

# HONOURS

## Anna Brogan

Supervisors: Dr. Matthew Vierimaa

### Research Focus

Sport specialization is becoming more widespread among youth despite growing evidence surrounding the associated physiological and psychosocial health risks including injury, burnout, and excessive psychological stress. To date, sport specialization has only been studied among able-bodied athletes, while much less is known about the sport specialization experiences of athletes in disability sport. Anna's research is focused on analyzing the gap of sport specialization in parasport in hopes of better understanding the developmental experiences of athletes with a physical disability as they specialize in parasport. This qualitative project utilized a retrospective narrative approach. An online survey was used to collect participants' demographic information, and then semi-structured interviews were conducted on ten elite Canadian parasport athletes to better understand their developmental experiences and sport specialization trajectory. This project aims to help enhance the experiences of athletes with a disability by better understanding their developmental experiences and identifying the unique factors that influence burnout and specialization in disability sport.

### The Researcher



Anna Brogan is currently a fourth-year student at Acadia University from Dartmouth, Nova Scotia. She will graduate in the spring of 2022 with a Bachelor of Honours with Kinesiology. Throughout her time at Acadia University, Anna has been a teaching assistant in exercise physiology and has been involved in many organizations on campus including the S.M.I.L.E. program, the Hannah Miller Memorial Hockey Tournament, Kings Special Olympics program, Acadia Kinesiology Mentorship program, and the Cardiac Rehabilitation Program. Outside of academics and volunteering she enjoys teaching children how to skate and loves to ski or play hockey. Upon graduation, Anna is planning to complete a BSc in nursing science and then a Masters in cardiovascular perfusion.

## Courtney Schnurr

Supervisor: Dr. Chris Shields

### Research Focus

Evolutionary psychologists view risk as a biological necessity; however, the everyday social norm is that risk is to be minimized or avoided. This study looked to understand young adults' perceptions of risk and whether there are differences in the way risky daily/recreational activities are perceived as compared to extreme sports activities. To this end, the study was a combination of two studies where the first study used photo-elicitation to better understand young adults' perceptions of risk by asking them to provide photos that illustrate sport activities and daily/recreational activities that they see as representing different levels of risk. The second study had interrelated research questions that built upon the preliminary study's findings. First, how do young adults react to, and perceive the risk of extreme sports as compared to daily/recreational activities deemed high risk by others? This was examined using photo elicitation procedures. Second, how young adults react to and perceive a person engaged in these behaviours was examined using narrative vignettes. As physical activity levels and neuroticism have been shown to impact responses to stressful or risky situations, the potential moderating effects of these variables were also examined as an exploratory analysis for both research questions in the second study. This study has the potential to contribute to the emerging literature highlighting the paradox of risk that is particularly relevant today.

### The Researcher

Courtney is from a rural community close to Walkerton, Ontario. Perpetually curious, Courtney first pursued research with the supervision of Dr. Chris Shields through an independent study examining the concept of social loafing, and whether it occurs differently based on the gender of the participants in the group. This question and the focus of Courtney's thesis was informed by her work with the Ontario Fire Ranger crew. Courtney currently volunteers to promote health and wellbeing with people on parole in Nova Scotia. Courtney's plans for the future include pursuing a master's program to extend her work with the Correctional Service of Canada.



# HONOURS

## Emmarie Racine Hallin

Supervisor: Dr. Laruen Lattimer

### Research Focus

Emmarie's honours research focused on an innovative dynamic postural control test designed to allow a rigorous comparison between people with and without a history of concussions. The goal was to increase the understanding of the long-term impacts concussions have on postural control and to improve the rehabilitation protocol. Emmarie and Dr. Lattimer created four novel tests with varying degrees of difficulty and stress on different systems affected by concussions such as vision, vestibular, proprioception and balance. Their tests were conducted in a sport specific, controlled environment. Participants were tested in the John MacIntyre Biomechanics Lab. Each test was conducted using force plates that measured the participant's center of pressure when performing each task. The participants center of pressure was measured in forward, backward, and sideways directions. They also measured isometric and dynamic neck strength using a new device called TopSpin360. They compared their novel tests to current clinical concussion testing protocols (BESS and COBALT) and found that their tests clearly and significantly identified greater center of pressure sway between participants that had a history of concussions compared to those who did not. For example, concussed and non-concussed groups included in this study had different average center of pressure on the balance tests performed. These innovative tests will help in the detection and proper management of concussions to safely return athletes to sport.

### The Researcher

Emmarie Racine Hallin is from Saskatoon, Saskatchewan. She originally came to Nova Scotia to play soccer and study! Emmarie is in the Athletic Therapy program and has had the privilege of working with Men's and Women's Soccer, Women's Basketball and Swimming in her senior year. Through the Athletic Therapy program Emmarie met her supervisor, Dr. Lattimer, together they have been accepted into WFATT and NATA for their research as well as APES. Acadia has a lot to offer, and Emmarie made the most of it by getting involved in the Acadia Kinesiology Society, International Ambassador Program, New Student Mentorship Program, SMILE, KinderSkills, Cardiac Rehabilitation program, Exercise is Medicine and Acadia 4U. Emmarie was also a research assistant in the biomechanics lab and teacher's assistant for Care and Prevention. She plans on continuing in academia and her next steps will involve completing her masters in Kinesiology with a focus on concussion research and taking the Athletic Therapy national exam.



# Emmi Meriläinen

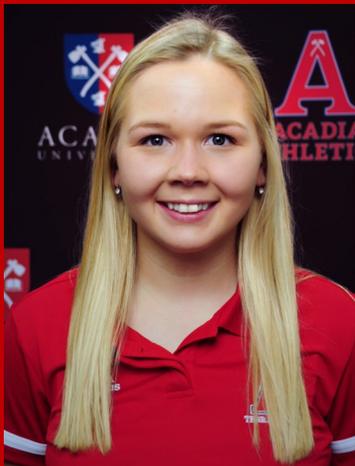
Supervisor: Dr. Colin King

## Research Focus

Previous research has identified concussion stigma, including concussion nondisclosure, as a major issue in sports medicine. Concussion tools and protocols are continuously being updated, but efficacy is impacted by unique concussion perceptions, behaviours, and attitudes. Effective concussion management should involve internal investigations of multiple stakeholder groups to explore complex socioecological networks and problematic areas to help implement fundamental change. Therefore, the purpose of this study was to investigate various concussion attitudes, behaviours, and knowledge within Acadia Athletics. The study was composed of 8 collision sport varsity athletes, 3 collision sport varsity coaches, and 8 student athletic therapists at Acadia University. Participants participated in semi-structured interviews which explored the experiences and perceptions of concussion management.

Factors within the intrapersonal, interpersonal, and cultural networks of athletes were found to negatively affect concussion management protocols. Athletes face various psychological challenges which negatively affect the efficacy of concussion management (ie. baseline testing and concussion education). Psychological challenges included self-imposed pressures, social/academic isolation during concussion management, and external pressures from coaches and teammates. The culture of sport was also found to increase the occurrence of concussion nondisclosure. Participants advocated for increased social, psychological, and academic support during concussion management. It was suggested that management strategies should directly address dangerous perceptions, attitudes, and behaviours. Increased conversation and communication within all stakeholder groups was proposed as a measure to help reinforce positive concussion intentions. These findings could be used by academics and health professionals to make meaningful changes to concussion prevention, assessment, and management protocols.

## The Researcher



Emilie Meriläinen is from Ottawa, Ontario. Emilie has been fortunate enough to conduct her honours thesis under the direct supervision of Dr. Colin King. Her experiences as a student athletic therapist and varsity athlete on the Women's Rugby team allowed her to be a part of concussion management from various perspectives. Emilie saw different perceptions, behaviours, and attitudes towards concussions and wanted to learn more about concussion stigmas in order to implement positive change. Upon graduating, Emilie hope to continue to improve concussion management within various health care settings.

# HONOURS

## Molly Courish

Supervisor: Dr. René Murphy & Dr. Said Mekary

### Research Focus

Microgravity, or weightlessness, is the environment an astronaut would enter during spaceflight. As with any new environment, this can have severe effects on the human body, and is crucial to understand if humans plan to send civilians to space in the near future. The gold standard method for recreating this environment on Earth is known as the face-up head-down tilt (HDT-FU). Our research looks to determine how this environment may have an effect on executive function and cognition, as well as if we can better mimic these effects through a variation of the gold standard method. Our procedure consisted of 28 participants, undergoing two microgravity simulations on two separate days, for 1.5 hours each time. One session would use the gold standard method of microgravity simulation while the other would use the variation created by our lab. Cognition testing was conducted pre and post intervention to determine how executive function may have changed throughout the microgravity simulation. Brain oxygen levels were measured constantly throughout the intervention.

### The Researcher

Molly Courish started at Acadia University in 2018, and is from Halifax, Nova Scotia. Molly's honors research on microgravity's effect on the human body was co-supervised by Dr. Rene Murphy and Dr. Said Mekary. After graduating from Acadia University, Molly plans to pursue a master's degree in Melbourne, Australia.



# HONOURS

## Nikki Matthews

Supervisor: Dr. Roxanne Seaman

### Research Focus

Nikki's research investigates the impact and feasibility of the virtual S.M.I.L.E. program which was implemented from September to December of 2020. There is an abundance of research promoting the significant health benefits associated with physical activity participation, such as aiding in the prevention of chronic health conditions, the improvement of depression and anxiety symptoms, and motor and cognitive development. Unfortunately, before COVID-19, Canadian physical activity participation was dramatically lower than recommended in the typically developing population and even lower for individuals with disabilities. Physical activity participation further plummeted through the COVID-19 pandemic due to the in-person restrictions and program closures. Thus, to combat lack of opportunities, S.M.I.L.E. reinvented the typical program, creating instead "Virtual S.M.I.L.E." in its place. This eight-week program was composed of weekly at-home activity sheets, as well as three 45-minute virtual programming sessions. As there is little research to guide the creation of this type of program, this study was created to assess the program's effectiveness, impact, and feasibility. Within this study, there were 16 participants aged 7-31 years ( $\mu=20.4$ ,  $SD= 6.87$ ) with 15 participants having caregivers to speak on their behalf. To create the clearest and most accurate account of the program as possible, a pre and post-survey, weekly program reflections, caregiver interviews, and leader interviews were implemented and conducted within this mixed-methods case study. Results from this study will show program impact on physical literacy and physical activity participation, shed light on the parental perspective and involvement, and discuss future applications for virtual programming.

### The Researcher



For this project, Nikki has been able to work under both Dr. Emily Bremer and Dr. Roxanne Seaman as her supervisors. She is a 4th-year student graduating with a Bachelor of Kinesiology with Honours. She moved to Wolfville from Bradford, ON, and while she misses home sometimes, she truly loves being here! Since being at Acadia, she has been able to volunteer with awesome programs like Kinderskills, Active for Life, and Walk 'N' Roll, and has spent all four of her years at Acadia volunteering with the S.M.I.L.E. program. She has also worked as a research assistant and a TA for multiple Kine classes. She is currently a Student Director for Saturday morning S.M.I.L.E. and through this program, discovered that she wants to pursue a career in adapted physical activity. Her goal for the future is to continue with research in this field and to hopefully pursue further education.

## Romana Plavsic

Supervisor: Dr. Colin King

### Research Focus

The study focused on exploring concussion knowledge, attitudes, and beliefs among the pediatric population. Past research has suggested concussion knowledge to have a substantial impact on concussion reporting and concussion care. Despite the recent growth in awareness surrounding concussions, concerning gaps in knowledge have been found in groups of physicians, coaches, parents, high school, and collegiate athletes. However, limited studies have examined concussion knowledge in the pediatric population, particularly those below the high-school age range. Investigating concussion knowledge in specific populations can provide the information to create more effective education strategies, thus reducing the burden of concussions among youth athletes. Therefore, the purpose of this study was to explore the knowledge of and attitudes towards concussions in a sample of children between grades 5-9 who were currently involved in organized sport. The study used a cross-sectional observational design, with a 51-item, online questionnaire, consisting of factual and scenario-based questions. The questionnaire was designed using previously validated concussion knowledge surveys, then merged and adapted to fit the target population.

The current findings show that despite having adequate knowledge towards the signs and symptoms of concussions, participants demonstrated a lack of knowledge surrounding proper concussion management protocols. Furthermore, participants displayed attitudes that illustrated a decreased understanding of the return-to-play and return-to-learn protocols. Based on these findings, future concussion education programs that are designed for use with the pediatric population should focus on up-to-date concussion management protocols, return-to-play and return-to-learn protocols, and the importance of social support during concussion recovery.

### The Researcher



Romy is from Vancouver, British Columbia, and feels privileged to conduct her honours thesis under the supervision of Dr. Colin King. Along with the honours program, Romy enjoys learning and applying her concussion knowledge in a practical setting while working with the Acadia Football team as the senior student athletic therapist. Romy is an active member within the School of Kinesiology, working as a teaching assistant, a research assistant, volunteering with programs such as the Special Olympics Swim team, the Acadia Kinesiology Mentorship Program, and MotionballU. She values health promotion and is actively involved in promoting the importance of healthy living on campus as the 4<sup>th</sup> year representative of the Exercise is Medicine committee and as Vice President of the Pre-health Society. In the future, she hopes to use the knowledge and skills taught to her by Dr. King to further concussion research, in efforts to mitigate the burden of traumatic brain injuries among athletes of all ages.

# HONOURS

## Sam MacDougall

Supervisor: Dr. René Murphy

### Research Focus

The importance of microgravity research continues to increase as recreational space exploration becomes a reality. The Head-Down Best-Rest model has been a widely used microgravity simulation for over fifty years, acting as a means of fluid redistribution from the lower to the upper body and posterior head, mimicking that of space, through elevation of the feet above with head while in a supine position. This research aimed to build on this methodology by implementing a novel Head-Down Face-Down bed rest model, in attempt to more accurately simulate the fluid redistribution from the posterior to the anterior aspect of the head, with the potential for better simulation of facial puffiness, symptoms, cardiovascular, and renal alterations observed in space.

### The Researcher

Sam was born in Fort McMurray, Alberta, and grew up throughout the east coast, following her parents' careers in the RCMP. Sam has always had a fascination with sport, science and healthcare, which lead her to begin her journey at Mount Saint Vincent University, playing volleyball and pursuing sciences, before deciding on a path for health care. Sam graduated with her diploma in Primary Care Paramedicine in 2017 and quickly realized her passion for health. Her experiences as a Paramedic have inspired her to acquire a broader knowledge and scope of practice, which led her to her degree in Kinesiology at Acadia in 2019. She is now completing her Honours degree under the supervision of both Dr. Rene Murphy and Dr. Said Mekary, and completing the CSEP-Clinical Exercise Physiology Practicum. Sam hopes to merge her interests in research and clinical practice to open a collaborative holistic health care center, providing accessible health and wellness to clients after figuring out her next steps.



# Stephanie Goodwin

Supervisor: Dr. Matthew Vierimaa

## Research Focus

Dementia is a pressing issue in the healthcare system. The prevalence of the condition is rising quickly, leading to high rates of admissions in long-term care facilities. Those with dementia suffer from a progressive decline in cognition, memory, and physical function. These symptoms make it increasingly difficult for this population to remain physically active. Additionally, individuals with dementia often suffer from mental health concerns, most notably depression. Exercise has been found to attenuate the cognitive and emotional symptoms of depression in individuals with dementia, however little research has been done on the effectiveness of different exercise types in this population. Stephanie's research focuses on the relationship between physical activity and depression in individuals with dementia. The goal was to gain insight on the physical activity habits of individuals with dementia living both in and out of long-term care facilities as well as to investigate their depressive symptoms. Through the use of surveys, data was collected regarding the physical activity habits, severity of cognitive decline, and severity of depressive symptoms of 10 individuals with dementia. The results of this study will compare depressive symptoms as they relate to physical activity habits, exercise type, and cognition, and identify any relationships between these factors.

## The Researcher



Stephanie is a fourth-year Kinesiology student from Argyle, Nova-Scotia. Throughout her time at Acadia, she has been involved in many organizations on campus including the S.M.I.L.E. program, cardiac rehabilitation program, Acadia Dance Collective, and Acadia Dance Community Club. She has also been a TA for multiple Kinesiology courses and a mentor to younger students through the Acadia Kinesiology Peer-Mentorship program. Stephanie has always wanted to pursue a career in rehabilitation and hopes to continue her education with a Masters degree in Occupational Therapy.