Western Undergraduate Research Journal
Health and Natural Sciences
prepare. grow. achieve.

LAUNCH AND INFORMATION SESSION

October 6th, 2014
What is WURJHNS?

- **STUDENT RUN**
  - A journal created and run by Western students for Western undergraduate students and their research

- **PEER REVIEWED**
  - Articles are reviewed by trained students and Faculty members to ensure scientific integrity in all publications

- **OPEN ACCESS**
  - The WURJHNS is available online and open to anyone and can be found at http://ir.lib.uwo.ca/wurjhns/
WURJHNS Goals

- Encourage undergraduate students to pursue research
- Provide opportunities for students to showcase their research endeavours
- Assist students in finding summer placement opportunities
- Assist undergraduate students with the publication process
The Peer Review Process

- Submit your article
- Manuscript submission to Editors-in-Chief
- Associate Editors
- 2 Undergraduate and 1 Faculty Reviewers
- Editorial Board Decision
- Revise and Resubmit
- Accept
- Reject Article
- Publish
Types of Accepted Submissions

- We Accept:
  - Research Article
  - Short Communication
  - Mini-Review Article
  - Students in the Field Report
  - Briefing Notes
  - Perspective Article
  - Letters to the Editor & Letter in Reply
  - Original Course work

The FIRST author of all manuscripts submitted to WURJHNS must be an undergraduate student at Western.

Articles from Health Sciences and Natural Sciences are accepted for publication.
Research Article

- Describe and report the finding from a complete research project

Short Communication

- Research is still in progress, but an opportunity to present preliminary research results
Mini-Review Article

- Investigates and summarizes the current state of literature about a specific issue

Students-in-the-Field Report

- To encourage students to write about any experience they have had in the area of health and natural sciences that bridges the gap between theory and practice
Letters to the Editor

- Provide critical and constructive commentary and/or analysis on a WURJHNS publication, or a health or natural science article published elsewhere

Briefing Note

- Short, concise policy document that informs decision makers about a current healthcare issue
Research Abstracts

• An abstract is a concise summary of a research project

Faculty Profiles

• Interviews conducted by WURJHNS team to ask researchers about their career and what they look for in research assistants
Perspective Article

• Short essays that highlight a personal viewpoint on a recent topic relevant to the health and natural sciences
Attention first & second years!
Do you want to win research opportunities, and make valuable connections?
Join the USCC and discover a whole new dimension of scientific innovation.

Info Session:
When: October 22 @ 5:30pm
Where: Arts & Humanities Building (formerly the Ivey Building), Room 1R40

Register before October 25th!
Scinapse.ca
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Brought to you by:
SCINAPSE
Western Science
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The Western Undergraduate Research Journal: Health and Natural Sciences (WURJHNS) started in 2009. It is a student-run open access, peer- and Faculty-reviewed online journal that publishes a variety of articles, including research articles, mini-review articles, Students in the Field reports, briefing notes, short communications, and Letters to the Editor.

Submission of quality papers for review is strongly encouraged. Interested authors should read the submission guidelines first. All articles judged suitable for consideration will be reviewed in a double blinded process by the WURJHNS editorial review board. The journal accepts articles on a rolling submissions basis and thus will accept submissions at any time throughout the year. For more information, contact wurjhns@uwo.ca.

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WURJ-Western Undergraduate Research Journal of Health and Natural Sciences
Examples of Published Articles

Original Research Article: Effect of Plantar Flexor Muscle Fatigue on Postural Control

Tyler Grey, Daren Redguard, Rebecca Wengele, Peter Wegscheider
School of Kinesiology, The University of Western Ontario, London, Ontario, Canada

Abstract
Objective: Previous studies have demonstrated that various exercises can alter posture stability. Our aim was to examine the effect of plantar flexor fatigue on postural stability in quiet standing.

Methods: Twenty healthy male university students (age: 22.1 ± 1.7 years; height: 1.83 ± 0.06 m; weight: 70.6 ± 5.4 kg) were instructed to stand on a force plate before and after calf fatigue exercise. The sensory systems were controlled by blindfolding subjects and having them stand on a flat firm surface without moving their feet. Fatigue was achieved through repetitive weight-bearing plantar flexion. Postural stability was assessed by using a force plate to calculate Center of Pressure (CoP) displacement.

Results: Plantar flexor fatigue led to significant (p<0.05) postural control impairments in the frontal and sagittal planes compared to non-fatigue (control). Fatigue led to significant changes in CoP: (1.06 ± 0.86 mm and 3.39 ± 2.19 mm for control and fatigue, respectively) and AP (4.48 ± 1.78 mm and 6.89 ± 2.74 mm for control and fatigue, respectively).

Interpretation: Lower limb fatigue led to significant postural control impairments. Interestingly fatigue in the plantar flexors, primary responsible for control in AP directions, led to significant postural sway in the ML directions. Therefore, it is likely that other muscle groups (i.e., hip and knee flexors and extensors) are used to correct posture, as the plantar flexors are not fully functioning capacity. Furthermore, it is possible that a sensory control environment, postural control is significantly impaired by lower limb fatigue, and can possibly be supported by other muscle groups.

Introduction
Postural sway can be described as the displacement of the Center of Mass (CoM) in relation to the Base of Support (BoS), and is directly related to postural stability control and balance (1). Postural sway is increased (indicating diminished stability) by many factors, including both muscular fatigue and visual illusion (2-4).

Muscular fatigue is a complex phenomenon and has been defined as a reduction in the force-generating capacity, regardless of the performed task (1). Lower limb muscle fatigue is speculated to be a leading factor in adult joint athletic injuries since many of these injuries occur at the end of an activity when the athlete is fatigued (2). There are two main fatigue-related mechanisms that can contribute to the diminished force-generating capacity: decreased activity and muscular strength. During fatigue, sensorimotor activity (afferent and afferent signals) is less successful in transmitting neural signals and as a result the muscle is stimulated to a lesser extent (1). This will lead to reduced motor control and therefore decreased stability. Strength is also diminished during fatigue as the proportionate and linear decrease in muscular properties of the joint is altered through increased threshold of muscle spindle discharge, disrupting afferent feedback, and consequently limiting the muscles' ability to control the joint (3). Therefore, fatigue of postural muscles, such as the gastrocnemius and soleus, has led to diminished postural control and increases instability to disturbance balance (5).

Fatigue may also lead to a loss of postural muscular control due to diminished use of sensory information (1,3,6,7). It is understood that visual information (1,2,3,6,7) is essential for visual feedback during movement, allowing for the maintenance of postural control.

Students in the Field: Juvenile diabetes: Understanding its impact beyond the pancreas

Lawrence Yau, Natasha Lepore
School of Medicine, University of Western Ontario, London, Ontario, Canada

Background
My name is Lawrence Yau and I am in my 5th year doing an Honours Specialization in Medical Sciences. My decision to pursue this degree was based on my interest in learning more about human diseases. Although I gained a ton of knowledge through my studies, it was a challenge to put a face on the diseases that I learned about at school. Consequently, I started volunteering at Rotaract Juvenile Diabetes Camp (JDC) three years ago. JDC Camp is a weekend camp operating during the month of March and is open to both children and families affected by Type 1 diabetes. The camp experience offers a host of fun activities for the children and also provides many networking and educational opportunities for parents. As the co-coordinator, in addition to planning and preparing meals for roughly 50 people each year, I had the opportunity to interact with both the children and their parents. Through my experiences at the camp, I gained a better appreciation and understanding of not only the physical implication of Type 1 diabetes on the child but also its impact on the emotional, social, and financial well-being of the entire family. I believe that diabetes facing future medical research lies in improving the quality of life of patients affected by Type 1 diabetes and their families.

In North America, diabetes remains one of the most prevalent forms of chronic disease affecting both children and adults. In fact, the rate of this disease is growing throughout the world, especially in impoverished countries. Understanding how diabetes impacts individuals and families is therefore important. Because there is a high probability that even those who do not suffer from the disease will eventually interact with someone who is struggling with it. What some people may not be aware of is that there are different types of diabetes. Among the most common is Type II diabetes mellitus, which is primarily caused by lifestyle factors. As the presence of the disease often coincides with other comorbidities, many of diabetes' symptoms are visible and apparent, which makes it easy to understand. In contrast, Type I diabetes mellitus or 'juvenile diabetes' is a much lesser understood form of diabetes. However, it can be as devastating and emotionally difficult to suffer from as Type II. In fact, the emotional consequences of this disease are something that I have witnessed firsthand in the last three years, having volunteered as a camp coordinator for children with juvenile diabetes.

Like many students in the Medical Sciences program at Western, I have had the privilege of taking many different courses over the past few years, ranging from anatomy and physiology to pathology. These courses exposed me to information about a large variety of diseases and often taught me how to identify these diseases' etiology, pathophysiology, symptoms, and treatment. Although I learned a lot from these courses, I know that my friends and I often wondered if the diseases that we studied were as simple and concise as described in class. I found it strange that we could easily recite all the statistics and mechanisms involved in a particular disease without really understanding the disease as something more than just words on a page. So naturally, I was excited when a friend told me that her club was looking for volunteers to help organize a weekend camp for kids with juvenile diabetes. I hoped that reaching out...
4 Great Reasons to Submit

• Gain publication experience
• Disseminate your research globally - Open-Access Publication
  • Indexed by EBSCO
• Recognized by faculty members and the research community
• Great addition to your CV when applying to graduate/professional schools
  • Official citation with DOI
A Testimonial From an Author

“The WURJHNS provides an extremely valuable resource for undergrad students.

We were exposed to the submission process for publication, as well as the review process, revisions, and responding to reviewers.

This experience has not only helped my work as a graduate student but also strengthened my curriculum vitae and scholarship application.”

Chantelle Nielson
Workshops

• How to get a summer research position
• November 2014 and January 2015
  • How and when to contact a Research Supervisor (ex: a professor, scientist)
  • How to create a cover letter and resume
  • Typical responsibilities of an undergraduate research student
• The benefits of a research position
• Western professor will be a guest speaker
Shadow A Researcher Day

• Spring of 2015
• A few students “shadow” a researcher or their graduate students for a day
• Open to all undergraduates
• Application required, TBA
• Great networking opportunity
Getting Involved

• First & Second Year Representatives
  ▫ Applications due October 12\textsuperscript{th} at 11:59pm
  ▫ Sign-up list after the presentation
  ▫ Application link online

• Workshop
  ▫ November 2014 and January 2015

• Application for next year’s executive positions
  ▫ February 2015
http://ir.lib.uwo.ca/wurjhns (Google WURJ)

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The application for 1st and 2nd Year Representatives can be found here.
SUBMIT!

We look forward to receiving your articles!

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THANK YOU!
Any questions?