra, O., Wright, A.D., ***Smirl, J.D.*** Dynamic cerebral autoregulation across the cardiac cycle during 8 hours of recovery from acute exercise. *Journal of Cerebral Blood Flow and Metabolism.* (In Prep).

4. Burma, J.S., Macaulay, A., Copeland, P., Khatra, O., Wright, A.D., ***Smirl, J.D.*** Assessment of neurovascular coupling and near point of convergence during recovery after high intensity intervals and moderate intensity continuous training. *Journal of Physiology.* (In Prep).

5. Burma, J.S., Copeland, P., Macaulay, A., Khatra, O., Bouliane, K., ***Smirl, J.D.*** Effects of high intensity intervals and moderate intensity continuous training on baroreceptor sensitivity and heart rate variability during recovery. *European Journal of Applied Physiology.* (In Prep).

6. ***Smirl, J.D.,*** Kates, J., Wright, A.D., Bouliane, K., Dierijck J., Burma J., Macauley A., van Donkelaar, P. An acute bout of soccer heading impairs cerebral autoregulation. *British Journal of Sports Medicine.* (In Prep).

7. ***Smirl, J.D.,*** Kates, J., Wright, A.D., Bouliane, K., Dierijck J., Burma J., van Donkelaar, P. Heart rate variability is impacted by an acute bout of soccer heading. *J Physiol.* (In Prep).

8. ***Smirl, J.D.,*** Jones, K.E., Copeland, P., Khatra, O., van Donkelaar, P. Dynamic cerebral autoregulation is altered in survivors of intimate partner violence. *J Neurotrauma.* (In Prep).

9. ***Smirl, J.D.,*** Jones, K.E., Copeland, P., Khatra, O., van Donkelaar, P. Intimate partner violence survivors demonstrate impaired heart rate variability metrics. *J Neurotrauma.* (In Prep).

Invited Presentations

1. ***Smirl J.D.*** Physiological alterations present in survivors of intimate partner violence (University of British Columbia – Vancouver, BC) (2019).

2. ***Smirl J.D.*** The impact of concussions on cerebral blood flow regulation. (University of Calgary – Calgary, AB) (2019).

3. ***Smirl J.D.*** Introduction to concussion. (University of Calgary – Calgary, AB) (2019).

4. ***Smirl J.D.*** Exercise as a treatment to improve concussion recovery. (University of Northern British Columbia – Prince George, BC) (2018).

5. ***Smirl J.D.*** van Donkelaar P. Physiological alterations in survivors of intimate partner violence (Women's Health Research Cluster: University of British Columbia – Vancouver, BC) (2019).

6. ***Smirl J.D.*** How do concussions alter cerebral autoregulation? (University of Northern British Columbia – Prince George, BC) (2018).

7. ***Smirl J.D.*** Exercise as a treatment to improve concussion recovery. (University of Northern British Columbia – Prince George, BC) (2018).

8. ***Smirl J.D.*** Cerebral autoregulation and concussions: what do we know and where should we go? (Cerebral Autoregulation Research Network Annual Meeting, Oxford, UK) (2018).

9. ***Smirl J.D.,*** van Donkelaar P. Effects on intimate partner violence on cerebrovascular, cardiovascular and sensorimotor metrics. (British Columbia Concussion Advisory Network, Vancouver, BC) (2017).

10. ***Smirl J.D.*** Cerebrovascular regulation following concussive and sub-concussive impacts. (University of Calgary – Calgary, AB) (2017).

11. ***Smirl J.D.*** An overview of research designs employed in injury prevention. (University of Calgary – Calgary, AB) (2017).

12. Announced a new $6 million fund for Mitacs Accelerate alongside: Minister of Advanced Education – Dr. Andrew Wilkenson, CEO of MITACS – Dr. Alejandro Adem, CEO of Helios Global technologies – Martin Cronin, and UBC Deputy Vice Chancellor – Dr. Deborah Buszard: (Winter 2016)

Conference Presentations

1. ***Smirl J.D.,*** Jones K.E., Copeland P, Khatra O, Mason K, van Donkelaar P. Survivors of intimate partner violence experience disruptions to cerebral blood flow regulation and autonomic function. Cerebral Autoregulation Research Network – Leuven, BEL) (2019).

2. ***Smirl J.D.,*** van Donkelaar P. Autonomic alterations in survivors of intimate partner violence. (Canadian Traumatic Brain Injury Research Consortium – Lake Louise, CAN) (2019).

3. ***Smirl J.D.,*** Jones K.E., Copeland P, Khatra O, van Donkelaar P. Physiological alterations within the cerebrovasculature in survivors of intimate partner violence. (International Brain Injury Association: World Congress – Toronto, CAN) (2019).

4. ***Smirl J.D.,*** Jones K.E., Copeland P, Khatra O, van Donkelaar P. Intimate partner violence-induced TBI alters autonomic function metrics. (International Brain Injury Association: World Congress – Toronto, CAN) (2019).

5. van Donkelaar P, Jones K.E., Copeland P, ***Smirl J.D.*** Characterizing symptoms of traumatic brain injury in survivors of intimate partner violence. (International Brain Injury Association: World Congress – Toronto, CAN) (2019).

6. Schneider KJ, Gagnon IG, McFadyen BJ, Reed N, ***Smirl J.D.,*** van Donkelaar P, Zemek R, Emery CA. SHRed concussions: Multifaceted clinical outcomes to inform recovery and evaluate prevention. (Canadian Traumatic Brain Injury Research Consortium – Lake Louise, CAN) (2019).

7. Batycky JM, Mercier LJ, Harris A, Fung T, ***Smirl J.D.,*** Debert CT. Evaluating heart rate variability as a measure of autonomic dysfunction in women with persistent post-concussion symptoms. (Hotchkiss Brain Institute Symposium – Calgary, CAN) (2019).

8. Tapsell L.C., ***Smirl J.D.,*** Kennefick M. K., Dalton B.H., MacNeil C.J., van Donkelaar P. Neurovascular coupling in post-concussion syndrome under mental fatigue. (UBC Health and Exercise Sciences – Graduate Student Research Day – Kelowna, CAN) (2019).

9. Bryk K, Wright AD, ***Smirl JD***, Jakovac M, van Donkelaar P. The Effect of Repetitive Head Impact Exposure on Response Inhibition in Contact Sport Athletes. (American Academy of Neurology 71st Annual Meeting – Philadelphia, USA) (2019).

10. Copeland P.V., Debenham M.I.B., ***Smirl J.D.,*** Dalton B.H. The effect of electrical vestibular stimulation on cerebral blood flow. (UBC Health and Exercise Sciences – Graduate Student Research Day – Kelowna, CAN) (2019).

11. Debenham M.I.B., Grantham T.D.A., Dos Santos N.L., ***Smirl J.D.,*** Foster G.E., Dalton B.H. Acute effects of hypoxia on the vestibular control of balance. (UBC Health and Exercise Sciences – Graduate Student Research Day – Kelowna, CAN) (2019).

12. ***Smirl J.D.,*** van Donkelaar P. Characterizing cerebrovascular alterations in survivors of intimate partner violence. (Canadian Traumatic Brain Injury Research Consortium – Lake Louise, CAN) (2018).

13. Burma J.S., Macaulay A., van Donkelaar P., ***Smirl J.D.*** Changes in neurovascular coupling and dynamic cerebral autoregulation metrics during eight hours of recovery from acute exercise. (Cerebral Autoregulation Research Network – Oxford, UK) (2018).

14. Burma J.S., Macaulay A., van Donkelaar P., ***Smirl J.D.*** Dynamic cerebral autoregulation across the cardiac cycle during 8 hours of recovery from acute exercise. (Okanagan Cardiovascular and Respiratory Symposium – Silver Star, CAN) (2018).

15. Dos Santos N.L., Grantham T.D.A., ***Smirl J.D.,*** Foster G.E., Dalton B.H. The effects of acute hypoxia and normoxia on the vestibular control of standing balance. (NeuroHike – Kananaskis, CAN) (2018).

16. Grantham T.D.A., Dos Santos N.L., ***Smirl J.D.,*** Foster G.E., Dalton B.H. The vestibular control of standing balance during acute hypoxia. (Canadian Society for Exercise Physiology – Niagara Falls, CAN) (2018).

17. ***Smirl J.D.,*** Kates J, Wright A.D., Bouliane K, Dierijck J.K., Macauley A, van Donkelaar P. An acute bout of soccer heading augments cerebral autoregulation. (International Brain Injury Association: World Congress – New Orleans, USA) (2017).

18. ***Smirl J.D.,*** Wright A.D., Bouliane K, Dierijck J.K., Burma J, van Donkelaar P. Sub-concussive soccer heading does not alter neurovascular coupling metrics. (International Brain Injury Association: World Congress – New Orleans, USA) (2017).

19. Wright A.D., ***Smirl J.D.,*** Kates J, Bouliane K, Dierijck J.K., Siemens D, van Donkelaar P. An acute bout of soccer heading may alter autonomic function. (International Brain Injury Association: World Congress – New Orleans, USA) (2017).

20. Dierijck J.K., Wright A.D., ***Smirl J.D.,*** Bouliane K, van Donkelaar P. An acute bout of soccer heading decreases postural control. (International Brain Injury Association: World Congress – New Orleans, USA) (2017).

21. van Donkelaar P, Dierijck J, Bouliane K, Wright A.D., ***Smirl J.D.*** A History of Concussion Does Not Lead to an Increase in Ocular Near Point of Convergence. (International Brain Injury Association: World Congress – New Orleans, USA) (2017).

22. Bryk K, Dierijck J.K., Bouliane K, Wright A.D., ***Smirl J.D.,*** van Donkelaar P. A bout of soccer heading induces acute reductions in complex sensorimotor function. (International Brain Injury Association: World Congress – New Orleans, USA) (2017).

23. Kennefick M., Smart S., Wright A.D., Dierijck J.K., Bouilane K, ***Smirl J.D.,*** van Donkelaar P. Impact of an acute bout of soccer heading on postural adjustments in complex tasks. (International Brain Injury Association: World Congress – New Orleans, USA) (2017).

24. Brassard, P., Ferland-Duti H., ***Smirl, J.D.,*** Paquette M., Le Blanc O., Malenfant S., Ainslie, P.N. Presence of Hysteresis in the Cerebral Pressure-Flow Relationship During Repeated Squat-Stand Maneuvers in Humans. (Experimental Biology – Chicago, USA) (2017).

25. ***Smirl J.D.,*** Wright A.D., Grewal H.S., Jakovac M, Bryk K, van Donkelaar P. Heart rate variability reductions following a season of sub-concussive head hits are related to the magnitude of impacts experienced. (5th International Consensus Conference on Concussion in Sport – Berlin, Germany) (2016).

26. ***Smirl J.D.,*** Wright A.D., Bouliane K, Bryk K, van Donkelaar P. Transcranial Doppler ultrasound measures of neurovascular coupling are maintained following acute sport-related concussion. (5th International Consensus Conference on Concussion in Sport – Berlin, Germany) (2016).

27. ***Smirl J.D.,*** Wright A.D., Bouliane K, Bryk K, van Donkelaar P. A history of multiple concussions does not alter the transcranial Doppler-based assessment of the neurovascular coupling response. (5th International Consensus Conference on Concussion in Sport – Berlin, Germany) (2016).

28. ***Smirl J.D.,*** Wright A.D., Bouliane K, Bryk K, Jakovac M, van Donkelaar P. Neurovascular coupling response is maintained despite exposure to repetitive sub-concussive head trauma over the course of one contact-sport season. (5th International Consensus Conference on Concussion in Sport – Berlin, Germany) (2016).

29. ***Smirl J.D.,*** Dierijck J.K., Wright A.D., Bryk K, van Donkelaar P. Effect of a history of 3+ previous concussions on centre of pressure variables during quiet stance. (5th International Consensus Conference on Concussion in Sport – Berlin, Germany) (2016).

30. ***Smirl J.D.,*** Dierijck J.K., Wright A.D., Bryk K, Jakovac M, van Donkelaar P. Effect of sub-concussive impacts sustained throughout a contact-sport season on quiet stance centre of pressure. (5th International Consensus Conference on Concussion in Sport – Berlin, Germany) (2016).

31. ***Smirl J.D.,*** Dierijck J.K., Wright A.D., Bryk K, van Donkelaar P. Effects of acute concussion on centre of pressure variables during quiet stance. (5th International Consensus Conference on Concussion in Sport – Berlin, Germany) (2016).

32. ***Smirl J.D.,*** Wright A.D., Ainslie P.N., Tzeng Y.C., van Donkelaar P. Differential systolic and diastolic regulation of the cerebral pressure-flow relationship during squat-stand manoeurvres. (Cerebral Autoregulation Research Network - Boston, USA) (2016).

33. ***Smirl J.D.,*** Wright A.D., Bryk K., Fjeld K., van Donkelaar P. Diminished cerebrovasculature buffering capacity after repeated concussions. (International Brain Injury Association: World Congress - The Hague, Netherlands) (2016).

34. Wright A.D., ***Smirl J.D.,*** Fraser S.K., Bryk K, van Donkelaar P. A history of multiple concussions does not confer long-term impairments to dynamic cerebral autoregulation. (5th International Consensus Conference on Concussion in Sport – Berlin, Germany) (2016).

35. Wright A.D., ***Smirl J.D.,*** Jakovac M, Fraser S.K., Bryk K, Grewal H.S., Dierijck J.K., van Donkelaar P. Exposure to rotational acceleration over the course of one athletic season is related to impairments in an index of dynamic cerebral autoregulation. (5th International Consensus Conference on Concussion in Sport – Berlin, Germany) (2016).

36. Wright A.D., ***Smirl J.D.,*** Grewal H.S., Bryk, van Donkelaar P. Acute sport-related concussion suppresses heart rate variability beyond clinical recovery. (5th International Consensus Conference on Concussion in Sport – Berlin, Germany) (2016).

37. Wright A.D., ***Smirl J.D.,*** Bryk K, Fraser S.K., Grewal H.S., Jakovac M, Dierijck J.K., van Donkelaar P. Acute sport-related concussion induces transient impairment in dynamic cerebral autoregulation that is related to SCAT3 performance. (5th International Consensus Conference on Concussion in Sport – Berlin, Germany) (2016).

38. Wright A.D., Grewal H.S., ***Smirl J.D.,*** Bryk K, van Donkelaar P. History of multiple sport-related concussions alters variability of heart rate response to activity. (5th International Consensus Conference on Concussion in Sport – Berlin, Germany) (2016).

39. Wright A.D., Fraser S.K., ***Smirl J.D.,*** van Donkelaar P. Comparison of spiral versus block curriculum styles in preparing medical students to diagnose and manage concussions. (5th International Consensus Conference on Concussion in Sport – Berlin, Germany) (2016).

40. Wright A.D., Byrk K, Jakovac M, ***Smirl J.D.,*** van Donkelaar P. Examining the cumulative effect of repetitive head-impacts on the ability to inhibit a motor response. (5th International Consensus Conference on Concussion in Sport – Berlin, Germany) (2016).

41. Wright A.D., ***Smirl J.D.,*** Bryk K., van Donkelaar P. Systolic and Diastolic regulation of the cerebral pressure-flow relationship differentially affected by acute sport-related concussion. (Cerebral Autoregulation Research Network - Boston, USA) (2016).

42. Fraser S.K., Wright A.D., ***Smirl J.D.,*** van Donkelaar P. Comparing spiral and block curriculum styles for concussion knowledge. (UBC students in health annual research conference – Vancouver, Canada) (2016).

43. Wright A.D., ***Smirl J.D.,*** Fjeld K., Bryk K., van Donkelaar P. Temporary impairment in buffering capacity of the cerebrovasculature to blood pressure changes in sport related concussions. (International Brain Injury Association: World Congress – The Hague, Netherlands) (2016).

44. Bryk K., Wright A.D., ***Smirl J.D.,*** Fjeld K., van Donkelaar P. The effects of concussion history on response inhibition. (International Brain Injury Association: World Congress – The Hague, Netherlands) (2016).

45. Kostoglou K, Wright A.D., ***Smirl J.D.,*** Bryk K., van Donkelaar P., Mitsis G.D. Concussion and Cerebral Autoregulation in young athletes. (International Symposium in Intracranial Pressure and Neuromonitoring – Boston, USA) (2016).

46. Kennefick M., Wright, A.D., ***Smirl, J.D.,*** van Donkelaar, P. Anticipatory postural adjustments as function of response complexity in simple reaction time tasks. (Society of Neural control of Movement – Montego Bay, Jamaica) (2016).

47. Kostoglou K, Wright A.D., ***Smirl J.D.,*** Bryk K., van Donkelaar P., Mitsis G.D. Dynamic cerebral autoregulation in young athletes following concussion. (IEEE Engineering in Medicine and Biology – Orlando, USA) (2016).

48. Ellis L.A., Ainlsie P.N., ***Smirl J.D.,*** Tallon C.M., Simair R.G., Sletten N.R., Morris, L.E., Armstrong V.A, McManus A.M. Cerebral blood flow during progressive exercise to exhaustion in children and adults. (Okanagan Cardiovascular and Respiratory Symposium – Silverstar Mountain, Canada) (2016).

49. Dierijck J.K., ***Smirl J.D.,*** Wright A.D., Wallace C, Byrk K, Bouliane K, McNulty J, Purpur J, McLeod M, Kennefick M, van Donkelaar P. Effects of an acute bout of soccer heading on neurovascular coupling. (Canadian Association of Neuroscience – Toronto, Canada) (2016).

50. Wright A.D., ***Smirl J.D.,*** Wallace C., Bryk K., van Donkelaar P. Indications of impaired cerebrovascular buffering of rapid blood pressure changes following one season of participation in contact sports. (Canadian Association of Neuroscience – Toronto, Canada) (2016).

51. Bryk K, Wallace C, ***Smirl J.D.,*** Wright A.D., Dierijick J, Bouliane K, McNulty J, McLeod M, Purpur J, Markson S, van Donkelaar P. The effects of an acute bout of soccer heading on response inhibition. (Canadian Association of Neuroscience – Toronto, Canada) (2016).

52. Dierijck J.K., Wright A.D., Byrk K, ***Smirl J.D.,*** van Donkelaar P. Postural control is transiently altered following acute concussion. (Canadian Society for Psychomotor Learning and Sport Psychology – Waterloo, Canada) (2016).

53. Dierijck J.K., Wright A.D., Byrk K, ***Smirl J.D.,*** Jakovac M., van Donkelaar P. Postural control is maintained despite a season of sub-concussive head impacts. (Canadian Society for Psychomotor Learning and Sport Psychology – Waterloo, Canada) (2016).

54. ***Smirl, J.D.,*** Hoffman, K., Tzeng, Y.C., Hansen, A., Ainslie, P.N. Methodological comparison of active and passive driven oscillations in blood pressure; implications for the assessment of cerebral-pressure flow relationships. (Cerebral Autoregulation Research Network – Southampton, UK) (2015).

55. ***Smirl, J.D.,*** Hoffman, K., Tzeng, Y.C., Hansen, A., Ainslie, P.N. The relationship between blood pressure and cerebral blood flow during supine cycling: Influence of aging. (Physiological Society – Cardiff, UK) (2015).

56. Wright, A.D., ***Smirl, J.D.,*** Fjeld, K., Bryk, K., van Donkelaar, P. Sport-related concussion induces transient impairment in dynamic cerebral autoregulation metrics. (Clinical Investigation Annual Scientific Meeting – Toronto, CAN) (2015).

57. Neary, J.P., Butz, M., Dahlstrom, K., ***Smirl., J.D.,*** Bishop, S. Effects of physical exertion and heat stress on cerebrovascular response in professional firefighters. (Brain – Vancouver, CAN) (2015).

58. ***Smirl, J.D.,*** Haykowsky M.J., Marsden, K.R., Nelson, M.D., Jones, H., Ainslie, P.N. The relationship between cerebral blood flow and blood pressure in long-term heart transplant recipients. (Cerebral Autoregulation Research Network – San Diego, USA) (2014).

59. Bishop, S., Burnett, T., ***Smirl, J.D.,*** Ainslie, P.N., van Donkelaar, P., Neary, J.P. Uncoupling of flow-pressure relationships following sport concussion in elite athletes. (Cerebral Autoregulation Research Network – San Diego, USA) (2014).

60. Neary, J.P., Butz, M., Dahlstrom, B., ***Smirl, J.D.,*** Bishop, S. Effects of physical exertion and heat on cerebrovascular response in professional firefighters. (Cerebral Autoregulation Research Network – San Diego, USA) (2014).

61. ***Smirl, J.D.,*** Lewis, N.C.S., Lucas, S.J.E., duManoir, G.R., Smith, K.J., Sherpa, N., Basnyat, A.S., and Ainslie, P.N. Cerebral Pressure-Flow Relationship in Lowlanders and Natives at High Altitude. (Cerebral Autoregulation Research Network – Porto, Portugal) (2013).

62. Smith, K.J., Macleod, D., Willie, C.K., Lewis, N.C.S., Murphy, K., Hoiland, R., Ray, L., ***Smirl, J.D.,*** Ikeda, K., Tymko, M., Donelly, J. duManoir, G.R., Foster, G., Macleod, N., Day, T., Ainslie, P.N. Cerebral blood flow and metabolism during exercise at high altitude. (Hypoxia – Lake Louise, Canada) (2013).

63. ***Smirl, J.D.,*** Ainslie, P.N. Influence of Cerebrovascular Resistance on Dynamic Cerebral Autoregulation in Humans. (Cerebral Autoregulation Research Network – Nijmegen, Netherlands) (2012).

64. Hornsby WE, Khouri MG, Lakoski SG, Ainslie P, ***Smirl J.D.***, West M, Lane A, Coan A, Ona FV, Klaunig JE, Koceja DM, Chapman RF, Jones LW. Autonomic and Cardiovascular Function of Hormone-Receptor Positive Breast Cancer Patients Following Treatment with Anthracycline-Containing Chemotherapy. (American College of Sports Medicine – San Francisoco, USA) (2012).

65. Wong, L.E., Smith, K.J., Koelwyn, G., ***Smirl, J.D.,*** Ainslie, P.N., Eves, N.D. Alerting oxygen tension during exercise does not effect flow mediated dilation in healthy young males. (Physiological Society – Edinburgh, UK) (2012).

66. ***Smirl, J.D.,*** Haykowsky, M.J., Tzeng, Y.C., Marsden, K.R., Jones, H., Nelson, M.D., Altamirano-Diaz, L.A., Ainslie, P.N. Cerebral blood flow in heart transplant recipients: rest and exercise. (Physiological Society – Oxford, UK) (2011).

67. Bailey, D.M., Jones, D.W., Sinnott, A., Brugniaux, J.V., New, K.J. , Hodson, D., Marley, C., ***Smirl***, ***J.D.,*** Ainslie, P.N. Dynamic cerebral autoregulation remains preserved in professional boxers. (Physiological Society – Oxford, UK) (2011).

68. Hodson, D., Gibson, R., Jones, D.W., Sinnott, A., Brugniaux, J.V., New, K.J., Hall, J., ***Smirl***, ***J.D.,*** Ainslie, P.N., Bailey, D.M. Neurocognitive function across the spectrum of high contact sports. (Physiological Society – Oxford, UK) (2011).

69. Brewster, K., ***Smirl***, ***J.D.,*** Bourns, K., Colino, F., Ainslie, P.N., Binsted. G. Effects of visual deprivation on regional cerebral blood flow velocity and neurovascular coupling. (Vision Sciences Society – Naples, USA) (2011).

70. ***Smirl, J.D.,*** Ainslie, P.N., Tzeng, Y.C., Marsden, K.R., Jones, H., Nelson, M.D., Dolinsky, V., Haykowsky, K, Haykowsky, M.J. Alterations in arterial-cardiac baroreflex and dynamic cerebral autoregulation following heart transplantation. (Canadian Society for Exercise Physiologists – Toronto, CAN) (2010).

71. Marsden, K.R., Haykowsky, M.J., ***Smirl, J.D.,*** Jones, H., Nelson, M.D., Ainslie, P.N. Influence of aging on cerebral blood flow during high intensity dynamic exercise. (Canadian Society for Exercise Physiologists – Toronto, CAN) (2010).

72. Cheng, D. T., De Grosbois, J., ***Smirl, J.D.,*** Binsted, G. Sequence effects during manual aiming: A departure from Fitts's Law? (Vision Sciences Society – Naples, USA) (2010).

Dissertations

1. ***Smirl, J.D.*** The relationship between arterial blood pressure and cerebral blood flow: insights into aging, altitude and exercise (Ph.D.). Supervisor: Philip Ainslie.

2. ***Smirl, J.D.*** Cerebral blood flow in heart transplant recipients at rest and during incremental exercise (M.Sc.). Supervisor: Philip Ainslie.

University Course Development

Taught and developed course material for 300 level on exercise physiology II (Fall 2018)
Taught and developed course material for 100 level human anatomy and physiology I and II (Fall 2017/ Winter 2018)
Taught and developed a graduate level course on cerebrovascular physiology (Fall 2016)
Co-wrote the lab manual: 300 level course on exercise physiology II (Winter 2012)
Co-wrote the lab manual: 300 level course on laboratory techniques in physiology (Fall 2011)

Student Mentorship

Ph.D: Alexander D. Wright (MD/PhD; Vanier Scholar), Michael Kennefick, Colin Wallace
M.D.: Michael Jakovac, Sarah Fraser, Harjas Grewal, Omeet Khatra, Dakota Peacock, Mirna Hennawy
M.Sc: Ryan Hoiland, Alex Hansen, Kelsey Bryk, Jill Dierijck, Kevin Bouliane, Liam Tapsell
B.HK: Kevin Makasoff, Kevin Bouliane, Jonathan McNulty, Alex Hansen, Alannah Macauly, Joel Burma, Dallas Siemens, Thierry Lamvohee, Paige Copeland
B.Sc.: Jeff Kates

Professional Memberships

American Physiological Society (APS)
Cerebral Autoregulation Research Network (CAR-Net)
Canadian Traumatic Brain Injury Research Consortium (CTRC)
Canadian Society for Exercise Physiologists (CSEP-CAN)
The Physiological Society (Physoc-UK)

Steering Committee Member

Cerebral Autoregulation Research Network (CAR-Net) – First Canadian elected to steering committee

Conference Chair

Canadian Traumatic Brain Injury Research Consortium (CTRC)
Chair of the trainee oral session and co-chair of trainee meeting (2019 Conference – Lake Louise, CAN)

Cerebral Autoregulation Research Network (CAR-Net)
Chair of the oral session on Clinical Applications in Cerebral Autoregulation (2018 Conference – Oxford, UK)
Co-Chaired the oral session on Cerebrovascular Autoregulation in Disease (2016 Conference – Boston, USA)

Corporate Consultancy

Elucimed (New Zealand) - Assisted in beta testing and applicability of Ensemble-R program, which is a library of software implementations of methods for processing medical device data (2018)

HealthTech Connex (Canada) – Advised on potential to performed testing and applicability of PoNS device for functional changes in cerebral blood flow regulation and autonomic function (2018)

Grant Reviewer

MITACS (x3)

Manuscript Reviewer

Hypertension (HYPE):	Impact Factor 6.9	(x1)
Journal of Physiology (JPhysiol):	Impact Factor 4.7	(x1)
Medicine and Science in Sports and Exercise (MSSE):	Impact Factor 4.5	(x2)
Acta Physiologica (Acta Physiol):	Impact Factor 4.4	(x2)
Frontiers in Physiology (FRONT PHYSIOL):	Impact Factor 4.1	(x2)
American Journal of Physiology (AJP):	Impact Factor 3.5	(x2)
Journal of Applied Physiology (JAPPL):	Impact Factor 3.1	(x8)
Experimental Physiology (Ex Physiol):	Impact Factor 2.9	(x3)
Journal of Neurophysiology (JN Physiol):	Impact Factor 2.9	(x3)
Journal of Neuroscience Methods (J Neurosci Methods):	Impact Factor 2.3	(x1)
European Journal of Applied Physiology (EJAP):	Impact Factor 2.3	(x4)

Guest Presentation Experience

University of British Columbia - School of Health and Exercise Sciences:

- HMKN 315: Guest Lecture and developed a lab on the principles of transcranial Doppler ultrasound with context to neurovascular coupling measures: Winter 2016, 2017, 2018
- Presented findings from the Helios protective head-gear development study to a group of local high school students interested in sports medicine, highlighting some of the diverse opportunities present at UBC. Winter 2017
- Kasugai (Japan) Delegation Presentation: Demonstrated how to perform cerebrovascular physiology measurements to faculty members from Chubu University: Summer 2016
- International High School Recruiters: Summer 2012
- CREATE Program: Fall 2011

Okanagan College (Penticton Campus) – Human Kinetics program:

- Mt. Everest Research Expedition (Translation to the Public): Spring 2012

Teaching Experience

Lecturer, University of British Columbia:

Undergraduate 300 level: Exercise Physiology II (Fall 2018)
Undergraduate 100 level: Introductory Biomechanics (Winter 2019); Human Anatomy and Applied Physiology I and II (Fall 2017/ Winter 2018)
Graduate 500 level: Cerebrovascular Physiology (Fall 2016)

Most recent Lecturer evaluation score: 4.31/5.00 – 185 students enrolled in class

Teaching Assistant, University of British Columbia:

Exercise Physiology II – HMKN 310 (Winter 2012, Fall 2012, Fall 2014)
Laboratory Techniques in Exercise Science – HMKN 312 (Winter 2010, Fall 2011, Winter 2013, Winter 2014, Winter 2015)
Anatomy and Physiology I – HMKN 190 (Fall 2013)

Anatomy and Physiology II – BIOL 133 (Winter 2011)
Anatomy and Physiology I – BIOL 131 (Fall 2010)
Cardio-Respiratory Disease: Pathology to Prescription - HMKN 410 (Winter 2010)
Introduction to Health and Fitness - HMKN 100 (Fall 2009)

Most recent TA evaluation score: 4.92/5.00 – consistently averaged >4.50/5.00 across all courses – 20 students enrolled in each laboratory session

Research Experience

Post-Doctoral Fellow, University of British Columbia:
Sport Concussion Research Lab – 2015-Current

Research Assistant, University of British Columbia:
Centre for Heart, Lung and Vascular Health – 2010-2015

Lab Coordinator, University of British Columbia:
Exercise Physiology II – HMKN 310 (Fall 2012)

Research Skills

Assessment of major factors that affect cerebral blood flow:

Assessment of cerebrovascular function using transcranial Doppler ultrasound (middle, anterior and posterior cerebral artery velocities)

Assessment of cerebral pressure-flow response using power spectrum and transfer function analysis during orthostatic challenges (Induced oscillations in blood pressure and lower body negative pressure)

Assessment of neurovascular coupling within the anterior and posterior regions of the brain during visual tasks and cerebrovascular reactivity via rebreathing.

Examining signal processing techniques on the assessment of cerebrovascular functioning.

Experience with clinical populations:

Performed studies on survivors of intimate partner violence (University of British Columbia)

Performed studies with elite football, rugby soccer and hockey players examining sports-related concussion on cerebral blood flow, neurovascular coupling, cerebral autoregulation, executive function, and balance assessments (University of British Columbia) and on cerebral autoregulation metrics in professional boxers (University of Glamorgan - Wales)

Performed studies with heart transplant recipients (University of Alberta) on cerebral blood flow assessment.

Performed cerebral blood flow studies with Duke University on breast cancer and brain cancer patients.

Performed studies with High Altitude Sherpa at the Ev-K2-CNR Pyramid Laboratory near the base of Mt. Everest (University of British Columbia).

Performed cerebral blood flow studies on firefighters (University of Saskatchewan).

Other research skills and techniques:

Trained in phlebotomy to perform venous blood draws and assessments of blood based biomarkers (Tau protein, S100B and neurofilament light).

Executive function assessments via complexity of movement tasks and response inhibition.

Monitoring concussion symptomology and recovery via SCAT3/5 assessments

Performing balance perturbations and centre of pressure assessments for postural sway and anticipatory postural adjustments.

Measurements of intraocular pressure (to index alterations in intracranial pressure) and convergence measurements for vision acuity.