ISB

ASB
founded 1977
AMERICAN SOCIETY OF BIOMECHANICS

INTERNATIONAL/AMERICAN SOCIETY OF BIOMECHANICS

ISB/ASB 2019

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UNIVERSITY OF CALGARY
FACULTY OF KINESIOLOGY

Telus Convention Centre

July 31 - August 4 Calgary, Canada

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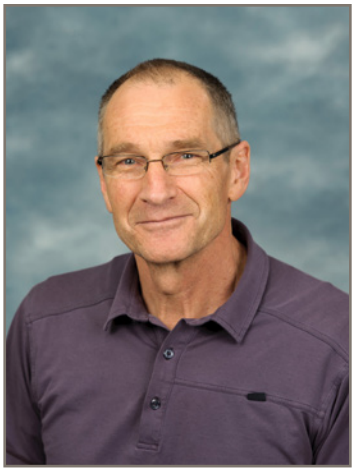
Welcome

from the Conference Chair

Dear Delegates,

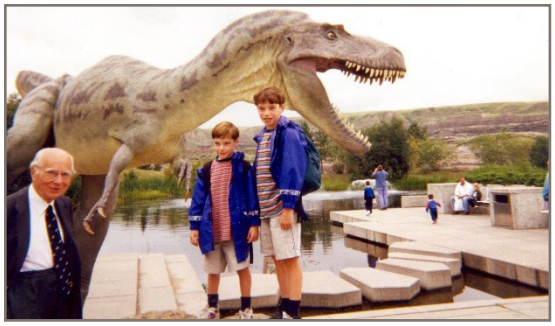


Welcome to the XXVII Conference of the International Society of Biomechanics and the American Society of Biomechanics (ISB/ASB 2019).

It seems like only yesterday that we hosted ISB 1999. Nobel Prize winner Andrew Huxley opened the proceedings with the Wartenweiler Memorial Lecture, unforgettable! He needed an overhead projector for his presentation, which we had not anticipated, but we made it happen at the last minute nevertheless.

The late Paavo Komi was the Muybridge award winner. This time around, he will be honoured in the ASB-sponsored Jim Hay Memorial Symposium for his invaluable contribution to biomechanics research and to the profession. In 1999, Ralph Mueller was the winner of the Promising Young Scientist Award, and this time around, he will give the ISB Muybridge Award Lecture. There is a symmetry to all this, as the circle closes.

Scientists around the world write to me and remind me that they were in Calgary, in 1999, and each one has a story, a memory and usually a little smile. This is my memory of 1999: Andrew Huxley with my two sons at the Royal Tyrrell Dinosaur Museum in Drumheller. Andrew wanted to visit the world-famous site with his wife, and to share this experience with children, so they took along Jens and Pascal, aged 7 and 5. "As good as gold" they were, so I was told, and the expression has stayed with our family to the present day.



I have always enjoyed scientific conferences: the ASB in Rochester (1983) and the ISB in that same year in Waterloo, Canada, were my first exposures to this world that has been a big part of my (scientific) life. I enjoy thinking about what others presented, trying to understand what they had discovered, following the logic or discovering the fallacy of an argument, asking questions formally, during a break, late in the evening when thoughts get blurry and the mind plays tricks. What pleasure, what privilege to be a scientist, to be exposed to the best, to be able to interact and listen to the leaders in the field.

I can't wait for the science to start: Wednesday July 31st, 5 p.m. – The Wartenweiler Memorial Lecture.

But remember ISB/ASB 2019 is much more than science; it is about experiences, people, friends, scientific adversaries and all your personal stories, but most of all, it's about a lot of fun.

Welcome to ISB/ASB 2019.

On behalf of the organizers,

Walter Herzog, PhD
Professor, University of Calgary
Conference Chair

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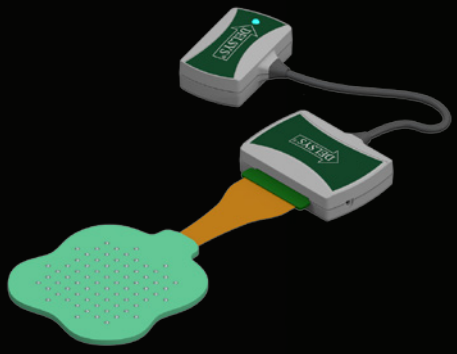

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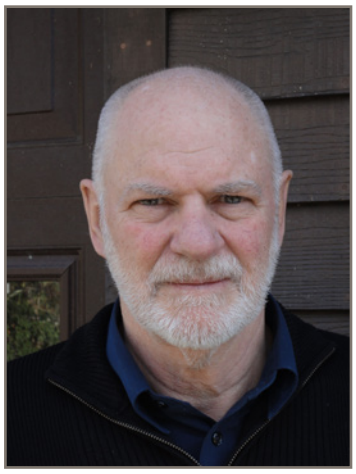
Welcome
from the ISB President

Dear Delegates,



On behalf of the International Society of Biomechanics Executive Council and the Congress organizers, I welcome you to Calgary, Canada, and the University of Calgary for the XXVII Congress of the International Society of Biomechanics (ISB2019) to be held in conjunction with the 43rd Annual Meeting of the American Society of Biomechanics (ASB2019). Thanks to the efforts of the Congress co-chairs, Dr. Walter Herzog, Dr. Benno Nigg, Dr. Brent Edwards, Dr. Darren Stefanyshyn, Dr. Art Kuo and Dr. Marco Vaz, and the event coordinator, Sandro Nigg, who have gone to extraordinary lengths to make this Congress one that promises to be a memorable event.

In 1999, the XVII Congress of ISB was also held in Calgary and now we are back once again. Since then, biomechanics has continued to develop as a scientific discipline making significant advances in a variety of fields. The ISB has a broad view of the science and application of biomechanics, believing that biomechanics has a major role in the study of all biological systems, from the level of the whole organism down to molecular size scales. Thus, ISB members come from a variety of disciplines including anatomy, physiology, engineering, orthopaedics, rehabilitation medicine, kinesiology and others.

The ISB is involved in many activities to promote biomechanics internationally. These activities include the organization of biennial ISB-international congresses, publication of congress proceedings and a biomechanics monograph series, distribution of a quarterly newsletter and sponsorship of scientific meetings related to biomechanics. The ISB is affiliated with the Journal of Biomechanics, the Journal of Applied Biomechanics, Clinical Biomechanics, the Journal of Electromyography and Kinesiology, and Gait and Posture. The Society also has a major Internet presence with the ISB on Facebook, Twitter and LinkedIn, as well as sponsoring the Biomechanics Forum, Biomch-l.

This Congress epitomizes the ideals of the International Society of Biomechanics as reflected in the number of abstracts submitted for this meeting and the quality of their scientific work. Once again, on behalf of the organizing committee and the ISB Executive Council, we wish you a memorable Congress.

Joseph Hamill, PhD
Professor Emeritus, University of Massachusetts Amherst
President, International Society of Biomechanics

Welcome
from the ASB President

Dear Delegates,

It is a great pleasure to welcome you to Calgary, Alberta, where the 43rd Annual Meeting of the American Society of Biomechanics (ASB) is being held in conjunction with the XXVII Congress of the International Society of Biomechanics (ISB). This is the first joint meeting of ASB and ISB since 2005, when our two societies held their conferences together in Cleveland, Ohio. Many thanks are due to our ASB program chair, Dr. Daniel Ferris, diversity chair, Dr. Robin Queen, student representative, Mr. Andrew Vigotsky, and past-president, Dr. Wendy Murray, for their tireless efforts in crafting our ASB-specific programming. Our program team worked closely and collaboratively with their ISB colleagues and the local organizers to achieve tight integration of the program and exploit unique opportunities afforded by this joint conference. I also wish to express our sincere thanks to our local hosts from the University of Calgary, Dr. Walter Herzog, Dr. Benno Nigg, Dr. Brent Edwards, Dr. Darren Stefanyshyn, Dr. Art Kuo, Dr. Marco Vaz, and Mr. Sandro Nigg, who have organized what promises to be an exceptional meeting of the international biomechanics community.

The ASB was founded in 1977 to encourage and foster the exchange of information and ideas among biomechanists working in different disciplines and to facilitate the development of biomechanics as a basic and applied science. The ASB has hosted an annual meeting every year since its inception and currently supports numerous regional, student-focused meetings around the U.S. Periodically, ASB holds its annual meeting in conjunction with an international biomechanics organization, such as the ISB or the World Council of Biomechanics. As we assemble this year in Calgary for our 43rd Annual Meeting, many long-time members of ASB will fondly recall attending our 26th Annual Meeting in 2002 held in conjunction with the 4th World Congress of Biomechanics, also hosted by the University of Calgary. These periodic joint meetings provide a unique opportunity to interact with a broader and more diverse group of scientists and engineers than at typical ASB meetings, and I encourage every ASB attendee to take full advantage of this opportunity.

In closing, I thank each of you for attending and contributing to what is sure to be an outstanding showcase and celebration of the field of biomechanics. On behalf of the ASB executive board, we wish all attendees an enjoyable and intellectually stimulating meeting.

Brian Umberger, PhD
Professor, University of Michigan
President, American Society of Biomechanics

Welcome

from the Dean of the Faculty of Kinesiology

Dear Delegates,

On behalf of the Faculty of Kinesiology and the University of Calgary, I welcome you to XXVII Congress of the International Society of Biomechanics held in conjunction with the 43rd Annual Meeting of the American Society of Biomechanics.

Thank you to the organizing committee and our faculty members who have been working on the program for many months. We are proud of our world-renowned biomechanics group and are very excited to help deliver this conference. With a record number of participants and abstracts, along with a comprehensive scientific program and engaging keynote speakers, including Dr. Hugh Herr, who will give the Wartenweiler Memorial Lecture, this conference will be a memorable gathering.

This was a notable year for our faculty. We were currently ranked No. 1 in North America and No. 7 globally for schools of sport science (Shanghai Rankings), based on our research quality and productivity. Our biomechanics faculty have certainly played a critical role in achieving that recognition, including this year's conference co-chair, Dr. Walter Herzog, a renowned pioneer in this field, who was awarded one of Canada's most prestigious honours for a scientist: the Killam Prize. Walter's work has led to ground-breaking discoveries in the field of biomechanics and muscle-contraction, giving hope to people living with bone, joint and muscular diseases.

Our faculty is unique. It is one of the oldest faculties at this young university, which recently turned 50. As a direct result of the 1988 Olympics, we have created an exceptional environment for research and teaching, as well developing superb training facilities for coaches and athletes at the varsity, community and Olympic level.

The Faculty of Kinesiology is a vital component of the University of Calgary and the Calgary community. Our scholars have made an impact by continuing to find ways to improve human performance.

I wish you a terrific conference and look forward to meeting many of you.

Sincerely,
Dr. Penny Werthner, PhD
Professor and Dean, Faculty of Kinesiology
University of Calgary

Organizing Committee

Walter Herzog	Conference and Co-Scientific Chair, University of Calgary
Venus Joumaa	Co-Scientific Chair, University of Calgary
Benno Nigg	Budget and Venue Organizer, University of Calgary
Joe Hamill	ISB Program Chair, University of Massachusetts
Daniel Ferris	ASB Program Chair, University of Florida
Janet Ronsky	ISB/ASB/CSB Liaison Officer, University of Calgary
Arthur Kuo	Invited Speaker and Special Symposia Co-Organizer, University of Calgary
Darren Stefanyshyn	Satellite Symposia Organizer, University of Calgary
Brent Edwards	Invited Speaker and Special Symposia Co-Organizer, University of Calgary
Marco Aurélio Vaz	E.D.C. Communication Officer, Universidade Federal do Rio Grande do Sul
Sandro Nigg	Event Director, Biomechanigg

International Organizing Committee

Samer Adeeb
Kai-Nan An
Toni Arndt
James A. Ashton-Miller
Janie L. Wilson
Joan E. Bechtold
Daniel L Benoit
Thor Besier
Kim Bigelow
Stephen Brown
Thomas S. Buchanan
Tim Butterfield
Felipe P. Carpes
Robert D. Catena
John H. Challis
Nachiappan Chockalingam
Elizabeth Clarke
Andrea Clark
Kelsey Collins
Paola Contessa
Andrew Cresswell
Heiliane de Brito Fontana
Clark Dickerson
Sharon Dixon
Salvatore Federico
Ceronique Feipel
Daniel Ferris
Atuski Fukutani
James Goh
Mark D. Grabiner
Eveline Graf
Stefan Grau
Ted S. Gross
Grant Handrigan
Chris J. Hass
David Hawkins
Gary D. Heise
John Holash
Mike Holmes
Gareth Irwin
Kenton Kaufman
Yasuo Kawakami
Peter Keir
Timothy J Koh
Rami K. Korhonen
Cheryl Kozey
Kornelia Kulig
Scott Landry
Alberto Leardini
William Ledoux
Hae Dong Lee
Li Li
Glen Lichtwark
David Lloyd
Huub Maas
Ralph Müller
Rajani Mullerpatan
Annegret Mündermann
Rick Neptune
Sang-Kyoon Park
Wolfgang Potthast
Geoffrey A. Power
Robin Queen
Tamara Reid Bush
Stacie I Ringleb
Stephen Robinovitch
Dieter Rosenbaum
Ellissavet Rousanoglou
Silvia Salinas Blemker
Gudrun Schappacher-Tilp
Hermann Schwameder
Bhawna Shiwani
Gerda Strutzenberger
Markus Tilp
J. J. Trey Crisco
Ton van den Bogert
António Veloso
John Wu
Saiwei Yang
Fred Yeadon
Bing Yu
Ron Zernicke
Kristin Daigle Zhao

Economically Developing Country Grants

We are pleased to have provided grants for students and researchers from developing countries that wanted to partake in this year's conference: the XXVII Congress of the International Society of Biomechanics 2019 (ISB 2019), held in conjunction with the 43rd annual meeting of the American Society of Biomechanics (ASB).

With the generous contributions from various faculties and units at the University of Calgary, the International Society of Biomechanics (ISB), the American Society of Biomechanics (ASB) and from our conference sponsor, Delsys, we obtained financial support for assisting students that are performing at an academically high level, but may not have the financial support that other students receive from their institutions.

As a result of the generosity of our sponsors, 58 students from economically developing countries were able to attend the conference at greatly reduced costs. Both the conference fee and five nights of accomodation were covered by these funds. In addition, 32 scientists, from economically developing countries, received a substantial discount on their registration fees.

The organizing committee of this conference would like to thank Delsys, ISB, ASB and all the faculties and units at the University of Calgary that made this possible. We would also like to encourge the organizing committees of future meetings of the International Society of Biomechanics to consider continuing this initiative.

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Biomedical Engineering Graduate Program

UNIVERSITY OF CALGARY
CUMMING SCHOOL OF MEDICINE
McCaig Institute for Bone and Joint Health

UNIVERSITY OF CALGARY
Office of the Vice-President (Research)

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FACULTY OF SCIENCE

UNIVERSITY OF CALGARY
FACULTY OF KINESIOLOGY
Human Performance Laboratory

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ISB

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AMERICAN SOCIETY OF BIOMECHANICS

General Information

Venue
Calgary Telus Convention Centre
120 9 Ave SE
Calgary, AB T2G 0P3

For access to ISB/ASB 2019, please enter the North Building of the Calgary Telus Convention Centre, located at 136 8 Avenue SE. This entrance provides the direct access to the Exhibition Hall.

+ 15 (Plus 15)
The +15 system is a series of above ground enclosed and connected walkways. Covering approximately 16 kilometres, it is the world's most extensive pedestrian skywalk network. The Calgary +15 has 59 bridges and links dozens of buildings in downtown Calgary, including the Telus Convention Centre and surrounding hotels, restaurants, and shopping centres.

Abstracts
Abstracts for ISB/ASB 2019 can be found on the congress website, or through the *Dryfta* app on your smart device.

Banking
There is an automated banking machine (ATM) on the main floor of the North Building near Guest Services. ATMs for several major banks can also be found along 8 Avenue within walking distance of the venue.

Downtown Calgary has numerous bank branches. Normal banking hours are Monday to Friday 0900 - 1700 hrs.

Car Parking
The Calgary Parking Authority runs an underground parkade (Lot 60) directly beneath the Telus Convention Centre, at 727 1 Street SE.

Catering
All morning coffee breaks, lunch and afternoon coffee breaks will be offered in front of the Exhibition Hall. For break times please refer to the day-at-a-glance pages of the program.

Certificate of Attendance
A certificate of attendance will be sent to each delegate post Congress via email.

Congress App
On your device, download the *Dryfta* app. Search for ISB, choose the ISB ASB 2019 event, and access up to date information about the congress.

Congress Compendium
Every registered delegate will receive an official Congress compendium upon registration that will include a copy of the congress program, sponsor inserts and other items.

Currency
The Canadian dollar is the currency in Canada - units are dollars and cents. Current exchange rates can be obtained from your bank or a currency exchange facility. All major credit cards are widely accepted in Canada.

Dietary Requirements
We will be offering a variety of options for each meal/break. A list of ingredients will be posted for those with dietary restrictions.

Disclaimer
The Congress Committee reserves the right to make changes to the congress program at any time without notice. Please note that this program is correct at the time of printing.

General Information

Dress Code
The Congress dress code is smart casual.

Duplication / Recording
No photography, videotaping or recording is allowed in oral sessions or in the poster-exhibition hall except by the official society photographer or society approved audio-visual vendor. This includes cameras, cell phones and all other devices.

Electricity
The electrical supply in Canada is 120 volts, 60Hz.

Emergency Details
In case of an emergency of any kind, please contact the Guest Services located on the main floor of the North Building. Please ensure to pay attention to any hotel alarms and announcements.

The emergency number in Canada is 911.

Exhibition
The exhibition will be held in the Exhibition Hall, which can be accessed via the North Building entrance. It will be open at the following times:

Wednesday, July 31	1600 - 2000 hrs
Thursday, August 1	0800 - 1830 hrs
Friday, August 2	0800 - 1830 hrs
Saturday, August 3	0800 - 1830 hrs
Sunday, August 4	0800 - 1600 hrs

Information Office
The Congress Information Office is located in the Upper Select Boardroom, on the second floor of the South Building. (Glen 210)

Wednesday, July 31	0900 – 1630 hrs
Thursday, August 1	0730 – 1630 hrs
Friday, August 2	0730 – 1630 hrs
Saturday, August 3	0730 – 1630 hrs
Sunday, August 4	0730 – 1600 hrs

Internet
Wireless internet (Wi-Fi) will be available free of charge for delegates of ISB/ASB 2019. The network is **IsbAsb2019**. The password is **BiomechCalgary**

Lost and Found
The Lost and Found is situated at Guest Services in the main foyer of the North Building.

Mobile Phones
Delegates are kindly requested to keep their mobile phones on silent in all rooms where scientific and educational sessions are being held, as well as in and around the poster and exhibition area.

The Exhibition Hall pre-function space in the North Building has a charging station that can power up to eight devices in lockable containers.

Name Badges
For security purposes, name badges must be worn at all times when attending the congress and social events. Entrance into sessions is restricted to registered attendees only. If you misplace your name badge, please visit the Registration Desk to arrange a replacement.

Posters
Posters will be on display August 1st, 2nd and 3rd from 1600 – 1800 hrs in the Exhibition Hall.

Registration
The Registration Desk is located in front of the Exhibition Hall, on the second floor of the North Building. The Registration Desk will be open during the following hours:

Wednesday, July 31	0900 - 2100 hrs
Thursday, August 1	0730 - 1830 hrs
Friday, August 2	0730 - 1830 hrs
Saturday, August 3	0730 - 1830 hrs
Sunday, August 4	0730 – 1830 hrs

General Information

Smoking
Smoking is widely prohibited in Canada, including restaurants and any indoor location. Please refrain from smoking unless in designated areas.

Social Media
Follow @ISB_ASB2019 on Twitter for updates regarding the congress.

Speakers
Laptops will be provided by the Congress in each of the breakout rooms. Speakers need to provide their presentations ahead of time, as follows:

If your presentation is less than 20 Mb, you may submit your presentation, via email, to the following address: **present@isb2019.com** This must be done at least 24 hours in advance of your scheduled presentation, after which time it will need to be uploaded directly to one of the computers in the Speaker Ready room.

You may upload and/or preview your presentation in the Speaker Ready Room prior to your scheduled session time. If uploading your presentation in the Speaker Ready Room, please ensure that you do so a minimum of **2 hours** prior to your scheduled presentation time.

Please ensure you arrive at your presentation room **at least 15 minutes prior to the start of the session**.

Speaker Ready Room
The Speaker Ready Room is located in Telus 111, on the main floor of the North Building. The Speaker Ready Room will be open during the following hours:

Wednesday, July 31	0900 - 2100 hrs
Thursday, August 1	0700 - 1830 hrs
Friday, August 2	0700 - 1830 hrs
Saturday, August 3	0700 - 1830 hrs
Sunday, August 4	0730 – 1500 hrs

Taxes
The Government of Canada charges a 5% goods and services tax (GST) on most purchases.

Tipping
It is generally customary to leave a 15% gratuity for services in restaurants if good service is provided. Tips for taxis and any porter service are at your discretion.

Transportation
The Telus Convention Centre is easily reached by public transit, both via the city's Light Rail Transit (LRT) lines and several major bus routes. The Centre Street Station is the closest LRT station to the Telus Convention Centre. For more information, please visit the Calgary Transit website.

Weather
Calgary has more hours of sunshine than any other major city in Canada. Be prepared for changes in temperature as weather in Calgary can vary day-to-day, and even hour-to-hour.

Find updated weather information for Calgary on the Environment Canada website.

Expect warm summer weather. You can expect to wear shorts and t-shirts comfortably in summer months but evenings can be cool. Calgary sits at an elevation of 1,045 metres above sea level.

Social Program

Opening Ceremonies

Wednesday, July 31st, 2019
1600-1800 hrs
Exhibition Hall E

The Opening Ceremony and Welcome Reception will be held in the Exhibition Hall at the Telus Convention Centre. The ceremony will include performances by internationally renowned trumpet soloist Jens Lindemann, and a presentation by Dr. Hugh Herr, a scientist, visionary and futurist on the topic *On the Design of Bionic Leg Devices: The Science of Tissue-Synthetic Interface*.

Welcome Reception

Wednesday, July 31st, 2019
1800-2000 hrs
Exhibition Hall CD

Following the opening ceremony, join us for a cocktail-style reception where appetizers and light refreshments will be served, where delegates will have the opportunity to mingle with friends, colleagues and industry partners. This will offer an excellent opportunity to network in a relaxed and enjoyable environment prior to the scientific programme.

Calgary Alumni Evening

Thursday, August 1st, 2019
1830-2030 hrs
Hyatt Imperial Ballroom

We will be gathering at the Hyatt where we have reserved a room with some light refreeshments and some finger foods so everyone can enjoy a drink and catch up with other Calgary Alumni. Benno Nigg and Walter Herzog will also say a few words. The Hyatt is located right next to the Telus Convention Centre. Included with fully paid delegate registration.

Diversity Lunch

Friday, August 2nd, 2019
1300 - 1400 hrs
Glen 201-202

Social Program

The focus of the diversity and inclusion lunch will be on developing mentor relationships. We will discuss in small groups as well as the larger group challenges with mentorship and how this is related to diversity and inclusion. We will also discuss strategies for maintaining positive mentoring relationships as well as providing insights into how to address some of the challenges related to diversity and inclusion that are present within science.

Participants must be registered for this specific event in order to attend.

Advancing Women in Biomechanics

Saturday, August 3rd, 2019
1930-2200 hrs
Glen 201-204

This event raises the topic of 'difficult conversations' with respect to women in the field of biomechanics. Facilitators will guide the conversations and attendees will be given the opportunity to dive deeper into each subtopic via a roundtable discussion format. Attendees will leave with strategies to initiate and respond when having a difficult conversation.

Participants must be registered for this specific event in order to attend.

Closing Ceremony

Sunday, August 4th, 2019
1630-1800 hrs
Exhibition Hall E

The Closing Ceremony is an opportunity to celebrate a successful ISB Congress, and look forward to ASB 2020 and ISB 2021. Joseph Hamill, President of the International Society of Biomechanics, will speak at the ceremony.

Banquet

Sunday, August 4th, 2019
1900-2300 hrs
Macleod Hall

The evening will feature a unique performance by biomechanical dancers, a sit-down dinner, and a live band to accompany attendees on the dance floor.

Student Program

Student Excursion - Hike

Wednesday, July 31st, 2019
0900-1530 hrs
Meet near Guest Services Desk (main floor of North Building)

A hike in beautiful Kananaskis country, we will be going on the Grassi Lakes Hiking trail, a 2 hour hike, with a low degree of difficulty. Buses will be organized to transport people to and from Kananaskis (1 hour drive), leaving and returning to the Telus Convention Centre. A boxed lunch will also be provided.

Participants must be registered for this specific event in order to attend.

Student Excursion - Night Out

Friday, August 2nd, 2019
2000-2300 hrs
Meet near Guest Services Desk (main floor of North Building)

We will be enjoying a fun night out at Ranchman's Cookhouse and Dancehall (www.ranchmans.com/). There will be live music and food provided as well as one drink ticket. Bussing will be provided from Telus Convention Centre to Ranchman's **starting at 1920 hrs**, and back to Telus Convention Centre throughout the night.

Participants must be registered for this specific event in order to attend.

Student Mentor Lunch 1

Saturday, August 3rd, 2019
1300 - 1400 hrs
Glen 201-202

Students and mentors will bring their lunches to the mentorship lunch where they will be at a table with their mentor and other mentor pairs to enjoy lunch, and have the opportunity to ask questions and learn from their mentor.

Participants must be registered for this specific event in order to attend.

Student Mentor Lunch 2

Student Program

Sunday, August 4th, 2019
1300 - 1400 hrs
Glen 201-202

Students and mentors will bring their lunches to the mentorship lunch where they will be at a table with their mentor and other mentor pairs to enjoy lunch, and have the opportunity to ask questions and learn from their mentor.

Participants must be registered for this specific event in order to attend.

A mission to support and foster the Biomechanics Community.

DE LUCA FOUNDATION

at ISB 2019

Proud to Support the 2019 Wartenweiler Lecture

Hugh Herr

Professor of Media Arts and Sciences
MIT Media Lab

Co-Director
MIT Center for Extreme Bionics

Founder of BionX

Proud to Support the 2019 Emerging Scientist Award

Dr. Adrian Ka Ming Lai

Neuromuscular Mechanics Laboratory
Simon Fraser University
Canada

MORE OPPORTUNITIES AVAILABLE FOR STUDENTS AND RESEARCHERS

Delsys Prize Deadline: Sept 30, 2019

App Development Competition Phase II Deadline: Nov 30, 2019

Coming Soon Open Source Initiative. To learn more about our mission and explore upcoming opportunities see www.delucafoundation.org

Things to do in Calgary and Surrounding Area

Calgary Tower

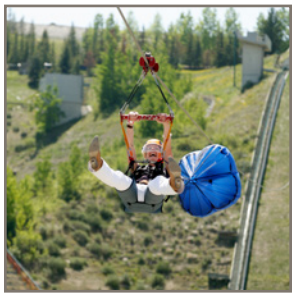
The Calgary Tower, home of the world's highest 360-degree observation deck, offers an award-winning multimedia tour. Available in English, French, Mandarin, Korean, Japanese and German, the self-guided tour brings visitors on an exciting journey through Calgary's past and present. Gain a unique perspective on famous landmarks while enjoying sweeping panoramas of the city skyline and Canadian Rockies.

See more at *calgarytower.com*

Glenbow

Founded some 50 years ago by oilman Eric Harvie, the Glenbow Museum is located next to the Calgary TELUS Convention Centre in downtown Calgary. One of the largest museums in Canada, the Glenbow includes a museum, art gallery, library and archives and has more than one million artifacts and 28,000 works of art in its vast collections. Many of those pieces are linked to the people and history of Western Canada.

See more at *glenbow.org*



WinSport and Canada's Sports Hall of Fame

The site of the 1988 Winter Olympic Games has since become an attractive training destination for professional athletes and a thrilling attraction for leisure sports enthusiasts. Thrill-seekers can take a ride down the bobsleigh track at speeds up to 100 km/h or zipline from the iconic ski jump tower. For something less intense, try downhill karting on the Skyline Luge. While at WinSport take time to visit Canada's Sports Hall of Fame.

See more at *winsport.ca* and at *sportshall.ca*

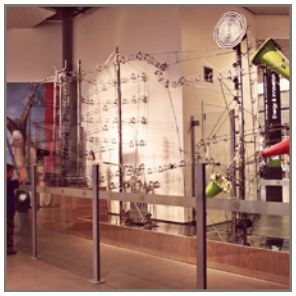
Heritage Park

Heritage Park Historical Village first opened its gates on July 1, 1964. Since opening its doors, the Park has grown into one of Calgary's premier tourist attractions and Canada's largest living history museum. Throughout the year, guests have the opportunity to interact with nearly 100 years of history. Heritage Park's exhibits span the early 1860s fur trade to the petroleum and automobile-dominated 1950s. It is the Park's mission to preserve the history of the early West and to educate and entertain guests of all ages for many generations to come. See more at *heritagepark.ca*

The Calgary Zoo

Located just minutes east of the city's downtown core and accessible on the CTrain line, the Calgary Zoo is the second largest zoo in Canada and in 2012, was the nation's most visited zoo. In 2014, it was named by TripAdvisor as Canada's top zoo and has received international recognition in the world of conservation research. Admire the pandas while strolling through Panda Passage. Visit the Land of Lemurs; the captivating penguins in an Antarctic environment; majestic giraffes, bellowing hippos and colourful mandrills in Africa; the cool cats, tigers, lynx and snow leopards in Eurasia; or the stars of the Canadian Wilds – the bears, cougars and wolves. See more at *calgaryzoo.com*

Things to do in Calgary and Surrounding Area



TELUS Spark

TELUS Spark is a place for people of all ages and abilities to let go and embrace the desire to explore and discover science, technology and art in a way that their normal day-to-day life doesn't allow for. With over 200 experiences, five galleries, and an outdoor park, it is a place to experiment and to play.

See more at *sparkscience.ca*

Fort Calgary

Fort Calgary is located on 40 acres of parkland on the eastern edge of downtown Calgary. This is the place where the modern city of Calgary began! Learn about the Indigenous history of the Traditional Treaty 7 land the fort was built on. Explore colourful stories of Calgary's past in the Interpretive Centre. Experience both sides of the law as you try on an authentic RCMP uniform or spend some time in their jail. Discover this National Historic Site and take a stroll around the RiverWalk to the confluence of the Bow and Elbow Rivers. See more at *fortcalgary.com*

Studio Bell - National Music Centre

Studio Bell, the National Music Centre, opened in downtown Calgary's East Village on July 1, 2016. The National Music Centre is home to the history of music in Canada, including the country's most impressive collection of musical instruments and sound equipment, the Canadian Music Hall of Fame, and the Canadian Country Music Hall of Fame Collection. It also includes event and performance spaces, recording studios, broadcast facilities, the Rolling Stones Mobile Studio, and artist-in-residence programs, as well as Calgary's famed King Eddy Hotel. See more at *nmc.ca*

Banff National Park

At the heart of Banff National Park is a charming and historic alpine town, surrounded by majestic lakes and tall peaks. Banff's historic town centre is alive with shops, galleries, cafes and restaurants. You can explore the iconic highlights and take in multiple views of the famous peaks, ride to the top of Sulphur Mountain on the incredible Banff Gondola and enjoy a relaxing boat ride on Lake Minnewanka.

See more at *banfflakelouise.com*

Drumheller and Canadian Badlands

The Canadian Badlands are located just an hour from Calgary. Stop at Horseshoe Canyon, walk among the Hoodoos, and enjoy an Underground Tunnel or Tipple Tour (a structure used to load product for transport) at the Atlas Coal Mine. Walk on the old Suspension Bridge that many a miner has crossed! And of course there are the dinosaurs. Enjoy the Royal Tyrrell Museum, Canada's only museum dedicated exclusively to the science of paleontology. See more at *canadianbadlands.com*

For more information visit *ChooseCalgary.ca/ISB-ASB2019*

Speakers

Keynote

Hugh Herr

Professor of Media Arts and Sciences, MIT Media Lab
Co-Director, MIT Center for Extreme Bionics
Founder of BionX

Wartenweiler Lecture **Wednesday, July 31st, 1700 hrs**

Hugh Herr is creating bionic limbs that emulate the function of natural limbs. Time Magazine coined Dr. Herr the 'Leader of the Bionic Age' because of his revolutionary work in the emerging field of Biomechatronics – technology that marries human physiology with electromechanics. A double amputee himself, he is responsible for breakthrough advances in bionic limbs that provide greater mobility and new hope to those with physical disabilities. He is currently Professor of Media Arts and Sciences at the MIT Media Lab, and co-director of the MIT Center for Extreme Bionics. Herr is the author and co-author of over 150 peer-reviewed manuscripts and patents, chronicling the science and technology behind his many innovations. These innovations include Computer-Controlled Artificial Knees, Active Leg Exoskeletons, and Powered Ankle-Foot Prostheses. A computer-controlled knee prosthesis called the Rheo, which is outfitted with a microprocessor that continually senses the joint's position and the loads applied to the limb, was named to the list of Top Ten Inventions in the health category by TIME magazine in 2004. A powered ankle-foot prosthesis called EmPower, which emulates the action of a biological leg and, for the first time, provides amputees with a natural gait, was named to the same TIME top-ten list in 2007. He is the Founder of BionX Inc., a company that commercializes the EmPower Ankle-Foot Prosthesis, first in a series of products that will emulate physiological function through electromechanical replacement. Today the EmPower Ankle-Foot Prosthesis has been clinically shown to be the first leg prosthesis in history to reach human normalization, allowing amputees to walk with normal levels of speed and metabolism as if their legs were biological once again. Herr has received many accolades for his groundbreaking innovations, including the 13th Annual Heinz Award for Technology, the Economy and Employment; The Prince Salman Award for Disability Research; The Smithsonian American Ingenuity Award in Technology, the 14th Innovator of the Year Award, and the 41st Inventor of the Year Award, and the 2016 Princess of Asturias Award for Technical & Scientific Research. Hugh's story has been told in a National Geographic film, Ascent: The Story of Hugh Herr; and episodes and articles featured in CNN, The Economist, Discover and Nature.

Speakers

Keynote

Heike Vallery

Professor, Biomechanical Engineering, Technical University Delft

Keynote Speaker **Thursday, August 1st, 1400 hrs**

Heike Vallery received her Dipl.-Ing. degree in Mechanical Engineering (with honors) from RWTH Aachen University in 2004. Since then, she has been working on robot-assisted rehabilitation and prosthetic legs, in close collaboration with clinical partners and experts in neuroscience and biomechanics. She received her Dr.-Ing. from the Technische Universität München in 2009. From 2008 to 2011, she worked as a postdoctoral fellow at the SMS Lab at ETH Zürich. At that time, she and her collaborators started realizing diverse transparent robotic interfaces for 3D overground gait training, which are now enabling ground-breaking research on recovery after spinal cord injury. From 2011 to 2012, she worked at Khalifa University in Abu Dhabi as an assistant professor, and she joined TU Delft in 2012 in that same function. Today, as a full professor at TU Delft, she works on minimalistic and unconventional concepts to support human gait and balance. Heike Vallery has published more than 70 peer-reviewed publications, filed 11 patent applications, and received diverse fellowships and awards, such as the 1st prize of the euRobotics Technology Transfer Award 2014 and a Vidi fellowship in 2016 from the Netherlands Organisation for Scientific Research.

Irene S. Davis

Director of the Spaulding National Running Center, Department of Physical Medicine and Rehabilitation, Harvard Medical School

ASB Borelli Award **Friday August 2nd, 1400 hrs**

Dr. Irene Davis is the founding Director of the Spaulding National Running Center, Department of Physical Medicine and Rehabilitation, Harvard Medical School. Dr. Davis received her Bachelor of Science in Exercise Science from the University of Massachusetts, and in Physical Therapy from the University of Florida. She earned her Masters degree in Biomechanics from the University of Virginia, and her PhD in Biomechanics from Pennsylvania State University. She is a Professor Emeritus in Physical Therapy at the University of Delaware where she served on the faculty for over 20 years. Her research is focused on the relationship between lower extremity structure, mechanics and injury. Her research also extends to the development of interventions to alter faulty mechanics through gait retraining. She has been studying the use of wearable sensors in both the evaluation and treatment of injured runners. Her interests also include the effect of minimal footwear on mechanics and injury. Dr. Davis has received funding from the Department of Defense, and National Institutes of Health to support her research. She has given over 350 lectures both nationally and internationally and authored 140 publications on the topic of lower extremity mechanics during walking and running gait. She was recently named one of the 50 Most Influential People in Running. She is a Fellow and Past President of the American Society of Biomechanics. She is also a Fellow, Vice President and current Presidential nominee of the American College of Sports Medicine and a Catherine Worthingham Fellow of the American Physical Therapy Association.

Speakers

Keynote

Ralph Müller

Professor at the Institute for Biomechanics, ETH Zürich

ISB Muybridge Lecture **Saturday, August 3rd, 1400 hrs**

Dr. Ralph Müller is currently a Professor of Biomechanics at the Department of Health Sciences and Technology and heads the Laboratory for Bone Biomechanics at ETH Zürich in Switzerland. He studied electrical engineering at ETH Zürich, where he also received his doctoral degree. Subsequently, he was involved in the development of a compact desktop micro-tomographic imaging system that since has been commercialized and is now marketed worldwide. The research he has completed and is currently pursuing employs state-of-the-art biomechanical testing and simulation techniques as well as novel bioimaging and visualization strategies for musculoskeletal tissues. His approaches are now often used for precise phenotypic characterization in mammalian genetics, mechanobiology as well as tissue engineering and regenerative medicine. He is an author of over 500 peer-reviewed publications in international scientific journals and conference proceedings. His work has been cited over 30,000 times on Google Scholar with an h-index of 90. In 2015, he was elected to the Swiss Academy of Engineering Sciences (SATW) and the European Alliance for Medical and Biological Engineering and Science (EAMBES). In 2017, the European Research Council awarded him with a prestigious ERC Advanced Grant. He is a former President of the European Society of Biomechanics and the Swiss Society for Biomedical Engineering and currently serves on the Board of the International Society of Bone Morphometry.

Kim Bennell

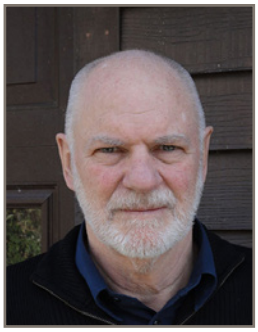
Professor and Director of Centre for Health, Exercise and Sports Medicine, in Physiotherapy at the School of Health Sciences, University of Melbourne

Keynote Speaker **Sunday, August 4th, 1400 hrs**

Kim Bennell is a Redmond Barry Distinguished Professor in the Department of Physiotherapy at the University of Melbourne. She leads the Centre for Health, Exercise and Sports Medicine and the National Health and Medical Research Council Centre of Research Excellence in Translational Research in Musculoskeletal Pain. She is also a fellow of the Australian Academy of Health and Medical Sciences. Her research focuses on non-drug, non-surgical management of hip and knee osteoarthritis and she has investigated many biomechanical interventions such as wedge shoe insoles, footwear, gait aids and braces. Kim has over 350 peer-reviewed publications including clinical trials published in JAMA, Ann Int Med and BMJ. She has supervised more than 25 PhD students to completion and was a co-recipient of the 2018 Australian Council of Graduate Research Award for Excellence in Research Supervision. Kim has been on the Board of the Osteoarthritis Research Society International since 2008.

Speakers

Keynote



Joe Hamill

Professor Emeritus, School of Public Health and Health Sciences, University of Massachusetts Amherst

President's Lecture **Sunday, August 4th, 1600 hrs**

Joseph Hamill has a BA (York University, Toronto), a BS (Concordia University, Montreal), and an MS and PhD in Biomechanics (University of Oregon). He is a Professor Emeritus in the Department of Kinesiology at the University of Massachusetts Amherst and is an Adjunct Professor at several universities around the world. Hamill has authored over 450 research papers, research proceedings and abstracts, 22 book chapters and 11 books. He has also presented numerous papers at both national and international conferences and has been a keynote or invited speaker at universities in the United States and other countries. He is a Fellow of the Research Consortium, ASB, ACSM, ISBS, CSB and the NAK. He has received awards from ASB, the AAHPERD Biomechanics Academy and the ACSM Biomechanics Interest Group. Hamill's current research interests are focused on lower extremity biomechanics during normal and pathological locomotion. His current projects include studies on coordination variability in cumulative micro-trauma injuries and the interaction of biomechanical and anatomical factors in overuse injuries. He has mentored over 50 PhD and MS students, 20 Honor's students and 10 post docs. Professionally, he has served on the Executive Boards of the NEACSM, the Footwear Biomechanics Group, ISB, CSB, ISBS and the National Academy of Kinesiology. He served as the Chair of the Footwear Biomechanics Group and as President of ISBS. Currently he serves as President of the International Society of Biomechanics.

Speakers

Invited

Alaa Ahmed

Dr. Alaa Ahmed is an associate professor in the Department of Integrative Physiology at the University of Colorado Boulder. She received her PhD in Biomedical Engineering from the University of Michigan, Ann Arbour in 2005. Dr. Ahmed's research focuses on biomechanical and sensorimotor processes underlying human movement control, and decision-making in uncertain or unstable environments. She is also interested in the neuromechanics of postural control, loss of balance detection, and falls in young and older adults. Dr. Ahmed is the recipient of the 2014 National Science Foundation CAREER Award, and the 2012 DARPA Young Faculty Award.

Thor Besier

Associated Symposium - Multi-scale modeling to evaluate musculoskeletal loading during locomotion and its role in degenerative joint disease

Thor Besier is an Associate Professor at the Auckland Bioengineering Institute at the University of Auckland, New Zealand. He completed his PhD in Biomechanics at The University of Western Australia where he developed EMG-driven models to estimate muscle forces and investigated mechanisms of non- contact knee ligament injury. Thor spent 8 years at Stanford University combining medical imaging with computational models to understand the mechanical aetiology of patellofemoral pain. His current projects combine wearable sensors with computational models to develop novel interventions for musculoskeletal disorders, such as stroke and osteoarthritis.

Andrew Biewener

Andrew A. Biewener is the Charles P. Lyman Professor of Biology and the Concord Field Station Director at Harvard University. He is Deputy Editor-in-Chief of The Journal of Experimental Biology. His research group focuses on the biomechanics and neuromuscular control of terrestrial and aerial locomotion, with relevance to musculoskeletal modeling, biorobotics, and biomedical engineering. His laboratory emphasizes *in vivo* methods for studying muscle function during animal movement in relation to body dynamics. This work has involved collaborations with modelers, roboticists, mechanical engineers, and computer scientists. He has published over 165 research papers, trained 18 PhDs and 16 post-doctoral fellows, and co-authored two recent textbooks (Animal Locomotion 2nd ed., 2018 Oxford Univ. Press; and How Life Works 3rd ed., 2018 Macmillan Press).

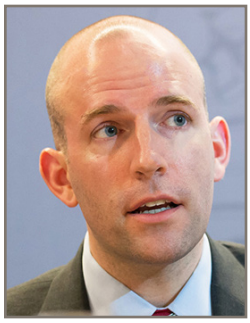
Speakers

Invited

Elizabeth Brainerd

Associated Symposium - Frontiers in X-Ray Reconstruction of Moving Morphology

Dr. Elizabeth Brainerd is a Professor of Biology and of Medical Science at Brown University. Dr. Brainerd obtained her PhD in Organismic and Evolutionary from Harvard University. Professor Brainerd and her research group combine anatomical studies of the musculoskeletal system with principles and techniques from engineering to understand the mechanical basis of movement in animals. Current projects include: biomechanics of the temporomandibular joint, muscle architecture, intercostal muscle function, and the development of a new 3D imaging technology, X-ray Reconstruction of Moving Morphology. Dr. Brainerd has authored and co-authored 57 publications, including the book "Great Transformations in Vertebrate Evolution" (2015).



Steven Collins

Associated Symposium - Exoskeletons and Prostheses

Steve Collins is an Associate Professor of Mechanical Engineering at Stanford University, where he teaches courses on design, biomechanics and robotics and directs the Stanford Biomechatronics Lab. His primary focus is to speed and systematize the design and prescription of prostheses and exoskeletons using versatile device emulators and human-in-the-loop optimization. Another interest is efficient autonomous devices, such as highly energy-efficient walking robots and unpowered exoskeletons that reduce the metabolic energy cost of human walking.

Taija Finni

Associated Symposium - Integrating multi-scale approaches to tendon biomechanics

Taija Finni is a professor of kinesiology at the Faculty of Sport and Health Sciences, University of Jyväskylä, Finland. Her research ranges from basic neuromuscular function to translational research related to physical activity and sedentary behavior. By measuring EMG from adults and children her group has gained accurate individual-level knowledge of the sedentary behaviour that is needed for designing effective physical activity interventions. Another research line focusing on muscle-tendon neuromechanics has provided fundamental information on tendon properties and muscle-tendon function for exercise training, rehabilitation and insight into age-related changes in mobility and neuromuscular performance. She serves as a senior section editor in Scandinavian Journal of Medicine and Science in Sports and is a member of the editorial board in Clinical Biomechanics. She is an elected council member of the International Society of Biomechanics and a member of the scientific committee of the European College of Sport Sciences.

Speakers

Invited

Samantha Harris

Dr. Samantha Harris is an Associate Professor of Cellular and Molecular Medicine at the University of Arizona. She is a researcher in the Molecular Cardiovascular Research Program. Dr. Harris' long-term goal of research is to understand the molecular mechanisms of muscle contraction. She is especially interested in how contractile proteins of muscle sarcomeres regulate the force and speed of contraction in the heart. Currently, the major research focus in her lab is understanding the mechanisms by which cMyBP-C regulates contractile speed and mechanisms by which mutations in cMyBP-C cause disease.

Cheryl Kozey

Associated Symposium - Biomechanics and Osteoarthritis: Role of muscle on joint loading in OA structural and symptomatic processes

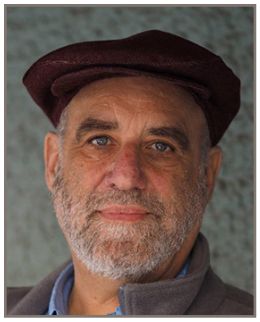
Dr. Cheryl Hubley-Kozey is a full professor in the Schools of Physiotherapy, Biomedical Engineering and Health and Human Performance at Dalhousie University, as well as an Affiliate Scientist at the Nova Scotia Health Authority. She co-leads the Innovation in Musculoskeletal Health and Physical Activity collaborative multidisciplinary team and is the co-Director of the Dynamics of Human Motion laboratory. Dr. Kozey's work in clinical biomechanics and neuromuscular control aims to keep people who have bone and joint conditions mobile and physically active so they can maintain health throughout their lifespan. Her primary focus has been on knee and lower back conditions, both of which result in a significant burden on the individual, the healthcare system and the economy given that both conditions are prevalent in those of working age. Her research on biomechanics and neuromuscular patterns associated with knee joint osteoarthritis (OA) processes has led to a new understanding of the role of the musculature on mechanical loading patterns with OA severity and progression. Her research has been mainly supported through the Canadian Institutes for Health Research, the Natural Science and Engineering Research Council and the Nova Scotia Health Research Foundation.

Steven Robinovitch

Dr. Steven Robinovitch is a professor at Simon Fraser University in the Department of Biomedical Physiology and Kinesiology, and the School of Engineering Science. He is also the Principal Investigator at the Injury Prevention and Mobility Laboratory. Dr. Robinovitch's research group uses the tools of biomechanics to develop and evaluate novel techniques for preventing disability and injury, seeking to generate new understanding of the risk factors for injury and mobility impairment, and to develop and test novel interventions. A particular focus of the laboratory is the prevention of injuries in the event of falls (especially hip fractures, wrist fractures, and brain injuries). Here, they are designing and testing the ability of energy-absorbing floors and protective clothing (e.g., hip padding devices) to reduce impact forces and injury risk during falls. An increasing focus is monitoring movement patterns in the real-life environment, through miniature wearable sensors and video technology. The lab has also developed several novel experimental techniques that are now being duplicated by former trainees and other research groups internationally.

Speakers

Invited



Andy Ruina

Andy Ruina has a robotics and biomechanics lab, and teaches mechanics and basic math classes at Cornell University. Andy's main study areas are coordination, classical rigid-object dynamics, and friction and sliding instability. Andy's degrees are all in Engineering from Brown University.

Karen Troy

Associated Symposium - Quantitative image-based biomechanics

Karen L. Troy directs the Musculoskeletal Biomechanics Laboratory, where she investigates questions related to musculoskeletal health and structure, physical activity, and biomechanics, in healthy and clinical populations. She has expertise in computational biomechanics and finite element modeling, aging and fall avoidance, and medical imaging. She has worked on clinical trials targeting bone health in both healthy women and people with spinal cord injury. She collaborates with physicians in the areas of orthopaedic trauma, radiology, rheumatology, and physical medicine and rehabilitation. Her broad research focus is on understanding how humans can use physical activity in a targeted and mechanistic manner to promote healthy aging. She specifically takes a biomechanics perspective on how physical forces applied to the musculoskeletal system generated through exercise or other physical activity can be used to improve bone and joint health. Her experimental approach utilizes medical image analysis and patient-specific computational models, combined with human subjects in a clinical setting.

Marjolein van der Meulen

Marjolein van der Meulen is the James M. and Marsha McCormick Director of Biomedical Engineering and Swanson Professor of Biomedical Engineering in the Meinig School of Biomedical Engineering and Sibley School of Mechanical & Aerospace Engineering at Cornell University and a Senior Scientist in the Research Division of the Hospital for Special Surgery. Before joining the faculty at Cornell Marjolein worked for three years as a biomedical engineer at the Rehabilitation R&D Center of the Department of Veterans Affairs in Palo Alto, California. In 1995 she received an NIH FIRST Award and in 1999 an NSF Faculty Early Career Development Award. Marjolein is a member of the American Society of Bone and Mineral Research (ASBMR), the American and European Societies of Biomechanics, and the Orthopaedic Research Society. She is a fellow of AAAS, AIMBE, and ASME. In the past, she was a Deputy Editor for the Journal of Orthopaedic Research, member of the ASBMR Task Force on Atypical Femur Fractures, and member for the Skeletal Biology Structure and Regeneration (SBSR) Study Section at NIH.

Speakers

Invited

Alan Wilson

Alan Wilson graduated from Glasgow University in 1987 having studied Veterinary Medicine and an intercalated BSc in Physiology. He subsequently undertook a PhD in the Anatomy Department at Bristol University where he studied the mechanical basis of tendon injury. He went on to work as a Post-Doctoral Research Associate and then as a lecturer. Alan moved to the Royal Veterinary College in 1996 where he now holds the post of Professor of Locomotor Biomechanics and leader of the Locomotion (Muscle, Tendon and Biomechanics) Research Group.

Fred Yeadon

Fred Yeadon obtained his PhD on the mechanics of twisting somersaults at Loughborough University where he is currently Emeritus Professor of Computer Simulation in Sport. Fred's main interests are in the use of whole-body computer simulation models to investigate the mechanics, motor control, optimisation and ultimate limits of sports movements.

Karl Zelik

Associated Symposium - Refreshing Perspectives on Assistive Technology

Dr. Karl Zelik co¬directs the Center for Rehabilitation Engineering & Assistive Technology (CREATE) at Vanderbilt University. CREATE aims to improve health, mobility and independence for individuals with disabilities, and to enhance human capabilities beyond biological limits, by engineering, measuring, optimizing and understanding technologies that physically augment human performance. Dr. Zelik's research team employs experimental and computational methods to study human biomechanics and aims to translate biomechanical principles into improvements in assistive devices such as prostheses, exoskeletons and smart clothing. Dr. Zelik received his B.S. and M.S. in Biomedical Engineering from Washington University in St. Louis, then his Ph.D. in Mechanical Engineering from the University of Michigan. Following this, Dr. Zelik was a post¬doctoral researcher and Whitaker International Scholar at the Santa Lucia Foundation Rehabilitation Hospital in Rome, Italy. He joined the Mechanical Engineering faculty at Vanderbilt University in 2014, and holds secondary appointments in the departments of Biomedical Engineering and Physical Medicine & Rehabilitation.

Award Winners

ASB Awards

Irene S. Davis - Borelli Award

August 2nd, 1400 hrs

Dr. Irene Davis is the founding Director of the Spaulding National Running Center, Department of Physical Medicine and Rehabilitation, Harvard Medical School. Dr. Davis received her Bachelor of Science in Exercise Science from the University of Massachusetts, and in Physical Therapy from the University of Florida. She earned her Masters degree in Biomechanics from the University of Virginia, and her PhD in Biomechanics from Pennsylvania State University. She is a Professor Emeritus in Physical Therapy at the University of Delaware where she served on the faculty for over 20 years. Her research is focused on the relationship between lower extremity structure, mechanics and injury. Her research also extends to the development of interventions to alter faulty mechanics through gait retraining. She has been studying the use of wearable sensors in both the evaluation and treatment of injured runners. Her interests also include the effect of minimal footwear on mechanics and injury. Dr. Davis has received funding from the Department of Defense, and National Institutes of Health to support her research. She has given over 350 lectures both nationally and internationally and authored 140 publications on the topic of lower extremity mechanics during walking and running gait. She was recently named one of the 50 Most Influential People in Running. She is a Fellow and Past President of the American Society of Biomechanics. She is also a Fellow, Vice President and current Presidential nominee of the American College of Sports Medicine and a Catherine Worthingham Fellow of the American Physical Therapy Association.

Paavo Komi - Jim Hay Memorial Award

August 4th, 1145 hrs

In 2019, the Hay Committee has elected to award The Jim Hay Memorial Award for Research in Sports and Exercise Biomechanics posthumously, to honor Paavo Komi. The award was established in 2004 through the support of the Hay family and additional donors to recognize research in the area of sports and exercise science biomechanics. Jim Hay (1936-2002) was a longtime faculty member at the University of Iowa, one of the original Founders of ASB, and the third and fourth President of the Society. The Jim Hay Memorial Award recognizes originality, quality, and depth of biomechanics research that address fundamental research questions relevant to extraordinary demands imposed in sport and exercise. Since 2017, a standing committee has both evaluated member-submitted nominations for the Jim Hay Award and identified candidates with exceptional contributions to the field of sports biomechanics. In 2019, two talks, provided by Bob Gregor and Taija Finni, will cover Professor Komi's professional and scientific contributions to the field of biomechanics. There will also be time for the audience to share stories in the 1 hour session that is planned by the ISB/ASB 2019 joint program committee.

Award Winners

ASB Awards

Scott Delp - Goel Award

August 2nd, 0800 hrs

Scott L. Delp, Ph.D., is the James H. Clark Professor of Bioengineering and Mechanical Engineering at Stanford University. He is the Founding Chairman of the Department of Bioengineering at Stanford, Director of the National Center for Simulation in Rehabilitation Research, and Director of the Mobilize Center, a NIH National Center of Excellence focused on Big Data and Mobile Health. Scott is focused on developing technologies to advance movement science and rehabilitation. Software tools developed in his lab (OpenSim and Simtk.org) have become the basis of an international collaboration involving thousands of investigators who exchange biomechanical models, simulations, and data. Prior to joining the faculty at Stanford, Delp was on the faculty at Northwestern University and the Rehabilitation Institute of Chicago. He has co-founded six biomedical technology companies.

Silvia Salinas Blemker - Founder's Award

August 4th, 0800 hrs

Silvia Salinas Blemker is a Professor of Biomedical Engineering, with joint appointments in Mechanical & Aerospace Engineering, Orthopaedic Surgery, and Ophthalmology at the University of Virginia in Charlottesville, VA, USA. She obtained her B.S. and M.S. degrees in Biomedical Engineering from Northwestern University and her Ph.D. degree in Mechanical Engineering from Stanford University. Before joining the faculty at UVa in 2006, Silvia worked as a post-doctoral Research Associate at Stanford University's National Center for Biomedical Computation. At UVA, she leads the Multi-scale Muscle Mechanophysiology Lab ("M3 Lab"). The M3 lab group develops advanced multi-scale computational and experimental techniques to study skeletal muscle biomechanics and physiology, and they are currently applying these techniques to a variety of areas, including muscle injury & regeneration, speech disorders, movement disorders, vision impairments, muscle atrophy, aging, and muscular dystrophies. While the work is grounded in biomechanics, it strongly draws from many other fields, including biology, muscle physiology, biomedical computation, continuum mechanics, imaging, and a variety of clinical fields. M3 lab aims to have an impact on research and society. The lab strives for excellence in scholarship through contributing high impact papers and being awarded competitive awards and grants. Second, teaching and mentorship of post-doctoral fellows, graduate students, and undergraduate students is a high priority, both in the lab and in the classroom. Lastly, the M3 lab is enthusiastic to take part in outreach activities, including having active participation of K-12 teachers in the lab. The M3 lab's research has been funded by several institutes at the National Institutes of Health (NIAMS, NIBIB, NIA, and NIDCD), NASA, the NSF, The Hartwell Foundation, the UVA-Coulter Translational Research Partnership, in addition to industry partnerships. Dr. Blemker has multiple patents pending and co-founded Springbok, Inc, a company focused on image-based muscle analytics for a variety of applications from sports medicine to neuromuscular disorders.

Award Winners

ASB Awards

Wouter Hoogkamer - Young Scientist Award - Post Doctoral

August 4th

Wouter Hoogkamer, Ph.D. is a post-doctoral research associate in the Locomotion Laboratory at the University of Colorado, Boulder. He uses a comprehensive approach to study human locomotion, integrating neurophysiology, biomechanics and energetics. Dr. Hoogkamer's work covers the full health spectrum, from the neuromechanics of split-belt walking in individuals with cerebellar damage to the biomechanics and energetics of elite marathon runners. After obtaining master's degrees in Civil Engineering and Human Movement Sciences in the Netherlands, he moved to Leuven, Belgium where he earned his Ph.D. degree in Biomedical Sciences, before moving to Colorado in 2015. Dr. Hoogkamer is passionate about mentoring students and is an avid runner. He recently accepted a tenure-track position as assistant professor in the Department of Kinesiology at the University of Massachusetts, Amherst, where he will be starting in the fall of 2019.

Erika Pliner - Young Scientist Award - Pre Doctoral

August 4th

Erika Pliner is a PhD Candidate in Bioengineering at the University of Pittsburgh. Her research is focused on determining individual, environmental and biomechanical factors that contribute to ladder fall risk. This knowledge is critical to guide safety interventions that reduce ladder fall injuries. She has also been active in outreach programs to improve diversity in biomechanics. Her dissertation work was funded by the NSF Graduate Research Fellowship Program and Whitaker International Program. She received her B.S. in Mechanical Engineering and M.S. in Engineering at the University of Wisconsin-Milwaukee.

Award Winners

ISB Awards

Ralph Müller - Muybridge Lecture

Saturday, August 3rd, 1400 hrs

Dr. Ralph Müller is currently a Professor of Biomechanics at the Department of Health Sciences and Technology and heads the Laboratory for Bone Biomechanics at ETH Zürich in Switzerland. He studied electrical engineering at ETH Zürich, where he also received his doctoral degree. Subsequently, he was involved in the development of a compact desktop micro-tomographic imaging system that since has been commercialized and is now marketed worldwide. The research he has completed and is currently pursuing employs state-of-the-art biomechanical testing and simulation techniques as well as novel bioimaging and visualization strategies for musculoskeletal tissues. His approaches are now often used for precise phenotypic characterization in mammalian genetics, mechanobiology as well as tissue engineering and regenerative medicine. He is an author of over 500 peer-reviewed publications in international scientific journals and conference proceedings. His work has been cited over 30,000 times on Google Scholar with an h-index of 90. In 2015, he was elected to the Swiss Academy of Engineering Sciences (SATW) and the European Alliance for Medical and Biological Engineering and Science (EAMBES). In 2017, the European Research Council awarded him with a prestigious ERC Advanced Grant. He is a former President of the European Society of Biomechanics and the Swiss Society for Biomedical Engineering and currently serves on the Board of the International Society of Bone Morphometry.

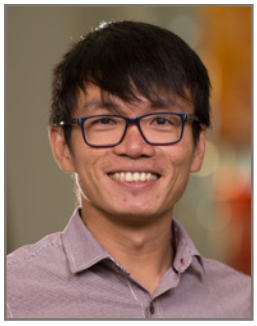
Stephan Bodkin - Clinical Biomechanics Award

August 4th, 1145 hrs

Stephan Bodkin is a current doctoral candidate within the Exercise and Sports Injury Laboratory at the University of Virginia. Stephan's primary research is directed towards functional consequences following musculoskeletal injury. Specifically, he is interested in the neurophysiological and biomechanical adaptations observed following ACL-reconstruction and providing evidence-based recommendations to safely and effectively return individuals to activity. In addition to his research within the lab, Stephan is involved with teaching undergraduate courses of musculoskeletal anatomy and clinical biomechanics. Stephan is expected to defend his dissertation titled "Optimizing Early Healthcare Decision Making in ACL-Reconstructed Patients" and graduate from the University of Virginia in the spring of 2020.

Award Winners

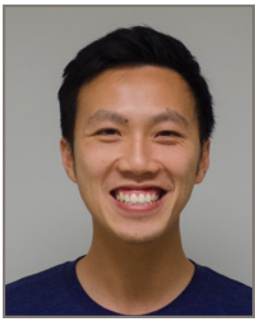
ISB Awards



Eng Kuan Moo - Promising Scientist Award

August 4th, 1500 hrs

Eng Kuan Moo was trained as a biomedical engineering scientist. He is interested in understand-ing the structure-composition-function relationship and cell-tissue interactions, in soft connective tissues. He received his doctoral degree from the University of Malaya in 2014, and joined Dr. Walter Herzog's group as a post-doctoral fellow at the University of Calgary in the same year. His research program encompasses *in vitro*, *in situ* and *in vivo* experiments as well as theoretical modelling. His goal is understanding how mechanical forces are transduced to the cells, and how cells interact with the surrounding structural network in their native environment. This knowledge will be applied to the field tissue engineering with the ultimate goal of bio-fabricating a viable and functional tissue substitute for patients who suffer from soft tissue injuries/diseases.



Adrian Lai - Carlo De Luca Emerging Scientist Award

August 4th, 1500 hrs

Adrian Lai is a post-doctoral fellow in the Neuromuscular Mechanics Laboratory at Simon Fraser University (SFU). His research focuses on using sound engineering principles and techniques to answer fundamental and applied questions on the role of muscle function and neural drive to the muscles during whole-body movement. Dr Lai's research aims to link the fields of human physiology and whole-body mechanics through research in the coordination and mechanics underlying a muscle contraction, through to *in vivo* muscle and joint dynamics and finally to whole-body system function; all across a broad spectrum of movement tasks. After obtaining undergraduate and master degrees in Mechanical and Biomedical Engineering in Sydney, Australia, he moved to Melbourne, where he earned his Ph.D. degree in Mechanical Engineering, before moving to the Kinesiology department at SFU. His work has been funded by the Australian Research Council, National Institutes of Health, Natural Sciences and Engineering Research Council of Canada and the National Center for Simulation in Rehabilitation Research.

David Winter Young Investigator Award Nominees

Podium

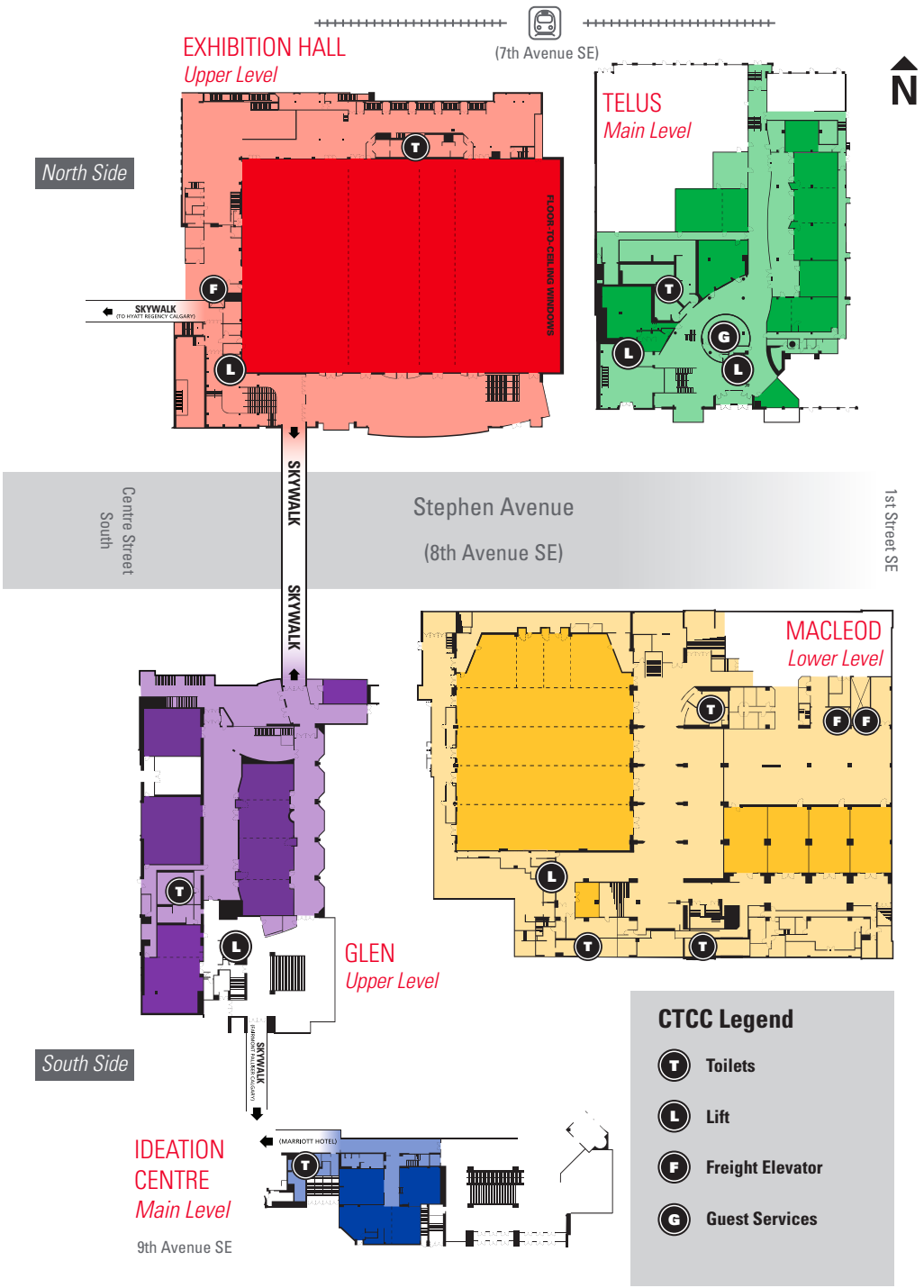
Giorgio Davico
Antoine Falisse
Ali Mohammadi
Scott Uhlrich
Nicole Zaino

Poster

Kevin Boldt
Michael McGeehan
Baaba Otoo
Dylan Schmitz
Jackie Zehr

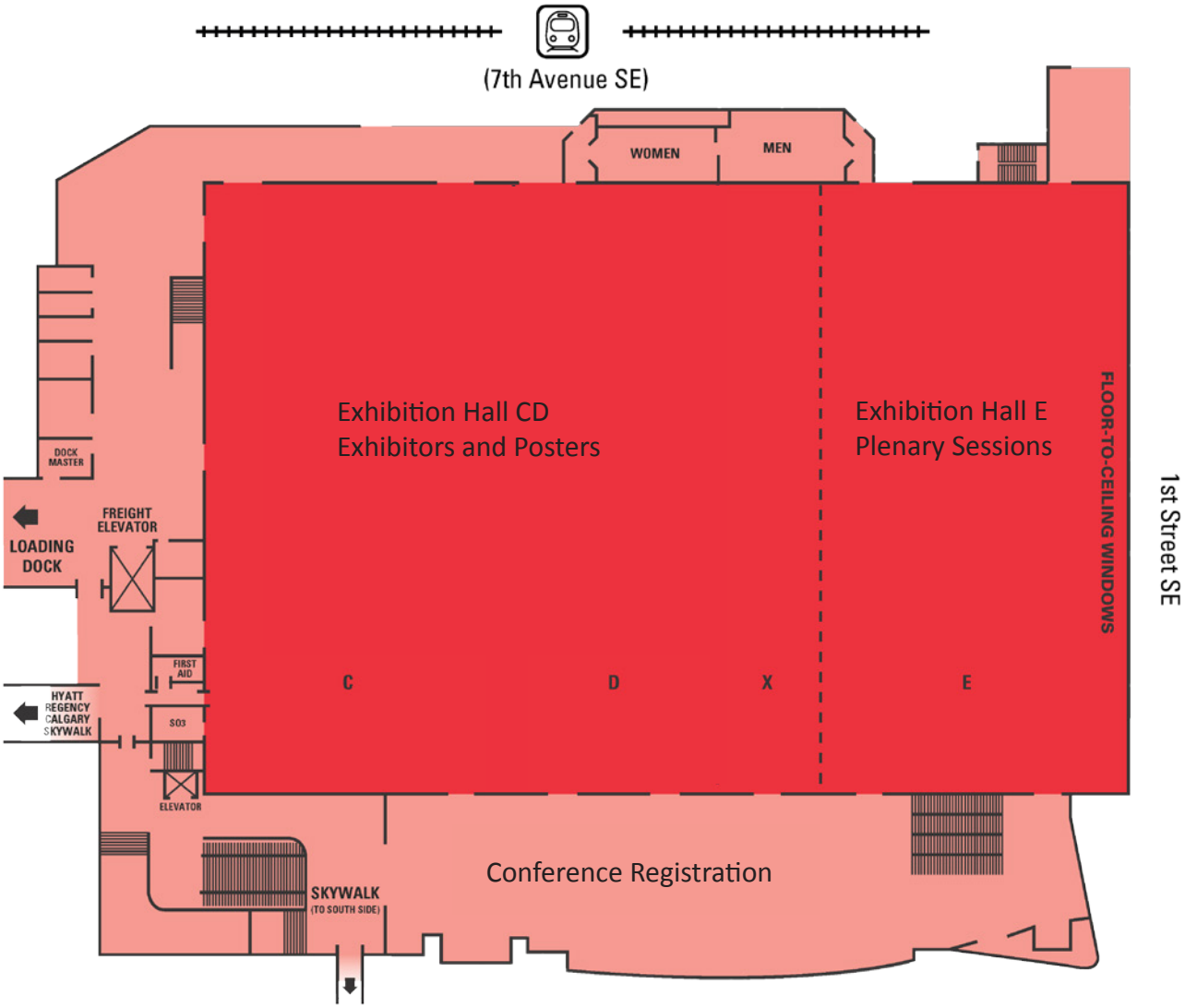
Venue Maps

Overview



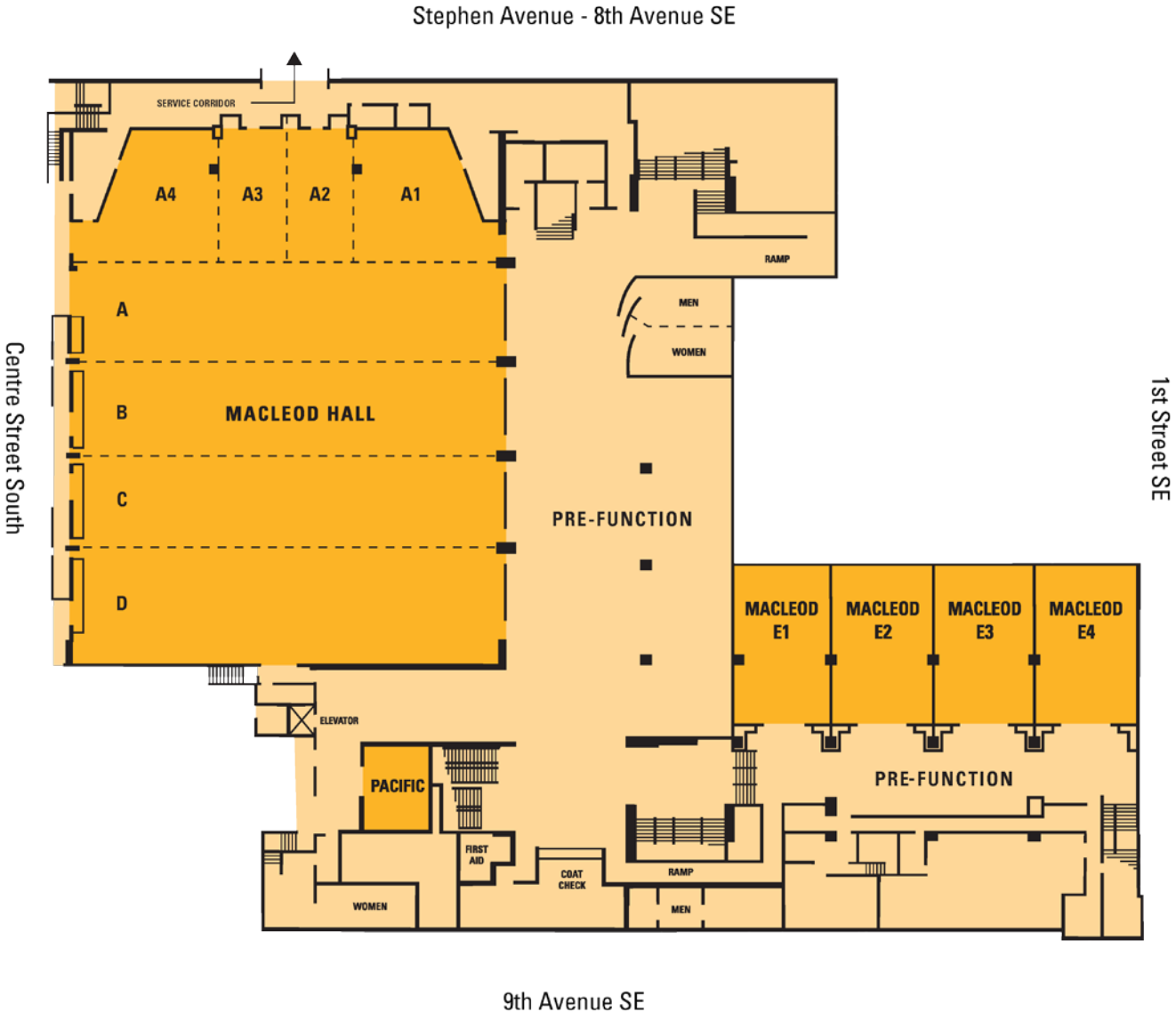
Venue Maps

North Building - Upper Level



Venue Maps

South Building - Lower Level

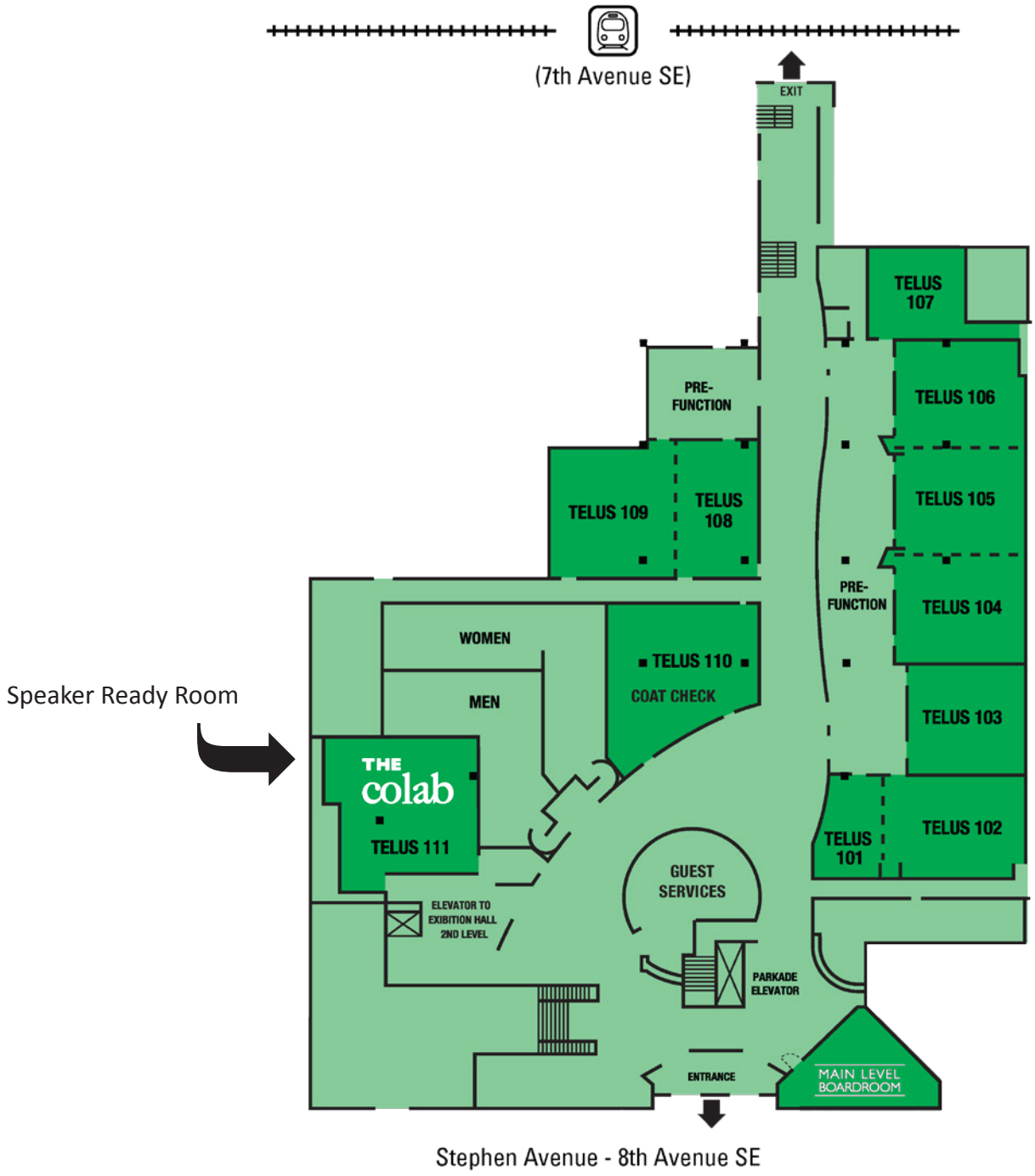


Venue Maps

South Building - Upper Level

Venue Maps

North Building - Street Level



Tutorials

Paradigms of Running Shoe Biomechanics

Benno Nigg
University of Calgary

July 31st, 1000 hrs to 1200 hrs, Macleod Hall AB

Paradigms describing running biomechanics have been proposed rather early in the recent research publications related to running. It has been proposed that 1) running should be modified to minimize impact loading and 2) running should be modified to minimize foot pronation, both to minimize running related injuries.

We have proposed that these original running paradigms in their current form are not valid and should be rejected. Furthermore, we have proposed some new paradigms: 1) the muscle tuning paradigm and 2) the preferred movement path paradigm, both to improve the understanding of running biomechanics.

This tutorial will (a) discuss the epidemiological and functional reasons why the impact and pronation paradigms should be rejected, (b) discuss and explain the muscle tuning paradigm and (c) discuss the preferred movement path paradigm. The tutorial will use lectures and discussions.

Recommended literature:

Nigg, B. M., Mohr, M. & Nigg, S. R. (2017). Muscle tuning and preferred movement path – a paradigm shift. Current Issues in Sport Science, 2:007. doi:10.15203/CISS_2017.007.

Statistics and Biomechanics

Todd Pataky
Kyoto University Graduate School of Medicine

July 31st, 1000 hrs to 1200 hrs, Macleod Hall CD

This tutorial will review the history of applied statistics and its uses in biomechanics. The roles of classical, modern and computational statistics and machine learning will be highlighted along with some key examples from the biomechanics literature. Increasingly popular analysis techniques will be reviewed including: functional data analysis, principal components analysis and statistical parametric mapping. Frequentist vs. Bayesian perspectives will be considered, and key statistical controversies will be discussed.

Bone Strength and Physical Activity

Saija Kontulainen
University of Saskatchewan

July 31st, 1300 hrs to 1500 hrs, Macleod Hall AB

This interactive tutorial will discuss bone adaptation to physical activity with a specific focus on evidence from advanced imaging studies. The tutorial will review pertinent evidence from experimental and observational studies, as well as randomized controlled exercise trials assessing bone adaptation in clinical studies of growing and

Tutorials

aging skeleton. Findings will be discussed in relation to theoretical bases of bone adaptation to loading stimulus with interactive examples. Theoretical bases will include the Mechanostat model, which explains how bone strain from loading stimulus leads to bone adaptation. The tutorial will also discuss physical activity interventions in individuals at risk of fracture as well as future research directions. By the end of this tutorial, participants will be able to describe, with examples: 1) bone structure and strength adaptation to physical activity/loading; 2) the Mechanostat model explaining bone adaptation to loading; 3) evidence of physical activity and bone strength in individuals at risk of fractures; and 4) areas of future research.

Standardization of Reporting Kinetic data in Biomechanics

Tim Derrick — Iowa State University
Stacey Meardon — East Carolina University

July 31st, 1300 hrs to 1500 hrs, Macleod Hall CD

The calculation and presentation of 3-dimensional joint moments gives the researcher a variety of choices that must be made and documented. From smoothing noisy kinematic and kinetic data, to choosing an anthropometric model and utilizing a specific method of calculation, there

are a number of options that affect the joint moment values. Once the moments have been calculated there are additional choices that must be made so that the data convey the maximal amount of information. These include the choice of presenting the internal or external moments, the choice of a coordinate system, and the method of normalization. If these decisions are made carefully the joint moments can provide a wealth of information concerning human movement. Haphazard or undocumented decisions can lead consumers of the research to a frustrating experience.

The purpose of this tutorial is to take a slow and methodical look at the calculation of joint moments. We will cover data smoothing, anthropometric modelling, and briefly describe methods of calculation. We will then look at the presentation of these data with special regard for the type of moments, the coordinate system and methods of normalization. Participants will have access to an online database that will allow an interactive look at how these varying methods affect the resulting curves.

Scientific Program

Wednesday, July 31st

- Plenary Session
- Invited Speaker
- Invited Symposia sessions
- Upper Limb/Spine Biomechanics
- Locomotion
- Methods in Biomechanics
- MSK Modeling/Simulation
- Muscle
- Neuromuscular/Postural Control & Balance
- Orthopedics Biomechanics
- Rehabilitation Biomechanics
- Sport Biomechanics
- Lower Limb Biomechanics
- Other
- Poster Sessions
- Social Events

Wednesday July 31st, 2019

Time	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900
Macleod AB		**Paradigms of Running Shoe Biomechanics** Benno Nigg			**Bone Strength and Physical Activity** Saija Kontulainen						
Macleod CD		**Statistics and Biomechanics** Todd Pataky			**Standardization of Reporting Kinetic data in Biomechanics** Tim Derrick/ Stacey Meardon						
Main Floor North Building	**Student Excursion Hike**										
Exhibition Hall E								**Opening Ceremonies Wartenweiler Lecture Hugh Herr**			
Exhibition Hall CD										**Welcome Reception**	

Thursday, August 1st, 2019

Day-at-a-Glance

Thursday August 1st, 2019

Time	Exhibition E	Macleod AB	Macleod CD	Macleod E1	Macleod E2	Macleod E3
0800 to 0845	Thor Besier MSK Modelling	Cheryl Kozey Osteoarthritis & Rehabilitation	Samantha Harris Skeletal Muscle			
0900 to 1000		Biomechanics and Osteoarthritis: Role of muscle on joint loading in OA	Multi-scale modeling to evaluate musculoskeletal loading during locomotion	Bone 1	Mentorship Matters – A tribute to Jean Landa Pytel	Applied Shoulder Biomechanics : An International Shoulder Group Symposium
1000 to 1030	Coffee Break - Exhibition Hall CD					
1030 to 1130		Osteoarthritis 1	Musculoskeletal Modelling in Comparative Biomechanics	Bone 2	Outreach & Education	Shoulder Modeling
1145 to 1245		Osteoarthritis 2	Gait Modeling 1	Finite Element Modeling	Comparative Biomechanics	Shoulder Elevation
1245 to 1400	Lunch - Exhibition Hall CD					
1400 to 1445	Kim Bennell					
1500 to 1600		Knee Cartilage & Osteoarthritis	Breakthroughs in Dynamic Simulations of Human Movement	Undergrad quick poster	Enhancing dance performance with biomechanics	Shoulder Arthroplasty
1600 to 1800	Poster Session 1 - Exhibition Hall CD					
1830 to 2030	Calgary Alumni Evening - Hyatt Imperial Ballroom					

Thursday, August 1st, 2019

Day-at-a-Glance

Thursday August 1st, 2019

Macleod E4	Glen 201-202	Glen 203-204	Glen 205	Glen 206	Glen 208-209
	Alan Wilson Comparitive Biomechanics				
Lumbar Spine 1	Running Injuries	Drop Landing - 1	Basketball	Walking - Elderly 1	Transtibial Amputation Functional Analysis
Coffee Break - Exhibition Hall CD					
Lumbar Spine 2	Model-based prediction of metabolic cost in human locomotion	Drop Landing 2	Baseball Pitching	Walking - Elderly 2	Transtibial Amputation Gait
Cervical Spine 1	Model-based prediction of metabolic cost in human locomotion	Drop Landing Plyomet-rics	Hockey/Skating	Walking Elderly 3	Ankle/Foot Orthosis
Lunch - Exhibition Hall CD					
					Diversity Grants Competition
Cervical Spine 2	Running footwear compliance: mechanics, energetics and perfor-mance	Vertical Jumping	Football/Rugby - Head Injuries	Elderly Falling	Foot/Ankle Prostheses
Poster Session 1 - Exhibition Hall CD					
Calgary Alumni Evening - Hyatt Imperial Ballroom					

Thursday, August 1st

Detailed Program

0800 - 0845	**Invited Speaker: Thor Besier - MSK Modeling**	**Exhibition Hall E**
0800 - 0845	Invited Speaker: Thor Besier - MSK Modeling	
0800 - 0845	**Invited Speaker: Cheryl Kozey - Osteoarthritis & Rehabilitation**	**Macleod A/B**
0800 - 0845	Invited Speaker: Cheryl Kozey - Osteoarthritis & Rehabilitation	
0800 - 0845	**Invited Speaker: Samantha Harris - Skeletal Muscle**	**Macleod C/D**
0800 - 0845	Invited Speaker: Samantha Harris - Skeletal Muscle	
0800 - 0845	**Invited Speaker: Alan Wilson - Comparitive Biomechanics**	**Glen 201-202**
0800 - 0845	Invited Speaker: Alan Wilson - Comparitive Biomechanics	
0900 - 1000	**Biomechanics and OA: Role of Muscle on Joint loading in OA Structural and Symptomatic Processes**	**Macleod A/B**
0900 - 0912	The role of muscles in joint loading and osteoarthritis	**Walter Herzog**
0912 - 0924	Human joint contact loading including muscle models and oa processes	**David Lloyd**
0924 - 0936	Biomechanical and neuromuscular responses to movement evoked knee osteoarthritis joint pain	**Katherine Boyer**
0936 - 0948	Role of biomechanics and muscle activity in knee osteoarthritis structural disease progression	**Kim Bennell**
0948 - 1000	Panel Discussion	**Cheryl Hubley-Kozey**
0900 - 1000	**Multi-Scale Modeling to Evaluate MSK Loading in Locomotion and Degenerative Joint Disease**	**Macleod C/D**
0900 - 0912	Novel mechanobiological computational models to predict local degenerative changes of articular cartilage	**Rami Korhonen**
0912 - 0924	Microscale mechanics in rate-dependent articular cartilage failure	**Corinne Henak**
0924 - 0936	New insights into femoroacetabular syndrome using in-silico assessment of muscle and contact forces	**Mario Lamontagne**
0936 - 0948	The effects of early surgical interventions on hip joint loading	**Kc Geoffrey Ng**
0948 - 1000	Panel Discussion	**Ilse Jonkers**
0900 - 1000	**Bone 1**	**Macleod E1**
0900 - 0912	Paediatric lower limb bones can be accurately reconstructed via the map client for use in musculoskeletal modelling	**Giorgio Davico**
0912 - 0924	Lower limb bones shape variations of a paediatric population	**Julie Choisne**
0924 - 0936	Typical shape differences in talus and calcaneus between subjects with chronic ankle instability and controls	**Nazli Tumer**
0936 - 0948	The investigation of the average shape and variations of the human talus bone	**Tao Liu**
0948 - 1000	Integration of external knee joint loads in the pre-surgical planning of high tibial osteotomy: a proof-of-concept study	**Luca Modenese**
0900 - 1000	**Mentorship Matters - A tribute To Jean Landa Pytel**	**Macleod E2**
0900 - 1000	Mentorship matters - a tribute to jean landa pytel	**Mary Rodgers**
0900 - 1000	**Applied Shoulder Biomechanics: An International Shoulder Group Symposium**	**Macleod E3**
0900 - 0912	Background of isg and general trends in translational shoulder biomechanics	**Andrea Giovanni Cutti**
0912 - 0924	Practical application of shoulder biomechanics knowledge to wheelchair users	**Melissa Morrow**
0924 - 0936	Biomechanical shoulder models can support surgical decisions for joint replacement	**Andreas Kontaxis**
0936 - 0948	Considerations for coordinate system definitions for imaging-based kinematic measures at the shoulder joint	**Kristin Zhao**
0948 - 1000	Elevating shoulder biomechanics into the future: discussion of emergent topics	**Clark Dickerson**
0900 - 1000	**Lumbar Spine 1**	**Macleod E4**
0900 - 0912	Creepy effects of prolonged static flexion on sub-regional lumbar spine motion during manual lifting	**Dennis Larson**
0912 - 0924	Exploring passive stiffness changes in the lumbar spine in response to low velocity rear impact collisions	**Kayla Fewster**
0924 - 0936	Arm-to-thigh bracing for light-to-moderate lifting tasks reduces lumbar spine loads	**Erica Beaucage-Gauvreau**
0936 - 0948	A multiscale model for whole-body and tissue-level lumbar spine biomechanics	**Jasmin Honegger**
0948 - 1000	Influence of lumbar spine motion constraint on lower extremity joint range-of-motion used during lifting	**Danielle Carnegie**

Thursday, August 1st

Detailed Program

0900 - 1000	**Running Injuies**	**Glen 201-202**
0900 - 0912	Are we moving forward in research on risk factors for running-related injuries?	**Max Paquette**
0912 - 0924	Development of overuse injuries in running - a multidisciplinary approach	**Jonatan Jungmalm**
0924 - 0936	Combining biomechanics and epidemiology in running injury research	**Henrik Sørensen**
0936 - 0948	Beyond "how hard did it feel?" what can we gain from the use of wearable sensors to monitor training loads in running?	**Chris Napier**
0948 - 1000	Panel Discussion	**Stefan Grau**
0900 - 1000	**Drop Landing 1**	**Glen 203-204**
0900 - 0912	Knee abduction moment is decreased by gluteus medius force while increased by vertical and lateral ground reaction force	**Ryo Ueno**
0912 - 0924	Knee mechanics of drop jump in individuals with low and high q-angle	**Youngmin Chun**
0924 - 0936	Female athletes with generalized joint hypermobility control acl strain during a single leg land and cut	**Christopher Geiser**
0936 - 0948	Visually-demanding secondary tasks associate with decreased knee flexion during a jump landing task	**Patrick Fischer**
0948 - 1000	Muscle co-contraction measured in vivo during dvj increases tibial anterior force	**Alessandro Navacchia**
0900 - 1000	**Basketball**	**Glen 205**
0900 - 0912	Effects of the mental load in the acceleration of upper limb and performance during free-throws shooting in professional basketball players	**Mauricio Delgado**
0912 - 0924	Contributions of center of mass velocity to ball velocity at release in basketball shots initiated with and without momentum	**Casey Wiens**
0924 - 0936	Longitudinal changes in 3d jumping biomechanics correlate to patellar tendon imaging in collegiate basketball players.	**Andrew Kraszewski**
0936 - 0948	Determinants of countermovement vertical jump performance among ncaa division 1 men's basketball players	**John Harry**
0948 - 1000	Countermovement jump performance comparison between high school, draft, and professional male basketball players.	**Rena Hale**
0900 - 1000	**Walking - Elderly 1**	**Glen 206**
0900 - 0912	Shorter gastrocnemius lengths in older adults associate with worse capacity to enhance push-off intensity in walking	**Katie Conway**
0912 - 0924	The knee and ankle extensor muscle effort during walking, running and sprinting in young versus older adults	**Juha-Pekka Kulmala**
0924 - 0936	Habitual endurance running does not mitigate age-related differences in gait kinetics	**Rebecca Krupenevich**
0936 - 0948	The impact of age on muscle activation patterns during prolonged walking	**Erica Casto**
0948 - 1000	Evidence of an age-related decline in achilles tendon stress across a range of walking speeds	**Anahid Ebrahimi**
0900 - 1000	**Transtibial Amputation Functional Analysis**	**Glen 208-209**
0900 - 0912	People with uni-lateral transtibial amputation adopt an asymmetrical neural control strategy after chronic exposure to asymmetrical biomechanics	**Lee Childers**
0912 - 0924	Temporal-spatial gait parameters during a 180^{o} turn in people with lower limb amputation	**Sheila Clemens**
0924 - 0936	Effect of prosthetic alignment on muscle activity for people with a unilateral transtibial amputation during sit-to-stand	**Katherine Wagner**
0936 - 0948	Changes in muscle activity of people with transtibial amputation when using a powered prosthesis	**Vibhavari Vempala**
0948 - 1000	Exploring effects of artificial gastrocnemius on persons with transtibial amputation using a powered ankle prosthesis	**David Ziemnicki**
1030 - 1130	**Osteoarthritis 1**	**Macleod A/B**
1030 - 1042	A simpler method to evaluate the knee adduction moment during gait using plantar pressure measurements	**Kevin Thomas**
1042 - 1054	Effects of bilateral medial knee osteoarthritis on the body's center of mass motion relative to the center of pressure during gait	**Pei-An Lee**
1054 - 1106	Joint loading and muscle strength of patients with knee osteoarthritis when walking downhill	**Gerda Strutzenberger**

Thursday, August 1st

Detailed Program

1106 - 1118	Lateral knee translation measures in adults with knee osteoarthritis	**Dylan Kobsar**
1118 - 1130	Personalization improves the efficacy of gait modifications at reducing the knee adduction moment in individuals with medial knee osteoarthritis	**Scott Uhlrich**
1030 - 1130	**Using Musculoskeletal Modelling in Comparative Biomechanics**	**Macleod C/D**
1030 - 1042	Making monsters: using musculo-skeletal modelling to understand the consequences of increased body size in varanid lizards	**Christofer Clemente**
1042 - 1054	From mice to men: how animal modelling can inform subject-specific human modelling	**James Charles**
1054 - 1106	Probing the interaction of compliance and activation on the force-length operating range and force capacity of skeletal muscle using comparative musculoskeletal modelling	**Jonas Rubenson**
1106 - 1118	Building a bird: musculoskeletal modeling and simulation of wing-assisted incline running during avian ontogeny	**Ashley Heers**
1118 - 1130	Predictive simulations to explore interactions between muscle-tendon properties, gait patterns and cost of transport	**Friedl De Groote**
1030 - 1130	**Bone 2**	**Macleod E1**
1030 - 1042	Morphological and apparent-level stiffness variations between normal and osteoarthritic bone	**Nikolas Knowles**
1042 - 1054	Fatigue testing of equine mciii subchondral bone under a simulated training program	**Shaktivesh Shaktivesh**
1054 - 1106	Characterization of bone material properties in pediatric cases of severe osteogenesis imperfecta	**Katarina Radmanovic**
1106 - 1118	Disuse impairs the mechanical competence of bone by regulating the characterizations of mineralized collagen fibrils in cortical bone	**Pengfei Yang**
1118 - 1130	Influences of breed and age on bending strength of rat femur	**Mei Wang**
1030 - 1130	**Outreach & Education**	**Macleod E2**
1030 - 1042	Targeted embodied learning programs for enhanced outreach in biomechanics: national biomechanics day events based on sport and dance	**Paul Devita**
1042 - 1054	Thoughts on publishing survey: an initial analysis of satisfaction levels on academic publishing	**Ricky Pimentel**
1054 - 1106	Taking a leap: an off-site multi-partner national biomechanics day for dance	**Antonia Zaferiou**
1106 - 1118	Biomechanics olympic games: a didactic innovation strategy inspired by the olympic spirit	**Inaê De Oliveira Marcelo**
1118 - 1130	To be determined	
1030 - 1130	**Shoulder Modeling**	**Macleod E3**
1030 - 1042	Muscle compensation at the glenohumeral joint with increased injury severity: a computational assessment	**Sujata Khandare**
1042 - 1054	Synergistic trunk dynamics reduces risk of shoulder injury during volleyball hitting.	**Dhruv Gupta**
1054 - 1106	Illustrating the effect of subject-specific muscle insertions on joint and muscle mechanics in a shoulder joint model	**Asma Salhi**
1106 - 1118	Evaluating shoulder disorders using musculoskeletal simulation	**Cheng-Hao Lai**
1118 - 1130	Probabilistic evaluation of scapulohumeral muscle functional roles to alterations in musculoskeletal geometry	**Daanish Mulla**
1030 - 1130	**Lumbar Spine 2**	**Macleod E4**
1030 - 1042	Generation of an unexpected load through a mechanical device for lifting studies	**Sarah Mukui Mutunga**
1042 - 1054	Effect of individual lumbar vertebral postures on its fracture strength under high-speed vertical acceleration	**Kwong Ming Tse**
1054 - 1106	Lumbar spine loads are reduced for activities of daily living when using a braced arm-to-thigh technique	**Erica Beaucage-Gauvreau**
1106 - 1118	Flexion induced creep in the low back does not consistently affect local or distal mechanical pain sensitivity	**Daniel Viggiani**
1118 - 1130	Quantification of the intersegmental spine response to perturbation with and without cognitive interference	**Jarrett Norrie**
1030 - 1130	**Model-based Prediction of Metabolic Cost in Human Locomotion**	**Glen 201-202**
1030 - 1042	Introduction	**Glen Lichtwark**
1042 - 1054	The lower limit on the metabolic cost of transport in human walking?	**Herre Faber**
1054 - 1106	Estimations of metabolic cost of gait using inverse methods and a weight-based adjustment	**Anne Koelewijn**
1106 - 1118	Independent motor unit recruitment reduces the predicted metabolic cost of locomotion	**Adrian Lai**

Thursday, August 1st

Detailed Program

1118 - 1130	Predicting metabolic cost of locomotion via musculoskeletal simulation	**Brian Umberger**
1030 - 1130	**Drop Landing 2**	**Glen 203-204**
1030 - 1042	Small interlimb asymmetries during return to sport testing with kinematic analysis in healthy athletes	**Mark Vorensky**
1042 - 1054	Active lower limb muscle volume increases when landing with body borne load	**Kayla Seymore**
1054 - 1106	Alterations in whole-body biomechanics during failed and successful unanticipated single-leg landings	**Nicholas Romanchuk**
1106 - 1118	Influence of hip abductor fatigue on acl loading during single-leg landing	**Namwoong Kim**
1118 - 1130	Muscle force contributions to the knee joint anterior shear force and valgus moment during single leg landing	**Nirav Maniar**
1030 - 1130	**Baseball Pitching**	**Glen 205**
1030 - 1042	Induced power analysis of sequential body motion and elbow valgus load during baseball pitching	**Arnel Aguinaldo**
1042 - 1054	Kinematic analysis of the trunk during baseball pitching	**Yu-Lin Chen**
1054 - 1106	Full dxa-driven inverse dynamic analysis of youth pitching arm kinetics	**Dalton Jennings**
1106 - 1118	Kinematic predictors of ball velocity and elbow varus moment in collegiate baseball pitchers	**Amy Whited**
1118 - 1130	Investigating the tommy john twist and its relation to elbow varus torque in professional baseball pitchers	**Brittany Dowling**
1030 - 1130	**Walking - Elderly 2**	**Glen 206**
1030 - 1042	Increasing gastrocnemius activity during walking may elicit counterproductive effects on fascicle behaviour in older adults	**Michael Browne**
1042 - 1054	Quantification of coordination and coordination variability during gait in older adults at different speeds	**Marcus Vieira**
1054 - 1106	Effects of older age and sex on motor output variability at individual joints during gait	**Christopher Bailey**
1106 - 1118	Difference in gait adaptation between younger and older adults adjusting to a continuous target-stepping test	**Marjolein Booij**
1118 - 1130	Ankle moment effects on hip joint angular accelerations during walking in healthy young and older adults	**Jeroen Waanders**
1030 - 1130	**Transtibial Amputation Gait**	**Glen 208-209**
1030 - 1042	Functional comparisons between people with ertl and non-ertl transtibial amputation	**Abbie Ferris**
1042 - 1054	Individuals with unilateral transtibial amputation exhibit reduced accuracy, precision and consistency during a targeted stepping task	**Michael Haley**
1054 - 1106	Lower extremity joint contributions to trunk control during walking in persons with transtibial amputation	**Adam Yoder**
1106 - 1118	The effect of shock-absorbing pylon stiffness on prosthetic mechanical work during walking	**Jenny Anne Maun**
1118 - 1130	Development of inertial sensor-based measures for lower limb segmental analysis during gait in people with unilateral amputation	**Sheila Clemens**
1145 - 1245	**Osteoarthritis 2**	**Macleod A/B**
1145 - 1157	Kinematic variability according to pain and structural disease severity in people with hip osteoarthritis	**Michelle Hall**
1157 - 1209	Hip cf impulse during stair descend best discriminates between healthy controls and hip osteoarthritis patients	**Jill Emmerzaal**
1209 - 1221	Predicting degenerative osteoarthritis of a hip joint using neural network	**Wiha Choi**
1221 - 1233	Influence of variable stiffness shoes on secondary gait mechanics in knee osteoarthritis patients	**Ethan Steiner**
1233 - 1245	Relationship of fat and lean tissue in the thigh with measures of mobility in women with symptomatic knee osteoarthritis	**Elora Brenneman**
1145 - 1245	**Gait Modeling 1**	**Macleod C/D**
1145 - 1157	Simulation of a high tibial osteotomy in patients with varus knee alignment and medial knee osteoarthritis	**Cynthia Fantini Pagani**
1157 - 1209	Predicting the effect of unilaterally reducing the number of muscle synergies on gait	**Marleny Arones**
1209 - 1221	Muscle anatomical variability and joint contact forces prediction in post-menopausal women	**Erica Montefiori**
1221 - 1233	Variability in hip contact forces during activities of daily living: a large cohort study	**Enrico De Pieri**
1233 - 1245	Gait alteration strategies for knee osteoarthritis: a comparison of joint loading via generic and patient-specific musculoskeletal model scaling techniques	**Christine Dzialo**
1145 - 1245	**Finite Element Modeling**	**Macleod E1**
1145 - 1157	Bone health in transfemoral amputees	**Joshua Kaufmann**

Thursday, August 1st

Detailed Program

1157 - 1209	Magnetic resonance imaging based finite element modeling of the proximal femur: an in vivo precision study	**Kadin Majcher**
1209 - 1221	Pressure changes on the ankle articular surface after low tibia osteotomy with and without fibular osteotomy: a finite element study	**Jung Min Lee**
1221 - 1233	Structural modelling of trabecular bone adaptation using a voronoi network	**Andrew Phillips**
1233 - 1245	The effect of stiffness and thickness of an internal fixation on mechanical response of a tibial fracture	**Youngtak Ko**
1145 - 1245	**Comparative Biomechanics**	**Macleod E2**
1145 - 1157	How kangaroo rats jump higher: muscle dynamics from in vivo measurements	**Marie Janneke Schwaner**
1157 - 1209	Coordinating fore and hind limb locomotion: when two strategies are better than one	**Delyle Polet**
1209 - 1221	Decreased physical activity during growth reduces peak power capacity but not running economy in a bipedal animal model	**Suzanne Cox**
1221 - 1233	Dolphin power: estimating center of mass power during a controlled swimming task	**Kenneth Shorter**
1233 - 1245	The roles of posture and morphology on bipedal walking patterns	**Russell Johnson**
1145 - 1245	**Shoulder Elevation**	**Macleod E3**
1145 - 1157	Activation of supraspinatus and infraspinatus partitions during performance of activities of daily living	**Tea Lulic**
1157 - 1209	Emg assessment of muscular activation during shoulder elevation tasks based on activities of daily living in subjects with shoulder impingement syndrome	**Mauricio Delgado**
1209 - 1221	Antigravity assistive force reduces muscle activations during shoulder elevation movements	**Patrick Hall**
1221 - 1233	Longitudinal emg analysis of shoulder muscles in patients surgically treated for rotator-cuff tear	**Andrea Giovanni Cutti**
1233 - 1245	Influencers of relationships between supraspinatus regional indwelling and surface electromyography in arm elevations	**Alan Cudlip**
1145 - 1245	**Cervical Spine 1**	**Macleod E4**
1145 - 1157	Cervical spine loading during asymmetrical non-injurious physical activities	**Jessica Isaacs**
1157 - 1209	A new index for the classification of neck injured patients, the neck functional holistic analysis score	**Alberto Fidalgo-Herrera**
1209 - 1221	Analysis of facet joint displacement during passive upper cervical mobilization	**Erik Cattrysse**
1221 - 1233	Towards a methodology to produce bilateral cervical facet dislocation and investigate the roles of axial compression and distraction on facet mechanics and fracture mechanism	**Ryan Quarrington**
1233 - 1245	Reliability of ultrasound-based muscle size and mechanical properties of the cervical flexor and extensor muscles and sex differences	**Takashi Nagai**
1145 - 1245	**Model-Based Prediction of Metabolic Cost in Human Locomotion (cont)**	**Glen 201-202**
1145 - 1157	A simple mechanical model to estimate the metabolic cost of human walking	**Amy Wu**
1157 - 1245	Panel Discussion	**Glen Lichtwark**
1145 - 1245	**Drop Landing Plyometrics**	**Glen 203-204**
1145 - 1157	Effect of sex and age on lower extremity sagittal plane asymmetry during single and double leg drop jump landings	**Hui Min Carolynn Tan**
1157 - 1209	Individual perception of knee healthy relates with peak of groud reaction force after long term of acl reconstruction	**Karine Stoelben**
1209 - 1221	Vertical drop jump biomechanics in youth with juvenile idiopathic arthritis	**Gregor Kuntze**
1221 - 1233	Sex-specific landing strategies during unanticipated drop-jumps landings in young athletes	**Nicholas Romanchuk**
1233 - 1245	Relationship between frontal plane knee kinematics and landing kinetics in a rebound jump	**Melissa Aure**
1145 - 1245	**Hockey/Skating**	**Glen 205**
1145 - 1157	Effect of a soft exoskeleton on lower body muscle activity during forward skating	**Michael Solomon**
1157 - 1209	To be determined	
1209 - 1221	Performance and injury risk assessment in figure skating: axel jump biomechanics.	**Davide Pavan**
1221 - 1233	Comparison of emg methods to identify aerobic and anaerobic thresholds in speed skaters	**Tatiane Piucco**

Thursday, August 1st

Detailed Program

1233 - 1245	National hockey league equipment regulation effects on goaltender reach envelope	**Kathleen Maclean**
1145 - 1245	**Walking - Elderly 3**	**Glen 206**
1145 - 1157	Novel insights on the relative importance of clinical and gait measures for detecting fall risk in community-dwelling older adults	**Sandra Hundza**
1157 - 1209	Gaze diversion in obstacle crossing: effects of aging	**Hyeyoung Cho**
1209 - 1221	Gait kinetic analysis in older adults after stair negotiation	**Andreia Aires**
1221 - 1233	Gait termination after stepping down a curb: effect of concurrent cognitive task	**Chuyi Cui**
1233 - 1245	Transition step mechanics: how influential are age and fall history?	**Emily Gerstle**
1145 - 1245	**Ankle/Foot Orthosis**	**Glen 208-209**
1145 - 1157	The influence of articulated afos on forward propulsion during walking adaptability tasks post stroke	**Arian Vistamehr**
1157 - 1209	The effect of tuning ankle foot orthoses-footwear combinations on the gait kinematics of children with cerebral palsy: a case series	**Nicky Eddison**
1209 - 1221	Mechanical energy in overground walking of intrepid dynamic exoskeletal orthosis users	**Megan Alfi**
1221 - 1233	Relationship between muscle activation and ankle motino in an ankle foot orthosis-footwear combination	**Christopher Hovorka**
1233 - 1245	Isolating brace power contribution in intrepid dynamic exoskeletal orthosis users during walking	**Nicholas Lobb**
1400 - 1445	**Keynote: Kim Bennell**	**Exhibition Hall E**
1400 - 1445	Applying biomechanical research to inform clinical management of musculoskeletal conditions	**Kim Bennell**
1500 - 1600	**Knee Cartilage & Osteoarthritis**	**Macleod A/B**
1500 - 1512	Association between quadriceps function and femoral cartilage characteristics in young adults with obesity	**Derek Pamukoff**
1512 - 1524	Changes in serum cartilage biomarkers in relation to knee joint loading mechanics during moderate running exercise	**Maren Dreiner**
1524 - 1536	Load induced changes in articular cartilage biomarkers before and after high tibial osteotomy in patients with medial compartment knee osteoarthritis	**Annegret Mündermann**
1536 - 1548	Application of a novel atlas-based computational method to predict personalized knee osteoarthritis	**Mika Mononen**
1548 - 1600	Articular cartilage changes in women with knee hyperextension gait pattern	**Patricia Teran Wodzinski**
1500 - 1600	**Breakthroughs in Dynamic Simulations of Human Movement**	**Macleod C/D**
1500 - 1512	Opensim 4.0 and beyond: extracting biomechanical insights from measurements, models, and simulations of movement	**Ajay Seth**
1512 - 1524	The concurrent optimization of muscle activations and kinematics (comak) framework to predict functional knee mechanics: overview and opensim implementation	**Colin Smith**
1524 - 1536	Fast and physiologically realistic predictive simulations of healthy and pathological human movement	**Friedl De Groote**
1536 - 1548	Musculoskeletal simulations reveal the metabolic benefits of assistive strategies that couple multiple degrees-of-freedom	**Nicholas Bianco**
1548 - 1600	Panel Discussion	**Scott Delp**
1500 - 1600	**Undergrad Quick Poster**	**Macleod E1**
1500 - 1510	The role of handedness in visuoproprioceptive tasks	**Kieley Trempy**
1510 - 1520	Simulating finger-tip force using two common contact models: hunt-crossley and elastic foundation	**Kevin Hao**
1520 - 1530	Ligamentous support and range of motion in the canine cranio-cervical junction: a biomechanical cadaveric study	**Paul Slaughter**
1530 - 1540	Effect of ankle sprain history on ankle inversion biomechanics in high school football players	**Jordan Mcclung**
1540 - 1550	Ballroom dance biomechanical assessment using pressure sensing insoles & inertial markers	**G. Bryan Cornwall**
1550 - 1600	Quantitative assessment of the risk of anterior cruciate ligament injury in female soccer players throughout a four year case study using joint kinematics: preliminary results	**Pichayathida Luanpaisanon**
1500 - 1600	**Enhancing Dance with Biomechanics: A Model for Movement Training and STEAM education**	**Macleod E2**
1500 - 1512	Biomechanical metrics of aesthetic perception in dance	**Shaw Bronner**

Thursday, August 1st

Detailed Program

1512 - 1524	Biomechanical analysis of balance and spotting in multiple rotations of ballet dancers	Catherine Haber
1524 - 1536	Validation of a wearable sensor system to capture magnitude and quality of dance movements	Danica Hendry
1536 - 1548	Quantification of force generation during turns: implications for real-time sonified biofeedback	Antonia Zaferiou
1548 - 1600	Panel Discussion	Sarah Kenny
1500 - 1600	**Shoulder Arthroplasty**	**Macleod E3**
1500 - 1512	Quantifying the distribution of scapular bone density to guide optimal screw placement in reverse shoulder arthroplasty	Josh Ehrlich
1512 - 1524	Glenoid sphere lateralization and affect subscapularis function after reverse shoulder arthroplasty	Andreas Kontaxis
1524 - 1536	Is limited scapular mobility associated with poor functional outcomes after reverse shoulder arthroplasty?	Bernd Friesenbichler
1536 - 1548	Optimisation of reverse total shoulder arthroplasty through the combination of prosthesis placement	Jonathan Glenday
1548 - 1600	Changes in rotator cuff muscle length after reverse shoulder arthroplasty with balanced glenoid and humeral lateralization	Alexander W Hooke
1500 - 1600	**Cervical Spine 2**	**Macleod E4**
1500 - 1512	Text neck: the effect of smartphone usage on kinematics and clinical measures in young adults	Ashton Human
1512 - 1524	Response to rehabilitation of neck injuries derived from traffic accidents using the nfhas	Alberto Fidalgo-Herrera
1524 - 1536	Differences in biomechanical and electromyographic characteristics of successful vs. unsuccessful manual high-velocity, low-amplitude spinal manipulation in an asymptomatic population.	Lindsay Gorrell
1536 - 1548	Effect of cervical spine manipulation on muscle strength: a randomized clinical trial	Jansen Estrázulas
1548 - 1600	Immediate effect of maximum voluntary isometric contractions of the cervical flexor and extensor muscles on ultrasound-based muscle size and mechanical properties	Takashi Nagai
1500 - 1600	**Running Footwear Compliance: Mechanics, Energetics and Performance**	**Glen 201-202**
1500 - 1512	Footwear compliance: implications for running economy and distance running performance	Wouter Hoogkamer
1512 - 1524	Footwear creation process for improving the performance of marathon running	Emily Farina
1524 - 1536	Do foot muscles assist with transitions to compliant surfaces?	Luke Kelly
1536 - 1548	The influence of the midsole stiffness on multi-segment foot kinematics	Benedicte Vanwanseele
1548 - 1600	Midsole material properties affect the amplitude but not the frequency of soft-tissue vibrations in heel-toe runners	Marlene Giandolini
1500 - 1600	**Vertical Jumping**	**Glen 203-204**
1500 - 1512	Males produce more lower limb work than females during loaded vertical jumps	Auralea Fain
1512 - 1524	Does time of the day differentially affects jump performed in athletes and non-athletes?	Inaê De Oliveira Marcelo
1524 - 1536	Produced momenta and work outputs of lower limb muscles during horizontal and vertical jumps	Yuta Suzuki
1536 - 1548	The effects of transcranial direct current stimulation on kinetics of lower extremity during countermovement jump	Wei Wang
1548 - 1600	Countermovement jump assessment as a substitute for isokinetic strength testing	Rena Hale
1500 - 1600	**Football/Rugby - Head Injuries**	**Glen 205**
1500 - 1512	Rugby tackle technique can be altered with coaching guidance	Suzi Edwards
1512 - 1524	Video analysis of head impact parameters in youth football.	Danielle Gyemi
1524 - 1536	Measurement of head forces magnitude and location during live scrummaging	Pavlos Silvestros
1536 - 1548	Reducing scrimmages may reduce concussion rate in high school football.	Barret Zimmerman
1548 - 1600	The effect of player contact characteristics on head impact exposure in youth football games	Daniella Diguglielmo
1500 - 1600	**Elderly Falling**	**Glen 206**
1500 - 1512	Determining the minimum number of strides to accurately measure dual-task walking gait in older adult fallers and non-fallers	Drew Commandeur
1512 - 1524	Identification of gait pattern in elderly fallers trough center of mass entropy and learning machine.	Diego Robles

Thursday, August 1st

Detailed Program

1524 - 1536	A comparison of pressure mat and force plate parameters for classifying elderly fallers	**Ashirbad Pradhan**
1536 - 1548	Fall prediction of elderly with logistics regression model based on temporal variables by timed up and go test	**Jeongwoo Seo**
1548 - 1600	Association of individual fall risk with standing measures on a step ladder	**Erika Pliner**
1500 - 1600	**Foot/Ankle Prostheses**	**Glen 208-209**
1500 - 1512	Biomechanical accommodation to an ankle-foot prosthesis: an analysis of new users within the first year of ambulation	**Caitlin Mahon**
1512 - 1524	Addition of a passive toe joint: considerations for passive and powered ankle-foot prosthesis design	**Rachel Teater**
1524 - 1536	Variable stiffness pneumatic ankle prosthesis with self-recharging for weight-lifting exercises	**Hannah Mrazsko**
1536 - 1548	Effects of prosthetic forefoot stiffnesses on the external mean ankle moment arm (emama) in different activities	**Jennifer Leestma**
1548 - 1600	Effects of prosthetic foot on gait patterns in toddlers	**Kara Ashcraft**
1600 - 1800	**Posters 1**	**Exhibition Hall C/D**
1600 - 1800	Posters 1	

Notes

Friday, August 2nd, 2019

Day-at-a-Glance

Friday August 2nd, 2019

Time	Exhibition E	Macleod AB	Macleod CD	Macleod E1	Macleod E2	Macleod E3
0800 to 0845	Scott Delp ASB Goel Award	Marjolein van der Meulen Orthopedic	Steve Robinovitch Elderly Falling			
0900 to 1000		Knee Modeling 1	Postural Control Elderly	History Dependent Muscle Properties	Cycling 1 - Energetics/ Coordination	Bone Fracture Modeling 1
1000 to 1030	Coffee Break - Exhibition Hall CD					
1030 to 1130		Knee Modeling 2	Falling Biomechanics	Skeletal Muscle Force-Length Relationship	Cycling 2	Bone Fracture Modeling 2
1145 to 1245		Knee Modeling 3	Postural Control	Skeletal Muscle Aging	Cutting Maneuvers	Running Injuries - tibial stress fractures
1245 to 1400	Lunch - Exhibition Hall CD					
1400 to 1445	Irene Davis ASB Borelli Award					
1500 to 1600		Combined Musculoskel-etal and Finite-Element Modeling	Slipping and Falling	ASB Grad quick poster 1	Reflections from Past Career Awardees of the Canadian Society for Biomechanics	Impact of Obesity on Joints: Body Mass, Biology or Both?
1600 to 1800	Poster Session 2 - Exhibition Hall CD					
1930 to 2030	VIP Dinner - Thomsons Restaurant in The Hyatt					

Friday, August 2nd, 2019

Day-at-a-Glance

Friday August 2nd, 2019

Macleod E4	Glen 201-202	Glen 203-204	Glen 205	Glen 206	Glen 208-209
	Karl Zelik Rehabilitation Biomechanics				
Plantar Pressure Measurements	Refreshing Perspectives on Assistive Technology	Wearable Sensors in Biomechanics Research: Moving the Laboratory Outdoors	Balance Recovery Following Perturbations	Concussion – Mechanisms, prevention, and opportunities for technology	Motor Control in Biomechanics
Coffee Break - Exhibition Hall CD					
Foot Biomechanics	Lifting Biomechanics	Challenges and resolutions in human motion monitoring with wearables	Balance Control in Patients 1	Locomotion following ACL Loss 1	Motor Control in Biomechanics
Deep Artificial Neural Network in Gait	Low Back Pain	Wearable Sensors in Sport	Balance Control in Patients 2	Locomotion following ACL Loss 2	Jumping/Landing
Lunch - Exhibition Hall CD					
	Diversity Lunch 1300-1400				
General Gait	Imaging in Osteoarthritis	"In the wild" application of wearable tech for sport: opportunities and obstacles	Elderly Walking	Personalized surgery for the human knee and ankle joints	Back + Spine
Poster Session 2 - Exhibition Hall CD					
Student Excursion, Night Out - Meet near Guest Services Desk (main floor of North Building) at 2200 hrs					

Friday, August 2nd

Detailed Program

0800 - 0845	**Invited Speaker: Scott Delp - ASB Goel**	**Exhibition Hall E**
0800 - 0845	Invited Speaker: Scott Delp - ASB Goel	
0800 - 0845	**Invited Speaker: Marjolein van der Meulen - Orthopedic**	**Macleod A/B**
0800 - 0845	Invited Speaker: Marjolein van der Meulen - Orthopedic	
0800 - 0845	**Invited Speaker: Steve Robinovitch - Elderly Falling**	**Macleod C/D**
0800 - 0845	Invited Speaker: Steve Robinovitch - Elderly Falling	
0800 - 0845	**Invited Speaker: Karl Zelik - Rehabilitation Biomechanics**	**Glen 201-202**
0800 - 0845	Invited Speaker: Karl Zelik - Rehabilitation Biomechanics	
0900 - 1000	**Knee Modeling 1**	**Macleod A/B**
0900 - 0912	Differences in knee ligament moment arms might contribute to the higher rate of ligament injuries in women compared to men	**Nynke Rooks**
0912 - 0924	Development and validation of subject-specific patellofemoral joint kinematic models for children and adolescents with recurrent patellar dislocation	**Martina Barzan**
0924 - 0936	Quantification of the role of muscle forces in knee joint mechanics in subjects with acl injury before and after surgery	**Davide Pavan**
0936 - 0948	Using musculoskeletal simulations to aid in knee brace development	**David Leandro Dejtiar**
0948 - 1000	Patellofemoral morphology influences muscle activation and patella translation	**Mitchell Wheatley**
0900 - 1000	**Postural Control Elderly**	**Macleod C/D**
0900 - 0912	Force steadiness of the hip abductors is associated with postural sway in both young and older adults	**Leah Davis**
0912 - 0924	Does wearing augmented and virtual reality googles affect the balance of older adults?	**Edgar Vieira**
0924 - 0936	Less regular postural sway is linked with age-related decline of postural control.	**Wolbert Van Den Hoorn**
0936 - 0948	Training with lateral stepping improves clinical balance tests in older adults	**Andreas Skiadopoulos**
0948 - 1000	Time-dependent tuning of balance control and aftereffects following optical flow perturbation training in older adults	**Jackson Richards**
0900 - 1000	**History Dependent Muscle Properties**	**Macleod E1**
0900 - 0912	Non-crossbridge contributions to residual force enhancement in vivo	**Daniel Hahn**
0912 - 0924	Effects of stretch/shortening magnitude on force depression of the quadriceps femoris after pure shortening and stretch-shortening contractions	**Martin Groeber**
0924 - 0936	Alterations to the history-dependence of force following short term unloading.	**Matthew Boston**
0936 - 0948	Residual force enhancement and depression of human single muscle fibres	**Parastoo Mashouri**
0948 - 1000	Residual force enhancement in cardiac myofibrils	**Seong-Won Han**
0900 - 1000	**Cycling 1 - Energetics/Coordination**	**Macleod E2**
0900 - 0912	The effect of lateral bicycle sway on joint power and center of mass motion during standing cycling	**Ross Wilkinson**
0912 - 0924	Effect of cadence and power output on energy cost across different age range elderly during cycling	**Keyi Yin**
0924 - 0936	Experienced and inexperienced cyclists have distinctly different kinematic coordination patterns	**Lex Gidley**
0936 - 0948	Validation of a simplified cost function for the study of the optimal cycling cadence	**Giacomo Palmieri**
0948 - 1000	Inferring the energy cost of cycling in different shoe conditions from surface emg	**Jared Fletcher**
0900 - 1000	**Bone Fracture Modeling 1**	**Macleod E3**
0900 - 0912	Using a finite element model to investigate second metatarsal stress during running	**Matthew Ellison**
0912 - 0924	Mesh sensitivity of three patient-specific bone morphing methods applied to the anybody glasgow-maastricht foot model	**Zach Welshman**
0924 - 0936	Estimating micromotion in distal femur fracture reconstructions: a lightweight computational framework	**Michael Hast**
0936 - 0948	Proximal femur ct scans of british postmenopausal women show that bone loss is tissue dependent	**Pinaki Bhattacharya**

Friday, August 2nd

Detailed Program

0948 - 1000	An experimentally validated continuum damage mechanics model of the micro-damage process zone formed during cortical bone fracture	**Daniel Dapaah**
0900 - 1000	**Plantar Pressure Measurements**	**Macleod E4**
0900 - 0912	Automated plantar pressure masking: evaluation of mask orientation to optical motion capture	**Ricky Pimentel**
0912 - 0924	A new measurement method of the center of pressure trajectory during gait	**Kai Iida**
0924 - 0936	Assessing group differences between hallux valgus patients and healthy controls using statistical parametric mapping	**Brian Booth**
0936 - 0948	The application of a neural network to improve plantar pressure mapping accuracy	**Kenneth Brent Smale**
0948 - 1000	Plantar anatomical masking improvement to gain effectiveness in diabetic foot pressure investigation	**Renan Monteiro**
0900 - 1000	**Refreshing Perspectives on Assistive Technology**	**Glen 201-202**
0900 - 0912	A changing paradigm on outcomes following amputation	**Elizabeth Russell Esposito**
0912 - 0924	Fabulous failures in wearable technologies: long-term lessons learned	**Julie Steele**
0924 - 0936	Using body area networks to infer high level control signals for powered prosthetic limbs	**Levi Hargrove**
0936 - 0948	Powered ankle prostheses: who benefits and why?	**Deanna Gates**
0948 - 1000	Panel Discussion	**Karl Zelik**
0900 - 1000	**Wearable Sensors in Biomechanics Research: Moving the Laboratory Outdoors**	**Glen 203-204**
0900 - 0912	Best practices for studying movement in the wild with wearable sensors	**Reed Ferber**
0912 - 0924	Emg recordings in acute care? tracking muscle activity and movement in the initial days after stroke	**Katherine Steele**
0924 - 0936	Wearable sensors: new frontiers for movement analysis in sport performance and health	**John Barden**
0936 - 1000	Quantifying gait outside the laboratory with wearable sensors: understanding and leveraging the gap between lab-based assessments and 24/7 monitoring	**Jeffrey Hausdorff**
0900 - 1000	**Balance Recovery Following Perturbations**	**Glen 205**
0900 - 0912	Stumble recovery: strategies, kinematics and kinetics as a function of foot perturbation timing during swing phase	**Maura Eveld**
0912 - 0924	The effect of postural threat on fall-recovery following a lab-induced trip	**Dan Narowitz**
0924 - 0936	Are the outside stability measures as sensitive as the inside measures?	**Abderrahman Ouattas**
0936 - 0948	Step-to-step regulation of lateral stepping by older adults in destabilizing environments	**Meghan Kazanski**
0948 - 1000	Baseline trunk angle predicts improvements in trunk angle after reactive balance training in older adults	**Jessica Aviles**
0900 - 1000	**Concussion - Mechanisms, Prevention, and Opportunities for Technology**	**Glen 206**
0900 - 0912	Sport-related concussion in youth: moving upstream towards prevention	**Carolyn Emery**
0912 - 0924	Physical surrogate models and instrumentation for head injury research and assessment of protective headgear	**Christopher Dennison**
0924 - 0936	Dynamic balance deficits following concussion: from acute effects to long-term implications	**David Howell**
0936 - 0948	The role of wearable sensors in preventing concussive brain injury	**Gunter Siegmund**
0948 - 1000	Panel Discussion	**Carolyn Emery**
0900 - 1000	**Motor Control in Biomechanics**	**Glen 208-209**
0900 - 0924	History-dependent muscle forces for sensing and moving in normal and impaired movement	**Lena Ting**
0924 - 0948	Feasibility theory: an integrative approach to neuromuscular control	**Francisco Valero-Cuevas**
0948 - 1012	Using intramuscular coherence to assess cortical contribution tolocomotor adaptation	**Julia Choi**
1030 - 1130	**Knee Modeling 2**	**Macleod A/B**
1030 - 1042	Comparison of ct- and mri-based fe modeling of the knee joint using the atlas-based method	**Ali Mohammadi**
1042 - 1054	Effect of joint laxity on damage prediction in knee prostheses using a multibody dynamics methodology	**Ehsan Askari**
1054 - 1106	An automated workflow for generating finite element models of the knee	**Marco Schneider**
1106 - 1118	Dynamics analysis of normal knee joint mechanics using finite element musculoskeletal model	**Liming Shu**

Friday, August 2nd

Detailed Program

1118 - 1130	Inclusion of initial strain in the ligaments improves knee joint finite element model accuracy	**Muhammad Qasim**
1030 - 1130	**Falling Biomechanics**	**Macleod C/D**
1030 - 1042	Improve clinical assessment of hip fracture risk by image-based dynamics simulation of sideways fall and impact force	**Yunhua Luo**
1042 - 1054	Effect of fall mechanics on hip impact force during a fall on the ground from standing height	**Kitaek Lim**
1054 - 1106	The effect of time constraints on reactive arm positioning prior to falling on outstretched hands	**James Borrelli**
1106 - 1118	The study of different motion between adl and fall situation	**Youngho Lee**
1118 - 1130	Sex differences in older adults during forward descents on outstretched arms	**Justin Pifko**
1030 - 1130	**Skeletal Muscle Force-Length Relationship**	**Macleod E1**
1030 - 1042	Leftward shift of the plantar flexion torque-ankle angle relationship during voluntary contractions at submaximal	**Anthony Hessel**
1042 - 1054	In vivo force-length relation in the gastrocnemius medialis in extreme dorsiflexion	**Denis Holzer**
1054 - 1106	How do the force-length properties of individual plantarflexors combine into the muscle group properties?	**David C Lin**
1106 - 1118	Botulinum toxin type-a effects on active and passive forces of the muscles exposed in the long-term	**Filiz Ates**
1118 - 1130	In situ investigation of the sarcomere force-length relationship in intact muscle using second harmonic generation microscopy	**Eng Kuan Moo**
1030 - 1130	**Cycling 2**	**Macleod E2**
1030 - 1042	System identification of a mathematical model to predict cycling power	**Patrick Mayerhofer**
1042 - 1054	Predictive equations to define an ideal bicycle saddle height from simple static measurements	**Anthony Gatti**
1054 - 1106	Optimal load for a torque-velocity relationship test during cycling	**Renata L. Kruger**
1106 - 1118	Evaluation on the bi-articular muscles during pedaling using musculoskeletal simulation	**Yoshimori Kiriyama**
1118 - 1130	Chainring eccentricity affects muscle-tendon unit mechanics in cycling.	**Amy Robinson**
1030 - 1130	**Bone Fracture Modeling 2**	**Macleod E3**
1030 - 1042	Finite element predicted fracture strength at distal femur and proximal tibia under biaxial loading	**Ifaz Haider**
1042 - 1054	Validation of an inhomogeneous fe model for the characterization of the osteosynthesis in proximal humerus fractures	**Daniel Elizondo Moreno**
1054 - 1106	Various fracture types of human proximal femur under a single loading orientation	**Fatemeh Alavi**
1106 - 1118	Biomechanical analysis of different treatment strategies for vertically unstable pelvic fractures using a musculoskeletal finite element model	**Ching-Chi Hsu**
1118 - 1130	Participant-specific modelling of the femur during falls: importance of impact dynamics and bone morphology	**Steven Pretty**
1030 - 1130	**Foot Biomechanics 1**	**Macleod E4**
1030 - 1042	Image resolution affects tracking in vivo biplanar x-ray images of the human foot during dynamic motion	**Andrew Dickinson**
1042 - 1054	Accuracy and reliability of skin-markers based measures of the medial longitudinal arch of the foot	**Paolo Caravaggi**
1054 - 1106	3d measurements of bone architecture in weight-bearing to enhance plantar loading analyses in the diabetic foot	**Alberto Leardini**
1106 - 1118	Assessing plantar foot energetics using integrated shear stress and motion capture	**Dustin Bruening**
1118 - 1130	Development of a dynamic 3d scanning system with multiple intel realsense depth cameras	**Abhishektha Boppana**
1030 - 1130	**Lifting Biomechanics**	**Glen 201-202**
1030 - 1042	Individuals with delayed trunk muscle reflexes have different muscle activation patterns to a complex lifting task	**D Adam Quirk**
1042 - 1054	A flexible beam exoskeleton does reduce mechanical loading of the low back during static bending and lifting tasks	**Axel Koopman**
1054 - 1106	Biomechanical investigation of dynamic materials handling tasks using opensim and an emg-assisted solver	**Dean Molinaro**
1106 - 1118	Biomechanical analysis of lifting tasks in healthy and low back pain affected subjects	**Zimi Sawacha**
1118 - 1130	Effects of prolonged driving on an occupational lifting task performance	**Wayne Albert**
1030 - 1130	**Challenges and Resolutions in Human Motion Monitoring With Wearables**	**Glen 203-204**
1030 - 1042	Minimum sensor configuration for maximum gait event detection with a powered ankle-foot orthosis	**Elizabeth Hsiao-Wecksler**

Friday, August 2nd

Detailed Program

1042 - 1054	Big data to small data - using real-world wearable data to compare mobility interventions	**Peter Adamczyk**
1054 - 1106	Dynamic characteristics of human gait helps to resolve the trade-off between the monitoring performance and the simplicity of wearables	**Sukyung Park**
1106 - 1118	Wearable technology in sports	**Kikwang Lee**
1118 - 1130	Wearable inertial sensors: powerful tools for sports science, but not without limitations and challenges	**Stephen Cain**
1030 - 1130	**Balance Control in Patients 1**	**Glen 205**
1030 - 1042	Measuring postural stability in chiari malformation by wavelet decomposition	**Brittany Sommers**
1042 - 1054	The effect of a dance intervention on postural stability in adults living with intellectual disability	**Mary Roberts**
1054 - 1106	The effect of spinal decompression surgery on the postural and dynamic stability of cervical myelopathy patients	**Emily Dooley**
1106 - 1118	Knee kinematics and spontaneous postural balance after reconstruction of anterior cruciate ligament	**Joel Alvarez-Ruf**
1118 - 1130	Persistent deficits in dynamic postural control despite concussion clinical recovery	**Thomas Buckley**
1030 - 1130	**Locomotion following ACL Loss 1**	**Glen 206**
1030 - 1042	Differences in angles and moments in participants with anterior cruciate ligament reconstruction compared to control group during single leg hop	**Mandeep Kaur**
1042 - 1054	Sagittal plane kinetics during stair ascent following acl reconstruction with patellar tendon graft versus with hamstring tendon graft	**Nigel Zheng**
1054 - 1106	Frontal plane knee joint range of motion during gait following anterior cruciate ligament reconstruction	**Michelle Loo**
1106 - 1118	Kinematic changes associated with anterior cruciate ligament deficiency using the finite helical axis	**Tomasz Bugajski**
1118 - 1130	The effect of auditory cues during running on impact forces of people with reconstructed anterior cruciate ligament	**Dimitrios Katsavelis**
1030 - 1130	**Motor Control in Biomechanics (cont)**	**Glen 208-209**
1030 - 1054	Evaluating the structure of skeletal muscle excitation and co-ordination to understand performance limits during cycling in humans	**Emma Hodson-Tole**
1054 - 1118	Musculotendinous mechanics for exercise performance enhancement: importance of motor control	**Yasuo Kawakami**
1145 - 1245	**Knee Modeling 3**	**Macleod A/B**
1145 - 1157	High medial contact forces during gait are associated with radiographic knee oa progression over 3 years	**Pouya Amiri**
1157 - 1209	Patellar stability following simulated tibial tubercle osteotomy is dependent on patellofemoral geometry	**Allison Clouthier**
1209 - 1221	A novel computational method to predict subchondral bone adaptation below articular cartilage lesion in the knee	**Mimmi Liukkonen**
1221 - 1233	Varus-valgus component malalignments during total knee arthroplasty can elevate tibial forces and ligament tensions during level walking and stair climbing	**Joshua Roth**
1233 - 1245	Anterior cruciate ligament loading and mechanisms of loading during drop-land-cut and running	**Azadeh Nasseri**
1145 - 1245	**Postural Control**	**Macleod C/D**
1145 - 1157	Virtual reality environments with moving surfaces and dynamic visuals challenge standing balance	**Sydney Lundell**
1157 - 1209	Development of a body balance assessment system with integrated virtual reality technology; construct validity testing in healthy older adults	**Yu Imaoka**
1209 - 1221	The absence of plantar sensory feedback results in reduced plantar pressure variability	**Melissa Thompson**
1221 - 1233	Absence of visual feedback during standing alters force direction/location ratio	**Aude Lefranc**
1233 - 1245	Emg-torque dynamic relationships are different for central and stretch reflex contributions to human postural control	**Pouya Amiri**
1145 - 1245	**Skeletal Muscle Aging**	**Macleod E1**
1145 - 1157	Intramuscular pressure of human tibialis anterior muscle reflects aging related muscular changes	**Filiz Ates**
1157 - 1209	Triceps surae muscle volumes are smaller but similarly distributed in older adults compared to young adults	**Katherine Knaus**
1209 - 1221	Age-related differences in associations between range of motion and stiffness of muscle, fascia and nerve	**Kosuke Hirata**
1221 - 1233	Multi-level analysis of aging myosin reveals decrease in muscle power without compromising overall contraction kinetics	**Amy Loya**

Friday, August 2nd

Detailed Program

1233 - 1245	Age-related changes in human single muscle fibre passive elastic properties are sarcomere length dependent	**Alex Noonan**
1145 - 1245	**Cutting Maneuvers**	**Macleod E2**
1145 - 1157	Understanding differences between sex, leg and sport on ankle joint angles and moments during cutting and jumping movements	**Ellen Hatt**
1157 - 1209	The impact of self-lacing technology on in-vivo foot containment during dynamic cutting	**Casey Myers**
1209 - 1221	Lower extremity energy absorption during a 90 degree cutting task pre-post fifa11+	**Celeste Dix**
1221 - 1233	Frequency and distribution of cutting maneuvers among female college ultimate frisbee players	**Paul Slaughter**
1233 - 1245	Jump cutting: a viable alternative to traditional laboratory cross cutting?	**Laura Hutchinson**
1145 - 1245	**Running Injuries - Tibial Stress Fractures**	**Macleod E3**
1145 - 1157	Effects of load carriage on biomechanical variables associated with tibial stress fractures in running	**Michael Esposito**
1157 - 1209	Does calf muscle morphology and function differ between mtss symptomatic and asymptomatic long-distance runners?	**Joshua Mattock**
1209 - 1221	Multi-directional peak tibial accelerations in over-ground, level, running: a multicenter study	**Pieter Van Den Berghe**
1221 - 1233	Wearables and injury prevention: the pitfalls and opportunities for monitoring musculoskeletal loading	**Emily Matijevich**
1233 - 1245	Estimating bone stress at the distal tibia during running using external transducers	**Stacey Meardon**
1145 - 1245	**Deep Artificial Neural Networks in Gait**	**Macleod E4**
1145 - 1157	Concurrent validity of a deep learning algorithm-based markerless motion capture system for biomechanical analysis	**Robert Kanko**
1157 - 1209	Development of a neural network based markerless motion capture system	**Travis Eliason**
1209 - 1221	Gait phase recognition using deep convolutional neural network (dcnn) with imu data	**Binbin Su**
1221 - 1233	Prediction of the 3d ground reaction force during rollator supported and unsupported gait in old persons using artificial neural networks	**Marion Mundt**
1233 - 1245	Deep neural networks for estimating knee joint kinematics from inertial measurement units	**Wolf Thomsen**
1145 - 1245	**Low Back Pain**	**Glen 201-202**
1145 - 1157	Evidence of spinal and knee kinematics changes in low back pain assessed by statistical parametric mapping	**Enrica Papi**
1157 - 1209	Classification of lbp patients using imu signal and machine learning approaches	**Ehsan Rashedi**
1209 - 1221	Trunk control in persons with recurrent low back pain during dynamic balance	**K. Michael Rowley**
1221 - 1233	Males and females with chronic low back pain display consistent differences in lumbar spine alignment during clinical tests and a functional task	**Quenten Hooker**
1233 - 1245	Kinematic and muscle activation differences in prolonged standing, transient low back pain and non-pain developers during tasks with functional demand and variety	**Jonathan Park**
1145 - 1245	**Wearable Sensors in Sport**	**Glen 203-204**
1145 - 1157	Capturing day-to-day variability in pitching mechanics with an array of wearable inertial sensors	**Stephen Cain**
1157 - 1209	Impact phase estimation of a golf swing using a single imu located at different body parts	**Myeongsub Kim**
1209 - 1221	Hurdle crossing detection methods using foot-worn inertial and magnetic sensors in 400 meters races	**Mathieu Falbriard**
1221 - 1233	Quantifying basketball free throw technique variance across player calibres using wearable sensors	**Kevin Thomas**
1233 - 1245	Validation of the linear acceleration measured by instrumented mouthguards for in-vivo head impact monitoring	**Enora Le Flao**
1145 - 1245	**Balance Control in Patients 2**	**Glen 205**
1145 - 1157	Influence of visual feedback during stable and unstable standing balance in persons with lower extremity amputation	**Amy Silder**
1157 - 1209	The effects of sampling duration on standing postural sway measures in children with and without cerebral palsy	**James Tracy**
1209 - 1221	Identification of postural control for children with autism using a machine learning approach	**Yumeng Li**
1221 - 1233	Effects of concussion and contact sports history on postural control	**Katherine Hunzinger**
1233 - 1245	How knee injury and knee osteoarthritis affect balance	**Enrica Papi**

Friday, August 2nd

Detailed Program

1145 - 1245	**Locomotion following ACL Loss 2**	**Glen 206**
1145 - 1157	Quadriceps weakness is associated with gait kinetic deficits in individuals with acute acl-reconstruction	**Scott Brown**
1157 - 1209	Temporal delays in quadriceps muscle activation influence patient perceived function after aclr	**Julie Burland**
1209 - 1221	Critical analysis of compensatory movement strategies following acl reconstruction	**Annemie Smeets**
1221 - 1233	Acute effects of functional resistance training on gait kinetics in individuals with acl reconstruction	**Steven Garcia**
1233 - 1245	Association between kinematic and kinetic asymmetry and psychological readiness for sport in acl patients	**Robin Queen**
1145 - 1245	**Jumping/Landing**	**Glen 208-209**
1145 - 1157	The relationship between corticomotor excitability of gluteus maximus and the hip extensor moment during a single-leg drop jump	**Yo Shih**
1157 - 1209	Shoe cushioning reduces impact forces during landings after fatigue, but not before fatigue	**Xi Wang**
1209 - 1221	Reduction of cutaneous sensory feedback of the soles of the feet decreases maximum vertical squat jump height	**Mia Caminita**
1221 - 1233	Linking proprioception to unilateral landing mechanics	**Liam Crowley**
1233 - 1245	Multitasking strategy associates with knee abduction angle during cognitively-challenging jump landing	**Scott Monfort**
1400 - 1445	**ASB Borelli Award: Irene Davis**	**Exhibition Hall E**
1400 - 1445	ASB Borelli Award: Irene Davis	
1500 - 1600	**Combined Musculoskeletal and Finite-Element Modeling**	**Macleod A/B**
1500 - 1512	Unified finite element and multibody simulation using artisynth	**John Lloyd**
1512 - 1524	A dynamic jaw model with a finite-element temporomandibular joint	**Benedikt Sagl**
1524 - 1536	Simulating the effect of muscle co-contraction on knee mechanics during walking using concurrent optimization of muscle activation and kinematics (comak)	**Colin Smith**
1536 - 1548	Biomechanical modelling of knee joint for assisting high tibial osteotomy	**Elaheh Elyasi**
1548 - 1600	Evaluating the use of simulation to understand radiation therapy impact on oral function	**Noor Al-Zanoon**
1500 - 1600	**Slipping and Falling**	**Macleod C/D**
1500 - 1512	Dynamics during controlled slips from standing in alternative footwear	**Liana Tennant**
1512 - 1524	Influence of slip-resistant shoe classification and shoe age on under-shoe hydrodynamics during human slips	**Sarah Hemler**
1524 - 1536	Quantification of arm kinematics in response to a slip induced perturbation	**Jonathan Lee**
1536 - 1548	Slip onset phase influences slipping mechanics and stepping responses	**Corbin Rasmussen**
1548 - 1600	Intentional slips while walking: exploring the association between segmental kinematics and stability estimates	**Eric Pitman**
1500 - 1600	**ASB Grad Quick Poster 1**	**Macleod E1**
1500 - 1512	Motor skill training vs. strength and flexibility exercise in people with chronic low back pain: effects on short- and long-term limitations in function, pain intensity, and movement characteristics	**Quenten Hooker**
1512 - 1524	Combined effects of user-driven treadmill control and functional electrical stimulation for poststroke rehabilitation	**Nicole Ray**
1524 - 1536	Lower-extremity joint and muscle group mechanical behavior changes in response to altered task demand	**Daniel Kuhman**
1536 - 1548	Optimizing contact area and joint stiffness of a passive foot-ankle exoskeleton for hopping on deformable terrain	**Jonathan Gosyne**
1548 - 1600	Wearing an american football helmet increases axial loading of the neck during blunt impacts	**Darcie Yount**
1500 - 1600	**Reflections from Past Career Awardees of the Canadian Society for Biomechanics (CSB/SCB)**	**Macleod E2**
1500 - 1512	Biomechanics and beyond: career reflections	**Jack Callaghan**
1512 - 1524	Reflections on a career in biomechanics	**Walter Herzog**
1524 - 1536	A career in clinical biomechanics: reflections and impact	**Cheryl Hubley-Kozey**
1536 - 1548	Opportunities, collaborations, and impact - biomechanics journey	**Ronald Zernicke**
1548 - 1600	Panel Discussion	**Andrew Laing**
1500 - 1600	**Impact of Obesity on Joints: Body Mass, Biology or Both?**	**Macleod E3**
1500 - 1512	Impact of obesity on musculoskeletal tissues: body mass, biology or both?	**Kelsey Collins**

Friday, August 2nd

Detailed Program

1512 - 1536	The influence of obesity on cartilage mechanical function and composition	**Louis Defrate**
1536 - 1600	The impact of obesity-related gut microbiome dysbiosis in cartilage degeneration	**Michael Zuscik**
1500 - 1600	**General Gait**	**Macleod E4**
1500 - 1512	Locomotion prediction based upon data-driven classification of intrinsically driven transitions	**Seth Donahue**
1512 - 1524	Validity and reliability of a markerless motion capture system	**Anika Weisbrod**
1524 - 1536	An artificial neural network predicts knee loading using 3d marker trajectories of anatomical landmarks	**Melissa Boswell**
1536 - 1548	Gait initiation data from 100 individuals with parkinson's disease	**Abigail Schmitt**
1548 - 1600	Gait kinematics as a biometric for identification	**Katelyn Williams**
1500 - 1600	**Imaging in Osteoarthritis**	**Glen 201-202**
1500 - 1512	Fully-automated cartilage segmentation using deep learning – data from the osteoarthritis initiative	**Anthony Gatti**
1512 - 1524	Quadriceps forces during gait 3 months after acl reconstruction predict 6-month trochlear cartilage t2 relaxation times	**Jacob Capin**
1524 - 1536	4d in vivo non-invasive quantification of ankle joint space width using dynamic mri	**Bhushan Borotikar**
1536 - 1548	Relationship between hip abductor muscle composition and patient-reported pain in individuals with hip osteoarthritis	**Alyssa Bird**
1548 - 1600	Fully automated patellofemoral segmentation from mri using holistically nested networks: implications for evaluating patellofemoral osteoarthritis, pain, injury, pathology, and adolescent development	**Frances Gavelli**
1500 - 1600	**In the Wild Application of Wearable Tech for Sport: Opportunities and Obstacles**	**Glen 203-204**
1500 - 1512	In the field wearable technology for athlete risk profile and performance assessment	**Valentina Camomilla**
1512 - 1524	Measuring impacts in the wild: lessons from a marathon race	**Irene Davis**
1524 - 1536	Using biomechanical models and wearable sensors as surrogate measures of tissue loading	**Thor Besier**
1536 - 1548	Predicting ground and joint kinetics from wearable sensor accelerations via deep learning	**William Johnson**
1548 - 1600	Panel Discussion	**Jacqueline Alderson**
1500 - 1600	**Elderly Walking**	**Glen 205**
1500 - 1512	Do older adults synchronize their strides to different visual stimuli?	**Douglas Rowen**
1512 - 1524	Role of muscle thickness on overground gait and obstacle crossing in older adults	**Eliane Celina Guadagnin**
1524 - 1536	Lower body gait kinematics of geriatric inpatients rollator users: a statistical parameter mapping analysis	**Joao Batista**
1536 - 1548	Gait performance during single- and dual-tasks among geriatric people with cognitive impairment: a cross-sectional study	**Yi-Chun Kuan**
1548 - 1600	Differences in walking mechanics between a traditional walker and the kb balance trainer	**Silvia Zanini**
1500 - 1600	**Personalized Surgery for the Human Knee and Ankle Joints**	**Glen 206**
1500 - 1512	Customisation in total ankle replacement using patient-specific models	**Claudio Belvedere**
1512 - 1524	Modelling the surface articulation of natural and artificial joints of the ankle	**Sorin Siegler**
1524 - 1536	Mechanical and biological characterization of novel implant-to-bone surfaces for endoprostheses	**Paolo Caravaggi**
1536 - 1548	A high precision patient-specific high tibial osteotomy procedure	**Richie Gill**
1548 - 1600	Kinematic assessment of robot-assisted uni-compartmental knee arthroplasty during activities using 3d	**Tung-Wu Lu**
1500 - 1600	**Back & Spine**	**Glen 208-209**
1500 - 1512	Characterizing torso muscle activation during target-matching contraction toward myoelectric robot control	**Minoru Shinohara**
1512 - 1524	Individual determinants of low back biomechanical exposures in lifting	**Daniel Armstrong**
1524 - 1536	Discriminating spine coordination strategies during flexion-extension	**Shawn Beaudette**
1536 - 1548	Measurement and evaluation of dynamic postural steadiness on visual condition between subjects with and without recurrent lbp during upright one leg standing.	**Paul Sung**
1548 - 1600	Characterizing motor planning and feedback control strategies in individuals with recurrent low back pain	**Sheri Silfies**
1600 - 1800	**Posters 2**	**Exhibition Hall C/D**

1600 - 1800 Posters 2

Notes

Saturday, August 3rd, 2019

Day-at-a-Glance

Saturday August 3rd, 2019

Time	Exhibition E	Macleod AB	Macleod CD	Macleod E1	Macleod E2	Macleod E3
0800 to 0845	Andy Ruina MSK Modeling	Andy Biewener Comparitive Biomechanics	Taija Finni Tendon Biomechanics			
0900 to 1000		Comparative biomechanics across organizational scales (tissues to whole body dynamics)	Integrating multi-scale approaches to tendon biomechanics	Hand & Wrist Biomechanics International Symposium	Methods in Spinal Biomechanics	Foot & Ankle Biomechanics
1000 to 1030	Coffee Break - Exhibition Hall CD					
1030 to 1130		Comparative biomechanics across organizational scales (tissues to whole body dynamics)	Achilles Tendon Mechanics	Thumb & Finger Biomechanics	Spine Modeling	Ankle Joint Biomechanics
1145 to 1245		Trajectory optimization for human motion	Tendinopathy	Gripping Biomechanics	ASB Teaching Symposium	Modeling of the Ankle Joint
1245 to 1400	Lunch - Exhibition Hall CD					
1400 to 1445	Ralph Mueller ISB Muybridge Lecture					
1500 to 1600		Prediction of Muscle and Joint Contact Forces		ASB Grad quick poster 2	Career Evolution: Reflections from CSB Young Investigators	Foot Biomechanics
1600 to 1800	Poster Session 3 - Exhibition Hall CD					
1900 to 2200						

Saturday, August 3rd, 2019

Day-at-a-Glance

Saturday August 3rd, 2019

Macleod E4	Glen 201-202	Glen 203-204	Glen 205	Glen 206	Glen 208-209
	Alaa Ahmed Orthopedic Biomechanics				
Locomotion in Patients with Cerebral Palsey	Running Injuries - Patellofemoral Pain	Energetics of Walking 1	Knee Injury/Disease	Eccentric contractions	IMU based methods for mobility assessment in real-world condition
Coffee Break - Exhibition Hall CD					
Locomotion in Patients with Parkinson's Disease	Running and Lower Extremity Stiffness	Energetics of Walking 2	Femoroacetabular Impingement	*in vivo* musculoskeletal mechanics and properties	Shoe Embedded Wearable Sensors
Locomotion in Post Stroke Patients	Running Economy	Stairs and Uneven Terrain Walking	Lower Limb Arthroplasty	*in vivo* musculoskeletal mechanics and properties	Gait Analysis Using Wearable Sensors
Lunch - Exhibition Hall CD					
	Student Mentor Lunch 1				ISB Annual General Meeting
Rehabilitation in Post Stroke Patients	Minimal Shoes Running	Uphill Walking	Upper Limb Prosthesis	Skeletal Muscle Modeling	Patient Evaluation with Wearable Sensors
Poster Session 3 - Exhibition Hall CD					
	Advancing Women in Biomechanics				

Saturday, August 3rd

Detailed Program

0800 - 0845	**Invited Speaker: Andy Ruina - MSK Modeling**	**Exhibition Hall E**
0800 - 0845	Invited Speaker: Andy Ruina - MSK Modeling	
0800 - 0845	**Invited Speaker: Andy Biewener - Comparitive Biomechanics**	**Macleod A/B**
0800 - 0845	Invited Speaker: Andy Biewener - Comparitive Biomechanics	
0800 - 0845	**Invited Speaker: Taija Finni - Tendon Biomechanics**	**Macleod C/D**
0800 - 0845	Invited Speaker: Taija Finni - Tendon Biomechanics	
0800 - 0845	**Invited Speaker: Alaa Ahmed - Orthopedic Biomechanics**	**Glen 201-202**
0800 - 0845	Invited Speaker: Alaa Ahmed - Orthopedic Biomechanics	
0900 - 1000	**Comparative Biomechanics Across Organizational Scales (Tissues to Whole Body Dynamics)**	**Macleod A/B**
0900 - 0912	Mechanical loading of bone during growth: lessons learned from rats and horses	**Mariana Kersh**
0912 - 0924	Comparative biomechanics across the hierarchical length scales of tendon	**Spencer Lake**
0924 - 0936	Elucidating the effects of connective tissue remodelling on muscle force and work in an animal model of aging	**Emanuel Azizi**
0936 - 0948	Compliance, activation and the force-length relationship in skeletal muscle	**Natalie Holt**
0948 - 1000	Scaling of neuromuscular delays and reflex time in terrestrial mammals	**Heather More**
0900 - 1000	**Integrating Multi-Scale Approaches to Tendon Biomechanics**	**Macleod C/D**
0900 - 0912	Structure-function relationships in functionally distinct tendons: implications for multi-scale biomechanics	**Hazel Screen**
0912 - 0924	Mechanical interactions between subtendons of rat achilles tendon	**Huub Maas**
0924 - 0936	Intramuscular aponeurosis modifies muscle fascicle behaviour at different muscle lengths and forces	**Brent Raiteri**
0936 - 0948	Improving our understanding of the origins and functional consequences of achilles subtendon sliding in walking	**Jason Franz**
0948 - 1000	Neuromechanical adaptations to tendon injury and the proposed framework for intervention	**Kornelia Kulig**
0900 - 1000	**Hand & Wrist Biomechanics International Symposium**	**Macleod E1**
0900 - 0912	Hand and wrist biomechanics international - an introduction	**Zong-Ming Li**
0912 - 0924	Hand and wrist pathology and how biomechanics can help	**Peter Evans**
0924 - 0936	Percutaneous sonographically guided procedures in hand surgery. from biomechanical studies to clinical solutions	**Fabian Moungondo**
0936 - 0948	A passive differential mechanism allows adaptable grasp after tendon transfer surgery	**Francisco Valero-Cuevas**
0948 - 1000	Carpal arch space augmentation for compression neuropathy	**Zong-Ming Li**
0900 - 1000	**Methods in Spinal Biomechanics**	**Macleod E2**
0900 - 0924	Techniques in in vitro spine biomechanics testing	**Hans-Joachim Wilke**
0924 - 0936	Methods for studying disc mechanobiology	**Cornelia Neidlinger-Wilke**
0936 - 0948	Biomechanical insights on spinal cord injury from rodent models	**Thomas Oxland**
0948 - 1000	Large animal models and methods for spinal orthopaedics and neurotrauma studies	**Claire Jones**
0900 - 1000	**Foot & Ankle Biomechanics**	**Macleod E3**
0900 - 0912	Ankle strength and gait asymmetries in patients with insertional achilles tendinopathy	**Bernd Friesenbichler**
0912 - 0924	Gait biomechanics differences between individuals with and without chronic ankle instability	**Gabriel Moisan**
0924 - 0936	A comparison of transfer load forces in children with clubfoot and typically developed children	**Alexis Brierty**
0936 - 0948	Foot-ankle kinematics subgroups in healthy runners: a hierarchical cluster analysis	**Eneida Yuri Suda**
0948 - 1000	Single session walking adaptations to an ankle foot orthosis in patients with claudication and peripheral artery disease	**Todd Leutzinger**
0900 - 1000	**Locomotion in Patients with Cerebral Palsy**	**Macleod E4**
0900 - 0912	Prospective study evaluating selective percutaneous myofascial lengthening on gait of children with cerebral palsy	**Jamie Kunnappally**

Saturday, August 3rd

Detailed Program

0912 - 0924	The long-term effects of single-event multilevel surgery on gait asymmetry in children with spastic bilateral cerebral palsy	**Rosa Visscher**
0924 - 0936	Effects of tendon release surgery on inter-limb sharing of total leg stiffness during weight transfer of gait in children with spastic diplegic cerebral palsy	**Chien-Chung Kuo**
0936 - 0948	Muscle synergy extrapolation method to reduce the number of electromyograms required to characterize walking in children with cerebral palsy	**Mohammad Fazle Rabbi**
0948 - 1000	Spasticity reduction by rhizotomy does not lead to reduced energy consumption	**Nicole Zaino**
0900 - 1000	**Running Injuries - Patellofemoral Pain**	**Glen 201-202**
0900 - 0912	Maximizing caloric expenditure and minimizing patellofemoral joint loading during running	**Michael Baggaley**
0912 - 0924	Effect of a 12-week gait retraining intervention on knee loadings in runners	**Baofeng Wang**
0924 - 0936	Effects of added load on patellofemoral joint stress in running	**Thomas Kernozek**
0936 - 0948	The effect of different and modified foot progression angle on patellofemoral pain related factors	**Tyler Wu**
0948 - 1000	Effect of running velocity on patellofemoral joint stress	**Naghmeh Gheidi**
0900 - 1000	**Energetics of Walking 1**	**Glen 203-204**
0900 - 0912	Mechanical and metabolic consequences of trunk lean angle in walking	**Rebecca Roembke**
0912 - 0924	Metabolic cost of concurrent step length and step time asymmetry in walking	**Jan Stenum**
0924 - 0936	Effects of timing and magnitude of forward forces at the waist on the metabolic cost of walking	**Prokopios Antonellis**
0936 - 0948	Metabolic cost breakdown of human walking: contributions from step frequency and length	**Hansol Ryu**
0948 - 1000	Optimization in human walking: decoupling whole-body energetics and local muscle effort	**Kirsty Mcdonald**
0900 - 1000	**Knee Injury/Disease**	**Glen 205**
0900 - 0912	Functional principal component analysis reveals distinct kinematics changes between osteoarthric and healthy knees	**Joe Lynch**
0912 - 0924	Effects of visual biofeedback on loading symmetry in recovery from a multi-ligamentous knee injury and dislocation	**Julianne Stewart**
0924 - 0936	Effect of prophylactic knee braces on knee valgus angles and moments during perturbed walking	**Raneem Haddara**
0936 - 0948	Exploring the form-function relationship in adolescents with patellofemoral pain syndrome	**Camila Grant**
0948 - 1000	Analysis of knee angle during the step-down test in women with patellofemoral dysfunction: preliminary results.	**Ameg Dalpiaz**
0900 - 1000	**Eccentric Contractions**	**Glen 206**
0900 - 0912	Neural control of lengthening contractions	**Roger Enoka**
0912 - 0924	Force production during eccentric contractions in skinned muscle fibres	**Venus Joumaa**
0924 - 0936	Aging and eccentric contractions	**Geoff Power**
0936 - 1000	Adaptations to eccentric training	**Anthony Blazevich**
0900 - 1000	**IMU Based Methods for Mobility Assessment in Real-World Condition**	**Glen 208-209**
0900 - 0924	Advances in real-world gait analysis using wearable sensors: framework for algorithm personalisation	**Kamiar Aminian**
0924 - 0936	Translating gait measurement beyond the laboratory with wearable sensors: advantages and challenges	**Silvia Del Din**
0936 - 0948	The challenge of real world validation	**Claudia Mazzà**
0948 - 1000	Multi-sensor integration and data fusion for enriching gait assessment in and out of the laboratory	**Andrea Cereatti**
1030 - 1130	**Comparative Biomechanics Across Organizational Scales (Tissues to Whole Body Dynamics) (cont)**	**Macleod A/B**
1030 - 1042	Break	**Monica Daley**
1042 - 1054	Titin's role in muscle mechanics from molecules to movement	**Kiisa Nishikawa**
1054 - 1106	Getting 'under the skin' to examine how exoskeletons steer muscle dynamics during locomotion	**Gregory Sawicki**
1106 - 1118	Generating 'big data' for manoeuvrability studies with trajectory optimization	**Stacey Shield**
1118 - 1130	Task-level objectives and low-order models of bipedal locomotion	**Christian Hubicki**
1030 - 1130	**Achilles Tendon Mechanics**	**Macleod C/D**
1030 - 1042	Calibration and validation of the in situ achilles shear wave speed-stress relationship	**Jack Martin**

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Detailed Program

1042 - 1054	Asymmetry of muscle-tendon properties 1-year after non-surgical treatment of acute achilles tendon rupture	**Taija Finni**
1054 - 1106	Biomechanical properties of dresden technique for suturing achilles tendon ruptures: in vitro study	**Carlos De La Fuente**
1106 - 1118	Neuromechanical modulation during bilateral hopping in patients with unilateral achilles tendon rupture	**Masaki Ishikawa**
1118 - 1130	A randomized controlled trial to compare the effect of non-operative treatment with or without platelet-rich plasma on healing and function in patients with acute achilles tendon ruptures	**Michaela Khan**
1030 - 1130	**Thumb & Finger Biomechanics**	**Macleod E1**
1030 - 1042	Improving surgical outcomes through identification of hand function after basal joint arthroplasty	**Joshua Drost**
1042 - 1054	The impact of exercise on thumb forces in carpometacarpal osteoarthritis and healthy participants	**Amber Vocelle**
1054 - 1106	The in-vivo effect of orthotics on the kinematics of the thumb joints	**Maarten Vanneste**
1106 - 1118	In vivo evaluation of finger joint angle and moment arm using real-time dynamic mri	**Bhushan Borotikar**
1118 - 1130	Quantifying hand movement limitations in scleroderma during functional tasks using the movement deviation profile	**Elena Eusterwiemann**
1030 - 1130	**Spine Modeling**	**Macleod E2**
1030 - 1042	Musculoskeletal modeling of the spine in children and adolescents: a validation study	**Stefan Schmid**
1042 - 1054	Effects of spinal coupling and marker set on tracking of spine models during running	**Nelson Glover**
1054 - 1106	Full body subject specific musculoskeletal model for complex spine movements	**Clement Favier**
1106 - 1118	Correlations among standing radiographic and non-radiographic sagittal thoracic kyphosis measures	**Daniel Grindle**
1118 - 1130	Importance of spine stability criterion in calculating trunk muscle forces following unilateral muscle weakening: a kinematics-driven vs a stability-based kinematics-driven musculoskeletal model	**Zeinab Kamal**
1030 - 1130	**Ankle Joint Biomechanics**	**Macleod E3**
1030 - 1042	Ankle stiffness increases proportionally to weight borne on the ankle	**Daniel Ludvig**
1042 - 1054	The importance of ankle stiffness in minimizing metabolic cost during load carriage: a prosthetic emulator study	**Erica Hedrick**
1054 - 1106	Effects of subtalar arthrodesis on the anteroposterior stiffness of the talocrural joint using a robot-based joint testing system	**Chang-Yi Lai**
1106 - 1118	Brace yourself: impact of prophylactic ankle brace during a rebound jump	**Heather Vanderhoof**
1118 - 1130	The effect of external braces on kinematics after lateral ankle sprain: a double-blind, placebo controlled study	**Alison Agres**
1030 - 1130	**Locomotion in Patients with Parkinson's Disease**	**Macleod E4**
1030 - 1042	Subthalamic deep brain stimulation at 60 hz and 140 hz improves gait features in people with parkinson's disease	**Johanna O'Day**
1042 - 1054	Improving the mobility and postural control ability by combined functional electric simulation with vibration for subjects with parkinson's disease	**Christine Hwang**
1054 - 1106	Effects of dopaminergic therapy on peak propulsion during treadmill walking in persons with parkinson's disease	**Sidney Baudendistel**
1106 - 1118	Impact of impaired coordination on backward walking in parkinson's disease	**Grace Kellaher**
1118 - 1130	Detection of freezing of gait in parkinson's disease: an investigation on the role of different feature families	**Arash Arami**
1030 - 1130	**Running and Lower Extremity Stiffness**	**Glen 201-202**
1030 - 1042	Neuromechanical contributions to lower extremity stiffness differ between single leg hopping and running	**Jonathan Goodwin**
1042 - 1054	Novel technique to estimate spring-mass parameters in running using nonlinear regression	**Geoffrey Burns**
1054 - 1106	Body size differences in vertical and leg stiffness in running humans	**Maria Fox**
1106 - 1118	How do prosthetic stiffness and running speed affect the biomechanics and symmetry of sprinters with unilateral transtibial amputations?	**Joshua Tacca**
1118 - 1130	Lower-extremity joint quasi-stiffness in graded running	**Arash Khassetarash**
1030 - 1130	**Energetics of Walking 2**	**Glen 203-204**
1030 - 1042	Do humans exploit arm swinging dynamics to reduce the metabolic cost of walking across slow and fast speeds?	**Shernice Thomas**
1042 - 1054	The effects of foot anthropometry on plantar flexor muscle fascicle mechanics and metabolic cost of walking	**Nikolaos Papachatzis**
1054 - 1106	Tibialis anterior muscle fascicle length changes track mechanical work while maintaining fascicle velocity	**Samuel Kwak**

Saturday, August 3rd

Detailed Program

1106 - 1118	Walking on a gaming simulator: metabolic and mechanical aspects	**Gaspare Pavei**
1118 - 1130	The metabolic cost of walking in healthy young and older adults – a systematic review and meta analysis	**Sauvik Das Gupta**
1030 - 1130	**Femoroacetabular Impingement**	**Glen 205**
1030 - 1042	The influence of gluteus maximus activation on transverse plane hip kinematics and kinetics during a deep squat in persons with femoroacetabular impingement syndrome	**Jordan Cannon**
1042 - 1054	3d growth plate shape: a quantification method and application to detecting early changes preceding cam morphology	**Rachel Horenstein**
1054 - 1106	Individuals with femoroacetabular impingement syndrome exhibit pain-specific hip muscle function during step ascent	**Laura Diamond**
1106 - 1118	Application of magneto-inertial measurement units to measure hip joint motion during elite adolescent sport practices at high risk for cam morphology	**Rachel Horenstein**
1118 - 1130	In silico gait analyses after surgical correction for cam femoroacetabular impingement	**Danilo Catelli**
1030 - 1130	**In Vivo Musculoskeletal Mechanics and Properties**	**Glen 206**
1030 - 1042	Linking in vivo muscle mechanics to the development and evaluation of muscle models	**Andrew Biewener**
1042 - 1054	The relationship between epimuscular myofascial loads and deformations within skeletal muscles	**Huub Maas**
1054 - 1106	Mechanics of intramuscular aponeurosis when operating at different muscle lengths and forces	**Glen Lichtwark**
1106 - 1118	Using elastography to assess the local mechanical properties of muscles, tendons, and nerves	**François Hug**
1118 - 1130	1st Panel Discussion	**Yasuo Kawakami**
1030 - 1130	**Shoe Embedded Wearable Sensors**	**Glen 208-209**
1030 - 1042	Activity classification using foot contact force features from instrumented insoles	**Alex Spencer**
1042 - 1054	Estimating ground reaction force from limited number of pressure sensors for gait tasks	**En-Tzu Wang**
1054 - 1106	A comparison of in-shoe pressure insoles and force plates in non-steady state activities of daily living	**Sarvenaz Chaeibakhsh**
1106 - 1118	The validity and day-to-day reliability of a shoe-embedded sensor module for estimating foot progression angle during over-ground walking	**Jesse Charlton**
1118 - 1130	Comparison of on-shoe wireless running sensor to instrumented treadmill and outdoor environment – a pilot study	**Nathaniel Schlosser**
1145 - 1245	**Trajectory Optimization for Human Motion**	**Macleod A/B**
1145 - 1209	Trajectory optimization for human motion analysis based on inertial sensors	**Ton Van Den Bogert**
1209 - 1221	Control strategies for power-assisted manual wheelchairs: a predictive simulation study	**Marko Ackermann**
1221 - 1233	Single-subject gait simulations can give misleading results	**Ross Miller**
1233 - 1245	Using direct collocation for solving bi-level optimization problems for human walking	**Vinh Nguyen**
1145 - 1245	**Tendinopathy**	**Macleod C/D**
1145 - 1157	Estimation of patellar tendon stress in persons with and without patellar tendinopathy using a subject specific finite element model: a feasibility study	**Kyungmi Jasmine Park**
1157 - 1209	Force imbalance within the triceps surae may be involved in achilles tendinopathy	**Marion Crouzier**
1209 - 1221	Clinical failure after mid-substance achilles tendon rupture to avoid lengthening during physiotherapy: a cadaveric biomechanics study	**Carlos De La Fuente**
1221 - 1233	Efficacy of combining prp and mmp inhibitors in treating moderately damaged tendons ex vivo	**Leila Jafari**
1233 - 1245	Ultrasound echogenicity is associated with fatigue damage of achilles tendon in a cadaveric loading model	**Josh Baxter**
1145 - 1245	**Gripping Biomechanics**	**Macleod E1**
1145 - 1157	Median nerve deformation and displacement with forceful gripping and wrist deviation	**Kaylyn Turcotte**
1157 - 1209	The effects of grip force on wrist kinematics in response to sudden perturbations	**Kailynn Mannella**
1209 - 1221	Effect of fatigue on grip force, wrist muscle activity and wrist kinematics during an object placement task	**Sarah Dedecker**
1221 - 1233	Impact of a gripping aid on hand kinematics and motor skills in healthy volunteers	**Veronique Feipel**
1233 - 1245	Wrist at risk? – an experimental study to assess peak forces occurring at the wrist joint during reaming in total hip arthroplasty	**Niels Hammer**

Saturday, August 3rd

Detailed Program

1145 - 1245	**ASB Teaching Symposium**	**Macleod E2**
1145 - 1209	The alt-classroom: engaging learners using active learning techniques	**Michelle Sabick**
1209 - 1221	Utilizing the active learning technique "jigsaw": an in-class activity using isb/asb conference abstracts	**Kim Bigelow**
1221 - 1233	Effects of interest-tailored biomechanics lectures on student engagement	**Erika Pliner**
1233 - 1245	Assessment of biomechanics learning in elementary and undergraduate students using a questioning scenario	**Amelia Lanier Knarr**
1145 - 1245	**Modeling of the Ankle Joint**	**Macleod E3**
1145 - 1157	Can ankle exoskeletons reduce the metabolic cost of older adult locomotion?	**Lindsey Trejo**
1157 - 1209	Comparison of ankle joint contact force of the flatfoot and normal during walking	**Jeongwon Kim**
1209 - 1221	Does including the subtalar joint affect the kinetics in the ankle and knee in a musculoskeletal model of running?	**Julia Noginova**
1221 - 1233	Evaluation of anatomical consistency of three subject-specific ankle joint modelling approaches	**Michele Conconi**
1233 - 1245	Predictive modeling of human locomotor response to ankle exoskeletons	**Michael Rosenberg**
1145 - 1245	**Locomotion in Post Stroke Patients**	**Macleod E4**
1145 - 1157	Asymmetries in the reactive control of angular momentum during post-stroke gait	**Chang Liu**
1157 - 1209	Functional electrical stimulation (fes) of ankle muscles moves patients towards the decoupling of lower-limb muscle modules for individuals with post-stroke gait	**Ashley Rice**
1209 - 1221	Impact of modifying spatiotemporal asymmetry on dynamic balance during walking post-stroke	**Sungwoo Park**
1221 - 1233	Sensorimotor control during walking in stroke patients and healthy controls	**Noel Keijsers**
1233 - 1245	Centre of mass control during stair negotiation is affected by tread nosing, handrail use and chronic stroke status	**Iris Claire Levine**
1145 - 1245	**Running Economy**	**Glen 201-202**
1145 - 1157	Biomechanics predict changes in metabolic cost during running and hopping at different frequencies	**Stephen Allen**
1157 - 1209	Mechanics of the metatarsophalangeal and ankle joints and running economy do not change in response to increased isometric toe-flexor strength	**Evan Day**
1209 - 1221	Energy dissipation due to soft tissue movement of the shank during forefoot and rearfoot impacts at different running velocities	**Matthew Pain**
1221 - 1233	Principal component analysis of the relationship between running technique and economy	**Steph Forrester**
1233 - 1245	Effects of manipulating center of mass vertical motion on running economy	**Claire Copriviza**
1145 - 1245	**Stairs and Uneven Terrain Walking**	**Glen 203-204**
1145 - 1157	Stair fall risk profiling using a novel multivariate approach	**Thijs Ackermans**
1157 - 1209	Ankle joint power during ascending stairs in different foot strike strategies	**Eui-Bum Choi**
1209 - 1221	Excursion variability of joint angle during walking in outdoor environment	**Haruki Toda**
1221 - 1233	Humans use anticipatory and generalizable control of walking speed for uneven terrain	**Osman Darici**
1233 - 1245	Adaptation of foot muscle activation and stabilization strategies in steps with unexpected heights	**Ryan Riddick**
1145 - 1245	**Lower Limb Arthroplasty**	**Glen 205**
1145 - 1157	Knee biomechanics during downhill walking on different slopes in total knee replacement older adults	**Songning Zhang**
1157 - 1209	Clinical and biomechanical cluster classification before tka impacts functional outcome	**Kathryn Young-Shand**
1209 - 1221	The knee extension moment during gait is more than two times lower after a total knee arthroplasty. a comparison to asymptomatic controls at matched walking speeds	**Marjolein Booij**
1221 - 1233	Influence of intraoperative laxity measured during total knee arthroplasty on post-operative knee dynamics during gait	**Gregory Freisinger**
1233 - 1245	How does footwear affect gait in persons with ankle arthrodesis versus arthroplasty?	**Amanda Stone**
1145 - 1245	**In Vivo Musculoskeletal Mechanics and Properties (cont)**	**Glen 206**
1145 - 1157	Musculo-tendinous-fascial interaction during joint actions: in vivo evidence	**Yasuo Kawakami**
1157 - 1209	In vivo passive and active mechanical characteristics of muscles: an intra-operative approach	**Filiz Ates**

Saturday, August 3rd

Detailed Program

1209 - 1221	Joint and muscle-tendon mechanics in children with cerebral palsy	**Constantinos Maganaris**
1221 - 1233	Neuromusculoskeletal dynamics during standing for the use in fes therapy	**Kei Masani**
1233 - 1245	2nd Panel Discussion	**Yasuo Kawakami**
1145 - 1245	**Gait Analysis Using Wearable Sensors**	**Glen 208-209**
1145 - 1157	Multidimensional ground reaction forces predicted from a single sacrum-mounted accelerometer via deep learning	**William Johnson**
1157 - 1209	Sagittal and frontal plane walking kinematics have the highest validity when measured with inertial sensor technology	**Rob Van Der Straaten**
1209 - 1221	Measuring stance time with ankle-mounted imeasureu sensors	**Cherice Hughes-Oliver**
1221 - 1233	Wearable sensor-based remote gait analysis detects altered duty factor and phase specific quadriceps muscle activation in patients recovering from acl reconstruction surgery	**Reed Gurchiek**
1233 - 1245	Characterizing marching gait parameters in the field during load carriage using a shank-borne sensor	**Rebecca Fellin**
1400 - 1445	**ISB Muybridge Lecture: Ralph Müller**	**Exhibition Hall E**
1400 - 1445	From mechanics to mechanomics: a journey through bone	**Ralph Mueller**
1500 - 1600	**Prediction of Muscle and Joint Contact Forces**	**Macleod A/B**
1500 - 1512	Influence of intersegmental contact on tibial contact forces during high knee flexion movements	**David Kingston**
1512 - 1524	A 12 degrees of freedom musculoskeletal model combined with a muscle force driven fibril-reinforced poroviscoelastic finite element model	**Amir Esrafilian**
1524 - 1536	Evaluation of knee muscle and contact forces estimated during gait using a deterministic model	**Raphael Dumas**
1536 - 1548	Lower extremity muscle contributions to ground reaction force during a stop-jump task	**Shelby Peel**
1548 - 1600	Evaluation of different performance criteria for accurate estimation of muscle coordination and knee joint contact forces	**Azin Zargham**
1500 - 1600	**ASB Grad Quick Poster 2**	**Macleod E1**
1500 - 1512	Effects of exercise during growth on bone strength and morphology.	**Matthew Salzano**
1512 - 1524	Achilles tendon shear wave speed as a measure of the active modulation of standing balance	**Samuel Acuña**
1524 - 1536	Cosimulation of glenohumeral dynamics with joint contact for predicting joint translations	**Matthew Berno**
1536 - 1548	Isolated muscle-tendon units reject a broad range of perturbations without feedback	**Laksh Kumar Punith**
1548 - 1600	The muscle mechanical basis of freeman-sheldon syndrome	**Kaylyn Bell**
1500 - 1600	**Career Evolution: Reflections from CSB Young Investigators**	**Macleod E2**
1500 - 1512	How the interdisciplinary nature of biomechanics positions us to tackle the problem of spine dysfunction and low back pain	**Stephen Brown**
1512 - 1524	Thank you canada (and csb)! reflections of a (somewhat recent) american immigrant on canadian biomechanics	**Clark Dickerson**
1524 - 1536	Thoughts on the canadian society for biomechanics community: excellence in research and training	**Janessa Drake**
1536 - 1548	The research breadth, people and sense of family is what defines the canadian society for biomechanics!	**Scott Landry**
1548 - 1600	Panel Discussion	**Salvatore Federico**
1500 - 1600	**Foot Biomechanics 2**	**Macleod E3**
1500 - 1512	Muscular contributions mediate the windlass effect in human feet	**Dominic Farris**
1512 - 1524	Morphology of the soles of the feet in young athletes	**Israel Miguel-Andres**
1524 - 1536	Effects of ankle and metatarsophalangeal joint angles on morphological and mechanical properties of the plantar fascia	**Hiroto Shiotani**
1536 - 1548	Plantar pressure pattern is associated with the development of lower leg complaints in military recruits.	**Noel Keijsers**
1548 - 1600	Intrinsic foot muscle strengthening positively impacts foot kinematics and plantar fascia strain	**James Becker**
1500 - 1600	**Rehabilitation in Post Stroke Patients**	**Macleod E4**
1500 - 1512	Individual joint contributions to abnormal kinematic and kinetic coordinative patterns after stroke during passive arm movements	**Kyung Koh**

Saturday, August 3rd

Detailed Program

1512 - 1524	Detecting change in hemiparetic arm kinematics using a neurogame: a case study	Lise Worthen-Chaudhari
1524 - 1536	Undesired coactivation in upper limb muscles may depend on severity of impairments in stroke survivors	Keonyoung Oh
1536 - 1548	Applying pelvic corrective force and non-paretic leg resistance force improves paretic leg muscle activities in individuals with stroke during treadmill walking	Chao-Jung Hsu
1548 - 1600	Impact of muscle strength and balance on gait after stroke	Benjamin Mentiplay
1500 - 1600	**Minimal Shoes Running**	**Glen 201-202**
1500 - 1512	Footwear effects on running economy and stride characteristics in experienced runners	Isabel Moore
1512 - 1524	The effects of running in minimalistic shoes on non-uniform displacement in the achilles tendon	Toni Arndt
1524 - 1536	Habitual running in minimal or partial minimal shoes compared to barefoot running.	Alessandra Matias
1536 - 1548	Mechanical adaptation of achilles tendon after a 12-week minimalist running transition program	Xini Zhang
1548 - 1600	Acute footwear effects on ankle and knee kinetics in inexperienced and experienced runners	Max Paquette
1500 - 1600	**Uphill Walking**	**Glen 203-204**
1500 - 1512	Variation in muscle strength decrements and biomechanical plasticity in older adults during level and incline walking	Paul Devita
1512 - 1524	The relative changes of 3d joint work during self-paced uphill and downhill slope walking	Zihan Yang
1524 - 1536	The efficiency of walking at incrementally increasing inclines is strongly related to thigh and knee angles at heel strike	Lex Gidley
1536 - 1548	Lower limb kinematics and kinetics of people with knee osteoarthritis during inclined and level treadmill gait	Allison Clouthier
1548 - 1600	Gait kinematics during uphill walking in patients after lateral lengthening osteotomy of the calcaneus	Corina Nüesch
1500 - 1600	**Upper Limb Prosthesis**	**Glen 205**
1500 - 1512	The impact of prosthesis type on sensory perception and grasping performance	Michael Gonzalez
1512 - 1524	New functional skill test with upper extremity prosthesis and practice under transcutaneous vagus nerve stimulation	Minoru Shinohara
1524 - 1536	Compensatory differences at the trunk and shoulder in transradial body-powered prosthesis users	Aïda Valevicius
1536 - 1548	The control of the 5-finger myoelectric hand prosthesis using an armband emg module	Youngho Kim
1548 - 1600	Accuracy and smoothness of goal-directed reaching movements in upper limb prosthesis users	Christina Lee
1500 - 1600	**Skeletal Muscle Modeling**	**Glen 206**
1500 - 1512	Impact of muscle compression on muscle force: experiment and modelling	Tobias Siebert
1512 - 1524	A three filament muscle model based on a titin-myosin interaction	Matthew Millard
1524 - 1536	Three-dimensional representations of skeletal muscles for use in simulations of human motion	Luca Modenese
1536 - 1548	Can a simple phenomenological model explain the mechanics of eccentric contractions?	Sang Hoon Yeo
1548 - 1600	Huxley-type muscle models in largish-scale musculoskeletal models; a feasibility study	Koen Lemaire
1500 - 1600	**Patient Evaluation with Wearable Sensors**	**Glen 208-209**
1500 - 1512	Lower leg kinematics when kam reduced after pressure-based auditory feedback training in knee osteoarthritis	Jade He
1512 - 1524	Quantifying everyday walking characteristics for individuals with and without lower limb loss	Jay Kim
1524 - 1536	Imu-derived metrics of kinematics and kinetics in aging and knee osteoarthritis gait	Jocelyn Hafer
1536 - 1548	Personalized classification using inter-limb movement variability in acl reconstructed knees using wearable sensors	Joe Hart
1548 - 1600	Dynamic balance assessment after severe traumatic brain injury: an objective approach through inertial sensors	Valeria Belluscio
1600 - 1800	**Posters 3**	**Exhibition Hall C/D**
1600 - 1800	Posters 3	

Notes

Sunday, August 4th, 2019

Day-at-a-Glance

Sunday August 4th, 2019

Time	Exhibition E	Macleod AB	Macleod CD	Macleod E1	Macleod E2	Macleod E3
0800 to 0845	Beth Brainerd Imaging	Silvia Blemker ASB Founder's Award	Fred Yeadon Sport Biomechanics			
0900 to 1000	ASB Awards 1			Run Like a Woman: The Biomechanics of Female Runners	ACL & Sport	Non-invasive neuro-muscular stimulation: principles and applications
1000 to 1030	Coffee Break - Exhibition Hall CD					
1030 to 1130	ASB Awards 2			Run Like a Woman: The Biomechanics of Female Runners	ACL & Landing	EMG/MMG Analysis
1145 to 1245	ISB Awards 1: Young Investigator & Clinical Biomechanics Award Lectures			Male vs Female Running	Functional Assessment Following ACL Rupture	Single Motor Unit Function
1245 to 1400	Lunch - Exhibition Hall CD					
1400 to 1445	Heike Vallery					
1500 to 1600	ISB Awards 2: Emerging & Promising Scientist Award Lectures			Sex Dependent Differences in Human Biomechanics	Quadriceps Function After ACL Rupture	
1600 to 1630	Coffee Break - Exhibition Hall CD					
1630 to 1800	Joe Hamill President's Lecture Closing Ceremonies					
1800 to 1900						
1900 to 2300		Banquet				

Sunday, August 4th, 2019

Day-at-a-Glance

Sunday August 4th, 2019

Macleod E4	Glen 201-202	Glen 203-204	Glen 205	Glen 206	Glen 208-209
	Karen Troy Orthopedics				Steve Collins Rehabilitation Biomechanics
Running and Wearable Sensors 1	Frontiers in X-Ray Reconstruction of Moving Morphology	Reflexes & Sensors	Musculoskeletal Modeling in Gait	Orthopaedic Biomechanics: Integrating pathomechanical knowledge into clinical practice	Exoskeletons and Prostheses
Coffee Break - Exhibition Hall CD					
Running and Wearable Sensors 2	Quantitative image - based biomechanics	Disease/Injury	Walking with Backpacks	Knee Surgery/Arthroplasty	Clinical Applications in Orthopaedics and Osseointegrated Prosthesis for Rehabilitative Medical Research in Korea
Biomechanics of Sprint Running	Functional Analysis Using Ultrasound Imaging 1	Behavioural Energetics: how energy minimization determines how you move	Gait Variability	Hay Symposium	Total Joint Arthroplasty: No more Limits?
Lunch - Exhibition Hall CD					
	Student Mentor Lunch 2				ASB Business Meeting
Rear vs Forefoot Running Biomechanics	Functional Analysis Using Ultrasound Imaging 2	Behavioural Energetics: how energy minimization determines how you move	Muscle Function in Gait	EMG/Muscle Force Prediction	Neuropathies in Disease
Coffee Break - Exhibition Hall CD					

Sunday, August 4th

Detailed Program

0800 - 0845	**Invited Speaker: Beth Brainerd - Imaging**	**Exhibition Hall E**
0800 - 0845	Invited Speaker: Beth Brainerd - Imaging	
0800 - 0845	**Invited Speaker: Silvia Blemker - ASB Founders Award**	**Macleod A/B**
0800 - 0845	Invited Speaker: Silvia Blemker - ASB Founders Award	
0800 - 0845	**Invited Speaker: Fred Yeadon - Sport Biomechanics**	**Macleod C/D**
0800 - 0845	Invited Speaker: Fred Yeadon - Sport Biomechanics	
0800 - 0845	**Invited Speaker: Karen Troy - Orthopedics**	**Glen 201-202**
0800 - 0845	Invited Speaker: Karen Troy - Orthopedics	
0800 - 0845	**Invited Speaker: Steve Collins - Rehabilitation Biomechanics**	**Glen 208-209**
0800 - 0845	Invited Speaker: Steve Collins - Rehabilitation Biomechanics	
0900 - 1000	**ASB Young Scientist Awards**	**Exhibition Hall E**
0900 - 0930	ASB Young Scientist Awards	
0930 - 1000	ASB Young Scientist Awards	
0900 - 1000	**Run Like a Woman: The Biomechanics of Female Runners**	**Macleod E1**
0900 - 0912	Run like a woman: the biomechanics of female runners	**Allison Gruber**
0912 - 0924	Impact loading and tibial stress fracture in female runners	**Clare Milner**
0924 - 0936	Run like a woman: frictional bra-breast injuries in running	**Julie Steele**
0936 - 0948	Economical running biomechanics in female runners	**Isabel Moore**
0948 - 1000	Gender responses to minimal running: preliminary results about interest, participation and training effects	**Ana Azevedo**
0900 - 1000	**ACL & Sport**	**Macleod E2**
0900 - 0912	Reducing biomechanical risk factors for acl injury by means of specific training in elite female handball players	**Sabrina Erdrich**
0912 - 0924	Acl tension during training activities for return to sport	**Stacey Meardon**
0924 - 0936	The effect of a 16-week foot muscle specific intervention program on acl and las injury mechanisms	**Carla Van Der Merwe**
0936 - 0948	The efficacy of multi-task relative rankings in screening for anterior cruciate ligament injury risk	**Mark Robinson**
0948 - 1000	Prospective frontal plane angles predict acl strain and identify those who will injure their acl in sport	**Nathaniel Bates**
0900 - 1000	**Non-Invasive Neuromuscular Stimulation: Principles and Applications**	**Macleod E3**
0900 - 0912	Does decreased motor axon excitability contribute to contraction fatigability during functional electrical stimulation?	**David Collins**
0912 - 0924	Transcutaneous electrical nerve stimulation: principles and parameters optimization for pain control	**Richard Liebano**
0924 - 0936	Neuromuscular electrical stimulation: principles and applications	**Nicola Maffiuletti**
0936 - 0948	Interests and limits of transcranial and peripheral magnetic stimulation	**Guillaume MILLET**
0948 - 1000	Panel Discussion	**Marco Vaz**
0900 - 1000	**Running and Wearable Sensors 1**	**Macleod E4**
0900 - 0912	Using wearable technology data to detect atypical running patterns with injury: a case report	**Christian Clermont**
0912 - 0924	An inertial sensor-based technique for estimating kinetic sprint performance metrics	**Reed Gurchiek**
0924 - 0936	Individual differences in ground contact time measurement accuracy of a commercially available sensor during treadmill running	**Ryan Brodie**
0936 - 0948	Pedestrian movement tracking using adaptive zero-velocity updates from shank imu	**Lara Weed**
0948 - 1000	Data-reduction method and surface effects on accelerometer-based estimates of cumulative damage	**Olivia Bruce**
0900 - 1000	**Frontiers in X-Ray Reconstruction of Moving Morphology**	**Glen 201-202**
0900 - 0912	Visualization and quantification of 3d foot bone kinematics between human and african great apes using a biplanar x-ray fluoroscopy	**Kohta Ito**
0912 - 0924	Clinical application of model-based tracking using a biplane fluoroscopy system	**Kristin Zhao**

Sunday, August 4th

Detailed Program

0924 - 0936	Application of mr imaging and high speed biplanar radiography to quantify dynamic acl function	**Louis Defrate**
0936 - 1000	Panel Discussion	**Micheal Rainbow**
0900 - 1000	**Reflexes & Sensors**	**Glen 203-204**
0900 - 0912	Acto-myosin cross-bridge stretch mechanics underlie history-dependent changes in muscle spindle sensory feedback: a multi-scale experimental and simulation study	**Brian Horslen**
0912 - 0924	Gait simulations with biologically-inspired central pattern generators and reflexes	**Anne Koelewijn**
0924 - 0936	Modular organization of the murine locomotor pattern in presence and absence of sensory feedback from muscle spindles	**Alessandro Santuz**
0936 - 0948	Modulation of tendon tap reflex activation of soleus motor neurons with reduced stability tandem stance	**Gordon Chalmers**
0948 - 1000	Paradoxical relationship in sensorimotor system: knee joint position sense absolute error and joint stiffness measures	**Takashi Nagai**
0900 - 1000	**Musculoskeletal Modeling in Gait**	**Glen 205**
0900 - 0912	Predicting the mechanics and energetics of a variety of human gaits based on complex musculoskeletal models	**Antoine Falisse**
0912 - 0924	Developing the new generation of personalised neuromusculoskeletal models to investigate cerebral palsy	**Giorgio Davico**
0924 - 0936	Estimation of the knee adduction moment and joint contact force during daily living activities using inertial motion capture	**Jason Konrath**
0936 - 0948	Estimating the time profile of metabolic cost within the gait cycle during level and uphill walking	**Philippe Malcolm**
0948 - 1000	Effect of simulated hip abductor strengthening on hip loading in hip dysplasia	**Brecca Gaffney**
0900 - 1000	**Orthopaedic Biomechanics: Integrating Pathomechanical Knowledge into Clinical Practice**	**Glen 206**
0900 - 0912	Introduction	**Donald Anderson**
0912 - 0924	Translating exogenous loading studies to clinical interventions	**Ted Gross**
0924 - 0936	Integrating pathomechanical knowledge into clinical practice: arthroplasty applications	**Claire Brockett**
0936 - 0948	Intra-articular contact mechanics of hip dysplasia and surgical hip preservation procedures	**Jessica Goetz**
0948 - 1000	Imaging approaches to quantifying spinal pathomechanics	**Arin Ellingson**
0900 - 1000	**Exoskeletons and Prostheses**	**Glen 208-209**
0900 - 0912	Alternative human-in-the-loop exoskeleton assistance strategies: heuristic-based exoskeleton control for co-adaptive locomotor assistance	**Rachel Jackson**
0912 - 0924	Assistive mechanisms of (distal) ankle exoskeletons and a (proximal) robotic waist tether	**Philippe Malcolm**
0924 - 0936	Should prosthetic feet be designed to maximize energy storage and return?	**Elliott Rouse**
0936 - 0948	Leg joint function in sprinting and jumping of athletes with and without below the knee amputation	**Steffen Willwacher**
0948 - 1000	The use of running-specific prostheses in athletes with bilateral transtibial amputations	**Alena Grabowski**
1030 - 1130	**ASB Journal of Biomechanics Awards**	**Exhibition Hall E**
1030 - 1050	Tibial bone strain influences bone change following marathon training in novice marathon runners	**Tsolmonbaatar Khurelbaatar**
1050 - 1110	Maximum force and velocity properties of cardiac muscle following aerobic and resistance exercise training in rats	**Kevin Boldt**
1110 - 1130	Situational factors associated with the frequency and severity of head impacts in varsity ice hockey	**Olivia Aguiar**
1030 - 1130	**Run Like a Woman: The Biomechanics of Female Runners (cont)**	**Macleod E1**
1030 - 1042	Running through the lifespan: benefits and risks for female athletes	**Katherine Boyer**
1042 - 1054	Female runners reduce proximal segment motion and alter stride dynamics postpartum	**Cristine Agresta**
1054 - 1106	The role of biomechanics in elite middle-distance running: an olympian and mother's perspective	**Hilary Stellingwerff**
1106- 1130	Panel Discussion	**Allison Gruber**
1030 - 1130	**ACL & Landing**	**Macleod E2**
1030 - 1042	Customized finite element models of the knee to investigate acl injury mechanisms during landing	**Alessandro Navacchia**
1042 - 1054	Kinematic and kinetic compensations during bilateral landing six months after acl reconstruction	**Frieder C. Krafft**

Sunday, August 4th

Detailed Program

1054 - 1106	Differences in anterior cruciate ligament injury risk factors between female dancers and female soccer players during single- and double-leg landing	**Bee-Oh Lim**
1106 - 1118	The single leg drop landing test as a biomechanical screening tool in élite athletes after acl surgery	**Zimi Sawacha**
1118 - 1130	Are athletes ready to return to competitive sports following acl reconstruction and medical clearance?	**Ahmed Radwan**
1030 - 1130	**EMG/MMG Analysis**	**Macleod E3**
1030 - 1042	Classification of muscle activation patterns of gait during single and dual tasking using artificial neural networks	**Fabian Hoitz**
1042 - 1054	Surface electromyography denoising using empirical mode decomposition during gait	**Claudio Tapia**
1054 - 1106	Quantitative assessment of motion artifact contamination in surface electromyograms	**Andrew Law**
1106 - 1118	Comparison of frequency properties of mechanomyogram between accelerometer and micophone	**Kazuyuki Mito**
1118 - 1130	The usefulness of adaptable multi-muscle co-activity measures in the trunk	**Daniel Viggiani**
1030 - 1130	**Running and Wearable Sensors 2**	**Macleod E4**
1030 - 1042	Using neural networks to predict running speed from a single pelvis-worn imu	**Adam Gotlin**
1042 - 1054	Assessing left-right asymmetry in running using wearable accelerometery and automated step segmentation	**John Davis**
1054 - 1106	Correlations between gait parameters estimated with wireless sensors and instrumented treadmill during running	**Isaiah Ball**
1106 - 1118	A wearable device for movement analysis in outdoor walking and running: a sensor-fusion approach	**Neil Cronin**
1118 - 1130	Sacral accelerations predict whole body kinetics and stride kinematics during running	**Ryan Alcantara**
1030 - 1130	**Quantitative Image-Based Biomechanics**	**Glen 201-202**
1030 - 1054	Muscle elastography: forces, fibers, fractals and fractional calculus	**Thomas Royston**
1054 - 1106	3d subtalar joint visualization: utility of weightbearing computed tomography	**Amy Lenz**
1106 - 1118	Mri measurements of in vivo cartilage mechanics	**Louis Defrate**
1118 - 1130	Proximal femur ct scans of british postmenopausal women show that bone loss is tissue dependent	**Pinaki Bhattacharya**
1030 - 1130	**Disease/Injury**	**Glen 203-204**
1030 - 1042	Knee flexion and extension force steadiness at 6 months post-acl reconstruction surgery	**Takashi Nagai**
1042 - 1054	Age-related changes in muscle strength and multi-channel surface electromyography during isometric and isokinetic knee extension in men and women	**Usha Kuruganti**
1054 - 1106	Alterations in extracellular matrix composition do not explain altered biomechanical properties in cerebral palsy	**Richard Lieber**
1106 - 1118	Muscle architecture degeneration in the residual limb following amputation: a pilot study in rabbits	**Dustin Crouch**
1118 - 1130	A new and reliable system for preventing muscle weakness and muscle loss during bed-rest conditions	**Marco Vaz**
1030 - 1130	**Walking with Backpacks**	**Glen 205**
1030 - 1042	Females use greater positive hip work than males in response to military-relevant loads	**Kari Loverro**
1042 - 1054	Spatiotemporal gait changes as a consequence of wearing a combat backpack: analysis between genders	**Jose Heredia-Jimenez**
1054 - 1106	Lumbar and hip joint contact forces during load carriage with different backpack designs	**Jordan Sturdy**
1106 - 1118	Changes in spatio-temporal gait measures throughout a load-bearing military march	**Rebecca Zifchock**
1118 - 1130	Changes in knee total joint moment during load carriage tasks in recruit-aged women	**Kellen Krajewski**
1030 - 1130	**Knee Surgery/Arthroplasty**	**Glen 206**
1030 - 1042	In vivo assessment of the collateral ligament elongation patterns following total knee arthroplasty	**Seyyed Hamed Hosseini Nasab**
1042 - 1054	Longitudinal postoperative joint kinematics of tibial plateau fracture patients	**Kieran Bennett**
1054 - 1106	Effects of acl injury on knee flexion and extension force steadiness	**Takashi Nagai**
1106 - 1118	The relationship between intraoperative anterior femoral translation with peak knee flexion moment during stair ascent in patients two years post-total knee arthroplasty	**Kenechukwu Okoye**
1118 - 1130	Relationships between joint angle variability across terrains and knee arthroplasty satisfaction	**Tyler Hamer**
1030 - 1130	**Clinical Applications in Orthopaedics and Osseointegrated Prosthesis for Rehab Research in Korea**	**Glen 208-209**
1030 - 1054	Biomechanical efficacies of different internal fixators for surgical management of both-column acetabular fractures	**SeogHyun Oh**

Sunday, August 4th

Detailed Program

1054 - 1106	A study of the endogenous electric signals effect on the bone modeling of trabeculae	**Junghwa Hong**
1106 - 1118	Foot plantar pressure distributions during walking in different foot types	**Gwang-Moon Eom**
1118 - 1130	A study on the manufacturing method of the prosthetic socket using the 3D modelling	**Sung-Jae Kang**
1145 - 1245	**ISB Awards 1: Young Investigator & Clinical Biomechanics Award Lectures**	**Exhibition Hall E**
1145 - 1215	ISB Awards 1: Young Investigator & Clinical Biomechanics Award Lectures	
1215 - 1245	ISB Awards 1: Young Investigator & Clinical Biomechanics Award Lectures	
1145 - 1245	**Male vs Female Running**	**Macleod E1**
1145 - 1157	Atalantas assemble: can the women's marathon world record be broken under an optimal cooperative drafting strategy?	**Kristine Snyder**
1157 - 1209	Gender differences of joint coordination and kinetics in healthy runners	**James Saxton**
1209 - 1221	Greater medial-lateral regularity for treadmill vs. outdoor running observed in males but not females	**Lauren Benson**
1221 - 1233	Does gender relate to lower limb asymmetry in adolescent long-distance runners?	**Micah Garcia**
1233 - 1245	Differences in running technique between males and females	**Sam Allen**
1145 - 1245	**Functional Assessment Following ACL Rupture**	**Macleod E2**
1145 - 1157	A novel use of unilateral leg press power during a bilateral leg press task to detect quadriceps weakness and limb symmetry index in acl-reconstructed individuals	**Takashi Nagai**
1157 - 1209	Pain and inflammatory responses after anterior cruciate ligament reconstruction predict poor loading mechanics during running	**Alexa Johnson**
1209 - 1221	Including jump height when normalizing single hop impact kinetics can change the directionality of findings	**Alexander Peebles**
1221 - 1233	Reduced total support moment during stair descent in acl-deficient individuals	**Kylie Davis**
1233 - 1245	Alternative clinical performance tests can identify differences between limbs following acl reconstruction	**Brooke Farmer**
1145 - 1245	**Single Motor Unit Function**	**Macleod E3**
1145 - 1157	Analysis of quadriceps arthrogenic muscle inhibition of acl injury with decomposed electromyography	**Nathan Schilaty**
1157 - 1209	Stretch-induced changes in motor unit activity of young and middle-aged adults during steady submaximal contractions	**Melissa Mazzo**
1209 - 1221	The influence of velocity and force on motor unit firing behaviour during dynamic contractions of the biceps brachii	**Bhawna Shiwani**
1221 - 1233	Non-invasive assessment of single motor unit activity in relation to motor neuron level and lesion location in stroke and spinal muscular atrophy	**Sybele Williams**
1233 - 1245	Motor unit discharge properties of m. flexor hallucis brevis	**Jeroen Aeles**
1145 - 1245	**Biomechanics of Sprint Running**	**Macleod E4**
1145 - 1157	A new perspective on when the hamstring is at greatest risk during high speed running	**Luke Donnan**
1157 - 1209	Muscle contributions to body mass centre acceleration during the first stance of sprint running	**Laura Martín De Azcárate**
1209 - 1221	A mechanism of body orientation change at the approach phase to curved path in sprinting	**Tatsuro Ishizuka**
1221 - 1233	The relative muscle volume of triceps surae differs among sprinters, runners and untrained subjects	**Yume Tsuruhara**
1233 - 1245	Using instrumented running specific prostheses during sprinting and long jumping for performance assessment of elite paralympic athletes.	**Andrea Giovanni Cutti**
1145 - 1245	**Functional Analysis Using Ultrasound Imaging 1**	**Glen 201-202**
1145 - 1157	Functional deficits following acute achilles tendon rupture are correlated with changes in muscle structure	**Josh Baxter**
1157 - 1209	Rectus femoris muscle quality is associated with mobility in women with knee osteoarthritis	**Jaclyn Hurley**
1209 - 1221	Altered gearing in medial gastrocnemius muscle of chronic stroke survivors	**Jongsang Son**
1221 - 1233	Estimating force in the rectus femoris and vastus intermedius via ultrasound during gait at different speeds	**Matt Prebble**
1233 - 1245	Ultrasound imaging reveals differential triceps surae response to altered propulsive demand in walking	**William Clark**

Sunday, August 4th

Detailed Program

1145 - 1245	**Behavioural Energetics: How Energy Minimization Determines How You Move**	**Glen 203-204**
1145 - 1157	Behavioural energetics - An Introduction	**Jessica Selinger**
1157 - 1209	Energy economy in unsteady, non-straight-line, perturbed and constrained locomotion	**Manoj Srinivasan**
1209 - 1221	Movement vigor, preference, and the subjective valuation of effort	**Alaa Ahmed**
1221 - 1233	Contribution of blood oxygen and carbon dioxide sensing to the energetic optimization of human walking	**Jeremy Wong**
1233 - 1245	A role for proprioception in the selection of economical gaits	**Jesse Dean**
1145 - 1245	**Gait Variability**	**Glen 205**
1145 - 1157	Gait variability and control during the walk-to-run transition in adolescents	**Stacey Kung**
1157 - 1209	Quantifying gait variability among children with autism spectrum disorder	**Patrick Cereceres**
1209 - 1221	Accuracy and repeatability of the “neutral-zero position” of the lower extremity	**Wolfgang Teufl**
1221 - 1233	Variability in quasi-steady-state overground walking vs. self-paced treadmill walking	**Daniel Richie**
1233 - 1245	Predicting stride time variability in healthy italian adults: examining variabilities of individual motor inputs and outputs	**Christopher Bailey**
1145 - 1245	**Hay Symposium**	**Glen 206**
1145 - 1230	Hay Symposium	
1145 - 1245	**Total Joint Arthroplasty: No More Limits?**	**Glen 208-209**
1145 - 1157	Improving patient outcome after joint replacement - the power and limits of arthroplasty registries	**Michael Morlock**
1157 - 1209	Joint loading of the hip and knee measured in vivo during different activities	**Philipp Damm**
1209 - 1221	Improving predictive tests for total knee replacement - lessons learned from retrieval and gait analysis	**Markus Wimmer**
1221 - 1233	Importance of TKA size selection for fine tuning the laxity in the knee	**Joern Seebeck**
1233 - 1245	Contact conditions at the total hip head-neck modular taper junction: known knowns, known unknowns, or unknown unknowns?	**Hannah Lundberg**
1400 - 1445	**Keynote: Vallery Heike**	**Exhibition Hall E**
1400 - 1445	Keynote: Vallery Heike	
1500 - 1600	**ISB Awards 2: Emerging & Promising Scientist Award Lectures**	**Exhibition Hall E**
1500 - 1530	ISB Awards 2: Emerging & Promising Scientist Award Lectures	
1530 - 1600	ISB Awards 2: Emerging & Promising Scientist Award Lectures	
1500 - 1600	**Sex Dependent Differences in Human Biomechanics**	**Macleod E1**
1500 - 1512	Male and female lower-limb kinematic responses during a standardised load carriage task are sex-specific	**Jodie Wills**
1512 - 1524	Sex differences in force steadiness	**J Greig Inglis**
1524 - 1536	Men and women with hip-related pain demonstrate differing lower limb biomechanics during low- and high-impact functional tasks	**Matthew King**
1536 - 1548	Sex differences in lower extremity biomechanics during unanticipated sidestepping	**Gillian Weir**
1548 - 1600	Male and female muscular and physical adaptations to load carriage conditioning are sex specific	**Tim Doyle**
1500 - 1600	**Quadriceps Function After ACL Rupture**	**Macleod E2**
1500 - 1512	Knee extensor fatigue resistance in individuals following acl-reconstruction	**Stephan Bodkin**
1512 - 1524	Y balance scores are related to quadriceps strength at return to activity following anterior cruciate ligament reconstruction	**Kazandra Rodriguez**
1524 - 1536	Rate of torque development declines at lower relative torque outputs in acl reconstructed limbs	**Alex Spencer**
1536 - 1548	Quadriceps strength does not modify gait mechanics after acl reconstruction, rehabilitation and return to sport training	**Elanna Arhos**
1548 - 1600	12 month post-acl reconstruction quadriceps strength, neural activity, and muscle stiffness asymmetries	**April Mcpherson**

Sunday, August 4th

Detailed Program

1500 - 1600	**Rear vs ForeFoot Running Biomechanics**	**Macleod E4**
1500 - 1512	Footstrike pattern recognition using machine learning on tibial accelerometry	**Joseph Mahoney**
1512 - 1524	Triceps surae metabolic energy consumption in rearfoot and mid-/forefoot strikers	**Wannes Swinnen**
1524 - 1536	Shear wave velocity in the plantar fascia of runners using different foot strike techniques	**Tony Lin-Wei Chen**
1536 - 1548	Can impact sound amplitude and frequency differentiate footstrike patterns?	**Roy Cheung**
1548 - 1600	Agreement between leg and ground reaction force vector orientation in forefoot and rearfoot running	**Raymond Tran**
1500 - 1600	**Functional Analysis Using Ultrasound Imaging 2**	**Glen 201-202**
1500 - 1512	Intra-session real-time ultrasonography feedback improves the quality contraction of transverse abdominis	**Carlos De La Fuente**
1512 - 1524	Alterations in vastus lateralis architecture in individuals with limb-sparing surgery after osteosarcoma: preliminary results	**Christa Nelson**
1524 - 1536	Differences in motor unit features of healthy and mnd affected muscles detected using b-mode ultrasound imaging	**Emma Hodson-Tole**
1536 - 1548	Reliability and validity of ultrasonography for measurement of hamstring muscle and tendon morphology	**Adam Kositsky**
1548 - 1600	Real-time muscle fascicle length measurement via machine learning	**Luis Rosa**
1500 - 1600	**Behavioural Energetics: How Energy Minimization Determines How You Move (cont)**	**Glen 203-204**
1500 - 1512	How people initiate energy optimization and converge on their optimal gaits	**Jessica Selinger**
1512 - 1524	Give and take: learning to use asymmetry to reduce energy cost during walking	**James Finley**
1524 - 1536	Can we leverage energy optimization as a mechanism for gait rehabilitation?	**Purnima Padmanabhan**
1536 - 1548	Women evolved to walk	**Cara Wall-Scheffler**
1548 - 1600	Panel Discussion	**Max Donelan**
1500 - 1600	**Muscle Function in Gait**	**Glen 205**
1500 - 1512	Lower extremity electromyography while walking in the alterg at different bodyweight support	**Paul Craig**
1512 - 1524	Effects of self-paced incline treadmill walking on lower limb muscles activation level	**Chenmiao Lu**
1524 - 1536	Altered gluteus medius contraction during gait in chronic ankle instability versus coper and healthy groups	**Alexandra Dejong**
1536 - 1548	Surface compared to fine-wire electromyography activity of lower leg muscles at different walking speeds	**Annamaria Peter**
1548 - 1600	Vastus lateralis muscle fascicles actively lengthen during human walking	**Tobias Weingarten**
1500 - 1600	**EMG/Muscle Force Prediction**	**Glen 206**
1500 - 1512	The effects of electromyography-assisted modelling in estimating musculotendon forces during gait in children with cerebral palsy	**Kirsten Veerkamp**
1512 - 1524	Do simulated synergies accurately represent muscle coordination?	**Megan Auger**
1524 - 1536	Effects of recruitment, rate coding and twitch property noise on the variability and complexity of muscle force: a simulation study	**Samantha Winter**
1536 - 1548	A new module-based static optimization approach that yields muscle co-activations	**Lydia Brough**
1548 - 1600	Reconstruction of an unmeasured muscle excitation with the measured muscle synergies extracted using principal component analysis (pca)	**Di Ao**
1500 - 1600	**Neuropathies in Disease**	**Glen 208-209**
1500 - 1512	Pressure time integral as a discriminant for group membership in the progression of diabetes	**Janet Dufek**
1512 - 1524	Classification of diabetic neuropathic patients from emg data: a machine learning approach	**Marcus Vieira**
1524 - 1536	Neuropathic motor unit abnormalities revealed by surface-detected electromyography decomposition	**John Letizi**
1536 - 1548	Neuromuscular control during gait in people with haemophilic arthropathy	**Carlos Cruz Montecinos**
1548 - 1600	Gait variability is altered in cancer survivors with neuropathy	**Katherine Hsieh**
1630 - 1745	**President's Lecture: Joe Hamill**	**Exhibition Hall E**
1630 - 1715	President's Lecture: Joe Hamill	

Poster Sessions

Topic Categories

Upper Limb & Spine Biomechanics

Locomotion

Methods in Biomechanics

MSK Modeling/Simulation

Muscle

Neuromuscular/ Postural Control & Balance

Orthopedics Biomechanics

Rehabilitation Biomechanics

Sport

Lower Limb Biomechanics

Other

Thursday, August 1

101: Muscle General 1
102: Balance Biomechanics 1
103: Clinical Gait General 1
104: Clinical Biomechanics 1
105: Lower Limb/Gait 1
106: Spine 1
107: Low Back Pain 1
108: Modelling: Musculoskeletal - Upper Limb/Trunk 1
109: Hip 1
110: Knee 1
111: Orthopedic Cartilage 1
112: Running General 1
113: Running Footwear 1
114: Volleyball 1
115: Football + Rugby 1
116: Skiing Hockey Sliding 1
117: Baseball 1
118: EMG/MMG/Data Analysis 1
119: Medical Devices 1
120: Miscellaneous 1
121: Miscellaneous Posters 1
122: Animal Comparative 1

Friday, August 2

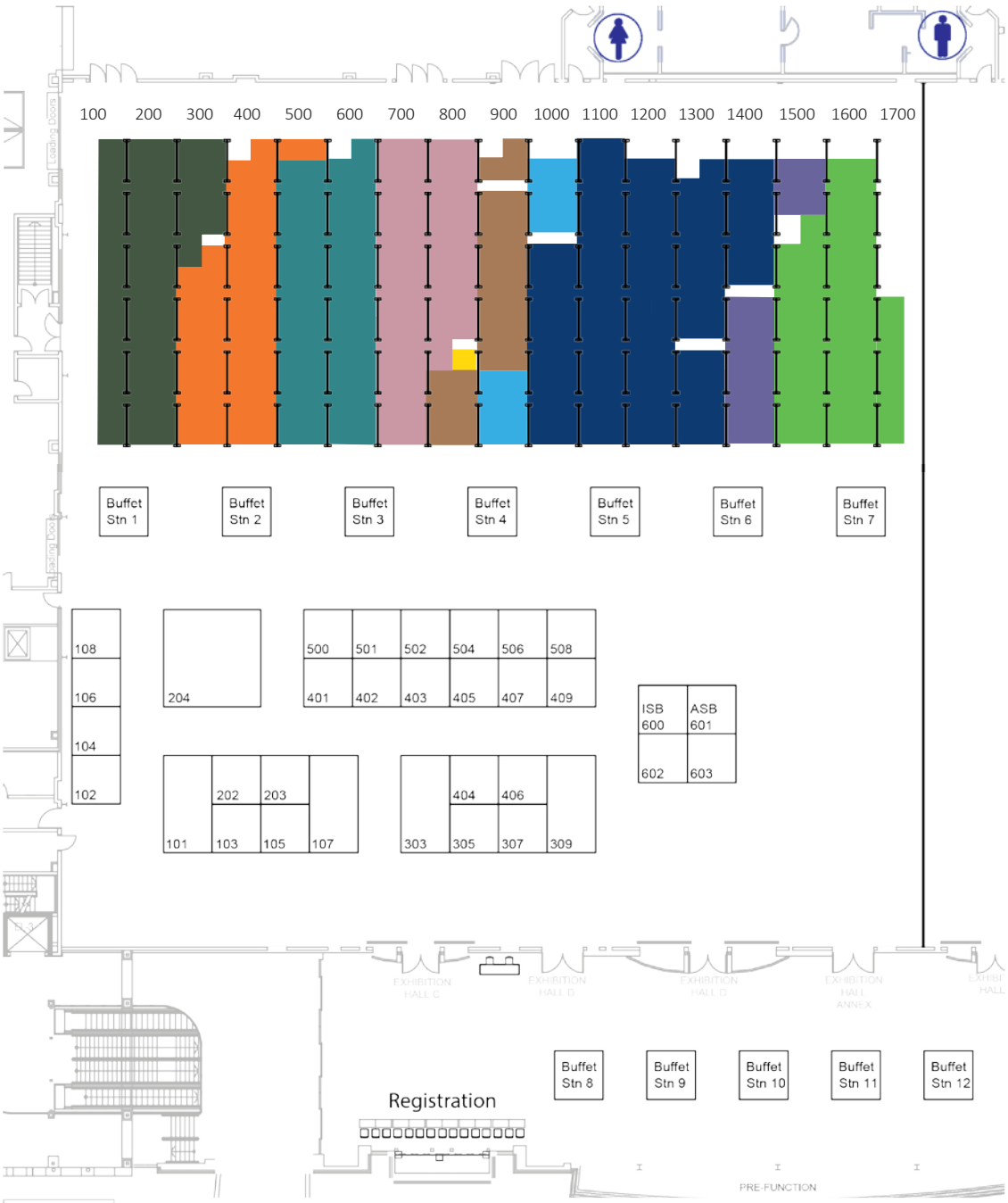
201: Muscle Properties 2
202: Muscle Fatigue 2
203: Muscle History Dependence 2
204: Modelling: General Simulations Lower + Upper Limb 2
205: Modelling: Musculoskeletal - EMG 2
206: Locomotion Energetics/Metabolic Cost Load Carrying 2
207: Locomotion Energetics/Metabolic Cost Incline/Decline 2
208: Clinical Gait: Cerebral Palsy 2
209: Clinical Gait: Parkinson's 2
210: Lower Limb/Gait 2
211: Balance Fall/Elderly 2
212: Orthopedic Tendon 2
213: Upper Extrimity - Elbow 2
214: Upper Extrimity - Hand + Wrist 2
215: Upper Extrimity - Miscellaneous 2
216: Extremity - Lower 2
217: Rehabilitation: Bio-Robotics + Exoskeletons 2
218: Rehab 2
219: Imaging Ultrasound + Electrography 2
220: Running Injury 2
221: Sport 2
222: Sport: Cuts/Lateral Movement Maneuvers 2
223: Sport: Landing/Drop Jumps 2
224: Imaging: X-ray + Fluoroscopy 2
225: Methodologies + Data Analysis - GAIT 2
226: Imaging: MRI + CT 2

Saturday, August 3

301: Muscle General 3
302: Modelling: Musculoskeletal - Muscle 3
303: Modelling: Musculoskeletal - Upper Limb/Trunk 3
304: Balance Walking 3
305: Control 3
306: Clinical Gait Post Stroke 3
307: Wireless Clinical 3
308: Locomotion General 3
309: Orthopedic Bone 3
310: Orthopedic Ligaments 3
311: Tissue Biomechanics General 3
312: Tissue Muscle + Soft tissues 3
313: Rehabilitation: Prosthetics + Orthotics - Lower Limb 3
314: Rehabilitation: Neuro-Rehab 3
315: Injuries + Rehab 3
316: Sport Cycling 3
317: Sport Squat/Lifting 3
318: Sport Basketball 3
319: Sport Jumping 3
320: Miscellaneous Posters 3
321: Medical Devices 3
322: Methlodologics + Data Analysis: Foot 3
323: Education + Outreach 3

Session 1 - Thursday, August 1st

Map



Session 1 - Thursday, August 1st

Detailed Poster Listing

Muscle General 1

Board: 1-113 ISB119 **Andras Hegyi**
Ankle joint angle influences hamstring fine-wire and high-density electromyography activity in ramp isometric knee flexions

Board: 1-114 ISB135 **Le Li**
Correlation between muscle morphology and electrical properties in tibialis anterior of poststroke survivors

Board: 1-115 ISB155 **Richard Lieber**
Reduced muscle stem cell number hinders sarcomere addition and contracture recovery

Board: 1-116 ISB156 **Richard Lieber**
Myopalladin is a z-disk protein that promotes muscle growth via the serum response factor (srf) pathway

Board: 1-117 ISB160 **Kenichi Kaneko**
On the relationship between advanced glycation end-products (ages) and surface emg on lower limb muscles in elderly persons

Board: 1-118 ISB182 **Bart Bolsterlee**
Reliability and robustness of muscle architecture measurements obtained using diffusion tensor imaging with anatomically constrained tractography

Board: 1-119 ISB204 **Inae Gadotti**
Forward head posture can influence masticatory muscle activity during chewing - a preliminary study

Board: 1-120 ISB210 **Richard Lieber**
Intramuscular anatomy may obscure correlations between collagen content and passive muscle stiffness

Board: 1-121 ISB282 **Stephanie Ross**
The effects of muscle size on the efficiency of muscle contraction

Board: 1-122 ISB285 **Bart Bolsterlee**
Evaluation of image registration methods used to estimate three-dimensional deformation of human skeletal muscle during isometric contractions

Board: 1-123 ISB396 **Ian Smith**
Relaxation is not accelerated by prior contraction in plantaris muscle of rana pipiens assessed in situ

Board: 1-124 ISB410 **Michelle Cardoso**
Neuromuscular investigations of two active office chair designs

Board: 1-200 ISB480 **Jaqueline Lourdes Rios**
The effects of moderate exercise and prebiotic fibre supplementation on vastus lateralis muscle in a rat model of obesity

Board: 1-213 ISB528 **Marissa Munoz-Ruiz**
Interactions between fingers during rapid force pulse production

Board: 1-201 ISB578 **Whitney Wolff**
Sternocleidomastoid muscle exhibits consistent muscle activation and elasticity tuning during 3-d isometric tasks

Board: 1-214 ISB607 **Pavlos Evangelidis**
Muscle shear elastic modulus in hamstrings: effect of intensity, contraction type, and relationship with muscle anatomy

Board: 1-202 ISB758 **Rhiannon Marion**
Activation reduction following active lengthening for position and torque matching tasks

Board: 1-215 ISB953 **Shinya Sato**
Can low-intensity squat exercise improve knee and hip flexion and extension strength simultaneously?

Board: 1-203 ISB963 **Heather Johnston**
Thoracolumbar co-contraction: a predisposing mechanism for back pain associated with large chest size?

Board: 1-216 ISB999 **Mikio Shoji**
Knee extensor muscle damage protective effect by maximal isometric contractions of the knee flexors

Board: 1-204 ISB1160 **Xiyao Shan**
Inhomogeneous and anisotropic mechanical properties of the triceps surae aponeuroses in vivo during submaximal muscle contraction

Board: 1-217 ISB1174 **Sigrid Thaller**
Weight- and inertia-related effects of training on muscle properties: a simulation study

Board: 1-205 ISB1202 **Khoi Nguyen**
Physical basis for the shape of muscle work loops

Board: 1-218 ISB1302 **Isotta Rigoni**
Lower leg muscle response during whole body vibration: effect of frequency and subject posture

Board: 1-206 ISB1361 **Takashi Nagai**
Knee flexion and extension muscular force steadiness in young adults: sex differences and test-retest reliability

Board: 1-219 ISB1368 **Takashi Nagai**
Effects of acl injury on knee flexion and extension force steadiness

Board: 1-207 ISB1469 **Sunil Prajapati**
Characterizing changes in muscle coordination in response to constrained motions during gait

Board: 1-220 ISB1498 **Dean Culver**
Modeling and simulating electrostatic, diffusive, and hamaker inelastic collisions for two charges in an ionic solution

Board: 1-208 ISB1544 **Derek Zwambag**
Estimating intrafibrillar and basement membrane contributions to passive elastic modulus in human single muscle fibres

Board: 1-221 ISB1562 **Rafael Akira Fujita**
The effect of verbal instruction on the electromyographic activity while performing the seated-row exercise, with and without pre-exhaustion.

Board: 1-209 ISB1614 **Fandi Shi**
Mechanomyography changes during different isometric contraction forces at different muscle lengths

Board: 1-222 ISB1653 **Laura Healey**
Forward positioned head supported mass amplifies muscle activation requirements of the upper neck extensors when performing reciprocal scanning

Board: 1-210 ISB1692 **Jessa Ward**
Semg activity of low back muscles during bridge exercises using kinesiology tape

Board: 1-223 ISB1775 **Philipp Kornfeind**
Muscular efficiency of the m. quadriceps femoris during maximal isokinetic knee extension

Session 1 - Thursday, August 1st

Detailed Poster Listing

Board: 1-211 ISB1814 **Jacqueline Cole**
Effects of altered loading paradigms on glenohumeral muscle development in growing rats

Board: 1-224 ISB1852 **Tim Van Der Zee**
Force rate dependency of metabolic cost during cyclic muscle contraction

Board: 1-300 ISB1860 **Barbora Rimkus**
The effect of single-bout eccentric exercise on contractile properties in mouse soleus and tibialis anterior muscles.

Board: 1-313 ISB1865 **Talia Alenabi**
Regional activation of infraspinatus during isometric external rotations in different arm postures

Board: 1-301 ISB1867 **Emily Abbott**
Biorobotic jumping: antagonist muscle-tendon units can controllably enhance power across a joint

Board: 1-314 ISB1871 **Emily Abbott**
Examining in situ changes to proprioceptive signals with increased muscle-tendon compliance

Board: 1-302 ISB1889 **Ashley Oldshue**
Modeling muscle cross-bridge dynamics for movement simulations

Board: 1-315 ISB1942 **Tim Butterfield**
Inducible depletion of titin kinase in adult skeletal muscle impairs passive tension-induced sarcomerogenesis

Board: 1-303 ISB1944 **Zachary Hettinger**
Differences in young's elastic modulus in gastrocnemius muscles from young and old rats explains the age-dependent subcellular responses to externally applied loads

Board: 1-316 ISB1957 **Hironori Watanabe**
Skin acts as a medium of epimuscular myofascial force transmission in human

Board: 1-304 ISB1971 **Laksh Kumar Punith**
Combining feedforward control and series elasticity enables muscle-tendon units to rapidly and safely reject perturbations

Balance Biomechanics 1

Board: 1-317 ISB59 **Michael Krackow**
Asymmetric loading and its impact on lateral sway in a healthy population

Board: 1-305 ISB173 **Lukas Ondra**
Assessment of balance ability among youth czech hockey players with different performance levels

Board: 1-318 ISB322 **Zachary Cordingley**
The immediate effects of tai chi on the postural stability of healthy young adults

Board: 1-306 ISB382 **Chen Yang**
Effects of localized muscle fatigue on upper body posture and postural variability in a repetitive pointing task

Board: 1-319 ISB386 **Malgorzata Kalinowska**
Is there any dependence between movement during postural sways and results of limits of stability test?

Board: 1-307 ISB401 **Wei-Jin Wong**
Weighting of the sensory systems during quiet standing in patients with neurogenic claudication: using time-frequency analysis

Board: 1-320 ISB592 **Daisuke Shibata**
Improvement of postural stability by a self-mobilization exercise program

Board: 1-308 ISB605 **Alexandria Roberts**
Postural control strategies of boarders on stable and unstable surfaces

Board: 1-321 ISB615 **Aida Chebbi**
Effect of loss of balance direction on the perturbation threshold line for lean releases, lean releases with surface translations and surface translations in younger adults

Board: 1-309 ISB643 **Eric Jenkins**
The effect of magnification loupes on posture during instrumentation by dental hygienists

Board: 1-322 ISB944 **Noriyuki Yamamoto**
The comparison of standing posture sway between pre and post the lower legs bathing

Board: 1-310 ISB945 **Romain Tisserand**
Perception of small whole-body perturbations during standing balance in humans

Board: 1-323 ISB1032 **Plaiwan Suttanon**
Accuracy and discrimination validity of an accelerometry-based postural sway meter

Board: 1-311 ISB1034 **Cody Reed**
Transient effects exist during eyes closed and eyes open quiet stance although characteristics vary

Board: 1-324 ISB1036 **Cody Reed**
Transient effects of postural control in young and elderly populations during quiet, eyes closed stance

Board: 1-413 ISB1042 **Cody Reed**
Correlations between initial transient response and whole-trial estimates of postural control in eyes closed stance

Board: 1-401 ISB1054 **Tom Van Wouwe**
Initial posture explains variability in kinematic responses to perturbations of standing

Board: 1-414 ISB1084 **Jae Sun Ree**
Effect of ankle joint proprioception level on the balance ability

Board: 1-402 ISB1146 **Hitoshi Makabe**
The effect of eye closing during standing on eeg-eeg coherence and eeg-emg coherence

Board: 1-415 ISB1194 **Pouyan Mehryar**
Ground reaction forces in perturbed standing balance of above-knee prosthesis users

Board: 1-403 ISB1275 **Kyra Twohy**
Elements influencing stability in older adults performing an overhead reaching task

Board: 1-416 ISB1390 **Brian Davis**
Postural instability in chiari patients: an understudied biomechanical problem.

Board: 1-404 ISB1416 **Lauren Nowosatka**
You nod "yes," the postural control system responds: "whoa!"

Board: 1-417 ISB1464 **Joel Alvarez-Ruf**
Postural control as a measure of mental fatigue in air traffic controllers

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Detailed Poster Listing

Board: 1-405 ISB1516 **Mindie Clark**
The relationship of postural sway to cortical rhythms during standing balance tasks

Board: 1-418 ISB1559 **Bhawna Shiwani**
Motor unit mechanisms of balance in the quadriceps muscle

Board: 1-406 ISB1560 **Sam Wilson**
The interaction of cognitive interference, standing surface, and fatigue on lower extremity muscle activity

Board: 1-419 ISB1574 **Kostas Gianikellis**
Knee joint functional relationship between accelerating movement, postural balance and isokinetics in young adults with cerebral palsy

Board: 1-407 ISB1594 **Ryan Crews**
Do design features of offloading removable cast walkers affect neuropathic diabetic individuals' responses to perturbations?

Board: 1-420 ISB1605 **Yoichiro Sato**
Constraint on center of mass trajectory for motion pattern formation of a kinematic chain

Board: 1-408 ISB1681 **Vinayak Vijayan**
Detrended fluctuation analysis for postural control data

Board: 1-421 ISB1695 **Monique Cajueiro**
Postural adjustments as mechanism of control and stability of shoulder during upper limbs movements

Board: 1-409 ISB1722 **Mohamed Abdelhafid Kadri**
Intra- and inter-individual variability of vibration-induced postural reactions in healthy adults

Board: 1-422 ISB1772 **Gina Digiacomo**
Synchronization of eeg activity with body balance during cognitive visual exercises

Board: 1-410 ISB1777 **Christian Debuys**
Support for the existence of open-loop and closed-loop regions in balance control

Board: 1-423 ISB1840 **Christopher Hurt**
Tandem stance ability may be a sensitive test in the onset of gait and balance dysfunction

Board: 1-411 ISB1850 **Chelsea Martin**
A comparison of side dominance and sex differences in muscle activation during the performance of the upper quarter y balance test

Board: 1-424 ISB1898 **Albert Vette**
Kinematics recommendation for balance studies on unstable sitting control

Board: 1-500 ISB1907 **Albert Vette**
Quantitative relationship between kinematics and muscle activity during unstable sitting

Board: 1-513 ISB1927 **Anita Vasavada**
Task, but not workspace configuration, influences postural sway during computer work

Clinical Gait General 1

Board: 1-501 ISB8931 **Enrica Papi**
Does knee osteoarthritis and knee injury affect movement patterns in the same way?

Board: 1-514 ISB88 **Jeff Eggleston**
Coordination variability and autism: a potential descriptor for movement impairment?

Board: 1-502 ISB263 **Morten Bilde Simonsen**
Tibialis posterior dysfunction - a contributing factor to forefoot deformities? a parametric study

Board: 1-515 ISB271 **David Howell**
Female athletes demonstrate faster dual-task gait recovery than male athletes after concussion

Board: 1-503 ISB275 **Lance Bollinger**
Effects of simulated weight loss on lower extremity emg and joint kinematics during treadmill walking in obese subjects

Board: 1-516 ISB308 **Stacy Loushin**
Gait characterization after ventricular peritoneal shunt placement in idiopathic normal pressure hydrocephalus

Board: 1-504 ISB477 **Matteo Zago**
Gait patterns alterations in people with down syndrome: a posture space kinematics approach

Board: 1-517 ISB492 **Renata Bona**
Relation between electromyographic and metabolic variables on gait in chronic heart failure and heart transplant patients

Board: 1-505 ISB501 **Brecca Gaffney**
Compensations during walking vary across slopes in patients with hip dysplasia

Board: 1-518 ISB616 **Alyssa Olivas**
Weighted vest effects on stride parameter variability in children with autism spectrum disorder

Board: 1-506 ISB662 **Hananeh Younesian**
Spatiotemporal and impulse characteristics of diabetic patients type ii with and without neuropathy during gait

Board: 1-519 ISB740 **Zimi Sawacha**
Gait analysis in children with x fragile syndrome: a combined emg and markerless approach

Board: 1-507 ISB761 **Brian Selgrade**
Optical flow perturbations to detect preclinical walking balance impairment in people with multiple sclerosis

Board: 1-520 ISB803 **Alex Dzewaltowski**
Collision work performed by patients with peripheral artery disease

Board: 1-508 ISB818 **Mike Vakula**
Quadriceps function is related to temporal gait characteristics in adults with obesity

Board: 1-521 ISB957 **Meredith Wells**
Quantification of vaulting in healthy adults walking with an immobilized knee

Board: 1-509 ISB1205 **Gu Eon Kang**
Gait kinematics are different between asymptomatic individuals with bipolar disorder and healthy controls

Board: 1-522 ISB1639 **Will Pitt**
A preliminary investigation of balance control during a 180 degree turn in acutely concussed young adults

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Board: 1-510 ISB1706 **Oladipo Eddo**
Increased trunk kinetics observed during subject-specific lateral trunk lean gait modification

Board: 1-523 ISB1835 **Keith Gordon**
Locomotor adaptation in a randomly varying dynamic environment: evidence of whole body impedance control

Board: 1-511 ISB1925 **Juhi Bharnuke**
Gait kinematics of bharatanatyam dancers with low back pain

Board: 1-524 ISB1974 **Mahboobeh Mehdikhani**
A flexible real-time biofeedback tool that trains gait adaptability

Clinical Biomechanics 1

Board: 1-613 ISB99 **Sergio Luis Orozco Villaseñor**
Biomechanical correlation of pelvic limb shortening with radiographic studies of scanning and baropodometry

Board: 1-601 ISB205 **Rachel Straub**
Sagittal plane trunk orientation is a better predictor of the knee extensor moment during squatting than tibia orientation

Board: 1-614 ISB295 **Andresa Germano**
Cutaneous sensitivity in normal aging and mild cognitive impairment (mci)

Board: 1-602 ISB349 **Hiroshi R. Yamasaki**
Analysis of physiotherapy effect on sit-to-stand movement dynamics after stroke

Board: 1-615 ISB541 **Gustavo Balbinot**
Post-stroke kinematic analysis in rats reveals similar reaching abnormalities as humans

Board: 1-603 ISB559 **Yuri Yoshida**
Biomechanical characteristics of the stand-up test in american adults –a pilot study to examine feasibility of 3d analysis-

Board: 1-616 ISB584 **Angelica Lang**
The influence of impingement pain on kinematics in breast cancer survivors during functional task performance

Board: 1-604 ISB682 **Carol Smyth**
Oep derived thoracoabdominal movement parameters significantly distinguish between rest, various exercise intensities, and recovery

Board: 1-617 ISB753 **Kevin Dibbern**
The relationship between acute intra-articular fracture severity and the risk of post-traumatic osteoarthritis

Board: 1-605 ISB1086 **Sophie De Mits**
Trunk strength and spinal mobility in spondyloarthritis patients

Board: 1-618 ISB1491 **Matthew Petrucci**
Arrhythmicity of upper and lower limb movements in people with parkinson's disease

Board: 1-606 ISB1785 **Andrew Lagree**
Effects of patient height during cardiopulmonary resuscitation (cpr) on upper limb muscle fatigue of the rescuer and cpr quality

Board: 1-619 ISB1821 **Gaura Saini**
Reliability and accuracy of 2d assessment of shoulder kinematics using single plane fluoroscopy

Board: 1-607 ISB1858 **Gessica Aline Silvano**
Hip torques in the transverse plane during the side walk exercise with elastic resistance

Lower Limb/Gait 1

Board: 1-620 ISB168 **Qichang Mei**
Form and function: gait adaptation in the chinese bound foot

Board: 1-608 ISB245 **Riad Akhundov**
Effects of game fatigue on hamstring and adductor muscle dynamics in elite-level athletes

Board: 1-621 ISB357 **David Heller**
Reliability and validity of the damping coefficient in a damped harmonic oscillator model during a medial drop landing in subjects with functional ankle instability

Board: 1-609 ISB418 **Lauren Sepp**
Hip joint contact forces during running with a transtibial amputation

Board: 1-622 ISB553 **Michael Asmussen**
The cost of stabilizing the ankle in static and dynamic tasks

Board: 1-610 ISB586 **Colin Firminger**
Effect of midsole bending stiffness on achilles tendon strain during countermovement jumps

Board: 1-623 ISB697 **Wolfgang Teufl**
Validity of a depth-camera based approach for segment lengths estimation

Board: 1-611 ISB934 **Bradley Wash**
Verification of opensim pelvic residuals in seated cycling with handlebar and seatpost load cells

Board: 1-624 ISB1729 **G. Bryan Cornwall**
Ballroom dance biomechanical assessment using pressure sensing insoles & inertial markers

Spine 1

Board: 1-700 ISB6150 **Fethiye Baskoy**
The effect of core stabilization training on trunk kinematics and serve performance during serve in tennis

Board: 1-713 ISB140 **Changsoo Chon**
Evaluation of biomechanical stability of anterior cervical plate with blocking pin made of shape memory alloy (ni-ti) for anti-backout

Board: 1-701 ISB406 **Clarissa Levasseur**
In vitro loading conditions fail to replicate in vivo cervical spine center of rotation during flexion/extension

Board: 1-714 ISB744 **Richard Hughes**
Evaluating epistemic uncertainty in a hybrid bayesian network model of spinal injury during lifting

Board: 1-702 ISB783 **Sara Molladavoodi**
Mechanical interaction of intervertebral disc cells and their extracellular matrix

Board: 1-715 ISB860 **Luis Nolasco**
Spine kinematics during gait are affected by prosthetic leg length

Board: 1-703 ISB881 **Maruti Gudavalli**
Axial stiffness of the spine in low back pain patients treated with flexion-distraction technique: a pilot study

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Board: 1-716 ISB989 **Zeinab Kamal**
Assessment of intradiscal pressure in a spine with unilateral muscle weakness using kinematics-driven and stability-based kinematics-driven models: is the stability really important?

Board: 1-704 ISB1074 **Young-Woo Kwon**
Biomechanical analysis of posterior screw fixations and allograft spacer in anterior cervical discectomy fusion: a finite element study

Board: 1-717 ISB1141 **Derek Zwambag**
Proportional distribution of motion amongst spine levels introduces systematic errors in posture during complex 3-d movements

Board: 1-705 ISB1334 **Rumit Singh Kakar**
Effect of age on thoracic, lumbar and pelvis coordination during trunk flexion and extension

Board: 1-718 ISB1348 **Manon Limousis-Gayda**
Do traditional back protectors prevent back injuries in skiing?

Board: 1-706 ISB1427 **Dennis Larson**
Characterizing local dynamic stability of spine sub-regions during repetitive trunk movements

Board: 1-719 ISB1489 **Mehrdad Palizi**
A novel approach to predict the spinal deformities based on the torso's median furrow midline curve

Board: 1-707 ISB1573 **Dan Desroches**
Assessing the error of ultrasound in measuring spine kinematics

Board: 1-720 ISB1612 **Andrea Winegar**
Acceleration of the head and body during parachute opening shock in experienced freefall parachutists

Board: 1-708 ISB1618 **Brian Novotny**
Cervical spine range of motion in military parachutists compared to a normal population

Board: 1-721 ISB1647 **Brian Froechtenigt**
Development of a biomechanical model of the cervical spine

Board: 1-709 ISB1660 **Alonso Figueroa**
The influence of variations in anatomical coordinate system definition on cervical spine kinematics

Board: 1-722 ISB1662 **Sam Vasilounis**
Comparing the temporal efficiency and consistency of an ultrasound identification program versus human identification

Board: 1-710 ISB1786 **Jordan Coker**
Trunk kinetics and kinematics among older and obese individuals during one-handed carrying

Board: 1-723 ISB1845 **Tomasz Bugajski**
Reliability of a three-dimensional scanning technique and metrics quantifying pectus deformities

Board: 1-711 ISB1880 **John Gardiner**
The effects of foam thickness and impact velocity in padded falls onto the buttocks

Board: 1-724 ISB1969 **Liesbeth Van Hauwermeiren**
Form and orientation of the sacroiliac joint

Low Back Pain 1

Board: 1-800 ISB123 **Paul Sung**
A consequence of a novel slip perturbation on spinal kinematics and reaction time in subjects with and without chronic low back pain.

Board: 1-813 ISB185 **Jackie Zehr**
An evaluation of low back injury development during variable and consistent compression loading using a nonlinear weighting adjustment approach

Board: 1-801 ISB420 **Erika Nelson-Wong**
Standing-intolerant office workers can improve low back pain and active standing with sit-stand desk use

Board: 1-814 ISB452 **Daniel Schmidt**
Thermal sensitivity mapping - warmth and cold detection thresholds of the torso

Board: 1-802 ISB532 **Artur Bonezi**
Damping factor in pilates exercise using a trunk stability model

Board: 1-815 ISB621 **Hai-Jung Steffi Shih**
Trunk control in and out of an episode of recurrent low back pain

Board: 1-803 ISB1059 **Daniel Cury Ribeiro**
The effectiveness of a lumbopelvic monitor and feedback device to change postural behaviour: a cluster randomized controlled trial

Board: 1-816 ISB1172 **Hiroyuki Nunome**
Immediate effect of corrective insoles on back strength exertion

Board: 1-804 ISB1613 **Claire Zai**
Frontal plane kinematics in servicemembers with amputation with and without lbp: contributions to the biopsychosocial model

Board: 1-817 ISB1718 **Sarah Mukui Mutunga**
Trunk, lumbar and pelvic continuous relative phase in runners with and without a history of low back pain

Board: 1-805 ISB1899 **Bhupinder Singh**
Core muscle activation and lumbo-pelvic alignment during common lumbar stabilization exercises

Board: 1-818 ISB1968 **Rajani Mullerpatan.**
Biomechanical exploration of suryanamaskar for scientific application in low back pain

Board: 1-806 ISB637 **Jui-Te Lin**
Applying varied pelvis perturbations during treadmill walking improves walking balance and over-ground walking speed in people with incomplete spinal cord injury

Board: 1-819 ISB1224 **Christian Meyer**
Characterizing gait deficits in incomplete spinal cord injury using kinematic gait analysis and challenging locomotor conditions

Board: 1-807 ISB1392 **Keith Gordon**
Lateral foot placement correlation with com dynamics is stronger after movement amplification gait training in spinal cord injury

Board: 1-820 ISB1521 **Kieley Trempy**
The role of handedness in visuoproprioceptive tasks

Board: 1-808 ISB1826 **Wendy Boehm**
Modification of maneuver strategies in lateral force fields in persons with incomplete spinal cord injury

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Modelling: Musculoskeletal - Upper Limb/Trunk 1

Board: 1-821 ISB1631 **Kevin Hao**
Simulating finger-tip force using two common contact models: hunt-crossley and elastic foundation

Hip 1

Board: 1-809 ISB69 **Isabella Sudati**
Weaker hip and knee strength in asymptomatic active subjects with dynamic knee valgus

Board: 1-822 ISB264 **Jingguang Qian**
Normative force data of knee and hip joint muscles of young adults in gait

Board: 1-810 ISB440 **Ke Song**
Dysplastic hip anatomy and joint reaction forces affect instantaneous and accumulative loads at the acetabular edge

Board: 1-823 ISB448 **Benjamin Mentiplay**
Associations between hip strength and hip joint kinematics during walking in active young adults with hip-related pain

Board: 1-811 ISB552 **Michael Harris**
Altered muscle geometry, moment arms, and strength in patients with hip dysplasia

Board: 1-824 ISB554 **Enrico De Pieri**
Hip contact force pathways in activities of daily living

Board: 1-913 ISB1079 **Basílio Gonçalves**
Validity and reliability of single and multiplanar hip strength measurements

Board: 1-901 ISB1191 **Viviane Frasson**
Impairments in patients with femoroacetabular impingement syndrome of different age groups

Board: 1-914 ISB1864 **Nicholas Fey**
Motion simulation of 3d ct images to compute joint interference distinguishes between multiple hip pathologies

Knee 1

Board: 1-902 ISB5348 **Tanner Thorsen**
Effects of increased q-factor on knee biomechanics during stationary cycling

Board: 1-915 ISB301 **Lauren Schroeder**
Does type of unanticipated stimulus alter knee mechanics during dynamic tasks?

Board: 1-903 ISB359 **Barbara Postolka**
Tibio-femoral kinematics of the healthy knee during functional gait activities

Board: 1-916 ISB543 **Annemarie Laudanski**
Quantifying the depth of high knee flexion exposures in occupational childcare

Board: 1-904 ISB573 **Pichayathida Luanpaisanon**
Quantitative assessment of the risk of anterior cruciate ligament injury in female soccer players throughout a four year case study using joint kinematics: preliminary results

Board: 1-917 ISB813 **Wyatt Ihmels**
Impact of sex and lace-up ankle brace on knee biomechanics during a single-leg cut

Board: 1-905 ISB904 **Joe Lynch**
Knee shape is associated with kinematic changes during deep flexion

Board: 1-918 ISB943 **Cheng-Chung Lin**
Isometric point analysis for extracapsular stabilization in canine using 3-d kinematics measurement

Board: 1-906 ISB1877 **Jiyoung Jeong**
Relationship between ratio of medial to lateral quadriceps thickness and the knee joint angle during single-leg landing

Board: 1-919 ISB1909 **Mostafa Hegazy**
Prediction of knee injury in professional soccer players using core endurance and strength

Board: 1-907 ISB352 **Jiayu Hu**
Effect of gait modification on the knee adduction moment and medial knee contact forces

Board: 1-920 ISB1041 **Shaida Biglari**
Knee abduction moments of normal weight, overweight, and obese participants in gait, cycling, and elliptical training

Board: 1-908 ISB1139 **Jaeyeon Wee**
Variable stiffness shoes lower knee adduction moment in normal walking without walking speed change

Board: 1-921 ISB1677 **Bryndan Lindsey**
Frontal plane knee angle and stride width explain kam reduction in three previously studied gait modifications

Orthopedic Cartilage 1

Board: 1-909 ISB92 **Gustavo Orozco**
Shear strain and fluid velocity-driven mechanobiological knee joint models can predict local cartilage adaptation after acl injury and reconstruction: numerical predictions compared with longitudinal variations in t1ρ and t2 maps

Board: 1-922 ISB94 **Zhan Liu**
The effects of dynamic biomechanics on the treatment temporomandibular osteoarthritis

Board: 1-910 ISB216 **Kelsey Collins**
A fat-free mouse model to study biomechanical and metabolic contributors to osteoarthritis

Board: 1-923 ISB367 **Paul Bolcos**
A computational method to identify locations susceptible to osteoarthritis in patients with acl reconstruction

Board: 1-911 ISB557 **Igor Komnik**
Reduced knee loading in 3d printed femur and tibia bone parts utilizing femur geometry matched knee pu-spacers

Board: 1-924 ISB606 **Kotaybah Hashlamoun**
Isotropic molecular diffusion in young porcine articular cartilage

Board: 1-1001 ISB834 **Lauren Stam**
Integrin α1β1 is necessary for chondrocyte primary cilia lengthening following hypo-osmotic stress

Board: 1-1014 ISB902 **Salvatore Federico**
Effect of structural distortions on articular cartilage permeability under large deformations

Board: 1-1002 ISB1403 **Baaba Otoo**
Chondrocyte volumetric strain measurements during cyclic loading

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Board: 1-1015 ISB1435 **Amin Komeili**
Cartilage matrix 2d strain distributions for physiological loading conditions

Board: 1-1003 ISB1493 **Kelsey Neal**
Comparison of involved and uninvolved limb knee cartilage t2 values 24 months after anterior cruciate ligament reconstruction

Board: 1-1016 ISB1506 **Jack R. Williams**
Medial compartment underloading 3 months after anterior cruciate ligament reconstruction is associated with lower tibiofemoral cartilage glycosaminoglycan content 24-months after surgery

Running General 1

Board: 1-1004 ISB7043 **Elliott Rouse**
Ankle mechanical impedance varies between running and walking

Board: 1-1017 ISB63 **Neil Cronin**
Markerless 2d kinematic analysis of deepwater running using deep learning

Board: 1-1005 ISB67 **Janet Hanwen Zhang**
Motor strategies and learning effect translation in an established running retraining program

Board: 1-1018 ISB68 **Zoe Chan**
Effects on foot-strike pattern and loading rate following a gait retraining: treadmill modification transfer to over-ground

Board: 1-1006 ISB76 **Shiwei Mo**
Reliability of variability and complexity obtained from bilateral stride intervals in recreational runners during a prolonged treadmill run

Board: 1-1019 ISB139 **Kathryn Farina**
Peak lower-limb acceleration in collegiate distance runners over varying surfaces

Board: 1-1007 ISB212 **Andy Pohl**
Quantifying the individuality of knee kinematics during running gait.

Board: 1-1020 ISB224 **Justin Fernandez**
Novice and experienced barefoot running response revealed using t2 maps, fe modelling and gait analysis

Board: 1-1008 ISB283 **Chris Napier**
The use of a sacral marker to approximate the centre of mass during running gait

Board: 1-1021 ISB291 **Eric Foch**
Low associations between hip adduction angle and hip abductor muscle activity during running

Board: 1-1009 ISB358 **Nizam U Ahamed**
Does a stable running pattern remain stable during different elevation conditions?

Board: 1-1022 ISB361 **Peter Shull**
Combined gait modifications for runners to reduce impact loading

Board: 1-1010 ISB495 **Laura-Anne Furlong**
Asymmetries in running kinetics are not related to asymmetries in strength

Board: 1-1023 ISB504 **Giorgos Krikelis**
Instantaneous achilles tendon moment arms during running

Board: 1-1011 ISB518 **Steffen Willwacher**
The time-course of extrinsic foot muscle volumes during prolonged running: an mri study

Board: 1-1024 ISB520 **Jasmin Willer**
The biomechanical changes during high-intensity running to fatigue

Board: 1-1100 ISB525 **Isabel Moore**
Inter-individual differences in bilateral changes to foot angle following a running gait retraining intervention

Board: 1-1113 ISB564 **Ulisses Taddei**
Altering foot muscles trophism does not affect arch stiffness during running

Board: 1-1101 ISB633 **Xiaole Sun**
Effects of a 12-week gait retraining program on lower extremity muscle activity under different shoe conditions

Board: 1-1114 ISB641 **Keitaro Seki**
Relationship between energy cost and kinematics during the support phase of running

Board: 1-1102 ISB665 **Senne Bonnaerens**
Grounded runners experience less severe ground reaction forces compared to runners who run with a flight phase

Board: 1-1115 ISB699 **Wei Zhuang**
The effect of shank additional mass on the kinematics and kinetics of lower limb during maximal speed in sprinting

Board: 1-1103 ISB716 **Kathryn Harrison**
Kinematic differences between new and experienced runners

Board: 1-1116 ISB763 **Reginaldo Fukuchi**
Effect of varying step frequency on lower extremity joint moments distribution during walking and running

Board: 1-1104 ISB769 **Brian Baum**
Prosthetic design influences peak joint moments during running

Board: 1-1117 ISB796 **Marcus Vieira**
Quantification of coordination variability in classical ballet dancers during running

Board: 1-1105 ISB821 **Christopher Chapman**
Development of a prototype smart apparel to quantify running gait

Board: 1-1118 ISB839 **Kaitlyn Bigner**
The relationship between trunk endurance and running kinematics in adolescent long-distance runners

Board: 1-1106 ISB1000 **Ola Adeniji**
Preliminary biomechanical performance analysis in athletics at the collegiate level

Board: 1-1119 ISB1035 **Hiromasa Ueno**
Relationship between knee extensor moment arm and running performance in endurance runners

Board: 1-1107 ISB1106 **Mitsuo Otsuka**
Bilateral deficit of spring-like behaviour during hopping in sprinters

Board: 1-1120 ISB1118 **Yasushi Enomoto**
Stiffness adjustment to maintain running speed during marathon

Board: 1-1108 ISB1120 **Shen Zhang**
Does heel strike running pattern with cushioned shoes influence muscles forces of longitudinal arch

Board: 1-1121 ISB1186 **Chihiro Murasawa**
Full body joint angle characteristics of elite endurance runners using principal component analysis

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Board: 1-1109 ISB1232 **Nihav Dhawale**
Control of tangential collisions for running on rough terrains

Board: 1-1122 ISB1246 **Thibault Besson**
Neuromuscular fatigue and recovery after single vs multi stage race

Board: 1-1110 ISB1388 **Bhushan Borotikar**
Effect of gait speeds on lower limb muscle synergy and joint moments

Board: 1-1123 ISB1528 **Lauren Welte**
The contributions of the plantar fascia to foot function during running

Board: 1-1111 ISB1545 **Michael Pohl**
The relationship between hip muscular endurance, strength, and frontal plane hip kinematics during running

Board: 1-1124 ISB1561 **Micah Garcia**
Does maturation relate to lower limb asymmetry in adolescent distance runners?

Board: 1-1201 ISB1580 **Kevin Aubol**
Reliability and minimal detectable differences of knee joint angles during running

Board: 1-1214 ISB1599 **Hsiang-Ling Teng**
Trunk flexion angle modulates hip and knee extensor work contribution during running

Board: 1-1202 ISB1616 **Kurt Schutte**
Outdoor effects of running fatigue and training session type on accelerometer-based loading and stability

Board: 1-1215 ISB1668 **Joey Smits**
Metatarsophalangeal joint mechanics differ between overground and treadmill running

Board: 1-1203 ISB1720 **Alessandra Matias**
Effects of a foot ankle exercises protocol on medial longitudinal arch during running

Board: 1-1216 ISB1763 **Tomoya Hirano**
The effect of forearm prosthesis on starting block performance in sprint running: a case study

Board: 1-1204 ISB1798 **Marisa Papp**
Association of swing and stance leg accelerations with reaction force characteristics during the initial contact phase of running

Board: 1-1217 ISB1807 **John H Challis**
Human heel pad and shoe interaction influences during running

Board: 1-1205 ISB1817 **Catalina Abad**
Comparison of variability in treadmill running versus overground running

Board: 1-1218 ISB1882 **Claire Sylvestre**
Running kinematics of overweight and obese children

Board: 1-1206 ISB1945 **Sam Blades**
A comparison of different gait event detection algorithms in running using an in shoe plantar pressure measurement system

Running Footwear 1

Board: 1-1219 ISB7332 **Shariman Ismadi Ismail**
A preliminary study on the influence of footwear outsole coefficient of friction and forefoot bending stiffness in futsal functional test

Board: 1-1207 ISB169 **Liang Jiang**
Effects of shoe heel-toe drop on joint angles and loading when walking uphill

Board: 1-1220 ISB261 **Zuoliang Liu**
A novel shoe with forefoot sliding element interacted with running biomechanics and performance

Board: 1-1208 ISB362 **Chenhao Yang**
Footwear changes patellofemoral contact loadings during heel-toe running

Board: 1-1221 ISB371 **Daniel Koska**
Investigation of time-dependent adaptation processes to different running shoe comfort conditions

Board: 1-1209 ISB610 **Junqing Wang**
Running shoe effects on ground reaction force and joint mechanics during 12-week gait retraining

Board: 1-1222 ISB659 **Xianyi Zhang**
Effect of foot orthoses on forefoot kinematics during running in individuals with a pronated foot posture

Board: 1-1210 ISB673 **Kat Daniels**
The ability of a 3d spring mass model to predict stance phase dynamics of a cutting manoeuvre in humans

Board: 1-1223 ISB766 **Mark Ricard**
The effect of midsole cushioning on 50 ms knee compression impulse in midfoot and rearfoot runners

Board: 1-1211 ISB895 **Brian Prejean**
Midsole cushioning affects joint coupling patterns in running

Board: 1-1224 ISB1939 **Justin Ter Har**
Maximal running shoes affect lower extremity stiffness before and after a six week acclimation period

Volleyball 1

Board: 1-1314 ISB77 **Hsiao-Yun Chang**
Grade comparison in functional movements screen for volleyball and track and field athletes

Board: 1-1302 ISB203 **Hsien-Te Peng**
Biomechanical comparison of running one and two leg vertical jumps on volleyball player

Board: 1-1315 ISB732 **Chen Kai-Chien**
Reason of thoracic mobility training for increasing shoulder function and it's delaying benefits

Board: 1-1303 ISB868 **Kayt Frisch**
Comparing female adolescent and collegiate shoulder kinematics during a volleyball spike

Board: 1-1316 ISB1147 **Jianjie Chen**
Analysis of the strength characteristics of knee and ankle muscles of chinese men's volleyball players

Board: 1-1304 ISB1243 **Kun Yu Chou**
The characteristic of range of motion of shoulder and trunk in young female volleyball players

Board: 1-1317 ISB1761 **Jessica Nihill**
Comparing landing mechanics after a spike by division ii front row volleyball players

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Football + Rugby 1

Board: 1-1305 ISB93 **Daniel Glassbrook**
A new technique to quantify positional differences in external mechanical load during professional rugby league.

Board: 1-1318 ISB880 **Jonathan Goldstein**
Grf of long snapping with and without blocking

Board: 1-1306 ISB1276 **Philip Walker**
The effect of acute fatigue on counter-movement jump phase characteristics in amateur football players

Board: 1-1319 ISB1505 **Jonathan Mortensen**
Does player strategy reduce head injury metrics during impact? a simulation study

Board: 1-1307 ISB1687 **Jordan Mcclung**
Effect of ankle sprain history on ankle inversion biomechanics in high school football players

Board: 1-1320 ISB1961 **Ming Chang Tsai**
Determining key metrics in wheelchair rugby field test using data reduction

Skiing Hockey Sliding 1

Board: 1-1308 ISB292 **Qi Hu**
The effect of vertical axial wind on the flight stability in ski jumping

Board: 1-1321 ISB299 **Fu Yanming**
Study on the risk of cruciate ligaments injury in the landing moment of freestyle skiing athletes of aerial skills

Board: 1-1309 ISB561 **Dieter Heinrich**
Computing neuromuscular control patterns that minimize acl forces during jump landing in skiing

Board: 1-1322 ISB1114 **Mikko Virmavirta**
The effect of wind on jumping distance in ski jumping depends on the aerodynamic polar

Board: 1-1310 ISB1320 **Davide Pavan**
Comparison between female and male professional field hockey players during on field 20 m sprint run with particular reference to the effect of handling a stick

Board: 1-1323 ISB1391 **Benedicte Vanwanseele**
Maximal velocity and power increases during a sprint test in the season leading up to the world cup field hockey

Board: 1-1311 ISB1548 **Aaron Manning**
Measuring ice hockey shot accuracy with precision: a 3d puck flight simulation

Board: 1-1324 ISB1808 **Caitlin Mazurek**
Differences in inter-joint coordination between high- and low-calibre ice hockey players during forward skating

Baseball 1

Board: 1-1401 ISB170 **Lin-Hwa Wang**
The effects of muscle fatigue on dominant arm performance in overhead athletes

Board: 1-1414 ISB306 **Georgia Giblin**
Countermovement jumping profiles by position in baseball using principal component analysis

Board: 1-1402 ISB324 **Christopher Galbreath**
A method for using inertial measurement units in to identify pitching events in baseball

Board: 1-1415 ISB484 **Kazuyuki Yabata**
Relationship between shoulder complex alignment and standing posture control in the mimicked cocking phase of pitching motion

Board: 1-1403 ISB521 **Kenzie Friesen**
Kinematic predictors of upper extremity pain in national collegiate athletic association division i softball pitchers

Board: 1-1416 ISB579 **Jason Wicke**
Variations in throwing speed and range of motion between female softball and male baseball players following deceleration-focussed shoulder exercises

Board: 1-1404 ISB1016 **Shuhei Nozawa**
Influence of the types of pitches on the flight distance in baseball batting

Board: 1-1417 ISB1398 **Austin Higgins**
Neural network prediction of fastball velocity in college baseball players

Board: 1-1405 ISB1474 **Brittany Dowling**
Differences between bullpen and game baseball pitching biomechanics

Board: 1-1418 ISB1901 **Wen-Tzu Tang**
Functional movement screen scores in baseball division i and division ii

EMG/MMG/Data Analysis 1

Board: 1-1406 ISB195 **Todd Pataky**
Near-real-time analysis of one-dimensional biomechanical continuum data using random field theory lookup tables

Board: 1-1419 ISB267 **Cédric Morio**
Time-frequency analysis of tibial acceleration: what is the best mother wavelet?

Board: 1-1407 ISB487 **Michele Conconi**
Quantification of a systematic source of error affecting optoelectronic stereophotogrammetric measurements: the camera occlusion artefact

Board: 1-1420 ISB800 **Daniel Davis**
A filtering procedure to process non-stationary signals

Board: 1-1408 ISB849 **Kayt Frisch**
Functional data analysis as a powerful alternative to filtering data

Medical Devices 1

Board: 1-1421 ISB2654 **Tobias Konow**
Various implant designs affect micromotion at bone-implant-interface – numerical analysis under different loading conditons

Board: 1-1409 ISB107 **Satria Ardianuari**
Comparison of a low-priced, 2d, video-based tool with instrumented laboratory for gait analysis in orthotics and prosthetics practice: a pilot study

Board: 1-1422 ISB211 **Lucy Armitage**
Effect of pressure sensor feedback on prosthetic socket fabrication

Board: 1-1410 ISB478 **Yoshitaka Nakanishi**
Effect of surface profile of co-cr-mo alloy on wear beahviour of polyethylene in artificial joint

Session 1 - Thursday, August 1st

Detailed Poster Listing

Board: 1-1423 ISB1007 **Sentong Wang**
Finite element modeling in the osteoarthritis patient knee joint and evaluation of unloader knee brace

Board: 1-1411 ISB1013 **Dave Schmitthenner**
Effect of foot plate length on foot segment movement

Board: 1-1424 ISB1258 **Chenzhang Xiao**
Palmar pressure distribution using a pneumatic sleeve orthosis during lofstrand crutch-assisted gait

Board: 1-1501 ISB1267 **Chenzhang Xiao**
Crutch loading and spatiotemporal effects while using pneumatic ergonomic crutches

Board: 1-1514 ISB1558 **Corey Pew**
Evaluation of an orthopaedic insole to reduce peak shock loading in military footwear: a pilot study

Board: 1-1502 ISB1693 **Brooke Slavens**
Biomechanics of geared manual wheelchair ramp ascent in individuals with spinal cord injury

Board: 1-1515 ISB1830 **John Collins**
Ideo work reliance increases after functional training

Miscellaneous 1

Board: 1-1516 ISB307 **Jacob Larson**
Maximum lyapunov exponent analysis of a repetitive vertical jump task in female athletes

Board: 1-1504 ISB1050 **Kao-Shang Shih**
Statistical shape modeling of the knee for three-dimensional fluoroscopic imaging of joint motion: accuracy assessment

Board: 1-1517 ISB1198 **Geonho Kang**
A study on the measurement of joint angle using psd-based infared sensor

Board: 1-1505 ISB1229 **John Sherrill**
Validation of a novel spine biomechanics simulator

Board: 1-1518 ISB1295 **Zikra Nilam**
Lower extremity soft and rigid tissue mass prediction for older living men and women using segment anthropometric measures and dxa

Board: 1-1506 ISB1335 **Fatemeh Jazinizadeh**
Considering the proximal femur's shape and bmd distribution in fracture risk estimation using a single dxa image

Board: 1-1519 ISB1337 **Sónia Alves**
Which vertical ground reaction forces variable is most associated with hip joint contact forces?

Board: 1-1507 ISB1418 **Ranny Michael**
The expansion of the rapid office strain assessment (rosa) - an office ergonomics tool

Board: 1-1520 ISB1424 **Oluwalogbon Akinnola**
Comparison of joint coordinate systems of the wrist

Board: 1-1508 ISB1432 **Albert Vette**
Quantifying inertial properties and force plate inertial components in instrumented platforms

Board: 1-1521 ISB1571 **Frantisek Lopot**
Using of 3d motion analysis for forensic purposes

Board: 1-1509 ISB1621 **Frantisek Lopot**
Design of the front of the tram in view of its danger to pedestrians in the collision

Board: 1-1522 ISB1633 **Carlos De La Fuente**
Non-supervised recognition of chest pattern through accelerometry during tidal breathing.

Board: 1-1510 ISB1751 **Torstein Eriksen Dæhlin**
A physical model to quantify error in determining hip joint angles using euler/cardan angles

Board: 1-1523 ISB1797 **Jonathon Blank**
Transient and standing wave measurements – a comparative analysis in porcine digital flexor tendons

Board: 1-1511 ISB1806 **Alexander W Hooke**
A novel method for evaluation of carpal kinematics in a cadaveric model

Board: 1-1524 ISB1815 **Shayne York**
Impact test method influences kinematic response of hybrid iii anthropometric test device

Miscellaneous Posters 1

Board: 1-1601 ISB64 **Andrew Vigotsky**
Modeling the spatial distribution of surface electromyogram amplitudes

Board: 1-1614 ISB255 **Kyehan Rhee**
Effect of viscoelastic property of atherosclerotic fibrous tissue on arterial diameter variation

Board: 1-1602 ISB325 **Mohammad Salem**
Fracture modeling of cancellous bone using 3d xfem

Board: 1-1615 ISB331 **Saeed Mouloodi**
Accuracy quantification of finite element stress analysis in long bones

Board: 1-1603 ISB332 **Saeed Mouloodi**
Artificial neural network algorithm for prediction of displacement in equine third metacarpal bone

Board: 1-1616 ISB450 **Naoko Tamada**
A role of feedback signals for the behaviour of a neural oscillator

Board: 1-1604 ISB602 **Hyab Mehari Abraha**
Effect of mandibular fracture bone plate repair on mechanics of the mandible during chewing

Board: 1-1617 ISB620 **Chia-Hsuan Li**
Weighting topology optimization method development for mandible reconstruction under multi-occlusal force conditions

Board: 1-1605 ISB657 **Atte Eskelinen**
A mechanobiological model for time-dependent biochemically and biomechanically driven degradation of injured cartilage

Board: 1-1618 ISB680 **Hadi Rahmanpanah**
Prediction of load in the equine third metacarpal forelimb through neural network prediction algorithm

Board: 1-1606 ISB767 **Zhaoyan Zhang**
Biaxial tensile testing and constitutive modeling of human vocal fold lamina propria

Board: 1-1619 ISB1018 **Naeim Akbari Shahkhosravi**
Identification of hoof's material properties based on hyperelastic ogden

Session 1 - Thursday, August 1st

Detailed Poster Listing

Board: 1-1607 ISB1203 **Ho Seong Ji**
Flow structure investigation on multi-vessel model through cfd method

Board: 1-1620 ISB1252 **Kuo-Chih Su**
Investigating the biomechanical effect of interbody fusion cage on lumbar spine

Board: 1-1608 ISB1347 **Alexander Fuchs**
Temporal and spatial wall shear stress characterization at the renal artery branching site

Board: 1-1621 ISB1358 **David Sproule**
Biomechanical analysis of a low speed rear-end collision using a subject-specific madymo simulation

Board: 1-1609 ISB1379 **Kira Tanghe**
Don't overestimate the power of the force

Board: 1-1622 ISB1485 **Baharan Pourahmadi**
Assessing the masticatory function using a food breakdown model

Board: 1-1610 ISB1502 **Ilya Dashevskiy**
Patient-specific biomechanical analysis in computer planning of dental implant prosthetics

Board: 1-1623 ISB1690 **Paul Snyder**
Importance of skull morphology and blunt impact location in remote fracture initiation

Board: 1-1611 ISB1721 **Carlos Escobar Del Pozo**
Secondary arteries influence on an aneurysm hemodynamic

Board: 1-1624 ISB1759 **Najeeb Khan**
Towards convolutional neural networks for finite element modeling of the tongue

Animal Comparative 1

Board: 1-1706 ISB1642 **Paul Slaughter**
Ligamentous support and range of motion in the canine cranio-cervical junction: a biomechanical cadaveric study

Board: 1-1707 ISB629 **Noriaki Usui**
Postural control strategy for head stabilization adopted in kendo striking movements

Board: 1-1708 ISB630 **Kentaro Takahashi**
Technical differences in kendo 'ouji-waza' skills

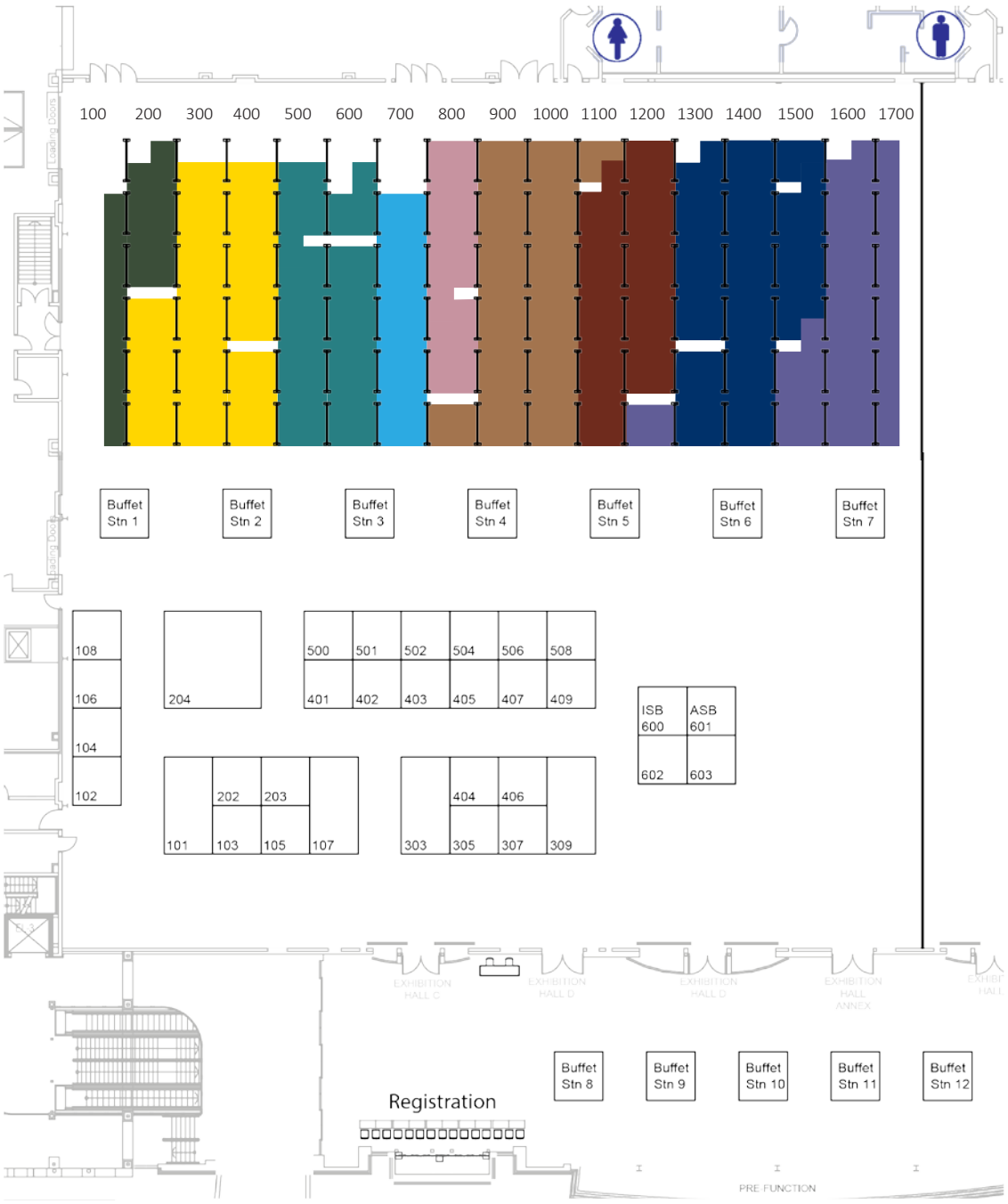
Board: 1-1709 ISB692 **Minato Kawaguchi**
Synchronization of eye blinks within fluctuation may estimate dan grades in kendo

Board: 1-1710 ISB782 **Yuhe Li**
Meniscal stress response during tai chi yunshou movement by finite element analysis

Board: 1-1711 ISB873 **Ali Khatib**
Comparing differences in head impact characteristics between weight classes in professional mixed martial arts

Session 2 - Friday, August 2nd

Map



Session 2 - Friday, August 2nd

Detailed Poster Listing

Muscle Properties 2

Board: 2-115 ISB157 **Richard Lieber**
Passive mechanical properties of mammalian muscle are not affected by the intracellular titin protein

Board: 2-116 ISB277 **Kevin Boldt**
Maximum force and velocity properties of cardiac muscle following aerobic and resistance exercise training in rats

Board: 2-117 ISB439 **Victor Cossich**
Absolute and normalized rate of torque development and their association to torque of knee extensors at five angles

Board: 2-118 ISB648 **David C Lin**
Estimation of force-velocity properties of individual muscles from measurement of the combined plantarflexor properties

Board: 2-119 ISB1010 **Akihiro Kanda**
Changes in maximal voluntary contraction torque and rate of torque development after initial and secondary bouts of maximal knee extensor eccentric exercise

Board: 2-120 ISB1158 **Neale Tillin**
Time from rest to maximum available joint torque is shorter at faster angular velocities: an intrinsic contractile property

Board: 2-121 ISB1423 **John Drazan**
Plantarflexor torque and work is positively correlated with medial gastrocnemius fascicle length in healthy adults

Board: 2-122 ISB1433 **Kurtis Ashcroft**
Athos's semg-based training load reflects athlete physical stress better than an accelerometry-based tracking system during an incremental treadmill vo2max test.

Board: 2-123 ISB1569 **Denis Holzer**
In vivo force velocity relation of human m. gastrocnemius medialis during maximal voluntary preloaded contractions

Board: 2-124 ISB1700 **Heiliane De Brito Fontana**
Agonistic muscle (im-) balance during synchronized activation

Muscle Fatigue 2

Board: 2-213 ISB949 **Adam Kositsky**
Medial gastrocnemius muscle architecture after exhaustive jumps

Board: 2-201 ISB1280 **Naoya Hirata**
Individual differences in knee extensor fatigue induced by sustained middle-level contraction

Board: 2-214 ISB1630 **John Letizi**
Motor unit manifestations of muscle fatigue during dynamic leg extension exercises

Board: 2-202 ISB1747 **Bryan Schlink**
Fatigue of the medial gastrocnemius induces a proximal shift and decrease in peak muscle activity during walking

Board: 2-215 ISB1762 **Jansen Estrázulas**
Back extension endurance time and muscle fatigue of university students with and without history of low back pain: preliminary findings

Muscle History Dependence 2

Board: 2-203 ISB82 **Atsuki Fukutani**
Influence of fiber type on stretch shortening cycle and residual force enhancement

Board: 2-216 ISB213 **Jackey Chen**
Tendon-evoked reflexes are attenuated in the torque-depressed state

Board: 2-204 ISB960 **Haley Gabel**
The effects of shortening-induced torque depression on fatigue resistance in males and females

Board: 2-217 ISB1058 **Patrick Bakenecker**
Muscle length-dependent force enhancement in m. vastus lateralis

Board: 2-205 ISB1472 **Antonia Zehentbauer**
Contribution of neural modulations to reduced residual force depression after stretch-shortening cycles

Board: 2-218 ISB1716 **Daiani De Campos**
Residual force enhancement in voluntary contractions of elbow flexors

Modelling: General Simulations Lower + Upper Limb 2

Board: 2-206 ISB2439 **Zhaoxia Li**
Dynamic simulation of hemiplegic gait and its rehabilitation

Board: 2-219 ISB65 **Hoon Kim**
Anterior translation and medial rotation of the talus can affect the ankle joint contact forces during hopping

Board: 2-207 ISB91 **Matthew Millard**
The influence of foot mechanics on predicted walking motions and ground forces

Board: 2-220 ISB100 **Ava Segal**
Performance of a rotating platform total knee replacement design during turning gait: a finite element analysis

Board: 2-208 ISB167 **Shu-Yu Jhou**
A new computational process for evaluation of footwear traction performance

Board: 2-221 ISB385 **Nikolas Knowles**
Material mapping of qct-derived scapular models: a comparison with micro-ct loaded specimens using digital volume correlation

Board: 2-209 ISB431 **Soumyabrata Maiti**
Speed regulation of a 3d compasswalker driven by a noisy toe-off impulse

Board: 2-222 ISB445 **Jeonghoon Oh**
Predicting ground reaction forces during stair climbing using depth sensor-driven musculoskeletal modelling

Board: 2-210 ISB513 **Michele Conconi**
Prediction of individual carpal kinematics during hammer motion: an in-vivo validation

Board: 2-223 ISB618 **Conor Jansen**
Predictive dynamic simulation of olympic track cycling standing start

Board: 2-211 ISB704 **Kayla Pariser**
Plantar flexor recruitment during walking with real-time adaptive and fixed speed treadmill controllers

Board: 2-224 ISB723 **Jazmin Cruz**
Development and validation of a new full body musculoskeletal model

Session 2 - Friday, August 2nd

Detailed Poster Listing

Board: 2-301 ISB798 **Nikolas Knowles**
Performance of qct-derived scapula finite element models in predicting local displacements using digital volume correlation

Board: 2-314 ISB831 **Mojtaba Zare**
Compression rate affects the mechanical response of meniscectomized knee joints

Board: 2-302 ISB918 **Hans Kainz**
Impact of subject-specific loadings on femoral bone growth simulations

Board: 2-315 ISB929 **Vahid Babakeshizadeh**
Towards a “more valid” method of validation: application of effective mass for error resolution of force plate measurements

Board: 2-303 ISB937 **Marco Schneider**
Predicting cartilage morphology from bone using a statistical shape model

Board: 2-316 ISB1003 **Hiroto Togawa**
Optimization of jumping motions considering approach run and prosthesis foot for long jump competition in lower extremity amputees

Board: 2-304 ISB1015 **Duncan Bakke**
Shape-model constrained scaling may improve repeatability of gait data generated by opensim

Board: 2-317 ISB1038 **Shaida Biglari**
Lumbar spine compressive loads in simulated strawberry picking using opensim

Board: 2-305 ISB1107 **Jaeyeon Wee**
Heel pad dissipates the energy as the heel pad becomes rapidly stiffer: finite element analysis

Board: 2-318 ISB1110 **Jodie Wills**
Hip and knee joint moment and power adaptations are elicited through load-carriage conditioning in males

Board: 2-306 ISB1117 **Azadeh Nasseri**
A rheological model of anterior cruciate ligament loading: development and validation

Board: 2-319 ISB1135 **Mahboobeh Mehdikhani**
Calf muscle wastage in people with partial foot amputation wearing footwear with fillers

Board: 2-307 ISB1151 **Dimitar Stanev**
An oculomotor model for kinematics and dynamics simulation

Board: 2-320 ISB1177 **Zimi Sawacha**
Multiscale modelling in diabetic foot prevention: a muscle forces driven approach

Board: 2-308 ISB1204 **Tzu-Yu Chou**
Forces in the lateral ankle ligaments during non-resisted and resisted ankle internal/external rotation using finite element analysis

Board: 2-321 ISB1208 **Hsuan-Yu Lu**
Theoretical accuracy of subject-specific knee modelling using a statistical shape model with multiple-view fluoroscopy images

Board: 2-309 ISB1305 **Jenna Link**
Separate and combined effects of known fatigue parameters on power during cyclic contractions

Board: 2-322 ISB1319 **Zimi Sawacha**
Development of a pipeline for fem guided plantar insole design

Board: 2-310 ISB1349 **Jonathan Gosyne**
Optimizing contact area and joint stiffness of a passive foot-ankle exoskeleton for hopping on deformable terrain

Board: 2-323 ISB1393 **Chase Rock**
How to hop on mars: neuromechanical model suggests low frequency is optimal

Board: 2-311 ISB1430 **Pawel Kudzia**
Simple mathematical models are insufficient in explaining vertical jumping

Board: 2-324 ISB1476 **Stephanie Rossman**
Development of a finite element lumbar spine model to predict intervertebral disc herniation risk

Board: 2-401 ISB1495 **Ryan Byrne**
How skeletal kinematics and passive tissue property affect musculoskeletal model-based lumbar load estimates

Board: 2-414 ISB1503 **Maryam Hajizadeh**
Foot orthosis deformations following dynamic loading: a 3d finite element study

Board: 2-402 ISB1504 **Marco Marra**
Analysis of factors of patellofemoral instability using personalized musculoskeletal modeling

Board: 2-415 ISB1565 **Ang-Xiao Fan**
A clinically applicable patient-specific surgical simulation platform for foot and ankle surgery: a feasibility study

Board: 2-403 ISB1601 **Satanik Mukherjee**
Comparison of mechanical stresses between in-silico models of an osteochondral setup and the human knee joint

Board: 2-416 ISB1675 **Ana Azevedo**
Musculoskeletal computational model optimization: the critical role of markers error adjustments

Board: 2-404 ISB1736 **Dongho Park**
Muscle compensation patterns in persons with medial gastrocnemius paralysis: comparison of experimental data with musculoskeletal simulation results based on computed muscle control (opensim 4.0)

Board: 2-417 ISB1755 **Jazmin Mccorkle**
Development of a finite element based model for the thermal assessment of transtibial prosthetic liners

Board: 2-405 ISB1916 **Koen Lemaire**
Energy dissipation in soft tissues increases with peak ground reaction force in human walking

Board: 2-418 ISB1920 **Toyoyuki Honjo**
Effect of upper body behaviors on numerical gait on a moving slope

Board: 2-406 ISB1938 **Robert Aguilar**
A 3d computational model for evaluating muscle activity in above-knee prosthesis users

Board: 2-419 ISB1972 **Myunghyun Lee**
Slip model demonstrating com dynamics of human walking in frontal plane

Board: 2-407 ISB1977 **Hyunho Jeong**
Ground reaction force estimation method based on a single rgb camera using spring walking model

Session 2 - Friday, August 2nd

Detailed Poster Listing

Board: 2-420 ISB1980 **Dinant Kistemaker**
What is the upper limit of the power output during a periodic movement of the lower limb?

Modelling: Musculoskeletal - EMG 2

Board: 2-408 ISB593 **Riad Akhundov**
Development and validation of a deep neural network for automated electromyographic pattern classification

Board: 2-421 ISB911 **Claudio Pizzolato**
Real-time estimation of localised achilles tendon strain using a multiscale emg-informed neuromusculoskeletal model

Board: 2-409 ISB1339 **António P Veloso**
Muscle contributions to maximal forward braking and backwards acceleration in elite athletes

Board: 2-422 ISB1456 **Lena Ting**
A multi-scale model predicts diverse muscle spindle firing properties

Board: 2-410 ISB1844 **Samuel Salemi**
Simultaneous penalization of muscle activation and contact loads

Board: 2-423 ISB1912 **Mohammad S. Shourijeh**
Informed synergy optimization for muscle activation estimation

Board: 2-411 ISB117 **Alberto Leardini**
3d measurements of foot bone architecture in weight-bearing by cone-beam computed tomography

Board: 2-424 ISB847 **Virginia Monteiro**
Comparison between two different fe modelling approaches to account for body weight in subject-specific socket design

Locomotion Energetics/Metabolic Cost Load Carrying 2

Board: 2-501 ISB83 **Rebecca Zifchock**
Are baseline strength measures predictive of changes in spatio-temporal gait measures throughout a load-bearing military march?

Board: 2-514 ISB237 **Jean-Paul Martin**
Generating electricity while walking with a carried mass oscillating in the medial-lateral direction

Board: 2-502 ISB320 **Keio Ishiguro**
The effect of weighted backpack position while walking on laterl inclined surfaces

Board: 2-515 ISB574 **Christopher Arellano**
Natural arm swing allows for inexpensive load carrying

Board: 2-503 ISB951 **Gavin Lenton**
Hip joint contact forces increase in response to greater body-borne loads and faster walking speeds

Board: 2-516 ISB1369 **Anilendu Pramanik**
Effect of biomechanical changes in continuous uphill load carriage operations of indian infantry soldiers

Board: 2-504 ISB1744 **Dennis Dever**
Effects of load carriage running and forced marching on gait kinematics of recruit-aged females

Locomotion Energetics/Metabolic Cost Incline/Decline 2

Board: 2-517 ISB514 **Chuanbao Cao**
Biomechanic characteristics of the patellofemoral joints of older adults when descending the stairs

Board: 2-505 ISB545 **Eva Orantes**
Load carriage and kinematic adaptations in overweight and healthy-weight schoolchildren

Board: 2-518 ISB816 **Corey Koller**
Effect of load carriage on natural ankle quasi-stiffness

Board: 2-506 ISB1201 **Hermann Schwameder**
Gait initiation in downhill walking

Board: 2-519 ISB1962 **Woolim Hong**
The effect of inclination and walking speed on foot placement for slope walking

Clinical Gait: Cerebral Palsy 2

Board: 2-507 ISB978 **Horng-Chaung Hsu**
Inter-limb sharing of total leg stiffness during weight transfer of gait in children with spastic hemiplegic cerebral palsy

Board: 2-520 ISB1140 **Miguel Rodal**
Uncontrolled manifold analysis of gait variability in young adults with spastic diplegia

Board: 2-508 ISB1510 **Laura Oudenhoven**
Can we use treadmills for real-time optimization of ankle foot orthoses?

Board: 2-521 ISB1603 **Ricky Pimentel**
Pressure distribution shifts laterally following lateral column calcaneal lengthening procedures

Board: 2-509 ISB1952 **Alyssa Spomer**
An analysis of muscle synergy structure during voluntary emulation of cerebral palsy gait patterns

Clinical Gait: Parkinson's 2

Board: 2-522 ISB814 **Nigel Zheng**
Optimal configuration of wearable sensors for gait analysis in parkinson's disease patients

Board: 2-510 ISB1012 **Changhong Youm**
Effects of spatiotemporal variables on maximum speed 540° turning task by disease-dominant side and with and without freezing of gait in parkinson's disease patients

Board: 2-523 ISB1046 **Graham Kerr**
Altered gait patterns in parkinson's and older people who fall: effects of a motor dual task constraint.

Board: 2-511 ISB1166 **Yoonhyeok Choi**
Gait patterns in healthy control, parkinson's disease and swedd subjects

Board: 2-524 ISB1684 **Wilford Eiteman-Pang**
Towards a real-time mobile phone based detection and intervention of deficient walking patterns in parkinson's disease

Session 2 - Friday, August 2nd

Detailed Poster Listing

Lower Limb/Gait 2

Board: 2-614 ISB441 **Michael Mcgeehan**
Integration of a semi-active variable-stiffness lower-limb prosthesis into a musculoskeletal model

Board: 2-602 ISB1363 **Quenten Hooker**
Motor skill training vs. strength and flexibility exercise in people with chronic low back pain: effects on short- and long-term limitations in function, pain intensity, and movement characteristics

Board: 2-615 ISB1411 **Helia Mahzoun Alzakerin**
Application of autoregressive modelling to evaluate knee stability dynamics during asymmetric walking: implications for acl injury

Board: 2-603 ISB1462 **Amanda Munsch**
Effects of knee extensor moment biofeedback on gait biomechanics and quadriceps contractile behavior

Board: 2-616 ISB1529 **Daniel Kuhman**
Lower-extremity joint and muscle group mechanical behavior changes in response to altered task demand

Balance Fall/Elderly 2

Board: 2-604 ISB227 **Adam Widgery**
A six week homebased strength and balance exercise programme for healthy older adults

Board: 2-617 ISB360 **Eline Van Der Kruk**
Rising from a seated position: future directions for an ageing population

Board: 2-605 ISB403 **Richard Hughes**
A hybrid bayesian network model of slipping while walking

Board: 2-618 ISB405 **Sang-Kyoon Park**
Complexity of center of pressure using approximate entropy in fallers and non-fallers during walking

Board: 2-606 ISB455 **Junggil Kim**
Effect of potential fallers on fall analysis during timed up and go

Board: 2-619 ISB599 **Xiao Gao**
Effects of older adults under postural dual task during turning

Board: 2-607 ISB608 **Soheil Bajelan**
Walking more safely by increasing swing phase ankle dorsiflexion

Board: 2-620 ISB756 **Fabricio Saucedo**
Effects of vibration training in reducing risk of falls in hispanic individuals with chronic stroke

Board: 2-608 ISB786 **Hao-Yuan Hsiao**
Control of lower limb loading in individuals with chronic stroke

Board: 2-621 ISB1019 **Andreas Skiadopoulos**
The effect of a novel task intervention on gait variability in older adults

Board: 2-609 ISB1259 **Kyra Twohy**
Differentiation of fall history in older adults using posturography

Board: 2-622 ISB1284 **Sina Mehdizadeh**
Gait instability, fall history, and neuropsychiatric symptoms are associated with falls in people with dementia

Board: 2-610 ISB1359 **Meghan Kazanski**
Variability of lateral stepping by older adults in destabilizing environments

Board: 2-623 ISB1680 **Pilwon Hur**
Does inadequate angular momentum regulation cause falls?

Board: 2-611 ISB1861 **Gabriel Haberly**
Predicted effects of strength training on the ability of older adults to recover from a backward balance loss

Board: 2-624 ISB1887 **Jeremy Angus**
A comparison of different technologies and metrics to measure postural stability during the clinical test of sensory interaction and balance

Orthopedic Tendon 2

Board: 2-702 ISB122 **Denes Farago**
The biomechanical properties of different tendons after cyclic test

Board: 2-715 ISB171 **Seung-Min Baik**
Effects of iliotibial band stretching in the modified thomas test position on iliotibial band flexibility and vastus medialis activity in individuals with tight iliotibial band

Board: 2-703 ISB354 **Yusung Kim**
Passive metatarsophalangeal joint dorsiflexion stiffness is correlated to the plantar fasciitis

Board: 2-716 ISB779 **Liliam Oliveira**
Comparative analysis of the supraspinatus tendon in different age groups using elastography

Board: 2-704 ISB785 **Liliam Oliveira**
An 8-week resistance training protocol is effective in adapting quadriceps but not patellar tendon shear modulus measured by supersonic shearwave imaging

Board: 2-717 ISB964 **Francesca Wade**
Achilles tendon moment arms differ when computed from moving and fixed helical axes of ankle rotation

Board: 2-705 ISB980 **Vickie Shim**
Combining finite element analysis with a machine learning technique for rapid prediction of subject-specific achilles tendon tissue stress

Board: 2-718 ISB1040 **Taeyong Lee**
The effect of prolonged weight bearing physical activities on plantar soft tissue properties

Board: 2-706 ISB1103 **Ruoli Wang**
A method to estimate the passive mechanical properties of tibialis anterior tendon in vivo

Board: 2-719 ISB1124 **Robert Griffiths**
Functional interpretation of the microstructure of the diaphragmatic ligament

Board: 2-707 ISB1316 **Kayla Fewster**
Mechanical testing of porcine cervical facet capsular ligaments

Board: 2-720 ISB1402 **David Corr**
Quasi-static and cyclic uniaxial mechanical loading exhibit distinct influences on the biomechanical properties of engineered scaffold-free tendon fibers

Board: 2-708 ISB1473 **Lynda Brady**
Microstructural differences in plantar soft tissue with diabetes status

Session 2 - Friday, August 2nd

Detailed Poster Listing

Board: 2-721 ISB1526 **Natalia Grzechnik**
Evaluation of different rehydration methods in the course of preparation of tendon samples.

Board: 2-709 ISB1600 **Jeff Barrett**
Modelling tendon failure as a function of strain rate

Board: 2-722 ISB1715 **Sophia Theodossiou**
Neonatal locomotor behavior may contribute to changes in tendon mechanical properties

Board: 2-710 ISB1731 **Anahid Ebrahimi**
Subject-specific calibration of shear wave tensiometers for estimating achilles tendon loading

Board: 2-723 ISB1879 **Erica Bell**
Assessment of plantar fasciitis with shear wave elastography

Board: 2-711 ISB1885 **Zachary Domire**
Relationship between plantar fascia modulus and plantar pressures during gait in patients with plantar fasciitis

Board: 2-724 ISB1895 **Jared Muench**
Effect of aging on failure propagation in partially-cut tendon fascicles

Upper Extrimity - Elbow 2

Board: 2-800 ISB193 **Shigeki Kubota**
Muscle activity during robotic elbow flexion training using a newly developed upper limb single-joint hybrid assistive limb device for elbow flexor reconstruction after brachial plexus injury

Board: 2-813 ISB198 **Elisa Romero Avila**
Effect of different external loads during the extension movement of the elbow on muscular activity in children and adults

Board: 2-801 ISB926 **Desney Greybe**
Ulnar size, not shape, differs between men and women

Board: 2-814 ISB1131 **Dong Hyun Kim**
Forearm muscle activity and fatigue in young people according to mouse type during a computer mouse task

Board: 2-802 ISB1226 **Nicholas La Delfa**
Experimental repeatability of an upper extremity muscle fatigue protocol

Board: 2-815 ISB1924 **Andrew Dang**
The effects of radial/ulnar deviation and pronation/supination on the displacement of index finger flexor tendons at the level of the radial styloid

Upper Extrimity - Hand + Wrist 2

Board: 2-803 ISB339 **Min Tang**
The effect of objective weight on hand positioning

Board: 2-816 ISB688 **Ahmed Tanashi**
A novel method of measuring in vivo finger kinematics using electromagnetic tracking

Board: 2-804 ISB921 **Amanda Farias Zuniga**
Median nerve blood flow, cross-sectional area and tendon motion in carpal tunnel syndrome patients

Board: 2-817 ISB1298 **Andrew Wong**
Subdiastolic venous occlusion alters fds tendon and ssct mechanics

Board: 2-805 ISB1588 **Zoe Mack**
The impact of wrist laxity on the three-dimensional motion of the triquetrum

Board: 2-818 ISB1645 **Garrick Forman**
Forearm muscle co-contraction in response to dynamic wrist perturbations

Board: 2-806 ISB1666 **Mohsen Akbari-Shandiz**
A novel approach for temporally aligning bilateral carpal bone poses obtained from 4dct imaging

Upper Extrimity - Miscellaneous 2

Board: 2-819 ISB128 **Katherine Spitzley**
The role of vision in joint position sense tasks

Board: 2-807 ISB646 **Soonmoon Jung**
The study on relationship between driving comfort and biomechanical parameter in lka intervention

Board: 2-820 ISB1062 **Johannes Zajc**
Usability of an upper arm rehabilitation device: lessons learnt from the retrainer randomized control trials

Board: 2-808 ISB1192 **Jacquelyn Maciukiewicz**
The temporality of arm kinematic dysfunction in breast cancer survivors

Board: 2-821 ISB1556 **Colleen Dewis**
Principal component analysis as a data reduction method for maximum reach envelope

Board: 2-809 ISB1607 **Susan Chinworth**
Electromyographic activity of the support arm utilized in the upper quarter y balance test: a descriptive study

Board: 2-822 ISB711986 **Hiromi Sakai**
Motion characterists during reaching motion on a desk in a hemiplegic patient

Extremity - Lower 2

Board: 2-810 ISB71 **Kristen Jakubowski**
Ankle stiffness varies with medial gastrocnemius fascicle velocity

Board: 2-823 ISB236 **Christian Sanchez**
Effect of ankle braces on frontal plane knee angle and moment and vertical jump performance

Board: 2-811 ISB256 **Benjamin Mentiplay**
Joint range of motion and angular velocity during clinical spasticity assessment: measurement with smartphones and camera tracking

Board: 2-824 ISB329 **Hema Sulkar**
In vitro simulation of physiologic human shoulder motion

Board: 2-900 ISB383 **Chich-Haung Richard Yang**
Does short foot exercise alter the stiffness of medial soft tissue in the plantar foot?

Board: 2-913 ISB414 **Jonathan Glenday**
The effect of optimised prosthesis placement on reverse total shoulder arthroplasty micromotion – a finite element analysis

Board: 2-901 ISB415 **Joseph Mozingo**
Shoulder mechanical impingement risk associated with manual wheelchair tasks

Session 2 - Friday, August 2nd

Detailed Poster Listing

Board: 2-914 ISB424 **Tobias Konow**
Image-based analysis of left-to-right symmetry of the three-dimensional morphology of the bones of the hindfoot

Board: 2-902 ISB434 **Anja-Verena Behling**
The importance of the foot-posture index compared to other pronation-related variables

Board: 2-915 ISB522 **David Stapleton**
Ultrasound localization of the humeral head in the glenoid cavity for motion capture

Board: 2-903 ISB531 **Juanita Wallace**
Foot pressure contact area and foot size asymmetry in children with unilateral clubfoot: interim results of a longitudinal study

Board: 2-916 ISB565 **Wouter Schallig**
The influence of soft tissue artefacts on calculated foot kinematics

Board: 2-904 ISB568 **Joshua Leonardis**
Shoulder biomechanics as a mediator of clinical outcomes following three common breast reconstruction techniques

Board: 2-917 ISB677 **Fransiska Bossuyt**
How wheelchair users compensate to maintain applied forces with wheelchair propulsion induced fatigue

Board: 2-905 ISB745 **Holly Rittenberry**
The relationship of torso angle and glenohumeral muscle activation

Board: 2-918 ISB815 **Kathleen Maclean**
Analysis of rotator cuff function through a novel probabilistic chimpanzee glenohumeral model

Board: 2-906 ISB826 **Nuno Oliveira**
Association between upper body joint motions and manual wheelchair propulsion efficiency in pediatrics

Board: 2-919 ISB841 **Evie Chodock**
Identifying predictors of upper extremity muscle elasticity with healthy aging

Board: 2-907 ISB842 **Alison Mcdonald**
The influence of body composition on functional and isometric joint strength in the shoulders and back

Board: 2-920 ISB859 **Mauricio Delgado**
Use of the kinect sensor as a clinical tool for functional evaluation in subjects with shoulder dysfunction

Board: 2-908 ISB922 **Patrick Williamson**
Glenohumeral joint stability during scapular plane abduction with muscle load

Board: 2-921 ISB952 **Herman Van Werkhoven**
Can foot anthropometry predict jumping performance in both sexes?

Board: 2-909 ISB969 **Tea Lulic**
Contribution of pectoralis major partitions in humeral movement

Board: 2-922 ISB972 **Bhillie Luciani**
Sex differences in regional pectoralis major activation

Board: 2-910 ISB977 **Oren Lagziel**
Ankle taping to emulate unilateral transtibial limb loss gait in non-amputees

Board: 2-923 ISB1004 **Jeffrey Patterson**
Mechanical work of the human foot during sloped walking

Board: 2-911 ISB1057 **Daniel Cury Ribeiro**
The effect of glenohumeral sustained glide on scapular muscle activity ratio in asymptomatic individuals

Board: 2-924 ISB1067 **Yi-Kuan Liu**
Development of medial longitudinal arch in school-age children in taiwan: effects of gender and normalization

Board: 2-1000 ISB1087 **Daniel Cury Ribeiro**
The effect of shoulder inferior mobilization on scapular and shoulder muscle activity during resisted shoulder abduction: a repeated-measures study on asymptomatic individuals

Board: 2-1013 ISB1100 **Chia Lin Chen**
The effect of the elastic tape on the arch support for the health adults with pronated foot

Board: 2-1001 ISB1138 **Dayana Rosa**
Does scapular positioning change during low flexion test in asymptomatic individuals?

Board: 2-1014 ISB1197 **Nicholas La Delfa**
The influence of exertion height on shoulder muscle fatigue & endurance

Board: 2-1002 ISB1217 **Stefan Madansingh**
Supraspinatus proximity to the acromion in manual wheelchair users during common propulsion strategies

Board: 2-1015 ISB1296 **Stephen Cain**
Challenges and recommendations for quantifying shoulder motion using wearable inertial sensors

Board: 2-1003 ISB1307 **Constantine Nicolozakes**
Active and passive anterior translational shoulder impedance varies inversely with perturbation amplitude

Board: 2-1016 ISB1322 **Augusto Gil Pascoal**
Diagonal shoulder elevation motion for clinical assessment. a kinematic exploratory study

Board: 2-1004 ISB1338 **Patrick Williamson**
Glenohumeral joint stability during scapular plane abduction with intraarticular pressure

Board: 2-1017 ISB1342 **Jonathon Birch**
Neuromechanical adaptations of foot function to changes in surface stiffness

Board: 2-1005 ISB1395 **Anna Spracklin**
The mechanical environment of the supraspinatus tendon over a range of arm elevation

Board: 2-1018 ISB1405 **Alexander Vaneneste**
Activation of supraspinatus and infraspinatus neuromuscular partitions during elastic resistance exercises

Board: 2-1006 ISB1468 **Francesca Wade**
Locomotor function and achilles tendon moment arm in end-stage ankle osteoarthritis patients

Board: 2-1019 ISB1508 **Brianna Goodwin**
Imu-derived humeral elevation angles during daily living of manual wheelchair users and able-bodied controls

Board: 2-1007 ISB1532 **Ashley Reece**
The effects of upper body posture and instructional cues on shoulder muscle activity and kinematics during elastic resistance exercise

Session 2 - Friday, August 2nd

Detailed Poster Listing

Board: 2-1020 ISB1538 **Christina Webber**
Compensatory motions present in adults with traumatic brachial plexus injuries during activities of daily living

Board: 2-1008 ISB1629 **Kilian Rauner**
Effect of shoe stiffness on foot bone kinematics during a static movement

Board: 2-1021 ISB1632 **Antonia Zaferiou**
Patient-specific effects on scapular orientation measurements using an acromion marker cluster with multiple calibration poses

Board: 2-1009 ISB1663 **Emma Baillargeon**
Age-related differences in muscle strength alter the feasible torque space of the shoulder in a musculoskeletal model

Board: 2-1022 ISB1741 **Carolyn Eng**
The contribution of transverse ligaments to the longitudinal bending stiffness of the foot

Board: 2-1010 ISB1790 **Alexander Berardo-Cates**
Foot ligament stiffness variations with changes in loading rate and anatomical location

Board: 2-1023 ISB1827 **Ali Yawar**
Quantifying the role of the windlass mechanism in increasing foot stiffness

Board: 2-1011 ISB1869 **Tiffany Lung**
Factors contributing to glenoid baseplate micromotion in reverse shoulder arthroplasty: a biomechanical study

Board: 2-1024 ISB1905 **Sarah Kessler**
The role of the midfoot in lower limb energetics

Board: 2-1100 ISB1910 **Howard Hillstrom**
Comparison of foot function between baseline and 8 week follow-up in west point cadets

Board: 2-1113 ISB1965 **Beomki Yoo**
Analysis of foot kinematics during toe walking in young healthy people using oxford foot model

Board: 2-1101 ISB102265 **Tsan-Yang Chen**
Reliability of three-dimensional foot sole surface measurements using a novel foot scan technology

Rehabilitation: Bio-Robotics + Exoskeletons 2

Board: 2-1114 ISB294 **Catherine Disselhorst-Klug**
Effect of robotic assistance on muscular activation when performing rehabilitation exercises

Board: 2-1102 ISB341 **Coral Ben-David**
Passive exoskeleton for vertical jumping

Board: 2-1115 ISB369 **Karthick Ganesan**
Assistance level versus metabolic cost in a biarticular exoskeleton: a simulation study

Board: 2-1103 ISB453 **Varun Nalam**
Robotic ankle training during standing on a compliant surface improves paretic ankle motor control, postural balance, and walking in chronic stroke survivors

Board: 2-1116 ISB718 **Nicole Ray**
Combined effects of user-driven treadmill control and functional electrical stimulation for poststroke rehabilitation

Board: 2-1104 ISB741 **Erik Lamers**
Effect of low-profile, spring-powered exosuit on back muscle fatigue during leaning

Board: 2-1117 ISB789 **Andrew Miller**
A knee exoskeleton harvesting different energy levels changes muscle forces during gait: revealing muscle contributions to metabolic cost of movement

Board: 2-1105 ISB870 **Gregory Freisinger**
Metabolic cost adaptation during training with a soft exosuit assisting the hip joint

Board: 2-1118 ISB886 **Michael Rosenberg**
Kinematic and myoelectric response to ankle exoskeletons during non-steady state locomotion in healthy adults

Board: 2-1106 ISB1291 **Longbin Zhang**
Modelling and simulation of a human knee exoskeleton's assistive strategies and interaction based on kinematics

Board: 2-1119 ISB1329 **Denean Kelson**
Effects of passive upper-extremity exoskeleton use on motor performance

Board: 2-1107 ISB1380 **Yixing Liu**
Simulating the effect of a knee exoskeleton's physical model parameters on muscle activation

Board: 2-1120 ISB1426 **Min Hyong Koh**
Robotic locomotor training with heuristic and deterministic assistance

Board: 2-1108 ISB1702 **Pawel Golyski**
Optimizing a passive hip exoskeleton for balance on a prosthetic foot

Board: 2-1121 ISB1724 **Hyunglae Lee**
Effects of variable damping-defined environments on mediolateral ankle stability and agility

Board: 2-1109 ISB1738 **Brock Laschowski**
Modelling and biomechanical evaluation of sitting movements: implications for energy-efficient lower-limb prostheses and exoskeletons

Board: 2-1122 ISB1809 **Sunwook Kim**
Effects of a whole-body powered exoskeleton on physical demands in a load carriage task

Board: 2-1110 ISB1810 **Jordyn Schroeder**
Modeling the impact of long-term exoskeleton use on achilles tendon mechanical and morphological properties

Board: 2-1123 ISB1890 **Owen Beck**
Exoskeletons improve walking economy by steering muscle dynamics

Board: 2-1111 ISB1923 **Jordan Coker**
Emg and joint angle-based machine learning to predict future joint angles at the knee

Board: 2-1124 ISB1958 **Ben Shafer**
Hip exoskeleton emulator to explore spring-like assistance strategies during walking

Rehab 2

Board: 2-1200 ISB3233 **Juanita Wallace**
Foot pressure algorithms to predict clubfoot reoccurrence

Session 2 - Friday, August 2nd

Detailed Poster Listing

Board: 2-1213 ISB146 **Roopam Dey**
Inter-population glenohumeral kinematic variation post total shoulder arthroplasty

Board: 2-1201 ISB266 **Claudio Belvedere**
Full 3d image-based evaluations of morphological and surgical parameters in medializing calcaneal osteotomy

Board: 2-1214 ISB319 **Yoshiteru Watanabe**
Effect of rocker sole on lower extremity joint motion during gait: using rocker sole with pivot point on the metatarsal head

Board: 2-1202 ISB419 **Edsko Hekman**
A free-motion shoulder subluxation orthosis

Board: 2-1215 ISB547 **Tylan Templin**
The influence of load carriage and foot stiffness on knee joint loading during amputee walking

Board: 2-1203 ISB581 **Thomas Legrand**
Influence of foot progression angle on the lower-limb joints and trunk using an ankle orthosis

Board: 2-1216 ISB762 **Corey Pew**
Analysis of relative motion between the socket and residuum in individuals with lower limb amputation

Board: 2-1204 ISB765 **Dana Solav**
Shape and full-field deformation measurement of residual limbs using 3d digital image correlation

Board: 2-1217 ISB846 **Kirsty Mcdonald**
The biomechanical and met-toe-bolic effects of walking on a passive prosthetic foot with an added toe joint

Board: 2-1205 ISB1008 **Deema Totah**
The effect of flexion speed on ankle-foot orthosis properties

Board: 2-1218 ISB1209 **Kelly Robb**
The effects of plantar-surface sensory augmentation on deep posterior compartment musculature

Board: 2-1206 ISB1497 **Gauthier Desmyttere**
Foot orthosis with add-on rearfoot postings can alter foot kinematics

Board: 2-1219 ISB1520 **Maryam Hajizadeh**
The rigidity of foot orthosis will alter its predicted deformation during walking

Board: 2-1207 ISB1557 **Mohsen Akbari-Shandiz**
A biplane 2d-3d registration protocol for quantifying glenohumeral kinematics following total shoulder arthroplasty

Board: 2-1220 ISB1585 **Carlos De La Fuente**
Changes in the ankle muscle co-activation pattern after 5 years using ankle arthroplasty

Board: 2-1208 ISB1592 **Donald Anderson**
Integrating pathomechanical risk of post-traumatic oa into the treatment of intra-articular fractures

Board: 2-1221 ISB1739 **Calvin Tse**
Plantar pressure, gait mechanics, and comfort in laterally-wedged insoles with and without custom arch support

Board: 2-1209 ISB1855 **Amy Lenz**
Measurement of in-vivo tibiotalar kinematics after total ankle replacement using dual fluoroscopy

Board: 2-1222 ISB1904 **Vani Sundaram**
Socket pistoning depends on socket design in a person with a transfemoral amputation walking at different speeds and slopes

Imaging Ultrasound + Electrography 2

Board: 2-1210 ISB225 **Shun Otsuka**
Site- and joint angle- dependent elastic properties of human iliotibial band: a shear wave elastography study

Board: 2-1223 ISB852 **Michel Bernabei**
Muscle stress provides a lower bound on the magnitude of shear wave velocity

Board: 2-1211 ISB854 **Michel Bernabei**
The dependency of shear wave velocity on muscle activation is inconsistent across muscles

Board: 2-1224 ISB1083 **Catherine Disney**
High resolution synchrotron microtomography strain measurement of native intervertebral disc

Running Injury 2

Board: 2-1313 ISB318 **Jia Liu**
Hip adduction and knee valgus during running: an issue of muscle strength or bony morphology?

Board: 2-1301 ISB411 **Caleb Johnson**
Association of ground reaction force load rates with the development plantar fasciitis in runners

Board: 2-1314 ISB438 **Cyril Donnelly**
Changes in foot strike posture and achilles tendon force characteristics during treadmill running

Board: 2-1302 ISB549 **Terumitsu Miyazaki**
Effects of muscle architectures on the hamstring musculotendon dynamics in high-speed running.

Board: 2-1315 ISB703 **Zhen Luo**
Effect of a 12-week gait retraining intervention on impact force and joint biomechanics in runners

Board: 2-1303 ISB739 **Erin Miller**
A novel method for evaluating loading rate during running regardless of impact peak

Board: 2-1316 ISB933 **Gauri Desai**
Coordination variability and injury among recreational runners: a prospective analysis

Board: 2-1304 ISB1168 **Mujia Ma**
Effects of different custom orthopedic insoles on kinematics of rear-foot in patients with high-arched and shin splints during toe-off

Board: 2-1317 ISB1377 **Kristyne Wiegand**
The effect of plantar fasciitis injury status on lower extremity running mechanics

Board: 2-1305 ISB1446 **Tyler Chuang**
The differences in dynamic stiffness and co-contraction between walking, running and cycling at equivalent intensities

Board: 2-1318 ISB1448 **Tyler Chuang**
Segment coordination variation in walking, running and cycling at equivalent intensities

Session 2 - Friday, August 2nd

Detailed Poster Listing

Board: 2-1306 ISB1486 **Ryan Gagnon**
The effect of biofreeze on delayed onset muscle soreness induced changes to running biomechancis

Board: 2-1319 ISB1541 **Allison Gruber**
Gait alterations from a prolonged run persist after four minutes

Board: 2-1307 ISB1617 **Toni Arndt**
Bilateral tendon strain duing a 5-km time-trial

Board: 2-1320 ISB1652 **Danny Mcandrew**
Effect of auditory cues on running biomechanics in individuals with pfps: a pilot study

Sport 2

Board: 2-1308 ISB132 **Caroline Lecours**
Biomechanical analysis of specific head impacts during real time male soccer play: a preliminary study

Board: 2-1321 ISB262 **Beat Göpfert**
Effect of eccentric-isokinetic strength training on the wavelet transformed emg of elite gymnasts while performing static strength elements on rings

Board: 2-1309 ISB289 **Bruno Bedo**
The effect of a specific fatigue protocol in force propulsion and postural sway in female handball athletes

Board: 2-1322 ISB297 **Clifford Hancock**
Biomechanical and postural differences between expert and novice marksmen

Board: 2-1310 ISB366 **Kao Yu-Hsuan**
Short-term and long-term effects of different amplitudes vibration training combined with unstable surface training on the balance ability of college gymnasts

Board: 2-1323 ISB375 **Weiya Hao**
A comparison of kinematics of different forward somersault movements in gymnastics beam

Board: 2-1311 ISB460 **Yoshinori Tsuboi**
Energy flow analysis between lower limb segments during the instep kick in soccer

Board: 2-1324 ISB462 **Chien Huang**
Biomechanical analysis of the yoga pose warrior i

Board: 2-1400 ISB527 **Matthew Hanks**
Upper extremity biomechanical characterization of overhead throwing in able-bodied and wheelchair lacrosse players

Board: 2-1413 ISB530 **Bo E. Seiferheld**
Exploring kinematics and kinetics in elite ten-pin bowling – a field study

Board: 2-1401 ISB589 **Yang Hu**
A systematic review and meta-analysis of upper extremity neuromuscular changes in older adults after tai chi practice

Board: 2-1414 ISB631 **Amanda Yamaguchi**
Lower extremity mechanical energy expenditure in sautés following dance specific exertion

Board: 2-1402 ISB700 **Anna Severin**
Transverse plane golf swing kinematics and performance in older adults with osteoarthritis of the trailing knee

Board: 2-1415 ISB702 **Anna Severin**
Lower body joint moments in older adults with osteoarthritis of the trailing knee during golf swings

Board: 2-1403 ISB857 **Savannah King**
Rate of change in emg rms as predictor of endurance time in female athletes

Board: 2-1416 ISB890 **Roland Van Den Tillaar**
Effect of speed or accuracy focus on kinematics and kicking performance in soccer players.

Board: 2-1404 ISB916 **Samantha Birse**
Bowling for accuracy: stride length, thorax, and pelvis kinematics in elite lawn bowlers

Board: 2-1417 ISB1005 **Yasuyuki Yoshida**
Interaction of competitive ballroom dance during turning movement

Board: 2-1405 ISB1085 **Caryn Urbanczyk**
Impact of rowing on shoulder biomechanics and glenohumeral stability

Board: 2-1418 ISB1101 **Yoon Hyuk Kim**
Performance analysis of golf swing using wireless inertial measurement unit sensor

Board: 2-1406 ISB1108 **Mark Scholes**
Investigation of hip biomechanics during running in male football players with and without hip-related pain

Board: 2-1419 ISB1230 **Tsung-Lin Lu**
The examinaiton of shock attenuation in bowling footwear

Board: 2-1407 ISB1365 **Gretchen Oliver**
The association between single-leg squat performance and stride leg kinematics in adolescent baseball pitchers

Board: 2-1420 ISB1509 **Nathan Edwards**
Pelvis, lower trunk, and upper trunk sequencing patterns in amateur golfers with lower back pain.

Board: 2-1408 ISB1530 **Jesper Bencke**
Is 'sidecutting' a sports-specific movement? biomechanical differences between female soccer and team handball players

Board: 2-1421 ISB1534 **Spela Bogataj**
3d kinematic analysis of team handball jump throw

Board: 2-1409 ISB1579 **Darcie Yount**
Wearing an american football helmet increases axial loading of the neck during blunt impacts

Board: 2-1422 ISB1688 **Aimee Mears**
Influence of modified driver properties on golfer movement patterns

Board: 2-1410 ISB1707 **Luis Mochizuki**
Joint coordination in the artistic gymnastics' giant circle

Board: 2-1423 ISB1959 **Sohei Washino**
Inspiratory muscle fatigue would descend body to a deeper level during maximal 200-m front crawl swimming

Sport: Cuts/Lateral Movement Maneuvers 2

Board: 2-1411 ISB72 **Yu-An Chang**
Effect of the kinesio-taping on female college students during the stop-jump task post-fatigue

Session 2 - Friday, August 2nd

Detailed Poster Listing

Board: 2-1424 ISB454 **Cui Zhang**
The dynamic stability of older adults was affected by the motor dual task during turning

Board: 2-1500 ISB1064 **Yanxian Yue**
Effect of arch-support insole on knee biomechanics during a running stop-jump task

Board: 2-1513 ISB1265 **Jasper Verheul**
Identifying key movements contributing to ground reaction forces in sports

Board: 2-1501 ISB1575 **Allison Kinney**
Kinematic coordination patterns change with task speed during a lateral step-down

Sport: Landing/Drop Jumps 2

Board: 2-1514 ISB2844 **Hang Qu**
Synthetic turf and shock pad reduced initial peak vertical ground reaction force during drop landing

Board: 2-1502 ISB426 **Milena Santos**
Effects of a rebound shoe to reduce impact forces in jump-landing tasks

Board: 2-1515 ISB468 **Songlin Xiao**
Effects of two fatigue protocols on knee joint mechanics in the frontal plane during drop landings

Board: 2-1503 ISB613 **Weijie Fu**
Compression shorts reduces soft tissue vibration accompanied with decreased muscle activation

Board: 2-1516 ISB707 **Joshua Winters**
Military personnel demonstrated asymmetrical loading patterns during landing

Board: 2-1504 ISB862 **Alessandro Navacchia**
Sensitivity of tibial anterior shear force to the force in the gastrocnemius during dvj

Board: 2-1517 ISB912 **Kim Hébert-Losier**
Landing error scoring system (less): less knowledge, more useful!

Board: 2-1505 ISB1011 **Meaghan Harris**
Are jump-landing mechanics associated in the development of patellar tendinopathy: a systematic review.

Board: 2-1518 ISB1093 **James Forsyth**
Are two variations of surf-like simulated aerial landings representative of aerial landings in surfing?

Board: 2-1506 ISB1123 **Lina Lundgren**
Assessing landings using a spring and damper element model

Board: 2-1519 ISB1340 **Sean Quisenberry**
A potential energy approach in examining knee landing mechanics between synthetic surfaces

Board: 2-1507 ISB1769 **Joaquin Barrios**
The influence of genu valgum on total support moment distribution during single-leg forward and lateral drop landings

Imaging: X-ray + Fluoroscopy 2

Board: 2-1520 ISB284 **Jessica Küpper**
Improved kinematics with a self-calibrating bundle adjustment for high-speed biplanar videoradiography

Board: 2-1508 ISB942 **Cheng-Chung Lin**
Robustness assessment of model-based motion tracking using asynchronous biplane dynamic x-ray with forward and backward projected image registration

Board: 2-1521 ISB1088 **Pei-Ling Weng**
Effects of lateral ankle instability on the variations of repeated talocrural and subtalar joint motions measured using 3d fluoroscopy

Board: 2-1509 ISB1096 **Benjamin Groisser**
Motion correction for slot scanners via simultaneous depth imaging

Board: 2-1522 ISB1628 **Craig Kage**
Biplane radiography of the spine: automated shape-matching via ultrashort echo time mri bone models

Board: 2-1510 ISB1774 **Christopher Prasanna**
Validation of biplane fluoroscopy system tracking using bone phantoms

Board: 2-1523 ISB1820 **Matthew Kindig**
Drraco: a gpu-based image processing toolkit for biplane fluoroscopy registration

Board: 2-1511 ISB1913 **Eric Thorhauer**
Optimizing image similarity metrics for model-based biplanar fluoroscopy foot and ankle bone tracking

Board: 2-1524 ISB1935 **Eric Thorhauer**
Sensitivity analysis of a biplanar fluoroscopy camera model used for foot and ankle bone tracking

Methodologies + Data Analysis - GAIT 2

Board: 2-1613 ISB111 **Todd Pataky**
Is statistical parametric mapping valid for nonuniformly smooth biomechanical data?

Board: 2-1601 ISB278 **Taylor Oldfather**
Knee valgus vs. knee abduction angle: comparative analysis of medial knee collapse definitions in female athletes

Board: 2-1614 ISB305 **Leif Hasselquist**
Synchronized biomechanical, physiological and cognitive metrics of a strenuous soldier task

Board: 2-1602 ISB595 **Seth Donahue**
Gait partitioning using minimal sensor data during intrinsically driven transitions

Board: 2-1615 ISB698 **Colin Mckinnon**
Validity and usability analysis for a return to work software platform

Board: 2-1603 ISB715 **Nathalie Oomen**
A machine learning model with only two features can accurately classify lifting height and weight based on forearm and pelvis kinematics

Board: 2-1616 ISB738 **Steffen Willwacher**
A novel method to determine instantaneous treadmill belt velocity

Board: 2-1604 ISB777 **Luke Nigro**
Modelling non-linear natural ankle quasi-stiffness across multiple walking & running speeds

Board: 2-1617 ISB787 **Claudiane Fukuchi**
Comparison of prediction methods for minimum and maximum values in gait kinematics and kinetics data over a range of speeds

Session 2 - Friday, August 2nd

Detailed Poster Listing

Board: 2-1605 ISB809 **Jean-Paul Martin**
A study of visual biofeedback on fast adaptation of healthy participants to desired step widths

Board: 2-1618 ISB848 **Kirsty Mcdonald**
Ankle joint complex power during walking and running: effects of marker location, and shoe- vs. skin-mounted markers

Board: 2-1606 ISB914 **Kim Hébert-Losier**
The deep landing error scoring system

Board: 2-1619 ISB936 **Corey Joseph**
Agreement between plug in gait and pycgm2 1.0 & 1.1 kinematics: a pilot

Board: 2-1607 ISB1028 **Lina Lundgren**
Quick assessment of lower body power using smartphones

Board: 2-1620 ISB1061 **Tina Smith**
Extracting nudge test parameters from noisy skin mounted accelerometer data

Board: 2-1608 ISB1098 **Jia-Da Li**
Soft tissue artefacts in the measured tibiofemoral joint translations during cycling: effects of joint angles and pedal resistance

Board: 2-1621 ISB1470 **Edgar Vieira**
Comparison of gait temporal-spatial parameters between an instrumented mat and inertial movement unit system of older adults in a public park

Board: 2-1609 ISB1566 **Micah Garcia**
A simple method for measuring waveform joint symmetry during running

Board: 2-1622 ISB1701 **Joel Sommerfeld**
Isolating aspects of gait through the use of pacing signals

Board: 2-1610 ISB1764 **Adam Fullenkamp**
Normalized jerk as an indicator of discrete kinematic disfluency in parkinson disease: a preliminary report

Board: 2-1623 ISB1824 **Gordon Alderink**
Knee and hip kinetics during self-paced walking in healthy adults: comparing seidel and harrington hip joint center methods

Board: 2-1611 ISB1874 **Spencer Petersen**
First metatarsal phalangeal energetics and walking speed

Board: 2-1624 ISB1931 **Calvin Young**
Biomechanical features to characterize individual performance of locomotor activities of daily living

Imaging: MRI + CT 2

Board: 2-1700 ISB268 **Claudio Belvedere**
Effect of traditional and modern imaging modalities on the 3d reconstruction of ankle articular surfaces

Board: 2-1701 ISB327 **Agah Karakuzu**
Qmrlab: an open source software project for streamlining the use of quantitative magnetic resonance imaging

Board: 2-1702 ISB394 **Christopher O'Neill**
High-throughput 3d local in vivo environment (live) imaging for gene and protein analysis of bone tissue

Board: 2-1703 ISB712 **Benyameen Keelson**
Dynamic ct for musculoskeletal applications: evaluating accuracy of the image registration step

Board: 2-1704 ISB749 **Luca Buzzatti**
Novel device for lower limb weight-bearing dynamic ct: a 3d knee kinematic analysis

Board: 2-1705 ISB1068 **Olivia Brown**
An image processing method to assess changes in tibial geometry from peripheral quantitative computerised tomography scans

Board: 2-1706 ISB1073 **Daniel Devaprakash**
Similar estimates of free achilles tendon shape and 3d geometry can be obtained using magnetic resonance and freehand 3d ultrasound imaging

Board: 2-1707 ISB1400 **Agah Karakuzu**
On the reproducibility of mri-dti based passive length changes and the added implications of quantitative mri

Board: 2-1708 ISB1589 **Daniel Devaprakash**
Measuring free achilles tendon twist from mri and freehand 3d ultrasound methods

Board: 2-1709 ISB1591 **Sorin Siegler**
An ankle reference frame system suitable for medical imaging with partial view of the tibia

Board: 2-1710 ISB1726 **Isaac Loegering**
Ultrashort echo time (ute) imaging reveals a shift in bound water within the aging achilles tendon

Board: 2-1711 ISB1872 **Yu Zhou**
Piecewise multi-modal spine registration to build personalized neck musculoskeletal model

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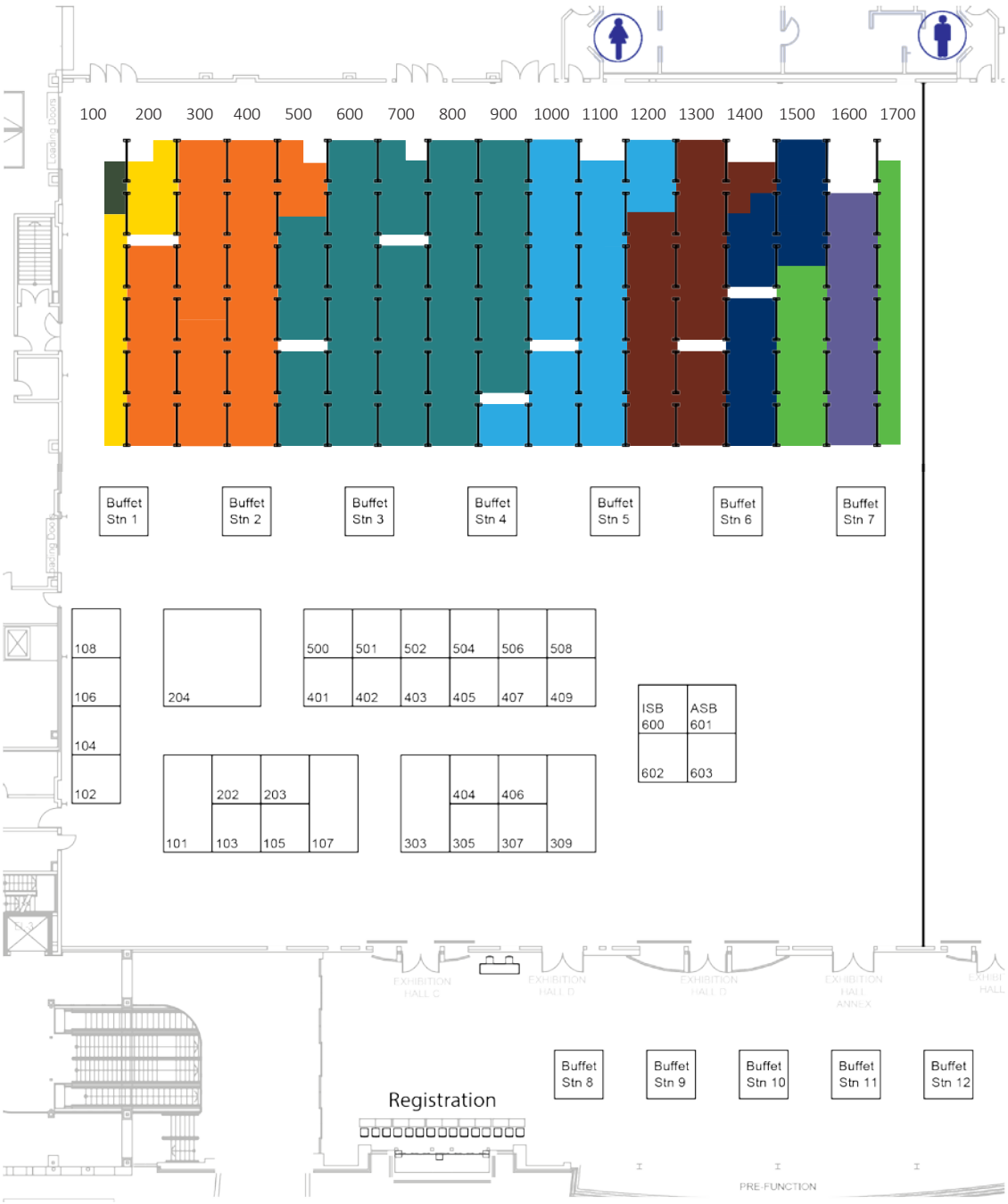
Map



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Muscle General 3

Board: 3-114 ISB828 **Kaylyn Bell**
The muscle mechanical basis of freeman-sheldon syndrome

Board: 3-115 ISB1970 **Laksh Kumar Punith**
Isolated muscle-tendon units reject a broad range of perturbations without feedback

Modelling: Musculoskeletal - Muscle 3

Board: 3-116 ISB802 **Oliver Roehrle**
A modelling-simulation-analysis workflow for investigating socket-stump interaction

Board: 3-117 ISB1033 **Mohd Nazri Bajuri**
Mechano-adaptive models of healing tendons

Board: 3-118 ISB78 **Sorin Siegler**
The stabilizing function of the collateral ligaments of the ankle revealed through a validated subject-specific, three-dimensional computational model

Board: 3-119 ISB143 **Michael Skipper Andersen**
On the effect of measurement uncertainties on estimated knee ligament properties from laxity measurements

Board: 3-120 ISB273 **Sean Flannery**
Machine learning model for predicting acl failure load

Board: 3-121 ISB938 **Young-Jun Koo**
Quantification of the effect of acl partial tear on knee kinematics during walking

Board: 3-122 ISB1066 **Hsiang-Ho Chen**
Design and finite element analysis of suture anchors for soft-tissue repair

Board: 3-123 ISB1713 **Jeff Mettler**
Estimates of ligament strain using a five-segment musculoskeletal model of the foot during two walking speeds

Board: 3-124 ISB1978 **Jillian Beveridge**
Predicted acl graft stiffness explains variation in increased anterior tibial alignment in acl-reconstructed subjects at 10-12 year follow-up

Modelling: Musculoskeletal - Upper Limb/Trunk 3

Board: 3-213 ISB784 **Garrick Bruening**
How well do computational effort proxies represent metabolic cost of reaching?

Board: 3-201 ISB983 **Daniel Potter**
Effect of rotator cuff integrity on deltoid efficiency following reverse shoulder arthroplasty: a biomechanical model

Board: 3-214 ISB1290 **Xianlian Zhou**
Helmet motion during walking and running and its effects on head-helmet interaction forces

Board: 3-202 ISB1444 **Robert Eberle**
Considering structural behaviour of bones in musculoskeletal simulation model

Board: 3-215 ISB1597 **Matthew Berno**
Cosimulation of glenohumeral dynamics with joint contact for predicting joint translations

Board: 3-203 ISB1641 **Tony Vicini**
Scapular location measurement using motion capture-tracked ultrasound probes

Board: 3-216 ISB1828 **Shawn Russell**
Modelling climbing therapy movement patterns of children with cerebral palsy

Balance Walking 3

Board: 3-204 ISB80 **Meng-Wei Lin**
The difference between the strong side and weak side in subjects with multiple sclerosis (ms)

Board: 3-217 ISB86 **Yun-Ju Lee**
External-lateral perturbations affect the center of pressure displacement in the medial-lateral direction prior to step initiation

Board: 3-205 ISB127 **Ewa Szczerbik**
Segments and com kinematics, gait grf: what influent limits of stability tests result on stable and unstable surface in group of healthy, active women of age around 50?

Board: 3-218 ISB337 **Jonathan Dingwell**
Regulation of lateral stepping movements in walking is redundant, multi-objective, and adaptable

Board: 3-206 ISB446 **Jaclyn Wing**
Effects of cognitive dual-task and number of short bouts on reliability of local dynamic stability estimates

Board: 3-219 ISB505 **Sarah Roelker**
Muscle contributions to mediolateral and anteroposterior foot placement during walking

Board: 3-207 ISB510 **Deng Siang Ting**
Does the modified short foot exercise (msfe) improve dynamic balance control in adolescent taekwondo athletes?

Board: 3-220 ISB548 **Michael Christensen**
A validation of margin of stability calculations relative to the pelvic coordinate system during gait

Board: 3-208 ISB567 **Will Pitt**
Gait imbalance in individuals with chronic mild traumatic brain injury

Board: 3-221 ISB920 **Zach Barrons**
The impact of unshod vs shod walking on centre of pressure variability

Board: 3-209 ISB993 **Sang Kuy Han**
An analysis of dynamic gait stability between young and elderly population using zero moment point method

Board: 3-222 ISB1039 **Hiroki Yamada**
Accuracy in control of center of mass during anticipatory postural adjustments prior to forward step

Board: 3-210 ISB1049 **Deepak Ravi**
Do rhythmic auditory stimuli enhance recovery against unexpected perturbations? a novel approach to quantify resilience during walking

Board: 3-223 ISB1109 **Hamed Shahidian**
The influence of cell phone usage on head stability during walking

Board: 3-211 ISB1115 **Noel Keijsers**
Test-retest reliability of stability outcome measures during treadmill walking

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Board: 3-224 ISB1128 **Hamed Shahidian**
A transverse-plane margin of stability quantity for human gait analysis

Board: 3-300 ISB1136 **Mei-Ying Kuo**
Effects of bilateral subthalamic deep brain stimulation on lower extremity kinematics during sit-to-stand in patients with advanced parkinson's disease

Board: 3-313 ISB1169 **Noah Rosenblatt**
The effect of diabetes on single stepping thresholds using a simple spring-loaded scale

Board: 3-301 ISB1234 **Yu-Lin Tsai**
Control of the motion of the body's center of mass in children with developmental dysplasia of the hip with or without avascular necrosis post osteotomy during obstacle-crossing: preliminary results

Board: 3-314 ISB1235 **Alireza Sedighi**
Different information displays have a varying effect on local gait stability

Board: 3-302 ISB1345 **Samuel Acuña**
Achilles tendon shear wave speed as a measure of the active modulation of standing balance

Board: 3-315 ISB1355 **Peter Fino**
Phase-dependent effects of tactile biofeedback on gait stability

Board: 3-303 ISB1422 **Teresa Chen**
A preliminary investigation on gait balance control after fatigue: effects of age and cognitive demand

Board: 3-316 ISB1438 **Yuri Russo**
Patterns of anticipatory postural adjustments in step initiation: comparison of forward and backward stepping

Board: 3-304 ISB1500 **Hossein Rouhani**
Assessment of gait stability during perturbed walking

Board: 3-317 ISB1649 **Yash Rawal**
Individual limb contributions to anterior-posterior stability during gait

Board: 3-305 ISB1748 **Ali Zeighami**
Stepping behavior for stability control of a digital human model

Board: 3-318 ISB1823 **Ryan Schroeder**
Mechanical perturbations make it easier to walk... if you walk the right way

Board: 3-306 ISB1839 **Valerie Norman-Gerum**
Healthy young adults may perform sit-to-stand significantly faster than what is defined as normative

Board: 3-319 ISB1857 **Daniel Gregory**
Margin of stability of slow and fast legs in split-belt treadmill walking converge to speed-matched margin of stability in normal treadmill walking

Control 3

Board: 3-307 ISB116 **Ken Takiyama**
Data-driven detection of task-relevant and task-irrelevant motion sequences

Board: 3-320 ISB124 **Paul Sung**
An adaptation to repeated trip perturbations in subjects with a history of whiplash-associated dysfunction.

Board: 3-308 ISB333 **Adrian Lai**
Mechanical and metabolic function of different fibre-types: coordination between muscles

Board: 3-321 ISB342 **Christopher Bailey**
Sex-independent and sex-dependent effects of older age on motor input variability during preferred-speed gait

Board: 3-309 ISB493 **Ya-Hui Chang**
Vibrotactile stimulation over the torso region immediately increase the control of deep muscles but not superficial muscles during abdominal drawing-in maneuver

Board: 3-322 ISB540 **Abbigail Fietzer**
Between-limb symmetry in movement variability structure in healthy individuals hopping

Board: 3-310 ISB546 **Alexander Klishko**
Contribution of biomechanical and neural constraints to planar covariation of cat hindlimb elevation angles

Board: 3-323 ISB569 **Devon Frayne**
Energetic constraints on inter-segmental coordination in vertical jumping

Board: 3-311 ISB598 **Juliane Flor**
Electromyographic parameters reproducibility after a joint stress protocol in women with patellofemoral pain

Board: 3-324 ISB617 **David Ortiz**
Exertion due to dance creates phase-specific alterations of interlimb force coordination

Board: 3-400 ISB678 **Dimitar Stanev**
Exploring musculoskeletal redundancy using null space projection for evaluation of knee reaction loads

Board: 3-413 ISB683 **Wei-Lin Huang**
The influence of in-game special visual effects on the performance of music game players

Board: 3-401 ISB730 **Bernd Stetter**
Similarities in modular control structures across varying locomotion tasks

Board: 3-414 ISB746 **Joshua Cashaback**
Robust neuromechanical control in uncertain load environments

Board: 3-402 ISB775 **James Wakeling**
Mechanical and metabolic function of different fibre-types: recruitment within a muscle

Board: 3-415 ISB819 **Safeer Siddicky**
The importance of prone time in the healthy musculoskeletal development of infants

Board: 3-403 ISB893 **Bahador Keshvari**
Disambiguating sense of effort and sense of force in short-term runs

Board: 3-416 ISB932 **Nataliya Rokhmanova**
Mapping of referred sensation after targeted reinnervation surgery in the lower limb

Board: 3-404 ISB997 **Neelima Sharma**
Postural stability limits fingertip force production

Board: 3-417 ISB1176 **Jinkyu Lee**
Increasing ankle plantar-flexion at initial contact during single-leg landing reduces the frontal plane loading in the knee joint

Board: 3-405 ISB1221 **Isaiah Lachica**
Hitting the bullseye: unique kinematic strategies emerge from acquiring a novel skill in a virtual environment

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Board: 3-418 ISB1308 **Alessio Gallina**
Population responses of medial gastrocnemius motor units to electrical vestibular stimulation

Board: 3-406 ISB1408 **Giovanni Martino**
Simulating the pendulum test to understand mechanisms of parkinsonian rigidity

Board: 3-419 ISB1511 **Mitchell Tillman**
Effects of past and future motor actions on present multifinger pressing behavior

Board: 3-407 ISB1524 **Jeremy Wong**
Smooth upper extremity reaching movements may be explained by metabolic cost

Board: 3-420 ISB1624 **Daniel Lidstone**
The effects of cerebellum transcranial direct current stimulation on online and offline learning of a complex multi-joint throwing task

Board: 3-408 ISB1673 **Anne Martin**
Determining the control goal for treadmill walking when belt speed varies

Board: 3-421 ISB1696 **Davis Forman**
The influence of isometric wrist flexor/extensor fatigue on hand tracking performance using a haptic wrist robot

Board: 3-409 ISB1698 **Clark Dickin**
Contribution of neuromuscular measures to knee dynamic valgus position during sidestep cutting

Board: 3-422 ISB1836 **Keonyoung Oh**
Visual-proprioceptive conflict resolution when applying contact forces

Board: 3-410 ISB1863 **Alex Dawson-Elli**
Exploring motor adaptation and skill learning in the lower limb with a haptic cycle ergometer

Board: 3-423 ISB1875 **Audra Davidson**
Grasping ideas with your hands: neuromechanical assessment of the relation between cognitive processing and motor performance

Board: 3-411 ISB1888 **Thendral Govindaraj**
Optimizing joint impedances to quickly reject an endpoint force perturbation in a cat hindlimb

Board: 3-424 ISB1894 **Crystal Kean**
Examining submaximal quadriceps force control in individuals with knee osteoarthritis: preliminary results

Board: 3-500 ISB1903 **Gregory Pearcey**
Cutaneous facilitation of force output during ramp isometric contractions.

Board: 3-501 ISB1937 **Dobromir Dotov**
Coordination rigidity as a symptom of parkinson's disease

Board: 3-514 ISB1947 **Leonardo Cavalcanti**
Functional neuromuscular stimulation for joint control using nonlinear model predictive control and extended kalman filtering

Board: 3-502 ISB1953 **Alyssa Spomer**
Can motor coordination by dynamically controlled? real-time analysis of muscle synergy modulation during walking

Board: 3-515 ISB1960 **Yasuhide Yoshitake**
Contribution of individual muscle activity to measurable net force fluctuations during isometric steady contractions

Clinical Gait Post Stroke 3

Board: 3-503 ISB378 **Chia-Yu Hsu**
Application of an automated infrared-assisted trunk accelerometer-based gait analysis system in chronic stroke patient

Board: 3-516 ISB479 **Junkai Xu**
A real-time subject-specific gait retraining dosage selection method for knee osteoarthritis

Board: 3-504 ISB764 **Elora Brenneman**
Sex does not influence tibiofemoral cartilage response to running in healthy adults

Board: 3-517 ISB1184 **Lance Rane**
Deep reinforcement learning finds optimal retraining strategies for patients with knee osteoarthritis

Board: 3-505 ISB1360 **Michael Samaan**
Post hip arthroscopy gait mechanics are associated with changes in cartilage composition in patients with fais

Board: 3-518 ISB1648 **Emily Mccain**
Toward understanding changes in joint loading due to reduced knee flexion in post-stroke gait

Board: 3-506 ISB1671 **Peter Barrance**
Effects of incremental lateral wedging on frontal plane knee and ankle angulation in medial knee osteoarthritis

Board: 3-519 ISB1838 **Émile Cardinal-Soucy**
Biomechanical effects of a single intra-articular injection of hyaluronic acid on gait pattern in patients with unilateral hip osteoarthritis: a double-blind randomized controlled trial

Board: 3-507 ISB1902 **Caitlin Banks**
Validation of a comprehensive locomotion index for individuals with chronic stroke

Board: 3-520 ISB1933 **Geng Li**
Modulation of joint angle variability by joint stiffness in stroke patients

Wireless Clinical 3

Board: 3-508 ISB4549 **Daniel Doremus**
An evaluation on threshold based fall detection

Board: 3-521 ISB79 **Ramandeep Jaswal**
Validation of the dartfish auto-tracking algorithm for the measurement of 2-dimensional knee angles in various movements

Board: 3-509 ISB115 **Steven Tragesser**
Low cost video motion capture system

Board: 3-522 ISB130 **Emily Miller**
Cross-sectional validation of inertial measurement unit for estimating trunk kinematics during treadmill disturbances

Board: 3-510 ISB131 **Emily Miller**
Subject specific calibration movements to calculate hip and knee kinematics using inertial measurement units

Board: 3-523 ISB201 **Peter Adamczyk**
Estimating prosthesis energy storage and return using wearable sensors

Board: 3-511 ISB226 **Hakim Mecheri**
Validation of a low cost imc system for whole body motion analysis

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Board: 3-524 ISB233 **Meghan O'Donovan**
The effects of equipment on expert and novice marksmen as measured by inertial measurement units during a dynamic live-fire exercise

Board: 3-600 ISB238 **Kimi Dahl**
Wearable sensor validation for return-to-play readiness criteria

Board: 3-613 ISB326 **Lindsey Tulipani**
Wearables demonstrate transition technique relates to balance confidence and fatigue in persons with multiple sclerosis

Board: 3-601 ISB481 **Marco Caruso**
Accuracy of the orientation estimate obtained from four sensor fusion filters applied to magneto-inertial recordings of rotations performed at three different rates

Board: 3-614 ISB566 **Christian Larue**
Learning handling principles using inertial sensors and 3d avatar

Board: 3-602 ISB583 **Sarah Griffin**
Investigating conversion of joint angle data between inertial measurement unit and optical infrared passive marker-based motion capture systems

Board: 3-615 ISB591 **Rachel Vitali**
Method for estimating three-dimensional knee rotations with inertial measurement units

Board: 3-603 ISB604 **Alireza Noamani**
Evaluation of wearable inertial sensors for quantification of standing balance

Board: 3-616 ISB619 **Haneul Jung**
Evaluation of the pre-impact fall detection algorithm: experiment vs dynamic simulation

Board: 3-604 ISB660 **Elmar Junker**
Design of a portable 32-channel semg-imu sensor system for the assessment of upper limbs' movements in daily living

Board: 3-617 ISB672 **Gert Faber**
Ambulatory l5/s1 moment estimation during manual lifting using wearable sensors: bottom-up versus top-down approach

Board: 3-605 ISB729 **Truman Gabriel**
Accuracy of wireless sensors while walking and running in combat boots

Board: 3-618 ISB771 **Jonathan Park**
Performance technology evaluation of commercially available hermetically sealed inertial measurement units for angular velocity

Board: 3-606 ISB853 **Louis Diberardino**
Kinematic considerations for inertial measurement units

Board: 3-619 ISB878 **Rachel Horenstein**
Validation of wireless magneto-inertial sensors to measure hip joint motion

Board: 3-607 ISB905 **Timothy Gadzella**
A wearable sensor for measuring whole-body vibration at the lower back

Board: 3-620 ISB919 **Adam Bartsch**
Machine learning can improve accurate monitoring of head impacts in american football

Board: 3-608 ISB1027 **Gunjanbhai Patel**
Human movement monitoring and gait analysis based on smart wearable and body-fixed wireless inertial sensors

Board: 3-621 ISB1113 **Qiang Zhang**
Evaluation of a wireless stretchable sensor for assessment of in vivo musculoskeletal soft tissue strains

Board: 3-609 ISB1126 **Panagiotis Chatzistergos**
Non-electronic measurement of plantar pressure during weightbearing activities of daily living

Board: 3-622 ISB1199 **Pouyan Mehryar**
User intent recognition using imu data

Board: 3-610 ISB1281 **Hiroshi Takemura**
Evaluation of the walkway through the change of the stride length measured by shoe attached imu sensor

Board: 3-623 ISB1310 **Sydney Lundell**
Design and verification of an autonomous gait monitoring cane

Board: 3-611 ISB1333 **Stefano Bertuletti**
A novel bilateral step counter based on the direct measurement of the distance between lower limbs during gait in persons with multiple sclerosis

Board: 3-624 ISB1378 **Sheridan Parker**
Comparison of nonlinear lower limb joint variability using imu and motion capture based kinematics

Board: 3-700 ISB1494 **Amanda Delaney**
Comparison of expert scoring of form on a plank-like exercise versus performance as measured using wearable sensors

Board: 3-701 ISB1513 **Vijeth Rai**
A framework for reference trajectory generation for mode-free prosthetic limb control

Board: 3-714 ISB1527 **Alexander Peebles**
An automated 2d marker tracking algorithm for kinematic assessment

Board: 3-702 ISB1593 **Matthew Mavor**
Validation of an imu suit for military-based movements

Board: 3-715 ISB1740 **Yaqing Xu**
Characterization of the epley maneuver using a wearable inertial sensor

Board: 3-703 ISB1883 **Liam Rodgers**
A comparison of measurement techniques for resultant angular velocities in the lower limbs

Board: 3-716 ISB771987 **Milad Nazarahari**
Accurate and repeatable sensor-to-body calibration of inertial measurement units for lower limbs motion analysis

Locomotion General 3

Board: 3-704 ISB188 **Hyeongmin Jeon**
Comparison of upper body angular motion during walking in different genders

Board: 3-717 ISB200 **Emily Chavez**
Walking while working: the effect of walking workstation use on tripping kinematics

Board: 3-705 ISB202 **Caitlin Mccleery**
Biomechanical implications of the development of countermeasures for extended exposure to microgravity

Board: 3-718 ISB220 **Ukadike Chris Ugbolue**
Sex differences in heel pad stiffness during a standing heel-rise task

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Implications for walking boot use

Board: 3-719 ISB269 **Marcus Vieira**
Effects of generalized fatigue induced by incremental test on gait local stability of women in the menstrual period

Board: 3-707 ISB274 **Lance Bollinger**
Knee extensor electromyography amplitude and trunk flexion are reduced in obese subjects during chair rise performance

Board: 3-720 ISB288 **Hyeongmin Jeon**
Development of cop based variables for various gait type classification

Board: 3-708 ISB321 **Takashi Nakayama**
Investigation of trunk movement with different load locations in the initial phase of gait

Board: 3-721 ISB430 **Shane King**
Development of a novel gait perturbation system for the study of stumble recovery

Board: 3-709 ISB465 **Hui-Ting Shih**
Socioeconomic status affects motor activity endurance and fear of falling avoidance behaviour in people with lower limb loss

Board: 3-722 ISB499 **Toshinori Miyashita**
The effect of functional compression tights for walking.

Board: 3-710 ISB524 **Jenna Thorp**
Entrainment of gait phase in healthy subjects during rhythmic electrical stimulation of the gastrocnemius

Board: 3-723 ISB601 **Shane Murphy**
Influence of number of strides analysed on mean kinematic symmetry indices

Board: 3-711 ISB642 **Jinseung Choi**
Age-related differences in the spatio-temporal variables during metronomic walking at the preferred speed

Board: 3-724 ISB644 **Jie Yao**
Influence of walking stride frequency on foot valgus

Board: 3-800 ISB664 **Clara Leyh**
Centre of pressure displacement during walking in subjects with low back pain: a vector field statistical analysis

Board: 3-813 ISB669 **Pieter Fiers**
Fast walking fatigues the ankle dorsiflexors as well as the plantarflexors

Board: 3-801 ISB778 **Navendu Patil**
In-step correlation of pelvis state to foot placement does not imply active control

Board: 3-814 ISB792 **Eric Honert**
Soft tissue work in early stance of human walking: partitioning foot vs. rest-of-body contributions

Board: 3-802 ISB801 **Brian Selgrade**
Aging increases reaction time during lateral precision stepping to near and distant targets

Board: 3-815 ISB850 **Elijah Kuska**
Ankle and midtarsal joint kinematics during rearfoot and non-rearfoot strike walking

Board: 3-803 ISB897 **Wilford Eiteman-Pang**
Adaptations in pelvis trunk coupling variability in response to fatiguing exercise

Board: 3-816 ISB924 **Masahiro Edo**
Contribution of the kinematic chain of pronation-supination of the rearfoot and internal-external rotation of the shank to lateral movement of the knee during early stance

Board: 3-804 ISB986 **Changhong Youm**
Decline of gait ability due to aging effects: analysis of gait characteristics for korean healthy adults in the age group of 20s–80s

Board: 3-817 ISB990 **Changhong Youm**
Gait characteristics for 20–30-year korean young adults using principal component analysis

Board: 3-805 ISB1006 **Luís Silva**
Multifractal analysis of visually cued stride intervals

Board: 3-818 ISB1029 **Reymil Fernandez**
Knee kinetics using dxa-mass inverse dynamics in gait, cycling, and elliptical training

Board: 3-806 ISB1089 **Jaeyeon Wee**
Biomechanical effects of split sole design in normal walking

Board: 3-819 ISB1092 **Alexis Brierty**
Plantar forces of typically developed children during load transfer

Board: 3-807 ISB1099 **Tina Smith**
Associations between bone loading due to daily activity and hip bone mass and structure

Board: 3-820 ISB1178 **Sudarat Apibantaweesakul**
Mechanical characteristics of the foot, lower extremity muscle sizes, and walking performance of children and adults

Board: 3-808 ISB1211 **Elysia Davis**
Lower extremity joint moment patterns demonstrate sex-dependant and independent changes throughout puberty

Board: 3-821 ISB1223 **Jessa Buchman-Pearle**
Effect of ankle range of motion on high knee flexion posture kinematics

Board: 3-809 ISB1227 **Vera Moniz-Pereira**
Normalizing joint moments during stair ascent in older adults: a comparison of two methods

Board: 3-822 ISB1250 **Luís Silva**
Synchronization between stride time intervals and external visual cueing

Board: 3-810 ISB1262 **Katie Boncella**
The influence of footwear on loading rate and joint kinematics during walking

Board: 3-823 ISB1266 **Paul-André Deleu**
Intrinsic foot joints adapt a stabilization-resistance configuration during the stance phase

Board: 3-811 ISB1272 **Josef Viellehner**
The effect of delivery van ingress strategy on ground reaction forces

Board: 3-824 ISB1277 **Lauro Ojeda**
The relation of foot clearance and gait speed during stair ascent and descent

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Board: 3-900 ISB1287 **Aaron Likens**
Multifractal correlation reveals variation in complexity matching across metronome types

Board: 3-913 ISB1289 **Luke Drnach**
A switched linear dynamical systems framework for modeling individual-specific joint angle trajectories and responses to muscle stimulation during gait

Board: 3-901 ISB1324 **Carolin Curtze**
Insights from foot placement and centripetal accelerations during turning

Board: 3-914 ISB1332 **Kristiaan D'Aout**
Plantar pressure distribution during walking and the effect of minimal shoes

Board: 3-902 ISB1362 **Rory Curtis**
Centre of pressure trajectories reveal similarities between barefoot and minimally shod walking

Board: 3-915 ISB1431 **Henry Wang**
A novel approach of performing gait analysis using radar technology

Board: 3-903 ISB1449 **Tom Buurke**
The effects of handrail holding on split-belt adaptation

Board: 3-916 ISB1525 **Surabhi Simha**
Effect of cost gradient in the initiation of energy optimization during walking

Board: 3-904 ISB1563 **Beat Göpfert**
Power-walking- a workout with a high muscle activity and lower ground reaction force.

Board: 3-917 ISB1586 **Peter Raffalt**
Task constraints during locomotion affect movement attractor dynamics more than scaling a control parameter

Board: 3-905 ISB1664 **Jillian Hawkins**
Between-day and within-day reliability of hip biomechanics during walking

Board: 3-918 ISB1728 **Kazuo Funato**
Variabilities in orthogonal ground reaction forces during self-paced walking on the dual belt treadmill

Board: 3-906 ISB1793 **Nicole Stoehr**
Environmental navigation in a fatigued state: alterations in perceptual-motor obstacle crossing behavior following exercise

Board: 3-919 ISB1914 **Pearl Quintero**
Earning money while walking: walking workstations make it possible

Board: 3-907 ISB1918 **John Bertram**
How walking and running work: insights from reduced gravity analyses

Board: 3-920 ISB1941 **Varun Nalam**
Environment-dependent modulation of ankle impedance during the stance phase of walking

Board: 3-908 ISB1949 **Rahul Soangra**
Effects of rhythmic auditory cueing on gait of healthy young adults

Board: 3-921 ISB1954 **Hsiang-Ling Teng**
Subject perceived haptic feedback during different mode and number of motors

Board: 3-909 ISB1975 **Bum Joon Kim**
Estimating grf using simple biomechanics implemented neural network model

Board: 3-922 ISB923 **Navendu Patil**
Speed regulation increases the robustness of a simple treadmill walker more than position control

Orthopedic Bone 3

Board: 3-910 ISB2929 **Khurshid Alam**
Exploring benefits of ultrasonically-assisted drilling in bone

Board: 3-923 ISB773 **Azadeh Ghouchani**
How large should be a distal femoral tumorous defect to necessitate taking fracture prophylactic actions? in-vitro and in-silico investigations

Board: 3-911 ISB7934 **Caroline Dover**
A biomechanical study of greater tuberosity fracture fixation – comparing plate, screw, and suture fixation methods

Board: 3-924 ISB113 **Yunhua Luo**
Cortical bone is denser cancellous bone but not 'simply'

Board: 3-1000 ISB345 **Mei Wang**
Radioulnar load-sharing examined through radiocapitellar joint force

Board: 3-1013 ISB491 **Pengfei Yang**
In vivo tibia deformation regimes and strain distribution during different locomotive activities

Board: 3-1001 ISB626 **Po-Yu Chen**
Effects of supporting location of expandable bone implant on spine mechanics

Board: 3-1014 ISB628 **Adam Tucker**
The effect of static preload on bone anabolism: a systematic review and meta-analysis

Board: 3-1002 ISB639 **Fatemeh Malekipour**
The relationship between fatigue-induced microdamage and subchondral bone mechanical properties

Board: 3-1015 ISB742 **Luca Buzzatti**
Comparison between orthostatic squat and horizontal squat for validation of a novel device: semg of the lower limb

Board: 3-1003 ISB877 **Yuwen Zheng**
Boys with grip force below 50th percentile have 19% lower bone strength at distal radius

Board: 3-1016 ISB971 **Satoshi Yamada**
Elastic modulus and nanostructure of the plate- and rod-like trabeculae in bovine proximal femurs

Board: 3-1004 ISB1095 **Miloslav Vilimek**
Temperature investigation during drilling into artificial bone

Board: 3-1017 ISB1309 **Yuta Nakashima**
Effect of titanium substrate photofunctionalization on osteoblastic cell behaviour

Board: 3-1005 ISB1461 **Thomas Abitante**
Force analysis of an electrically induced isometric contraction of the knee muscles as a technique for osteogenesis

Board: 3-1018 ISB1708 **Emily Fawcett**
Effect of brachial plexus birth injury location on trabecular microstructure in the proximal humerus

Board: 3-1006 ISB1832 **Jacqueline Cole**
Changes to the osteovascular niche following ischemic stroke in mice

Session 3 - Saturday, August 3rd

Detailed Poster Listing

Board: 3-1019 ISB1847 **Marisa Kohut**
Anterolateral versus medial plating for comminuted intra-articulation distal tibia fractures: a biomechanical assessment

Board: 3-1007 ISB1896 **Mahdi Rostami Haji Abadi**
Children with autism spectrum disorder have sustained bone deficits in the radius and tibia shaft: 1-year follow-up

Board: 3-1020 ISB1919 **Andrew Baines**
A study of how healthy and cancerous bone material properties of the pelvic bones differ based on bone material properties extracted from patient-specific ct scans

Orthopedic Ligaments 3

Board: 3-1008 ISB232 **Amanda Stone**
Individuals with aclr are more accurate during initial prism exposure

Board: 3-1021 ISB423 **Payam Zandiyeh**
Tibia-femoral kinematic changes following acl reconstruction: a randomized clinical trial of sb vs. db

Board: 3-1009 ISB1389 **Amanda Stone**
Aclr performance during novel angle-matching task and dual-task

Board: 3-1022 ISB464 **Aapo Ristaniemi**
Fibril-reinforced poroviscoelastic modelling of anterior cruciate ligament

Board: 3-1010 ISB708 **Payam Zandiyeh**
Ute t2* mri shows evidence of tissue remodeling in acl grafts between 1 and 9 months after surgery

Board: 3-1023 ISB838 **Alessandro Navacchia**
The contribution of quadriceps and hamstrings to acl tension changes based on landing technique

Board: 3-1011 ISB856 **Matthew Seeley**
Cluster analysis of walking load and patient-reported outcomes after anterior cruciate ligament reconstruction

Board: 3-1024 ISB875 **Ryo Ueno**
Principal component regression for 6-axis kinetics in the cadaveric model of clinical relevant anterior cruciate ligament injury

Board: 3-1101 ISB1091 **Shun Shinohara**
Length change patterns of the medial ligaments of the knee

Board: 3-1114 ISB1155 **Ryo Takeda**
Development of knee joint finite element analysis model considering ligament geometry and material properties

Board: 3-1102 ISB1453 **Skylar Holmes**
Is quadriceps strength symmetry related to biomechanical symmetry in individuals with acl reconstruction?

Board: 3-1115 ISB1496 **Payam Zandiyeh**
Effect of mechanical noise vibration on proprioception in anterior cruciate ligament reconstructed patients

Board: 3-1103 ISB1552 **Michael Del Bel**
Limb symmetry assessment in pre-operative paediatric patients with acl injuries

Board: 3-1116 ISB1719 **Celine Girard**
Paediatric patients with acl injury demonstrate muscular endurance deficits during an isokinetic endurance task

Board: 3-1104 ISB1854 **Laryssa Kemp**
Paediatric females with and without acl ruptures exhibit comparable knee joint control during bilateral squats

Tissue Biomechanics General 3

Board: 3-1117 ISB62 **Jorge Salvatierra**
Synthesis and characterization of a polymer scaffolding by electrospinning for the formation of ligament

Board: 3-1105 ISB177 **Blake Johnson**
The effect of strain rate on the mechanical properties of the human liver under unconfined compression

Board: 3-1118 ISB184 **Jackie Zehr**
Inter-cycle loading variation influences cumulative compression tolerance in porcine cervical spine units: an in vitro study

Board: 3-1106 ISB223 **Niels Hammer**
Application of 3d printing technology to facilitate and standardize testing soft tissues

Board: 3-1119 ISB293 **Zebin Wu**
Study on biomechanical properties of bovine pericardium after freezing and thinning

Board: 3-1107 ISB372 **Mohammadhossein Ebrahimi**
Structure-function relationships in healthy and osteoarthritic human tibial cartilage

Board: 3-1120 ISB377 **Alexander Jung**
Electromechanical effects of heterogeneous human ipsc-derived cardiomyocyte couplings

Board: 3-1108 ISB443 **Kaixiang Jin**
Poly(glycerol-dodecanoate): a potential shape memory polymer applied for minimally invasive nucleus pulposus replacement

Board: 3-1121 ISB466 **Niels Hammer**
Biomechanical comparison of native and acellular human dura mater using recent 3d-printing advances in soft tissue testing

Board: 3-1109 ISB497 **Jan-Lucas Gade**
Predicted stress components of an in vivo parameter identification method

Board: 3-1122 ISB1152 **Derek Zwambag**
A novel method to characterize the compressive, tensile, and neutral zone stiffness of the intervertebral disc

Board: 3-1110 ISB1153 **Jennifer Shin**
Visualization of stresses during expnsion of cellular aggregates

Board: 3-1123 ISB1465 **Juan F. Vivanco**
Mechanical evaluation of 3d-printed scaffolds: a 3^3 full-factorial analysis of geometrical parameters

Board: 3-1111 ISB1709 **Daniel Martel**
Relationship between impact velocity, loading rate, and femoral bone strength during lateral impacts with biofidelic fall conditions.

Board: 3-1124 ISB1878 **Lindsay Loundagin**
Effects of stress concentrations on the fatigue life of bovine cortical bone: finite element predicted peak stress and stressed volume

Session 3 - Saturday, August 3rd

Detailed Poster Listing

Tissue Muscle + Soft tissues 3

Board: 3-1200 ISB563 **Justin Scott**
Determining in vivo bulk tissue properties for wheelchair users

Board: 3-1213 ISB647 **Jaemin Kim**
Endoscopic measurement method of smooth muscle contractile properties in vivo by electrical stimulation

Board: 3-1201 ISB992 **Kitaek Lim**
Real-time measurement of soft tissue compression during a fall: soft tissue stiffness depends on pelvis impact configuration

Board: 3-1214 ISB1651 **Jessica Oreskovic**
Predicting leg tissue stiffness from anthropometric measures

Board: 3-1202 ISB1710 **Hunter Wallace**
Biaxial testing of the passive properties of mdx and healthy diaphragm before and after enzymatic collagen digestion

Board: 3-1215 ISB1789 **Jessica Oreskovic**
Sensitivity of bulk leg tissue stiffness to muscle activation

Rehabilitation: Prosthetics + Orthotics - Lower Limb 3

Board: 3-1203 ISB60 **Joyce Blandino**
Development of a low cost transtibial prosthesis

Board: 3-1216 ISB178 **Ava Segal**
Lower limb amputee motor intention through neuromuscular and mechanical pattern recognition to predict uneven terrain

Board: 3-1204 ISB338 **Jonathan Dingwell**
Regulation of lateral stepping in destabilizing environments by persons with transtibial amputation

Board: 3-1217 ISB343 **Pascal Schütz**
The role of implant design in governing knee implant kinematics during level walking and stair descent

Board: 3-1205 ISB355 **Liming Shu**
A patient-specific knee prosthesis design with normal knee joint kinematic: from preclinical testing to additive manufacturing

Board: 3-1218 ISB417 **Lauren Sepp**
Lower-limb muscle activity in runners with a transtibial amputation

Board: 3-1206 ISB747 **Cristian Pasluosta**
Neuromuscular adaptations after a lower-limb transfemoral amputation

Board: 3-1219 ISB774 **Bailey Petersen**
Relationship of severity of sensory impairments and measures of balance and gait in lower-limb amputees

Board: 3-1207 ISB820 **Dominic Chicoine**
Biomechanical effects of three types of foot orthoses on a posterior tibialis tendon dysfunction population

Board: 3-1220 ISB876 **Vahidreza Jafari Harandi**
Individual muscle contributions to propulsion in above-knee amputees with osseointegrated prosthesis during walking

Board: 3-1208 ISB908 **Lee Childers**
Ankle power of transtibial bone-anchored prosthesis with carbon fiber and fiberglass passive foot in walking cats

Board: 3-1221 ISB1105 **Genki Hisano**
Relationship between step length and step rate during walking in unilateral transfemoral amputees

Board: 3-1209 ISB1189 **Taekyeong Lee**
Transfemoral amputee semg classification for gait detection

Board: 3-1222 ISB1299 **Trevor Kingsbury**
Biomechanical and patient reported outcome data for ideo patients one year post rehabilitation

Board: 3-1210 ISB1304 **Trevor Kingsbury**
Biomechanical comparison of two different ideo brace designs

Board: 3-1223 ISB1313 **Tobias Konow**
Micromotion affected by taper and neck design

Board: 3-1211 ISB1317 **Ludovic Miramand**
Joint coordination of lower limb amputees during gait: preliminary results

Board: 3-1224 ISB1327 **Ian Sloan**
Subthreshold vibration influences the posture and gait of transtibial amputees

Board: 3-1300 ISB1467 **Tyler Farnese**
The effect of non-linear spring-loaded knee orthosis on lower extremity biomechanics

Board: 3-1313 ISB1646 **Tatiana Djafar**
Power and work comparisons between ideo users and patients with transtibial amputation

Board: 3-1301 ISB1703 **Dylan Schmitz**
Investigating changes in achilles tendon load during walking with exosuit assistance

Board: 3-1314 ISB1868 **Andres Torres**
Adjustable socket for the optimization of pressures of transtibial prosthesis

Board: 3-1302 ISB1884 **Nicholas Dunbar**
Multi-objective optimization of pelvic sarcoma resection planes

Board: 3-1315 ISB1900 **Ali Zeighami**
Quantitative evaluation of evoke™ knee orthosis using eos® biplane x-ray images during squat movement

Rehabilitation: Neuro-Rehab 3

Board: 3-1303 ISB790 **Xuan Liu**
The short term effect of gait retraining using real-time visual kinematic feedback in a child with cerebral palsy

Board: 3-1316 ISB898 **Mohammed Alenazy**
Electrical stimulation of sensory nerves improves mobility and balance in persons with multiple sclerosis

Board: 3-1304 ISB1269 **Woo-Sub Kim**
Principal component analysis of variables from insole type pressure measurement system – for post-stroke hemiplegia

Board: 3-1317 ISB1303 **Annamaria Guiotto**
Effects of the equistasi® neurological rehabilitation device on the gait of parkinson's disease patients

Board: 3-1305 ISB1576 **Sourav Chandra**
Variations of isometric elbow force during voluntary contraction after botulinum toxin therapy

Session 3 - Saturday, August 3rd

Detailed Poster Listing

Board: 3-1318 ISB1623 **Blaize Majdic**
Excitatory effect of intermittent theta burst stimulation on corticomotor excitability of the biceps in individuals with tetraplegia

Board: 3-1306 ISB1750 **Paul Howell**
Increased elbow angle improves measurement of cortical voluntary activation of the elbow flexors

Board: 3-1319 ISB1782 **Thibault Roumengous**
Voluntary drive amplifies effects of paired-pulse tms and arm posture on biceps corticomotor excitability

Board: 3-1307 ISB1849 **Kevin Nowacki**
Clinical utility of laser light visual feedback for stepping task in stroke and multiple sclerosis populations

Board: 3-1320 ISB1870 **Martina Mancini**
Cortical correlates of closed-loop feedback while walking and turning in people with parkinson's disease

Injuries + Rehab 3

Board: 3-1308 ISB85 **Loay Al-Salehi**
Neck muscle activation and cervical spine posture during impending head-first impacts

Board: 3-1321 ISB138 **Chu Ling Lo**
The effect of facilitation and inhibition methods of kinesio taping on leg muscles hardness and pressure pain for healthy athletes

Board: 3-1309 ISB153 **Ahmed Radwan**
Alternative ergonomic seat designs for office workers: a systematic review

Board: 3-1322 ISB244 **Lauren Forsyth**
Efficacy of stability-based training with visualisation

Board: 3-1310 ISB280 **Tyler Wood**
Age related differences in head impact during experimentally induced sideways falls

Board: 3-1323 ISB538 **Clarissa Schuch**
Low-level laser therapy partially restores cartilage integrity and reduces chronic pain behavior

Board: 3-1311 ISB976 **Kathryn Houg**
On the ability of experimental measurements to predict tooth luxation injury following impact: a preliminary study using an in-vitro swine model

Board: 3-1324 ISB985 **Karam Elabd**
Effect of torso curvature and hip stiffness on head impact severity during backward falls with a falling dummy

Board: 3-1401 ISB1479 **Daniel Aponte**
Short track vs hockey helmets: investigating impact attenuation properties of helmets in two skating sports

Board: 3-1414 ISB1655 **Ray Daniel**
Modelling injury risk in the restrained mandible

Board: 3-1402 ISB1929 **Jon Doan**
Directional cues modify perceptions and behaviours in manual materials handling tasks

Sport Cycling 3

Board: 3-1415 ISB81 **Trevor Staples**
Biomechanics of single-leg emphasis cycling

Board: 3-1403 ISB109 **Erik Hummer**
Effects of saddle height on frontal-plane hip cycling biomechanics

Board: 3-1416 ISB407 **Henry Wang**
A novel application of radar technology in cycling movement analysis

Board: 3-1404 ISB508 **Anthony Gatti**
Effect of lower extremity bicycle-fit on ankle knee and hip kinematics

Board: 3-1417 ISB719 **Louise Burnie**
Biomechanical measures of maximal cycling on an ergometer: a test-retest study

Board: 3-1405 ISB884 **Steven Tragesser**
Analytic characterization of mountain bike pitchover dynamics

Board: 3-1418 ISB1188 **Suzanne Konz**
Comparison of forward versus backward pedalling of a stationary recumbent bicycle

Sport Squat/Lifting 3

Board: 3-1406 ISB8946 **Sarah Remedios**
Applying pattern recognition to understand inter-individual variability during the deep squat and hurdle step

Board: 3-1419 ISB150 **Daniel Armstrong**
Differentiating movement strategy between high and low biomechanical exposure lifts and lifters

Board: 3-1407 ISB490 **Nobuko Nogami**
Kinematic and kinetic characteristics of bouncing movement in aerobic gymnastics athletes.

Board: 3-1420 ISB555 **Jacob Gardner**
Varying positions of deadlift isometric contractions affects lower extremity muscle activation and peak ground reaction force: a pilot study

Board: 3-1408 ISB597 **Drew Rutherford**
Patellofemoral joint loading during forward and backward lunges

Board: 3-1421 ISB654 **Hanjun Li**
The effects of wearing a compression garment during night sleep on recovery from deep squat exercise

Board: 3-1409 ISB879 **Natasha Ivanochko**
Influence of cyclic and sustained squatting on knee power and hemodynamics

Board: 3-1422 ISB1065 **Tomoki Nagano**
Effectiveness of mechanical energy utilization during lifting phase of squat

Board: 3-1410 ISB1150 **Sangwoo Lee**
Determining the best combination of ground reaction force parameters for maximizing power during the power snatch

Board: 3-1423 ISB1577 **Robert Needham**
A biomechanical investigation of a spanish squat: the effect of trunk inclination on quadriceps activation

Board: 3-1411 ISB1635 **Eric Shumski**
Lower extremity joint moments during sit-to-stand in adults with and without prader-willi syndrome

Board: 3-1424 ISB1686 **Ben Meyer**
Kinematic parameters in various drop snatch squat lifting conditions

Session 3 - Saturday, August 3rd

Detailed Poster Listing

Sport Basketball 3

Board: 3-1500 ISB215 **Suzi Edwards**
Trunk control is altered after playing an elite u20s basketball game

Board: 3-1513 ISB218 **Katherine Dooley**
Youth elite basketball game alters lower limb agility technique assessment

Board: 3-1501 ISB855 **Davide Pavan**
Basketball biomechanics: side cut as noncontact acl injury screening

Board: 3-1514 ISB1200 **Pornthep Rachnavy**
Biomechanical analysis of single- and double-leg landings during 3 point jump shot in basketball.

Board: 3-1502 ISB1441 **Mauricio Delgado**
Effects of the mental load in the acceleration of upper limb and performance during free-throws shooting in professional basketball players

Sport Jumping 3

Board: 3-1515 ISB500 **Sasa Cigoja**
The energy return properties of the longitudinal arch in jumping

Board: 3-1503 ISB1014 **Zhu Zhiqiang**
Acute effect of midsole stiffness on lower extremity biomchanics during lay-up jumping

Board: 3-1516 ISB1644 **Keith Urbinati**
Changes in performance during jumping slows punch speed in karate

Board: 3-1504 ISB1779 **Kirsten Albracht**
Take-off technique of elite high jumpers is associated with the mechanical properties of the achilles tendon and the plantar-flexor muscles

Board: 3-1517 ISB1892 **Madelyn Dow**
Concurrent validity and reliability of mobile applications in measuring vertical jump performance

Miscellaneous Posters 3

Board: 3-1505 ISB89 **Xiang Qin**
The controlling mechanisms of basal myosin oscillation

Board: 3-1518 ISB101 **Jodie Gomez**
Biomechanical response of the mandible to blunt impact and corresponding biofidelity of the focus headform

Board: 3-1506 ISB141 **Chalida Limjeerajarus**
Does cracked tooth develop dental pulp inflammation? a study of dental pulp cell response to mechanical loading from tooth 3d modeling

Board: 3-1519 ISB148 **Natasha Jacobson**
Minimum lumbosacral orthosis tension required to prevent parastomal herniation while supporting the spine

Board: 3-1507 ISB498 **Ming-Shaung Ju**
Finite element analysis for effects of clinical infusion plan of paclitaxel on hyper-elasticity of living pc-12 cells

Board: 3-1520 ISB687 **Ya-Sheng Chen**
The effect of kinesio taping on the functional movement for healthy athletes

Board: 3-1508 ISB810 **Jamie Hibbert**
Qualitative and quantitative assessment of cardiovascular fitness and health for law enforcement personnel

Board: 3-1521 ISB910 **Yuri Kwon**
The spinal curvature classification in the cross-legged sitting posture

Board: 3-1509 ISB1076 **Alexander Tsouknidas**
Computational approaches to cellular biomechanics

Board: 3-1522 ISB1142 **Abigail Bailey**
The examination of aquatic activities on the motor skills of autistic children

Board: 3-1510 ISB1331 **Paul Ecker**
Numerical and experimental investigation of different hollow fiber membrane packing arrangements for an artificial lung

Board: 3-1523 ISB1428 **Ashley Mazurkiewicz**
Effects of brain morphometry on impact-induced displacement fields

Board: 3-1511 ISB1570 **Shufei Zhang**
Measurement of pubic symphysis width in different birthing positions using ultrasound

Board: 3-1524 ISB1928 **Jisun Hwang**
Comparison of individual fingertip forces between healthy people and spinal cord injury patients

Medical Devices 3

Board: 3-1602 ISB2742 **Fatemeh Farhadi**
An ergonomic testing system for the first metatarsophalangeal joint range of motion

Board: 3-1615 ISB129 **Bethany Grant**
The development and evaluation of customisation of a current total ankle replacement using patient-specific models

Board: 3-1603 ISB234 **Jose De Jesus Mayagoitia-Vazquez**
Development of an ergonomic support system for immersion with restricted mobility for patients with muscular dystrophy problems

Board: 3-1616 ISB254 **Cheolwoong Ko**
A study on contact pressure of femur fracture fixation plate made of shape memory alloy by finite element analysis

Board: 3-1604 ISB526 **Ming-Shaung Ju**
Development of five-axis mri-compatible robot system for imaged-guided stereotactic neurosurgery

Board: 3-1617 ISB1097 **Zhi-Han Zhang**
A novel design of passive gravity compensation holder on shoulder arthroscopic surgery

Board: 3-1605 ISB1137 **Sanne Vancleef**
Strength evaluation of a commercial and patient-specific clavicle fracture fixation plate using a biofidelic model

Board: 3-1618 ISB1273 **Ross Collins**
Feasibility of a novel upper limb weight support device for stroke rehabilitation

Board: 3-1606 ISB1517 **Michael Greene**
Control of a semi-active two-axis prosthetic ankle

Board: 3-1619 ISB1572 **Oliver Morgan**
The atlas™ knee system reduces external rotation and anterior translation in a tibiofemoral joint finite element model simulating the stance phase of gait.

Board: 3-1607 ISB1674 **Baixuan Yang**
effect of insertion factors on dental implant insertion torque/ energy

Session 3 - Saturday, August 3rd

Detailed Poster Listing

Board: 3-1620 ISB1725 **Lorenzo Garcia**
Artificial fin prosthesis for sea turtle. understanding biomechanical locomotion of an amputated fore flipper

Board: 3-1608 ISB1866 **Dobromir Dotov**
Practising complex dynamics with causal depth for better learning

Board: 3-1621 ISB1891 **Alexandros Mathioudakis**
Mobility enhancing device for sit-to-stand (medsts)

Board: 3-1609 ISB1911 **Namita Anil Kumar**
Pilot study with a gyroscopic hand rehabilitation device

Methlodologics + Data Analysis: Foot 3

Board: 3-1622 ISB442 **Ciao-Ming Tsai**
On developing a method to customize ankle-foot orthosis using foot contour feature points

Board: 3-1610 ISB539 **Jason Wilken**
Characterization of a novel shoe testing system for use in custom orthotic device evaluation

Board: 3-1623 ISB733 **Paolo Caravaggi**
Validation of a kinect-based 3d plantar foot scanner in weight-bearing

Board: 3-1611 ISB754 **Blake Ashby**
Internal foot power in the standing long jump: comparison of distal foot power and foot power imbalance

Board: 3-1624 ISB1283 **Andrew Kern**
A system for quantifying foot temperature changes following locomotion

Education + Outreach 3

Board: 3-1701 ISB281 **Tyler Wood**
Intra-rater reliability of a novel neck strength device with implications for older adults

Board: 3-1702 ISB1241 **Paul Devita**
The internationalization of national biomechanics day (nbd)

Board: 3-1703 ISB258 **Celeste Coltman**
Effect of obesity on upper torso musculoskeletal pain and shoulder range of motion in women

Board: 3-1704 ISB348 **Joseph Langenderfer**
Randomness and complexity of breast motion

Board: 3-1705 ISB925 **Jack Nguyen**
The effect of compressive vs. tensile physiological stresses on the stiffness of secondary osteonal bone in white-tailed deer proximal humerus

Board: 3-1706 ISB927 **Fatemeh Mahdavi**
A slip model to predict the dynamics of rapid tetrapod locomotion during hind-leg single support

Board: 3-1707 ISB928 **Fatemeh Mahdavi**
Effects of the number of starts on greyhound racing dynamics

Board: 3-1708 ISB1075 **Beat Göpfert**
A pilot study on the variation of the kinematics of horses in forward and backward overground walking in western riding

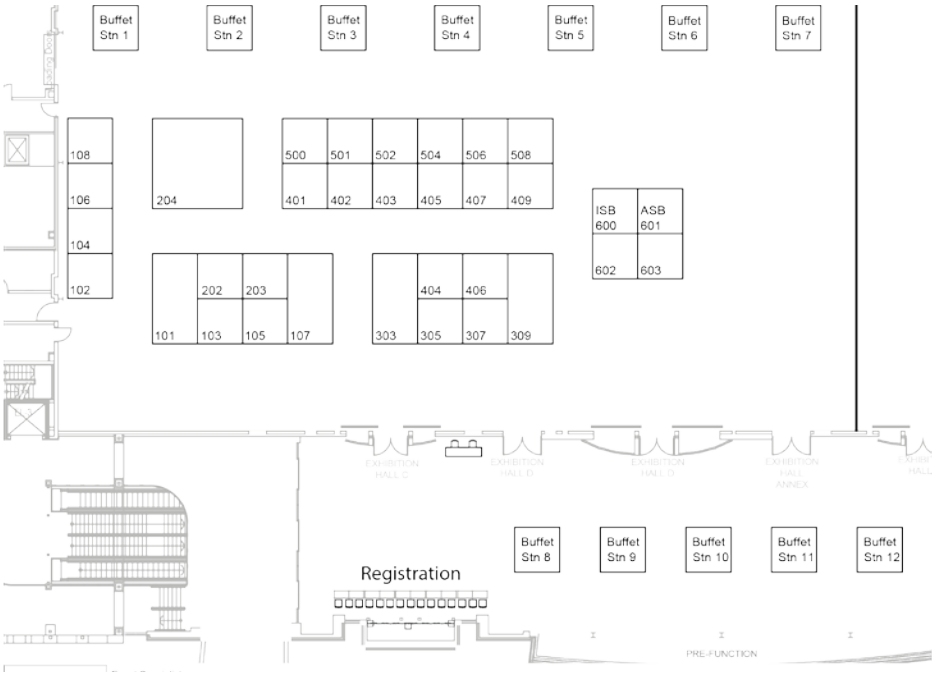
Board: 3-1709 ISB1279 **Matthew Salzano**
Effects of exercise during growth on bone strength and morphology.

Board: 3-1710 ISB1447 **Kavya Katugam**
Material properties of the achilles tendon are unaltered by botulinum toxin across growth in an avian bipedal model

Board: 3-1711 ISB1699 **Juan F. Vivanco**
Morphological and micromechanical analyses of argopecten purpuratus under climate change scenarios

Exhibitor Location Map

Exhibition Hall CD



Exhibitors

AMTI

Booth Number: 309

Email: sales@amtimail.com
Web: www.amti.biz

AMTI leads the way in force platform technology, and we are excited to announce the addition of our large surface area force plates to the OPTIMATM-BMS family. All of our standard force platforms now undergo AMTI's patented OPTIMATM calibration process, making them more accurate and repeatable than any of our competitors' force plates. When seeking the best biomechanical measurements, researchers and clinicians worldwide trust AMTI's industry-leading force platforms and joint simulators – shouldn't you?

AnyBody

Booth Number: 404

Email: sales@anybodytech.com
Web: www.anybodytech.com

AnyBody Technology provides software and services for musculoskeletal analysis of daily activities. A detailed validated full-body model computes *in vivo* kinematics and dynamic individual muscle and joint forces. The biomechanical insight facilitates design concept evaluation, design of implants and assistive devices, and *in vivo* performance analyses for different body anthropometries, patient groups and individuals.

APDM

Booth Number: 108

Email: www.apdm.com/contact/
Web: www.apdm.com

APDM Wearable Technologies offers solutions for quantifying human movement by combining Opal sensors and sophisticated algorithms. Deployed by thousands of researchers and clinicians worldwide, APDM solutions streamline data collection and analysis. Moveo Explorer produces full-body kinematic data, including joint angles and range of motion during functional tasks; Mobility Lab generates spatiotemporal outcome measures of gait and balance; Motion Studio provides synchronized raw inertial data.

ATI

Booth Number: 104

Email: www.ati-ia.com/company/requestinfo.aspx
Web: www.ati-ia.com

ATI Industrial Automation is the world-leading engineering-based developer of robotic accessories and robot arm tooling, including Multi-Axis Force/Torque Sensing Systems, Automatic Tool Changers, Utility Couplers, Robotic Deburring Tools, Robotic Collision Sensors, and more.
Our robot end-effector products are found in thousands of successful applications around the world. Our Multi-Axis Force/Torque Sensors measure all components of force and torque (Fx, Fy, Fz, Tx, Ty, and Tz) and are used in a wide variety of applications including: product testing, biomedical research, rehabilitation research, teleoperation, haptics, and robotics. Key features include: High overload protection, high-speed output, and high signal-to-noise ratio.

Exhibitors

Bertec

Booth Number: 204

Email: info@bertec.com
Web: www.bertec.com

Bertec's reputation for precision and accuracy is built on a three decades old legacy in measurement excellence. Researchers around the world rely on Bertec's engineering to help them pursue a deeper understanding of biomechanics from the ground up. From design to engineering to production, we pay attention to every detail, so the biomechanical engineering industry can advance its understanding of the human body

C-Motion

Booth Number: 407

Email: info@c-motion.com
Web: www.c-motion.com

C-Motion is the developer of Visual3D, the professional 3D biomechanics analysis software for your research needs. Visual3D handles motion capture data from any system and provides the biomechanical modeling, analysis and reporting functionality in support of comprehensive commercial and research protocols.

Cometa

Booth Number: 203

Email: sales@cometasystems.com
Web: www.cometasystems.com

Cometa Systems is a leading manufacturer of EMG and IMU systems. Our systems have extremely small sensors, with long range and over 8 hours battery life. Ideal for both lab and outdoor environment, with exclusive IPX7 waterproof certification.

Cosmed

Booth Number: 307

Email: www.cosmed.com/en/contact-us
Web: www.cosmed.com

COSMED manufactures a comprehensive suite of gold-standard solutions for cardiopulmonary, metabolic, body composition, and nutritional assessment. Featured products include the new generation K5 wearable metabolic system and the Quark CPET Metabolic Cart.

Exhibitors

Darimotion

Booth Number: 106

Email: info@DARImotion.com
Web: Darimotion.com

DARI Motion is a patented, FDA-Cleared, markerless 3D human motion assessment platform. Powered by state-of-the-art, precise motion analysis technology, this comprehensive solution captures, processes, and analyzes movement with a quick, accurate and easy user experience. Stop by our booth to find out more about our markerless 3D systems.

DELSYS

Booth Number: 107

Email: delsys@delsys.com
Web: www.delsys.com

Delsys is a world leader in the design, manufacture, and marketing of a broad portfolio of high performance Electromyography & human movement detection instruments. We focus on markets where our patented parallel-bar sEMG sensors often a critical differentiator in our customers' research emphasis on understanding and solving movement disorders problems. We currently market a wide range of innovative wireless physiological and biomechanical sensors designed to meet the needs of our broad base of customers. They Include: Trigno Avanti Wireless EMG systems, Mobile EMG systems, NeuroMAP System and Tiber HD-sEMG system.

DIERS

Booth Number: 403

Email: info@diers.de
Web: www.diers.de

4Dmotion Lab and High Performance Lab -- The Golden Standard in 3D and 4D Spine, Pelvis and Posture Analysis.

The full equipped DIERS Lab makes possible simultaneous 4D measurements of the whole body (spine, pelvis, legs and feet).

The unique solution with measurement frequency up to 60/240 fps enables a wide range of new and advanced applications in medicine and sports.

The DIERS product portfolio includes also EMG and muscle strength devices completing high performance medical and sports applications.

Exponent

Booth Number: 506

Email:
Web: www.exponent.com

Exponent is a leading engineering and scientific consulting firm. Our multidisciplinary team of scientists, engineers, physicians, and regulatory consultants brings together more than 90 different disciplines to solve complicated problems facing corporations, insurers, government entities, associations and individuals. Our approximately 1000 staff members work in 26 offices across the United States and abroad. Exponent has over 800 consultants, including more than 500 that have earned a doctorate in their chosen field of specialization.

Exhibitors

Gait Up

Booth Number: 105

Email: contact@gaitup.com
Web: www.gaitup.com

Born in research 18 years ago, Gait Up combines wearable sensors, algorithms and biomechanics, to provide world leading motion analysis. We empower wearables to rival accuracy of legacy motion labs, with real life convenience that counts. Our mission is to enhance health, sport, and society by providing easy yet accurate measures of the 6th vital sign: Movement.

Kistler

Booth Number: 502

Contact: +1 248 668 6900
Web: www.kistler.com

Kistler is the global market leader for dynamic pressure, force, torque and acceleration measurement technology. This year, Kistler will showcase at our booth# 531 the 9260AA a cost-effective multicomponent force plate with excellent accuracy for gait and balance analysis. It offers easy installation for versatile and mobile use!

Leomo

Booth Number: 501

Contact: support@leomo.io
Web: www.leomo.io

LEOMO provides the pioneering solution in portable motion analytics for endurance sports professionals. Working with world-class coaches and sports scientists on a global scale, LEOMO is dedicated to bringing science-based metrics to the next generation of sports performance analysis.

Motek

Booth Number: 406

Email: www.motekmedical.com/contact
Web: www.motekmedical.com/

Motekforce Link is the global leader in virtual reality technology for research and rehabilitation. The technology is suited for treatment of a wide variety of conditions affecting the balance and locomotion mechanisms in the human body. Our clients are Hospitals and Medical Centers specialized in orthopedic and neurological disorders, Rehabilitation Centers, Universities and Sports Institutions.

Exhibitors

Motion Analysis

Booth Number: 504

Email: sales@motionanalysis
Web: www.motionanalysis.com

For over 35 years we have provided state-of-the-art 3D motion capture systems. We offer high quality software and cameras that are fully interchangeable; making adding cameras a simple plug and play exercise. Applications include: biomechanics, broadcast, sports analysis, game production, VR & AR, film, research, engineering and rigid object tracking

Motion Monitor

Booth Number: 202

Email: sales@TheMotionMonitor.com
Web: www.themotionmonitor.com

The MotionMonitor is a real-time, turn-key 3D motion capture system designed to synchronously collect data from kinematic trackers, EMG, force plates, instrumented treadmills, hand transducers, EEG, video, event markers, virtual reality, haptic devices, and other analog devices. All data is collected and displayed in real-time with several visualization options including time series graphs, bar graphs, x-y plots, virtual targets/cursors and a 3D musculoskeletal animation. The MotionMonitor supports a wide range of biomechanics applications, from standard kinematic analysis to self-paced walking/running to CT/MRI registration to VR/Biofeedback."

Noraxon

Booth Number: 101

Email: info@noraxon.com
Web: www.noraxon.com

Noraxon's medical grade biomechanics equipment is fully portable and integrated with the myoRESEARCH®3 data analysis software, creating a modular and customizable approach to study human movement in or out of the lab. Noraxon serves the global biomechanics community across academic, medical/clinical, ergonomic, elite sports and human-performance applications.

novel

Booth Number: 401

Email: mariapasquale@novelusa.com
Web: www.novelusa.com

novel is quality in force distribution measurement providing a variety of systems including the emed barefoot pressure platform, the pedar in-shoe pressure measurement system, the loadsol(pad) mobile force sensors, and the pliance system for applications such as hand, socket-limb pressures, and much more. novel utilizes fully calibrated capacitive sensor technology providing the most accurate data which is available for real-time wireless (loadsol/loadpad, pedar and pliance) display to be used for feedback applications. The loadpad and loadsol in-shoe force sensor are captured to a smartphone for real-time feedback during rehabilitation, daily activities, and for any application where a flexible force sensor and mobile transmission are required.

Exhibitors

Orpyx

Booth Number: 103

Email: info@orpyx.com
Web: www.orpyx.com

Orpyx Medical Technologies empowers people to help maintain mobility. Orpyx's intelligent insole systems is a modern solution designed for the accurate, efficient, and mobile measurement of foot and plantar analysis. Orpyx's technology is used by researchers to access clinical-grade plantar pressure measurement data for health and human performance applications.

Photron

Booth Number: 500

Email: image@photron.com
Web: www.photron.com

In addition of offering a wide range of high-speed cameras for slow motion analysis, Photron will be launching the innovative 6D-Marker at this year's ISB meeting. The 6D-Marker is a 44mm square target that uses a proprietary variable moiré pattern to extrapolate precise 3D and 6D data using only a single camera. Easy set-up, and the ability to use pre-recorded conventional or high-speed video, makes the Photron 6D-Marker the natural choice for your next biomechanics motion analysis project.

Qualisys

Booth Number: 102

Email: sales@qualisys.com
Web: www.qualisys.com

Qualisys is a leading provider of motion capture technology and has a long history of supplying research, engineering and sports facilities with high-end camera systems and expertise in capturing and analyzing movements.

Qualisys offers a wide range of products and services and has offices in Gothenburg, Chicago and Shanghai. Qualisys is certified according to ISO 9001:2015, our clinical products are compliant with Medical Device Directive 93/42/EEC and have FDA clearance (K171547), which demonstrates our commitment to provide highest possible quality products and services to our customers.

Sawbones

Booth Number: 405

Email: info@sawbones.com
Web: www.sawbones.com

SAWBONES inspires confidence through practice by creating the world's best medical procedure simulation models. We collaborate with our customers to invent, design and manufacture bone and soft-tissue models that help doctors learn and improve their skills and help medical device makers showcase the unique advantages of their products. From Orthopedics to Veterinary, from Biomechanical testing devices to Digital Anatomy models, SAWBONES has led the industry since its inception over 40 years ago.

Exhibitors

SIMI

Booth Number: 602

Email: sales@simi.com
Web: www.simi.com

Simi develops and manufactures 3d motion capture systems for sports and medical applications. Simi's full body markerless tracking by silhouette recognition, machine vision and powered by AI allows the most advanced human tracking system in the world. Based on 27 years of experience Simi combines latest technology with long proven concepts on motion tracking.

STT Systems

Booth Number: 402

Email: info@stt-systems.com
Web: www.stt-systems.com

STT delivers high-end 3D motion analysis solutions for various applications. Our products are simple to set up, simple to use and affordable. Throughout these 20 years, our primary focus has been to develop innovative products and solutions for various Motion Analysis and Machine Vision applications. Furthermore, STT has also made itself strong in delivering custom software projects, as well as offering consultancy and training services. Existing customers include small businesses in need for off-the-shelf products as well as large companies and corporations seeking tailored solutions.

Tekscan

Booth Number: 305

Email: info@tekscan.com
Web: www.tekscan.com

Tekscan manufactures a range of pressure assessment and clinical/research evaluation tools. Our new Strideway™ System measures temporal (time), spatial (distance), and kinetic (movement) parameters, as well as objective force and plantar pressure information. This modular system is available in standard, medium, and high resolution with length options from 1-5 meters.

Treadmetrix

Booth Number: 603

Email: steve@treadmetrix.com
Web: www.treadmetrix.com

Treadmetrix first developed our modular, fully instrumented treadmill design in early 2000's (Determan, Swanson, McDermott and Hamill, 2004). Since we officially launched in 2013, over 40 world-class institutions have published nearly 50 peer reviewed publications using our instrumented treadmills. Today, Treadmetrix offers single-belt, split-belt, and custom treadmill systems that achieve the greatest range of sizes, speeds and grades available and integrate with most major motion capture systems.

Exhibitors

Vicon

Booth Number: 508

Email: info@vicon.com
Web: www.vicon.com

Innovating for over 35 years as the world's largest supplier of clinical and research motion capture systems, Vicon pioneers biomechanics, gait, and sports sciences solutions.

XSENS

Booth Number: 303

Email: info@xsens.com
Web: www.xsens.com

Xsens motion capture solution including the proprietary MVN Analyze software. MVN Analyze is a Full-body human measurement system based on inertial sensors, biomechanical models, and sensor fusion algorithms. Easy to use, short setup time and instant validated data output. The system can be used anywhere.

XSensor

Booth Number: 409

Email: sales@xsensor.com
Web: www.xsensor.com

For over 20 years, XSENSOR has set the standard for accurate sensors and image quality in software to visualize and analyze pressure data. We have listened to industry leaders and developed systems they rely on to improve the comfort, safety, quality and performance of their products. Our new Foot & Gait Measurement System is an advanced pressure imaging system that combines wireless data acquisition with fast, reliable, high accuracy and high resolution sensors.

Notes


FACULTY OF KINESIOLOGY
UNIVERSITY OF CALGARY
No.1
SPORT SCIENCE SCHOOL IN NORTH AMERICA
No.7
WORLD WIDE