10 Simple Rules for Building an Anti-Racist Lab

The McMaster Science Society recently hosted Dr. Berhe and Dr. Chaudry to discuss their article.

CSEP Recap

We detail the first ever virtual CSEP conference, and PhD candidate Jem Cheng’s award!
Welcome!

As this year comes to a close and we are preparing to send this newsletter out to all of you, I am reflecting on how the sense of time seems to have been altered by the pandemic. In the past, we measured time in our lab by the daily activity of the testing and analysis, weekly by our lab meeting schedule and then term by term by the arrival and departure of our undergrad students for their courses. Longer time scale has typically been marked by the tenure of our graduate student members and punctuated by the celebrations after each of their defenses. While we have tried to maintain so many of these events in our virtual environment, the days seem to blend together, and the weeks fly by. Despite the fact that is has now been 9 months since we have been in the lab, I have been so impressed by everyone’s productivity, collaboration and compassion. All of the lab members have been working hard on their individual and collaborative projects and making extra effort to take care of themselves and others. In this edition of the newsletter we share our recent news and activity and are hopeful that in our next newsletter we will have returned to some version of “normal”. In the meantime, stay well and stay connected!

Dr. Maureen MacDonald
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We are thankful to be able to connect remotely during this time.

Todd Prior
Lab Manager

Dr. Emily Dunford
Postdoctoral Fellow

Dam Nguyen
Computer Specialist

Jem Cheng
PhD Candidate

Jennifer Williams
PhD Candidate

Sydney Valentino
PhD Student

Connor Droog
MSc Student/RA

Joshua Cherubini
MSc Student

Dani Joshi
Thesis Student

Rachael Moorhouse
Thesis Student

Christina Pizzola
Thesis Student

Alia Dieleman
Placement Student

Joshua Turner
Research Assistant
“10 Simple Rules for Building an Anti-Racist Lab” Zoom Event

On November 24, the Faculty of Science, the McMaster Science Society, and the Science Graduate Students Association were honored to host Dr. Asmeret Asefew Berhe (left) from the University of California, Merced, and Dr. Bala Chaudry (right), from the University of Chicago, to discuss their recent article “10 simple rules for building an anti-racist lab” and their antiracist action plan. This event is part of the Faculty of Science and VDL’s ongoing commitment to diversity, equity, inclusion, and anti-racism. The article, recently published in Plos Computational Biology, can be found here. A special thank you to Dr. Berhe and Dr. Chaudry for the important and informative discussion, and to the McMaster Science Society for hosting the event.
2020 MacDonald-Philips Joint Lab Holiday Social

The 2020 MacDonald-Philips Joint Lab Holiday Social was held on December 12 over Zoom. The event was wonderfully hosted by TeamBuilding, and while the annual Holiday Social was a bit different this year, fun and merriment was had by all. The night consisted of holiday-themed trivia and games, in which teams battled it out for year-long bragging. Congratulations to the “Pigs-in-a-Blanket” for their victory, and members of the less fortunate teams can be seen bowing down to the victorious team below. A big thank you to Dr. MacDonald and Dr. Philips for the event.

Happy Holidays from the VDL
An Introduction to Our Thesis Students

Dani Joshi
My name is Dani Joshi and I am a Kinesiology 4RR6 thesis student in the Vascular Dynamics Lab. My graduate student supervisor, Sydney Valentino, and I are working on a project entitled ‘Cardiorespiratory Fitness Responses in Athletes Completing Stair Climbing-Based High Intensity Interval Training’. Specifically, my project will focus on VO₂ max improvements following an unsupervised perceptually-guided stair climbing intervention in athletes. We are currently in the ethics submission phase of our project and hope to start recruitment in the New Year!

Rachel Moorhouse
My name is Rachael Moorhouse and I am a BIOLOGY4C12 student completing my undergraduate thesis in the VDL. The project I am working on is an arm of an ongoing contraceptives study and will be investigating the acute effects of emergency contraceptive use (i.e. “the morning after pill”) on endothelial function. This is a two-pronged study, so we will be researching in both cell and human models. We have just submitted our ethics amendment and hope to begin recruiting in the new year!

Christina Pizzola
My name is Christina Pizzola and I am a Kinesiology 4RR6 thesis student in the Vascular Dynamics Lab. I am working alongside my graduate student supervisor, Jem Cheng, on her Artery function responses to heat therapy and exercise training study (HEATEX). Specifically, my project will focus on the effects of 8 weeks of lower limb heat therapy on central and peripheral arterial stiffness, as well as how acute responses translate to chronic. We are planning to start piloting the study in November/December and start participant recruitment in the new year!
Project Updates

Stroke Rehabilitation Research Team: MacStroke Canada
By: Kevin Moncion, Elise Wiley, Kenny Noguchi and Dr. Ada Tang

Like many other labs across campus, MacStroke Canada research involving human participants has been on hold as a result of the COVID-19 pandemic restrictions. Needless to say, the MacStroke Canada team was busy at work during the summer and fall terms.

Dual degree PT PhD Candidate, Kevin Moncion was busy this summer completing his PhD comprehensive examination, which he passed with distinction in July 2020. Kevin recently presented his comprehensive exam work that examined the association between enrollment delay and the cardiorespiratory fitness trajectories over enrollment duration in long-term cardiac rehabilitation at the virtual Canadian Society for Exercise Physiology 2020 conference. Kevin also transitioned into the physiotherapy component of his degree in Fall 2020 and is currently completing his first unit. He will be spending the majority of the Winter 2021 term working as a student physiotherapist out in the community setting.

Kenny Noguchi and Elise Wiley both defended their Master's theses this past summer, and have both decided to stick around to pursue their PhDs. Kenny also had his work published in Applied Physiology Nutrition and Metabolism this past August. This paper examined the long-term impact of smoking on cardiorespiratory fitness changes during cardiac rehabilitation. Both Kenny and Elise have been working hard at planning their PhD studies, carefully considering the COVID-19 pandemic. The focus of Kenny's PhD work will focus on resistance exercise training in individuals with stroke. Elise will continue to examine sex-and gender-based considerations for exercise post-stroke.

Recently, Dr. Ada Tang, presented a recent project that examined the impact of exercise on promoting cardiovascular health, mobility and function after stroke and won the “Rehabilitation Best Poster Award” at the Joint European Stroke Organization and World Stroke Organization Conference (ESO-WSO 2020).

The MacStroke team is very grateful for the ongoing collaboration with the VDL team.

Follow us on our social media to stay up to date with our work!
Twitter: @MacstrokeCan
Instagram: @macstrokecan
Facebook: @macstrokecan
Our Experience with Writing a Collaborative Review Paper Remotely

Throughout the summer of 2020, the extended VDL group completed an extremely comprehensive collaborative review on the impact of the 24-hour movement spectrum on peripheral vascular and cerebrovascular function in older men and women. Joshua Cherubini, first-year MSc student, and Sydney Valentino, second-year PhD student, recently sat down with me to discuss the challenges and successes of writing a large-scale collaborative review in a remote environment. Jennifer Williams, third-year PhD candidate, who was involved in the inception of the review and leadership of the process with Postdoctoral Fellow Dr. Emily Dunford, described the origins of the review:

Jennifer: The origins of the project were twofold: early in the summertime, I was chatting with some of the graduate students and we were interested in exploring literature around physical activity and sleep in older adults. Specifically, with the upcoming progression of the Canadian 24-hour Movement Guidelines, we were curious about what literature existed in our field on this topic. Around the same time, AJP-Heart had a call for papers looking at physical activity and sedentary behaviour in cardiovascular and cerebrovascular outcomes, and we felt that this call aligned well with our research interests. After reviewing the literature, we also felt there was a need in the review to provide a focus on research growth in the last 10 years, and in integrating sex and gender throughout. While that was the “scientific gap” that we wanted to address, on a personal note, knowing we would be apart this summer we thought it would be important to have a project we could work on together. Having the social aspect of doing research together through frequent contact via Microsoft Teams and progressing towards a goal this summer helped me to feel grounded and connected during this time. I especially enjoyed bringing together so many diverse perspectives; each team member brought their own strengths, interests, and learning goals that Emily and I aimed to cater to during the review process.

I asked first-year MSc student, Joshua Cherubini, what he thought of the experience as an incoming graduate student.

Josh: I felt this provided a great opportunity to learn more about our field, vascular function and remodelling broadly, and to make contributions as a new graduate student entering a new role. A great way to be introduced to the literature in the area, especially in my area of interest (being sleep), in a population I have not looked at before. It was also a great way to work with everyone in the lab that I may not have previously worked with prior to this experience. This was a great way to segway into the school year and beginning of my Master’s and prepare me throughout the summer.
Given your prior experience with reviews, is there anything you preferred about the virtual experience or any takeaways in that respect?

Sydney: At the beginning of the pandemic, I quickly realized how my work schedule was structured around the activities and patterns of my environment. The people I work with are important part of why I love research so it was nice that we had this concrete goal, something to work on together, and that we knew the end goal we were working towards. I really enjoyed both the short- and long-term goal setting and weekly check-ins that were implemented to maintain progress. I enjoyed interacting with people on common tasks and goals that somewhat replicated being in the lab and working together as a unit. The style of the review was also more creative than a systematic review, which was fun for me.

Jennifer then added that both students brought such a unique perspective to the review. “Sydney, with your expertise in systemic reviews and your thorough and critical analysis of the literature, as well your experience with graphic design and visual knowledge translation, and Josh the unique perspective you bring with your sleep research, really added considerably to our team.”

Sydney, having been heavily involved in the development of our figures, did you find it more or less difficult in terms of gathering feedback on the visuals?

Sydney: I enjoyed the online format. In the past, I really enjoyed sitting around a table and discussing ideas for figures in person, but you often don’t have a voice recorder on to go back to those ideas a team member gave you. I found that the written comments and feedback online had to be quite specific to articulate changes in visual aspects of the figures. If you are sitting in a room full of people trying to get your word in, sometimes it can be challenging to share feedback. In an online format, I could tell everyone was putting in the effort to flex their “creative muscles”, and there was lots of diverse feedback from our team. Sometimes there is a balance between the artistic vision and the scientific accuracy so I really enjoyed the iterative process. I am very happy with what our team came up with.

In reflecting on the experience, is there anything you would change?

Sydney: I don’t think I would change anything, but I can reflect on some elements that were new for me. The integration of technology was very important, and I could not have foreseen how important it was to the success of the review. Tech brings challenges of its own, but I thought the integration and use of Microsoft Teams was very beneficial overall. There was also pressure to meet deadlines in a very short time frame from the beginning. We started in June and the call from AJP-Heart was originally scheduled for the end of August. The VDL is a close knit group and I needed to do my part as a team member. It was incredibly motivating but it was challenging when our schedules didn’t align.

Josh: Not many things could have been done differently, and I thought it was great overall. During the initial phase of the review, I would allocate more time to familiarize myself with the literature outside of the area I was responsible for. This may have helped contribute or shed light upon some of the concepts that were discussed. The only thing I would change is allocating more time to read and review more sections.
What is your main takeaway from this?

Josh: There is a lot of literature out there, and many perspectives to explore. Many different interventions related to vascular function clearly exist. My main takeaway related to learning is that there is a substantial amount of research that still needs to be done in this area. I found that in writing the sleep section, it was hard to find research in older adults. I found that theme to be echoed in many other sections. My main social takeaway is that the VDL is a great place to work. This is the first collaborative project in which I had a chance to work with everyone in the extended VDL group, and Jenny did a great job of bringing us all together and we supported each other in a way that brought out the best in one another, in terms of reviewing and providing feedback on each other’s work. Even when asking questions, this experience allowed for so many unique perspectives from the extended VDL group. This highlighted the collaborative and cohesive environment that the VDL truly is.

Sydney: In the past, my favourite thing was when we all working in the lab together, collecting data, or working on our own projects, but still together. This review felt reminiscent of that for me, and it just reconfirms that our group is really supportive and can do great things when we come together. The leadership on this review were thoughtful in playing to each individual’s strength. Each member was asked what and how they would like to contribute, and I think that human-centred design is really important on big projects like this and it made the experience so much more enjoyable. On a more individual level, this review pointed out some gaps in my own knowledge. I enjoyed getting immersed in the core measures of vascular remodeling which is essential to all the research in the VDL.

Thank you to Joshua and Sydney for providing their unique perspectives on this valuable experience for the extended VDL group.

By: Joshua Cherubini, Connor Droog, Sydney Valentino, and Jennifer Williams
Research Practicum 3-Minute Thesis Presentation

Alia Dieleman

When I chose to apply for a 3RP3 position in the VDL lab last February, I could not have expected it would turn out the way that it did. Completing a research practicum course from home didn’t really sound like it would work but thanks to Prof. Cupido, Dr. MacDonald, and my graduate supervisor Jem Cheng, it was still a semester full of new experiences and skill development. In this new, virtual learning environment, I was able to take part in weekly lab meetings, attend Journal Club gatherings, assist in data analysis, complete a research proposal, and present a Three-Minute Thesis (3MT). While all of the tasks I completed in this course were new to me, the 3MT was the most exciting. I chose to base my 3MT on a paper that explored the effects of circadian misalignment on high-sensitivity C-reactive protein (hs-CRP) and blood pressure levels in long-term shift workers. The authors of this paper found that circadian misalignment causes an increase in hs-CPS levels and blood pressure in the shift work population and those increases indicate an increased risk of inflammation, hypertension, and cardiovascular disease in shift workers. I chose to explore this topic because I hope to work in healthcare in the future and many individuals in this workforce work on shift work schedules, so I wanted to explore potential impacts from this schedule.

By: Alia Dieleman
In October, the VDL attended their first virtual conference as a lab group: CSEP’s 2020 annual general meeting. This conference brought together one of the largest groups of students, Faculty, and exercise professionals from across Canada and beyond (over 1,000 attendees!). The conference included key symposia, virtual recorded oral and poster presentations, and several student-oriented events. Highlights included:

- Oral and poster presentations from several VDL members, with a special highlight for Jem Cheng as the winner of the CSEP Graduate Student Award (see more about Jem’s experience below)
- A symposium from McMaster Faculty Dr. Stuart Phillips and Alumni Dr. Michaela Devries-Aboud (U of Waterloo) and Dr. Chris McGlory (Queen’s) on “Nutritional approaches to support exercise-induced musculoskeletal adaptation”
- A symposium on “Strength and Endurance Training: Current Trends 2020” with McMaster Faculty Dr. Martin Gibala and Alumni Dr. Martin MacInnis (U of Calgary)

While we missed the opportunity to connect in-person, the CSEP Student Committee was involved in coordinating activities to encourage students to connect virtually. These events included CSEP Welcome Event, which included an orientation to how to network through the online platform, a successful mentorship event with 12 mentors (including Dr. Maureen MacDonald!) and over 50 student attendees, and a Lunch Symposium highlighting McMaster’s own Dr. Baraa Al-Khazraji. VDL PhD candidate Jennifer Williams was involved in planning several of the events through the Committee and supporting students in preparing their oral and poster presentations virtually, including creating a tutorial: [https://csep2020.csep.ca/abstract-faq](https://csep2020.csep.ca/abstract-faq)

By: Jenifer Williams
Canadian Society for Exercise Physiology Conference 2020 Graduate Student Award

At CSEP 2020, I had the pleasure of presenting research from my PhD on “Region-specific improvements in vascular function in response to acute lower limb heating in young healthy males and females” as a finalist for the CSEP Graduate Student Award (Oral). In this study, we had participants undergo local lower limb hot water immersion, and found it to be effective for improving brachial artery flow-mediated dilation and femoral-foot pulse wave velocity, among other vascular outcomes examined.

Selected as a finalist this year was a truly special experience as I shared the stage with three colleagues that I “grew up with” and have personal connections to as a scientist and researcher: Alex Coates (U of Guelph), Rachel Skow (U of Alberta), and Eric Hedge (U of Waterloo). Though we are tied together by the common thread of cardiovascular physiology, it was amazing to see our diverse interests showcased in the broad range of our research topics. We covered everything from heat therapy and vascular health, to inflammation and cardiac function, to pregnancy and sympathetic activity, to oxygen uptake kinetics and wearable technology. As we each delivered our presentations in a live-streamed session to all attendees, I felt a burst of pride watching my friends present as the master of their respective crafts.

In the end, I’m proud to say I was able to take home the prize for McMaster University as the award winner! It was a team effort, and would not have been possible without the support and contributions of the VDL lab members and close physiology friends and colleagues, who watched me practice the same talk (sometimes multiple times!) so that I could get it just right for the big day.

By: Jem Cheng
In August 2020, I wrote a blog for the Women’s Health Research Cluster – an organization based out of the University of British Columbia, which brings together researchers who focus on women’s health. Leading up to the fall semester, I had been having conversations with researchers about how to consider sex/gender in designing new research studies and in grant applications. After a few conversations, one of the students I had been chatting with said “I wish there was a simple guide for where to start when considering sex/gender in research”. This was the inspiration behind writing the blog entitled: “Sex/Gender Research: Resources for the Early Integrator to the Advanced Champion”.

In this blog, I highlight some history on the growing importance of considering sex/gender in health research, and the work of the Canadian Institutes of Health Research, and specifically the Institute of Gender and Health. Following this background, the blog contains a range of resources, many of which I interact with near daily, including: resources to getting started with sex/gender, training modules, resources for grant applications, key research articles and guideline documents, and how to become a sex/gender champion.

While this was not an exhaustive list of resources, I encouraged readers to continue to contribute to the conversation, sharing their favourite resource(s) on Twitter using the #sexandgender

By: Jennifer Williams

Photo: The link to this infographic, along with several other helpful resources, can be found within the blog post.
“Sleep disorders, such as insomnia, sleep apnea and restless leg syndrome, have acute and chronic negative cardiovascular impacts. Why is so little known about the cellular and molecular mechanism regulating cardiovascular events in sleep disorders? In this podcast Editor-in-Chief Dr. Irving H. Zucker interviews lead author Dr. Maureen MacDonald (McMaster University) and expert Karyn Esser (University of Florida) about an insightful new Review article by Cherubini et al. MacDonald and co-authors became interested in the affect sleep has on endothelial function while conducting their own exercise physiology studies. Reviewing the literature, Cherubini et al. found that most studies do not control for sleep, yet sleep deprivation – whether acute or chronic, partial or total – can have negative effects on endothelial function in humans. The literature also shows similar results in animal and cell culture models. Because clock mechanisms exist in every human cell type, the understanding of links between so-called “clock genes” and disease progression is an emerging field. How does this relate to the development of atherosclerotic plaques, and the potential for exercise as a therapeutic strategy to combat the negative impact of disordered sleep? Listen now.”

The podcast and podcast description can be found [here](#).
Recent Publications


Recent Honorary Lab Members

We’d like to welcome the NEWEST honorary lab member, Cole Francis Harbor! Justin and Emily welcomed their first baby boy on July 21st, 2020. The VDL loves babies and we are so lucky to have our inboxes graced with pictures of sweet Cole, every now and then. We can’t wait to meet him in person!

Congratulations to VDL alumnus Julia Totosy de Zepetnek and her family who welcomed their third child, Ada! We wish Julia and her family all the best in the new year.
Alumni News

Dr. Ninette Shenouda

A long-time Marauder and VDL member (MSc 2011-2013, PhD 2013-2018), my time at McMaster came to an end in Spring 2018, after defending my dissertation on the influence of estrogen and sprint interval exercise on brachial artery endothelial function in healthy adults. Two weeks later I moved to the US to start a postdoc in the Vascular Physiology Lab of Dr. David Edwards at the University of Delaware. Having developed a foundational understanding of peripheral artery function in healthy adults during my PhD, I set out to learn more about central hemodynamics and gain experience working with a clinical population.

During my postdoc I have been studying pulsatile load on the heart, a complex time-varying afterload the heart must overcome to promote forward blood flow. Specifically, I am characterizing pulsatile load and its relations with cerebral artery pulsatility and cognitive function in patients with chronic kidney disease, as they have an increased risk of developing mild cognitive impairment and heart failure. I have also been investigating the influence of sex hormones on pulsatile load, and recently published a retrospective study on the effects of high dietary sodium on low-flow mediated constriction.

My postdoc experience has been wonderful but not without its challenges. It took time to master several new measures of central, cerebral, and cognitive function in a clinical population, but I learned to be patient with myself. I also learned much about grant writing through the necessary but painful process of writing grants, re-writing grants, submitting grants, and resubmitting grants. Through it all, I have had tremendous help and support from my advisor and lab mates.

Life in the US has been an adventure! Living in the First State is much quieter than living in the GTA, but I have grown very fond of it. I do not miss the GTA traffic or long and cold Canadian winters, but I do miss my Tim Hortons, Ketchup and All-Dressed chips, and Caramilk chocolate! Snacks aside, I have really enjoyed meeting and working with trainees, physicians and researchers from all over the Mid-Atlantic region that I would have otherwise never crossed paths with. Getting to explore neighbouring states like Maryland, Pennsylvania, and Washington D.C. has also been a real treat!
Alumni News: A #MacMazingAlumni Story

Congratulations to VDL Alumnus Alison Sigal! Alison recently received the Community Impact Award for her work in providing dental care to those with special needs. The full story can be found [here](#).

**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 all the exciting endeavours of VDL alumni.

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

How many people in this photo can you name? Who are they, and where are they now?

Send your responses into vdl@mcmaster.ca

Good Luck!

Thank you for reading!