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MESSAGE FROM DR. MACDONALD

MACSTROKE CANADA

DR. KING’S LAB

RECENT PUBLICATIONS

ALUMNI: DR. DUNFORD
CURRENT VDL MEMBERS

STAFF

Todd Prior
Lab Manager

Dam Nguyen
Computer Specialist

GRADUATE STUDENTS

Jem Cheng
Ph.D. Candidate

Joshua Cherubini
Ph.D. Student

Mason Kadem
Ph.D. Student

Sydney Valentino
Ph.D. Candidate

Jennifer Williams
Ph.D. Candidate

RESEARCH ASSISTANTS

Calvin Armstrong
Danielle Joshi
Christina Pizzola
Emily van Berkel
Shantal Stade
Krisiga Krishnarajah

UNDERGRADUATE STUDENTS

Manahil Iftikhar
Thesis Student

Keira Mattook
Thesis Student

Jenna Stone
Thesis Student

Amna Zia
Thesis Student

Taylor Aldor
Placement Student

Jasleen Gill
Placement Student

Nelani
Placement Student

Arya Raha
Placement Student

Neha Saroya
Placement Student

Gurleen Bagri
Volunteer

Claudia Yong
Thesis Student (Walsh Lab)

Alicia Au
3H06 Student
MESSAGE FROM OUR PRINCIPAL INVESTIGATOR: DR. MACDONALD

Welcome to the spring/summer 2022 edition of the Vascular Dynamics Lab newsletter.

It is amazing to reflect that just one year ago we were marking 18 months of working remotely by preparing our return to in-person research application. Fast forward one year and while the pandemic challenges continue, we seem to have found a new rhythm to our work. A few years ago, Prof. Doug Seals presented in our Departmental Research Seminar and talked about how running a research program is like running a small business with the PI acting simultaneously as the CEO, head of HR, Chief Financial Officer and sometimes the front desk reception. That description really resonated with me and while the business of running the VDL is incredibly challenging, it certainly means that there is never a dull day.

In this edition of the VDL newsletter, you will see that we have a vibrant and diverse talent pipeline and that a key area of focus is on building opportunities for everyone to have a role in running the lab. In our scaffolded mentorship and supervision model, all trainees have opportunities to contribute to the research we are conducting and to the development and growth of the team. The creation, refinement and advancement of our lab EDI plan has had tangible positive impacts on the research we are doing and the ways in which we are doing it. Many applicants to the lab remark on our EDI plan and trainees often reflect on the inclusive environment. Thanks to everyone who has made that possible.

I hope that your work and studies are progressing and that in this newsletter you see some opportunities for collaboration and connection.

Warm regards,

Maureen
PROJECT UPDATE

Stroke Rehabilitation Research Team: MacStroke Canada

By: Kevin Moncion, Elise Wiley, Kenny Noguchi, Eric Huynh, and Dr. Ada Tang

The MacStroke Canada research team has kept busy through the start of 2022!

Dual PT-Ph.D. student Kevin Moncion recently led an international and interdisciplinary collaborative paper outlining clinical considerations for exercise after stroke following the COVID-19 pandemic. He has since presented this work to the BC Stroke Network and to the Florey Institute of Neuroscience and Mental Health based in Melbourne Australia.

Ph.D. student Kenny Noguchi is working with the McMaster Institute for Research on Aging are hard at work planning a new MIRA Trainee Grant Writing Workshop, a 6-month initiative aiming to improve graduate student and post-doctoral fellow confidence in grant writing skills.

Ph.D. student Elise Wiley is launching a randomized trial of telerehabilitation to promote recovery after stroke with stroke rehabilitation sites across Canada from Vancouver to Halifax, and MSc student Eric Huynh is wrapping up his coursework and starting a systematic review to examine the effects of exercise on cardiovascular health in post-menopausal women.

Lastly, the group was excited to participate in the Canadian Women’s Heart Health Centre #WearRedCanada virtual event on February 13, 2022, to raise awareness for women’s heart health and to support women and families affected by heart disease.

MacStroke Canada would like to thank the Vascular Dynamics Lab for their collaboration and continued support in our research, and are excited to continue moving forward with our studies in the upcoming months.

Follow @MacstrokeCan on Twitter, Instagram and Facebook to stay up to date with our work!
In my thesis, I examined the effect of one night of acute partial sleep deprivation (PSD) on endothelial cell viability during an oxidative stress challenge, and whether cell viability relates to endothelial function in humans. Interestingly, we found that one night of acute PSD decreased endothelial cell viability, but only in the absence of oxidative stress. And cell viability did not relate to endothelial function under normal sleep conditions. These findings indicate that acute PSD negatively impacts endothelial cell health, which may have implications for public health, owing to the high prevalence of SD.

Coming from the Department of Biochemistry, I had the wonderful opportunity to do an undergraduate thesis at VDL, which allowed me to gain exposure to both in vitro and in vivo techniques in vascular research. I was also able to expand my understanding of sleep deprivation as it relates to endothelial function, and cardiovascular outcomes, from both a biochemical and physiological lens. This experience was invaluable to my growth as a researcher and allowed me to learn from different perspectives through lab meetings, journal clubs, and presentations. Most importantly, I am beyond grateful for, and would like to thank everyone for creating a supportive and welcoming environment at the VDL!
UNDERGRADUATE STUDENT THESIS PRESENTATION
KEIRA MATTOOK

During my thesis, I had the opportunity to work with Ph.D. candidate, Jem Cheng, on the HEATEX study. My research question focused on investigating the effects of 8 weeks of lower limb heating compared to a control condition on central and peripheral arterial stiffness in recreationally active healthy, young males and females. We found that chronic lower limb heating does not improve arterial stiffness when compared to a control group. Greater increases in core body temperature, sample size and study duration may be required to induce the structural vascular alterations necessary to change arterial stiffness. We are excited to complete the last wave of the HEATEX study over the summer and analyze all remaining data.

No significant group or time differences in central or peripheral PWV

My experience in the VDL has allowed me to expand upon my knowledge of factors that impact cardiovascular health and collaborate with a supportive and kind team. More specifically, through my thesis, I learned how localized heating interventions can acutely and chronically impact central and peripheral arterial stiffness. I am very grateful for the opportunity to be a part of the VDL and I am excited to use the skills I improved upon throughout my thesis in the future! A special thank you to my amazing graduate student supervisor, Jem, as well as to Dr. MacDonald for providing this wonderful opportunity and to all the members of the VDL for their continuous support and feedback.
Being a part of the VDL for the past year and a half has been the highlight of my undergraduate career. The lab has provided me an avenue to explore the intersection between women’s health and cardiovascular physiology, which I have a great passion for. I have also developed numerous invaluable academic and personal skills through being a member of this lab. I am so grateful to work with this amazing team of scientists, and I look forward to continuing to work in the VDL in the summer as a research assistant, and in the Fall as a master’s student.

UNDERGRADUATE STUDENT THESIS PRESENTATION

JENNA STONE

This past year I have been involved in a study investigating Cardiovascular Response in Athletes completing Stair climbing based High intensity interval training. This study aimed to investigate the effects of 4-weeks of at home stair climbing exercise on vascular outcomes including arterial stiffness and endothelial function in McMaster Varsity Athletes. For my thesis project we were able to collect data on six participants and perform preliminary analysis on these data. So far, it does not seem that stair climbing based high intensity interval training is a strong enough stimulus to elicit vascular changes in this highly trained population of athletes, but we look forward to seeing if this trend remains when a larger sample size is collected.
For my thesis, I investigated the impact of a 4-week stair climbing-based high intensity interval training protocol (STAIR) on cardiorespiratory fitness (CRF) in varsity-student athletes. We were able to collect data on five participants (1M/4F) from McMaster University’s soccer and rugby teams. After visually inspecting the preliminary data, we found an increase in VO2peak after 4 weeks in both the STAIR and CONTROL groups. Based on this, we concluded that STAIR did not improve CRF in varsity student-athletes. With that being said, the STAIR participants were able to fully adhere to the training intervention, exhibited high levels of self-efficacy, and were able to attain 88-99% of their peak heart rate during the STAIR sessions. The study is ongoing so hopefully we will be able to gather a larger, sex-balanced sample size in the future!

By being part of the VDL this past year, I have learned a lot about the dynamics of research in kinesiology, effective science communication, as well as expanded my knowledge on the use of time-efficient HIIT interventions to improve fitness. This experience also made me realize that I enjoy knowledge translation and science communication, and as a result, I am now involved in projects beyond the thesis where I am further refining these skills. I would like to thank my graduate student supervisor, Sydney Valentino, for being a phenomenal mentor, as well as all members of the VDL for their continuous support throughout his journey!
Vascular Dynamics Lab
Graduate Student Timeline

ADRIENNE VISSOCHI
2002-2004

JENNIFER CROZIER
2003-2005

AUDRA MARTIN
2009-2012

JULIA TOTOSY DE ZJAN
2010-2014

MARTHA FAULKNER
2002-2006

LINDSAY GURR
2006-2007

LISA COTIE
2009-2013

CHERI McGOWAN
2001-2005

JENNIFER BARTHOLOMEW
2005-2006

KATHERINE CURRIE
2008-2012

GREGORY McGILL
2010-2013

ANDREW LEVY
2003-2006

MARK RAKOBOWCHUK
2002-2004 (Masters)
2004-2009

DAVE MURRAY
2007-2013

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With the return to back to human research testing this year, our lab team has been in full swing finishing up studies that begun pre-pandemic and continuing data collection for some ongoing trials. A big thank you to PhD candidate Jem, our Research Assistants Emily, Jenna, and Shantal, thesis student Claudia, placement students Taylor and Alicia, and volunteer Fajjar for making these projects a reality!

**HER Study:** This study examines the influence of hormonal contraceptives on measures of vascular function and structure, both in humans and in a cell culture model. This project also has recently involved a collaboration with Dr. Jeremy Walsh, a new Faculty at McMaster, and his thesis student Claudia as they examine the effects of hormonal contraceptives on mood and BDNF concentrations. We’re nearly finished data collection on this project, set to finish in the Spring, and are deep into analyzing data. Looking forward to sharing our results of this comprehensive study later in 2022.

**QSIT Study:** As part of a collaboration with the Human Performance Lab run by Dr. Marty Gibala, we are working with his Ph.D. candidate Billy Bostad to investigate sex-differences in the cardiovascular response to sprint interval training, considering hormonal cycle phase in the testing protocol. The project is ongoing, with approximately 1/3 of testing finishing later this month. We look forward to sharing the results from this study in early 2023.
It’s absolutely wild to think that we are coming up on 9 months of running the HEATEX study. What an almost-year it’s been! And as I write this article, the 60th and final participant of this massive effort is being locked in. The team is geared up and ready to go for one last rodeo (wave 4 of 4!) and in 2 months’ time, it will be time for a well-deserved celebration.

Now that we are three waves in and making progress on the analysis side of things as well, it’s exciting to see how the story is coming together. We don’t want to spoil anything just yet but we’re looking forward to sharing our results in the next newsletter and at upcoming conferences. In the meantime, enjoy these HEATEX memories from wave 3!

For those of you who missed the last newsletter and are just tuning in, the HEATEX study is an 8-week interventional study that seeks to determine the vascular function changes in response to heat therapy and exercise training. Participants are randomized by sex and fitness level into either the (1) control, (2) heat therapy, (3) exercise training, or (4) combined training groups to see which may be the most effective at improving our myriad of outcome measures.
It’s not every day that the Vascular Dynamics Laboratory can give back to the Physical Activity Centre for Excellence (PACE). At the end of March 2022, the VDL donated 10 heart rate monitors to the PACE. By speaking to a PACE staff, members, PACE clients can get set up with a heart monitor to test out during their exercise sessions. There are many different activities and heart rate monitors on the market, sometimes it is hard to know if they are worth all the hype. This is just one example of how the PACE and the Department of Kinesiology work together.

As of January 2022, The PACE has re-opened with new COVID mitigation strategies in place. It has been amazing to have community members back on campus. There are many friends that have reconnected and a new cohort of undergraduate students involved with volunteering at the PACE. Speaking for many, the community was dearly missed.

The VDL is happy to contribute to the amazing services that are offered at the PACE. By using the Polar™ watches, heart rate monitoring is just one way we can gauge exercise intensity. Light, moderate, and heavy heart rate “zones” can be calculated to create an individualized target for the desired exercise intensity. But heart rate zones are not everything! Sometimes there is a mismatch between the heart rate you see on your watch and how hard you feel you are working during a particular exercise.

Heart rate can be affected by factors that alter the way the heart muscle communicates with the rest of the body. Slight increases in our “typical” heart rate may be noticeable if we are dehydrated, had a bad sleep, and haven’t eaten in a while. More drastic changes in our heart rate might happen with new medications, especially those that intentionally alter heart rate. Also, a spinal cord injury or disease may dampen the highs and lows of the heart rate due to communication blocks between the heart and the spinal cord.

Heart rate monitoring can be complemented with the use of the ratings of perceived exertion (RPE) scale, especially for individuals with altered heart rate responses to exercise. The 0-10 RPE scale was created in the 1970s but the body signals, such as heart rate, associated with each number on the scale are disputed. The physical sensations that are associated with the RPE scale are not as clear for individuals with a spinal cord injury. If you are feeling confused, you’re not the only one! These are the questions Sydney is asking for her doctoral research in the VDL. There is always more to learn as Sydney uncovers the quirks of the “heart rate and RPE” story.

Aside from the research, heart rate and RPE are both useful ways to check in on how hard you are working during exercise. These scales put a number to “how we are feeling” and “what are heart is doing” to keep track of our own exercise. It is fun to track your exercise when you are trying to take your training to the next level. The VDL is happy to contribute to the exercise experience with the heart rate monitors now in the hands of the PACE staff.

If you’re interested in Sydney’s research, reach out directly over email (valens@mcmaster.ca).
GRAD STUDENT STUDY PROGRESS

The SLEEP Study
By: Joshua Cherubini

The data collection for the SLEEP study is now complete! It has been an interesting and rewarding experience that has included a number of participants who readily gave their time to visit the lab on several occasions. Participants attended data collection sessions for a variety of assessments related to endothelial function and cardiovascular physiology, after both normal sleep, and after sleep deprivation interventions. We want to thank all participants for their involvement in the project. Furthermore, the project has invited several opportunities to collaborate with other laboratories at McMaster. We look forward to completing data analysis with Dr. Jeremy Walsh’s Brain Exercise Enhancement Research Lab and Dr. Gianni Parise’s Molecular Exercise Physiology and Muscle Aging Lab. As always, a special thanks to Dr. Maureen MacDonald and the entire Vascular Dynamics Laboratory. We are excited to complete our analyses and share our results with the research community!
My area of research interest involves the relationship between oral health and cardiovascular health. In my thesis, we are using a mouth rinse to analyze inflammatory biomarkers in the saliva to get an objective measure of gingivitis. For the vascular measures, we are using indicators of artery stiffness and endothelial function. In our preliminary findings, we saw that there was no significant relationship between oral neutrophil count in participants with low to mild gingivitis and vascular function. However, we did see that levels of exercise were able to strongly predict artery stiffness. This may suggest that physical activity may have some protective role on the vascular system against low to mild levels of gingival inflammation. Further research needs to control for physical activity levels as well as physical activity type.

We hope to expand the knowledge and understanding on how oral health effects the whole body as well as the role dentists may have in the patient's overall health.

I had the opportunity to complete a fourth-year thesis project in Dr. King’s lab, working alongside the VDL. The purpose of my pilot study was to determine if oral inflammatory load would affect our vascular response to acute mental stress. We discovered that despite the significant increase in perceived stress levels, MAP, and HR during the stress task, subjective participant characteristics such as neutrophil count, physical activity level and age were not able to predict the change in FMD and the change in PWV.

Given the cohort of seven participants, the response to stress in the face of already present inflammation and cardiovascular disease risk is still unclear.

This is cause for concern considering most individuals consistently endure stressful situations. Thus, the effect of stress on endothelial function among those with varying basal inflammatory loads must be further investigated.
I could not be happier with my experience in the VDL this semester. As a 3RP3 student, I worked with my supervisor, Jennifer Williams, on her two projects this semester. The ECP study which is looking at emergency contraceptive pills’ acute effects in the vasculature was such an amazing project to be a part of because of the strong excitement from the McMaster community. I was mostly working on the ECP study and helped with some of the participant sessions of the HER study. Both experiences gave me the opportunity to learn important lab skills such as finding pulse wave velocity using a tonometer and supporting data analysis. By gaining a stronger understanding of female hormones, I found myself taking an interest in polycystic ovary syndrome, specifically in exercise interventions to combat cardiovascular disease risk and autonomic dysfunction in this population. I proceeded to write about this topic in my final paper for the 3RP3 course as well as present on an article in this area for my 3-Minute Thesis. I am thankful for my experience in the VDL this semester as it has made me think outside the box and gave me a strong appreciation for the current research at McMaster!
I had an amazing semester working under the supervision of Jem Cheng on the HEATEX study and with the rest of the VDL team! I had so much fun coming into the lab and helping out with training and testing sessions. I gained valuable skills such as tonometry, stacking, and running lab specific tests. Being in the VDL environment has also helped me develop numerous soft skills, as well as develop lots of friendships (shoutout to the VDL girls <3), that I will always carry with me.

As reflected in both my problem statement and Three-Minute Thesis (3MT) presentations, my research interests this semester were focussed on the use of chronic heating and exercise therapies to improve vascular function in young obese individuals. This specific population was very interesting to me because of the negative effects that chronic inflammation due to obesity can have on vascular function, even in younger populations. My 3MT was inspired by a paper by Ratajczak, M. et al (2019) that compared the effects of endurance training versus combined endurance-strength training on endothelial function in middle aged obese women. However, my problem statement proposed an alternative to endurance training to help improve vascular function that takes into account the sedentary behaviour typically seen in this population: heat therapy. Overall, this experience taught me a lot about drawing information from literature and being able to present meaningful conclusions to others.
I have immensely enjoyed my time in the VDL. I am so grateful for this wonderful team and for all the opportunities that this 3RP3 position has brought me. During my placement, I worked with my supervisor, Jem Cheng, on her HEATEX study, which looks at the effects of heat therapy and exercise training on arterial function. I learned a lot about cardiovascular protocols and was able to expand my skill set! Her study inspired me to delve into the literature to learn more about heat therapy.

My 3MT presentation was on a study which concluded that combined resistance and aerobic training can reduce arterial stiffness. Expanding on that, my research proposal is exploring the combined effects of resistance and chronic heat exposure on arterial stiffness, as there were many parallels between aerobic training and chronic heat exposure. This experience wouldn’t have been possible without the support and guidance of all the amazing individuals of the VDL and I hope to continue to be involved in research as much as I can.
PLACEMENT STUDENT 3-MINUTE THESIS PRESENTATION
ARYA RAHA

My semester in the VDL has been an eye-opening journey. Throughout my 3RP3, I assisted my supervisor, Sydney Valentino in editing ethics protocols along with creating recruitment forms and data collection questionnaires for the Perceptions of Exercise Prescriptions study. These opportunities has provided me with detailed insight on the processes required for study development and ethics approval in populations of individuals with spinal cord injuries. Additionally, I had the opportunity to observe and implement VO2 max exercise testing during CRASH study visits.

This semester I was interested in exploring the effects that activity-based-restorative therapies have on muscle strength, compared to traditional physical activity guidelines in individuals with spinal cord injuries. I chose to write my final paper on this topic while identifying potential interventions measures such as robotic-assisted locomotor training, which is conveniently located at McMasters’ PACE center. I also presented my 3MT on a study that used robotic-locomotor training as a means to increase lower extremity strength in individuals with a spinal cord injuries. I am very thankful for the opportunity to learn and grow with the support of the excellent research team within the VDL! I am looking forward to staying involved with the VDL for the coming months!

Retraining the mind-muscle connection in individuals with Spinal Cord Injuries using Robotic-Assisted Locomotor Training

(Mirbagheri et al., 2011)
PLACEMENT STUDENT 3-MINUTE THESIS PRESENTATION
NEHA SAROYA

Conducting my practicum with the VDL has been the highlight of my academic career thus far in terms of the skills I have gained and the knowledge I have been exposed to. I had the opportunity to work closely with my supervisor, Josh Cherubini, to learn more about the impacts of sleep deprivation on endothelial function. I gained tangible skills, such as measuring pulse-wave velocity and heart-rate variability, along with a deeper ability to understand scientific literature.

My final research proposal focused on the sex differences in how effective biofeedback therapy is at improving heart-rate variability. I also presented my 3MT on how chronic pain can influence heart-rate variability and psychological inflexibility. My amazing experience in the VDL was also largely due to the supportive lab members who are always willing to help you learn and grow!
In the beginning of June, I had the opportunity to travel to Liverpool John Moores University in the United Kingdom for a cardiovascular ultrasound course. The course was an incredibly rewarding experience. We heard from leading experts including Prof. Helen Jones and Prof. Ellen Dawson who described and demonstrated fundamental principles of vascular sonography, and Prof. Dick Thijssen, who delivered a riveting guest lecture on flow-mediated dilation. I’m very grateful for the opportunity to travel abroad, learn, and meet so many wonderful students and researchers from around the world.

The fun extended outside of the labs, too, as Jeremy Cohen (from the University of Waterloo) and myself chatted with other ultrasound course attendees, toured UK pubs, enjoyed some fish and chips, and even got a picture with The Beatles! Many thanks to all the professors, instructors, and post-doctoral fellows at LJMU for sharing their knowledge, time, and skill, and for making the trip an unforgettable learning experience!
“Examination of Sex-Specific Participant Inclusion in Exercise Physiology Endothelial Function Research: A Systematic Review”

We’re excited to share our recent publication in Frontiers in Sports and Active Living on sex-specific inclusion in exercise physiology endothelial function research. As part of a collaborative systematic review with Queen’s University’s PhD candidate Lindsay Lew and supervisor Dr. Kyra Pyke, we reviewed ~500 studies with ~25,000 participants, over the last 26 years of FMD research. A male-bias was identified with ~64% of participants were male, with 1/3 of studies in male-only versus 10% in female-only. These proportions stayed largely the same in the last 20 years! We also found that male-only studies were less likely to report sex in the title or abstract, and less likely to justify the exclusion on the basis of sex, compared to female-only studies. We also aimed in this review to explore the justifications for sex exclusion, which largely fit into the following four themes: sex-specific rationale/gap in the literature, exclusion of females based on hormonal cycles or sex-differences, maintaining congruence with the male norm, and challenges with recruitment, retention, and resources. As the first study to analyze sex-based inclusion/exclusion in vascular exercise physiology research, our hope is that by identifying gaps and perceived barriers, we can work towards equal sex participation, increasing female representation.

Want to check out the study? See here!

- Jennifer Williams

https://doi.org/10.3389/fspor.2022.860356

“Roles of Hormonal Replacement Therapy and Menopause on Osteoarthritis and Cardiovascular Disease Outcomes: A Narrative Review”

Hot off the press from Frontiers in Rehabilitation Sciences, a group of researchers led by Yixue (Michelle) Mei and supervisor Dr. Baraa Al-Khazraji, put together this narrative review examining the intersection of two prevalent conditions: osteoarthritis (OA) and cardiovascular disease (CVD). Recognizing the overlap in risk factors and prevalence of these two conditions, this review discussed the intersections of conditions with sex and age, recognizing the elevated prevalence of both conditions in older women after the menopause transition. This review also goes into depth into the use of hormone therapy and its impacts on OA and CVD. As a timely consolidation of the literature, this review also presents critical gaps in our understanding of how OA, CVD, and hormone therapy interact in postmenopausal women.

Want to check out the study? See here!

- Jennifer Williams

“The effects of perceptually regulated exercise training on cardiorespiratory fitness and peak power output in adults with spinal cord injury: a systematic review and meta-analysis”

This publication looks to analyze and summarize exercise intensity prescribed using subjective measures of intensity that can lead to improvements in fitness in adults with a spinal cord injury. **Want to check out the study? See here!**


"What are the effects of acute exercise and exercise training on cerebrovascular hemodynamics following stroke? A systematic review and meta-analysis"

This systematic review and meta-analysis 1) examined the effects of acute exercise and exercise training on cerebrovascular hemodynamic variables reported in the stroke exercise literature; and 2) synthesized the peak middle cerebral artery blood velocity (MCAv) achieved during an acute bout of moderate-intensity exercise in individuals post-stroke. **Want to check out the study? See here!**


"Cardiovascular responses to high-intensity stair climbing in individuals with coronary artery disease"

Results are in! Subjective measures of exercise training lead to improvements in cardiorespiratory fitness and peak power output in individuals with spinal cord injury. We are excited to present these findings from our systematic review and meta-analysis in collaboration with Professor Vicky Goosey-Tolfrey and Dr. Michael Hutchinson at Loughborough University. We believe this review is a launching point to enhance the understanding of the physiological benefits of using subjective methods of exercise prescription. We hope to further facilitate the use of RPE by end-users such as clinicians and adults with SCI in exercise rehabilitation. This research article is the first and most comprehensive systematic review on this topic developed in accordance with international requirements for systematic reviews informing evidence-based clinical practice guidelines. **Want to check out the video abstract? See here!** **Want to check out the study? See here!**

ALUMNI FEATURE

DR. EMILY DUNFORD

Working with Maureen and the VDL has been the highlight of my research career. September 2021 was the end of my postdoc, 4 years learning about arteries, blood flow, FMDs, the CLSA, how to write grants, how not to write grants, and everything vascular in between. Maureen cultivates a family-like research environment, where there is always someone to turn to for support or to talk through your latest idea. My time in the VDL provided me with the clinical research opportunity I was waiting for. While working alongside cardiac rehabilitation patients, I was able to conduct a stair climbing intervention. We were fortunate to have enthusiastic and dedicated participants, who submitted freely to the blood draws, skeletal muscle biopsies and actually seemed to enjoy the stair climbing program. Significant collaboration was required for this project, both internally (Stu Phillips, Marty Gibala, Chris McGlory, Changhyun Lim, Sara Oikawa, Sydney Valentino) and externally with the physicians and therapy staff at the Cardiac Health and Rehabilitation Centre in Hamilton General Hospital. It was a ton of fun to be involved with!

While research is my passion, I knew that academia and running my own research lab was not for me. I had expressed interest in medical writing, and working from home, as commuting from Bradford to Hamilton became a bit of a challenge, especially when my son Cole arrived. The pandemic actually opened up a number of home-based medical writing opportunities, and I am now working (from home) as a medical writer for FUSE Health Inc., an oncology-focused medical communications agency based in Toronto. The work we are doing has an immediate impact on patients with varying stages and forms of cancer, and I am enjoying being a part of this new team.
As a research assistant, I oversaw tasks in relation to science communication, data management, and other administrative tasks. Consolidating past grad student data into master sheets, helping out Dam, the lab’s computer specialist, in managing past data, and creating this very newsletter, were some of the many tasks I was given.

Working through these tasks, one important thing I learned was how important science communication is. Although, it might be easy for me to say, as someone with no background in human physiology, that science communication often comes with a lot of barriers. Connecting with everyone is vital and science often comes with a lot of jargon that makes it difficult to do so, especially with individuals outside of the world of STEM. Working on the task of consolidating past student data, I often referred to Dr. MacDonald and some grad students for support and this is where Dr. MacDonald and I recognized the importance of incorporating a codebook that simply (somewhat) defines what each variable means. I hope this will be helpful in the future!

I am thankful for this very unique experience and for every member of the VDL. I will forever carry these lessons with me.
Jennifer Williams has received a Gender in Research Fellowship (2022) from ZonMw, where she will be going to a course in the Netherlands in August 2022 dedicated to learning from experts in gender in research science for a week. This program is catered to PhD students and post-doctoral researchers and focuses on understanding how to examine gender in research and its implications for basic science and healthcare research. Jennifer has also received the Ontario Women’s Health Scholars Award for 2022-2023 and a Silver poster award at the 2022 MIRA Knowledge Exchange.

Congratulations to former VDL undergraduate student Jenna Stone who will be completing her Master’s degree in the Department of Kinesiology under the supervision of Dr. Maureen MacDonald and who has been awarded an Ontario Graduate Scholarship.

Congratulations to VDL research assistant Christina Pizzola for her acceptance into the University of Ottawa medical school.

Congratulations to VDL research assistant Dani Joshi for her acceptance into the Accelerated Nursing Program at McMaster University.
Congratulations to former VDL undergraduate student Manahil Iftikhar who will be completing her Master’s in eHealth at McMaster University.

Congratulations to former VDL undergraduate student Keira Mattook who has accepted an offer from the University of Toronto for a Masters in Occupational Therapy.

Congratulations to former VDL undergraduate student Alia Dieleman who has accepted an offer from Western University of Toronto for a Masters in Physiotherapy.

Congratulations to MacStroke Canada PhD Candidate Kevin Moncion on receiving a Silver poster award at the 2022 MIRA Knowledge Exchange.
This past year, we launched our LinkedIn page!

We hope to use this platform to showcase published articles from the VDL and from our collaborators, as well as, updates from students in the VDL.

Through this platform, we look to connect with more people and exhibit our research and contributions to the development and refinement of methods of measurement of arterial compliance and endothelial function in humans and determining the impact on arterial structure and function.

Our research is ever-growing and brings important findings and insights into various populations.
CALL FOR VDL ALUMNI UPDATES!

We would love to hear from VDL alumni!

Please inform us if you have any news that you would like to share with us so that we can include it in future VDL newsletters to update other readers. We are looking forward to hearing from and learning about all the exciting endeavours of VDL alumni.

Please contact vdl@mcmaster.ca with any updates, comments, or inquiries.

THANK YOU FOR READING!