Message from the President

Dear ISBS members and conference delegates,

ISBS 2020 hosts Mark Robinson, Mark Lake, and the team from Liverpool John Moores University are continuing to work hard organising our annual conference. They and the Scientific Committee have reviewed 341 submitted articles for the 38th ISBS Proceedings that, with the outstanding keynotes, should be a great scientific program. Our proceedings and our journal Sports Biomechanics are important permanent records of our scholarly activity and promotion of biomechanics of sports and exercise.

The conference organisers and the ISBS Board have been closely monitoring the health risks and travel impacts of the COVID-19 pandemic. Given the speed at which the situation is changing, we have decided to delay conference registration and a final decision about holding our 2020 conference until April 30, 2020. It is possible that restrictions in international travel may still be in place in July. While we are hopeful that the situation will be resolved or have lessened sufficiently so that the conference can go forward, delegates should liaise with their own university / business travel managers to consider what effect this may have on their plans and how best to mitigate risks of travel disruption. At this time, we politely suggest that delegates do not book travel until a decision on the conference taking place is made on the 30th April. We would also like to highlight that travel grants will not be awarded in the event of the conference not taking place, therefore the travel grant application deadline has been extended by one month to May 24th.

The Liverpool organising team have put a great deal of work into planning this year’s conference so that it can still go ahead if possible; however, the board of directors are working with them to ensure that we as a society are

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Message from the President

Duane Knudson

still able to share our research and ideas with each other through alternative initiatives in the event of the conference not taking place. We will keep you informed through society email, website, conference website, and social media.

I thank the conference organizers, scientific committee, and the ISBS Board of Directors for their hard work on ISBS activities throughout this world health crisis. I especially thank VP of Publications Sarah Breen for setting up ISBS Exec and Board lists to facilitative communication across the time zones of the world. Thank you to Floren Colload for accepting nomination and election to complete the Laura-Anne's term as VP of Public Relations. Thank you to Laura-Anne for her service to the society.

Let me also renew my call to you from the December 2019 Newsletter to make a commitment to stay engaged with ISBS, serving on the board, nominating worthy award recipients, and inviting others to join us as members and delegates at our conferences. ISBS is only as strong as the collective efforts of our members.

Best wishes for personal safety and good health,

Duane Knudson
President, ISBS

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New Investigator Award Update

We have had many strong applications for this year’s New Investigator Awards. These have nearly all been judged by our hard-working Awards Committee which will enable the top eight in each of the award categories (poster, oral) to be shortlisted.

Geoffrey Dyson Award

As you are hopefully already aware, our Geoffrey Dyson Award for 2020 will be presented to Professor David Lloyd (Griffith University, Australia) and we greatly look forward to hearing his Dyson lecture. David is a Fellow of the International Society of Biomechanics and currently Director of Griffith Centre for Biomedical and Rehabilitation Engineering. David and his team have developed computer-simulation methods to study the causes, prevention and rehabilitation of musculoskeletal conditions, with these methods now being adopted in the orthopaedics and neurorehabilitation industries. David and team are currently developing accurate personalised digital models of humans with real-time capabilities by combining data from laboratory-based instrumentation, multimodal medical imaging and wireless wearable devices.
Hans Gros Emerging Researcher Award

We are also delighted to announce that Dr Gillian Weir (University of Massachusetts, Amherst, USA) has been selected as the Hans Gros Emerging Researcher for 2020 and again we eagerly look forward to Gillian’s invited lecture.

Gillian’s research interests broadly encompass injury prevention and athletic performance in team sports. She has focussed her early career in contributing to the fundamental understanding of the mechanisms of, and counter-measures to, lower limb injuries. In her time as a strength and conditioning coach, her growing frustrations with anterior cruciate ligament (ACL) injuries and their debilitating nature to athletes and teams led her to focus much of her research in initial and recurrent prevention of these injuries. Consequently, she has focussed upon four target areas through her PhD and postdoctoral research; 1) counter-measure development; 2) screening methods; 3) biomechanically informed injury prevention training; and 4) translation and engagement with sporting bodies and the wider athletic community.

Call for Future Award Nominations

Whilst the Geoffrey Dyson recipient for this year is known, now is the time for me to invite you to propose candidates for the Geoffrey Dyson Lecturer in 2021. It is also the time for you to propose candidates for Life Members of ISBS and Fellows of ISBS. These are all extremely prestigious ISBS awards and I would ask you to think carefully about anyone who you feel may be deserving of these awards. The criteria required for nomination or application for each of these awards are available at www.isbs.org/awards. Any nominations must be forwarded to me (vpawards@isbs.org) by 30th April 2020. Only nominations forwarded by this date will be considered by the ISBS awards Committee for 2020, and successful candidates will be announced later this year.
ISBS conference initiatives for students:
The upcoming conference provides some great opportunities for Student Mentors. See the newsletter for further details regarding the Student Mentor Program at ISBS2020 and the availability for the Student Research Grant.
Additionally, we are working on a Tip-Sheet for students or conference novices. Hopefully we will be able to gather some valuable thoughts and tips in order to make your first conference experience even better. Do you have any important tips for your fellow students? Let us know so that we can add it to the list!

New student representative for term 2020 - 2022
After two years of serving as ISBS student representative my term will end with this year's ISBS conference. At this point I would like to thank you all for supporting me and acknowledging my ideas. I would also like to thank the members of the student sub-committee for their valuable and thoughtful input.
Now is the time to call out for a new student representative. Being the student representative of ISBS is a great chance for students to get directly involved with decisions made by the ISBS board of directors. In a very early stage of your scientific career, you can leave your footprint in a great society. The student representative will hold a two-year term in which you will have plenty of opportunities to continue and/or start student initiatives.

Requirements:
- Student member of ISBS in good standing at time of appointment
- More than 12 months into graduate study – there is no restriction on penultimate year students expressing interest in the position as the role can overlap with the first year post-terminal degree.
- The priority for selection of a candidate is finding a suitable, interested, motivated individual who will be a good, fair ambassador for the student members of the society.

Please, keep an eye on our official ISBS communication channels, as we will announce the opening and procedure for applications soon.

Johannes Funken
ISBS Student Representative
Dear ISBS student members,

The student mentor programme has been a component of the annual ISBS conference since 2012. This programme presents an excellent opportunity for ISBS student members to meet with experts in the sports biomechanics field. Students who have participated in the mentoring programme in the previous years have found it to be a valuable part of the conference and have made excellent contacts (see the October newsletters from 2013-2019).

Each year, we do our best to match mentors and mentees based on their research interest and this year will be no exception. Mentors that take part in the programme come from a range of biomechanical backgrounds and are open to discussing your research, career aspirations, or sharing their experience with you.

How to take part:

Participation in the student mentor programme is free of charge. If you would like to be part of the programme, select the option during the online registration process for ISBS 2020. The deadline for the mentor programme is **June 1 2020**.

Priority will be give to student members that are new to the programme but we will endeavour to include all interested students.

*Please note if the conference does not go ahead an online student mentor program will be organised*

Ina Janssen

ISBS Vice President (Research & Projects)
In 2018, I had the honor of being one of the students selected for the Mini Student Research Grant to support my Master’s thesis, *The Effects of Shoe Type on Biomechanical and Physiological Responses to Stepping and Inclined Walking*, under the supervision of Dr. Sarah Breen.

In the outdoor industry, there is often debate regarding which footwear is better for performance and efficiency on trail: hiking shoes or hiking boots. Wearing hiking boot with tall shafts may reduce the risk of ankle injury, but may also lead to increased forces at the knees and hips as a result of limited ankle range of motion (ROM). On the contrary, wearing lightweight shoes may allow for greater ankle ROM, but may put the hiker at greater risk for sprains and strains, as well as injuries to the knees and hips. While the effect of footwear on performance has been extensively investigated in firefighters and military personnel, there is little research done in the hiking community. Therefore, the purpose of my study was to examine the hiking shoes and hiking boots on the biomechanical responses to a stepping task and the physiological responses to an inclined walking task, with specific focus on ground reaction forces, joint moments and range of motion, toe clearance height, oxygen uptake, and ventilation.

Twenty recreational hikers in the surrounding community were recruited for this study. During data collection, participants were instructed to step up and down on a handmade step containing three force platforms (Figure 1). Participants performed three two minute stepping trials in hiking shoes and three trials in hiking boots, for a total of six trials. Kinematic and kinetic data were captured during the stepping task using a 10 camera motion capture system. Following stepping, participants walked on a treadmill for five minutes at 3.0 mph and a 10% incline in both hiking shoes and hiking boots, while connected to a metabolic cart to collect physiological data.

Results of the study showed significant differences between footwear in ankle and knee ROM and ankle and knee moments throughout the stepping cycle, as well as significant differences in oxygen uptake and ventilation during the inclined walking task. While these variables are statistically significant, they may not be practically significant in an actual hiking scenarios, as the magnitude of differences observed were minimal. This led us to conclude that use of either a hiking shoe or hiking boot may not result in an increased risk of injury, therefore leaving the choice of footwear up to the hiker’s personal preference.

I would like to thank the ISBS committee for giving me this opportunity and allowing me to pursue my research passions. Without the financial support, this research project would not have been possible. Additionally, I would like to thank the ISBS community for their continued work hosting conferences, which has allowed me to grow as a researcher and individual over the years. Lastly, a special thank you to my co-authors for their support and feedback throughout this project.
I was awarded the grant to visit the Human Mobility Research Centre (HMRC) based at the Faculty of Engineering and Applied Science, Queen’s University, Kingston, Canada in the spring 2019, with the aim to learn and investigate the emerging technology of 3D markerless video-based motion capture for sports specific movement tasks and have a sneak-peak into dynamic biplanar X-Ray fluoroscopy. The experiences gained during this research stay went far beyond my expectations and boosted my interest in biomechanics and fundamental movement strategies even further.

The primary aim was to evaluate the outcome of 3D markerless video-based motion capture software (Theia, https://www.theiamarkerless.ca/ developed by HAS-Motion) against a gold standard technology of marker based motion capture (Qualisys, Gothenburg, Sweden). The 3D markerless software under investigation is based on a deep learning algorithm and estimates 3D joint positions using multiple calibrated 2D video views. Besides gait and jogging, sport specific movement tasks commonly used in performance assessments, such as counter movement and drop jumps were of special interest. During my time at Queen’s University I was involved with protocol development, data collection and initial data analysis with a grandiose team, of which Robert Kanko is exceptionally to be named. How comparable to the markerbased system does the markerless system track? Heads up for the presentation at ISBS 2020 in Liverpool and papers currently in progress!

The second project took me to the dynamic biplanar X-Ray fluoroscopy Laboratory to participate in an extraordinary data collection investigating the fundamental biomechanics of a healthy foot during gait and running and the knee during a deep lunge. As methodological side question the implementation and usability of the markerless approach in a dynamic biplanar X-Ray fluoroscopy setting was undertaken and combined the lessons learned of the previous projects with this one.

The grant gave me the exceptional opportunity to work in collaboration with the outstanding research groups of Dr. Kevin Deluzio and Dr. Mike Rainbow (Queen’s University) as well as the industrial partners Scott Selbie (C-Motion Inc, HAS –Motion Inc.) and Markus Brown (HAS-Motion Inc.). As scientific output initial findings on gait have been presented at the ISB 2019 in Calgary by R. Kanko and an abstract will be submitted to ISBS 2020. A thematic set of papers are in progress (one to be submitted to the journal Sports Biomechanics) and further collaborative research is planned.

I am enormously thankful to all project partners (C-Motion (Dr. Scott Selbie), the team of Queen’s University (with Prof. K. Deluzio as representative), the team of Salzburg University (with Prof. H. Schwameder as representative) and ISBS for the ability to undertake this research visit which counts as one of the top research experiences in my life. I strongly encourage others to apply for these grant opportunities provided by ISBS.
ISBS is pleased to announce that the Student Research Grant, Internship Grant and the Mobility Grant will all be available in 2020! These grants have been developed to support the research activities of ISBS members, in particular those that are in the early stages of their career or are returning from a career break. Brief information relating to all three grants are provided over the next two pages. Full details of the grants and application processes are available under the ‘Grants’ tab of the website: www.isbs.org/grants. Please note that the deadline for all applications is April 26 2020.

Call for Applications: ISBS Research Grants 2020

Dr Ina Janssen
ISBS VP Research & Projects

The Student Research Grant is open to final year undergraduate students and postgraduate students and is available to fund biomechanics research projects in an environment that provides strong mentorship from an established researcher. The grant is designed to assist the student in the early stages of their professional development to encourage the pursuit of biomechanics research.

Funds Available

ISBS funds up to two awards per year, each award may be up to €1000 and is available to fund research for up to one year in duration.

Applications in one or more of the following areas are encouraged:

- Sports / Exercise biomechanics
- Paediatric/ gerontology exercise biomechanics
- Development of biomechanical methods/ instrumentation
- Fundamental movement biomechanics
- Sports engineering
- Biomechanics of injury prevention and rehabilitation in sport / exercise

Eligibility

The applicant must be supervised by an established researcher who is a current ISBS member.

The student’s supervisor is expected to administer the funding.

Students must be enrolled as a final year undergraduate or a graduate student at the time of application.
**Call for Applications: ISBS Research Grants 2020**

**Dr Ina Janssen**  
**ISBS VP Research & Projects**

**The Internship Grant** will provide funds to pay an intern student to assist with the research of a full ISBS member. The purposes of the internship are to: 1) support full ISBS members (particularly early career researchers in their research activities by providing student internship support, and 2) foster the intern student’s interest in biomechanics research and provide them with an opportunity to become familiar with research techniques and collect data under the guidance of an established researcher.

**Funds Available / Allowable Costs**

The amount paid will be €250 per week for students living away from home or €150 per week for students living at home for 4-8 weeks and is administered by the Host Institution. Other research expenses are not payable.

**Duration / Eligibility**

Projects should be achievable in 4-8 weeks – students should be working on a specific project and details of what is intended to be achieved within the time frame is required at application. Students should currently be enrolled as an undergraduate or taught masters student (PhD students are not eligible as intern students). Applicants must be current members of ISBS in good standing and have been a member for three consecutive years.

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**The Early Career and Developing Researcher Mobility Grant** will provide funds to support full ISBS members to travel to an established ISBS member’s or applied organisation’s lab. The purpose is to allow the applicant to learn new techniques, collect data, develop research skills, bridge the gap between research and practice and build collaborative sports biomechanics networks. Visits may be to a research lab or applied organisation that utilises sports biomechanics (e.g. National Governing Body or footwear/equipment manufacturer).

**Funds Available / Allowable Costs**

Up to €2000 is available to support travel costs and accommodation/subsistence. Full anticipated costings and details of other current financial support to be provided with application.

**Duration / Eligibility**

Visits are for a duration of 4-8 weeks.

ECRs should be less than 3 years post-PhD graduation (not including verified absence due to sickness, maternity, paternity). Developing Researcher >3 years post-completion of PhD.

Applicants must be current members of ISBS in good standing and with a minimum of one year’s membership.
Short Communications

Tim Exell,
ISBS VP Conferences & Meetings

Student Travel Grants & Call for Hosting ISBS

In light of the postponement of registration opening for ISBS 2020, the student travel grant application deadline has been extended to May 24th 2020. In the event of the conference being cancelled due to the global situation surrounding Covid-19, travel grants will not be awarded for this year. Therefore, students are recommended not to book travel for the conference until a final decision has been made on April 30th.

Call for Hosting ISBS 2023

Due to the current unplanned changes affecting many of us in response to the global Covid-19 pandemic, the deadline for submission of applications to host the 41st ISBS (2023) has been extended by one month to 30th April 2020.

ISBS Sports Biomechanics Lecture Series

Due to the effects of COVID-19, staff and students around the world are transitioning to online learning. ISBS are providing access to expert guest lectures on a range of sports biomechanics topics. These can be watched live or integrated into any teaching and learning environment. The series is organised by Stuart McErlain-Naylor from the University of Suffolk and sponsored by Vicon. All lectures can be viewed on YouTube. To keep updated please follow @ISBSOFFICIAL or @biomechstu on Twitter.
Women in Sport Biomechanics

During the Covid-19 pandemic, support for women in our society is increasingly important. The juggling of carer responsibilities with work has become an even larger challenge for some women, making it difficult to remain connected to our society. Whilst we can’t physically help with the daily burden, we can support each other during this lifetime event by staying connected. For that reason, we have created a private Facebook group. Please join us at “Women in Sport Biomechanics”.

Liz Bradshaw  
Mum of Alexander (Age 8)

Ina Janssen  
Mum of Jackson (Age 6) & Sienna (Age 3)

We are also pleased to announce that the ISBS 2020 conference organisers have secured a nursing/breastfeeding room at the conference venue. Stay tuned to the ISBS2020 website and newsletter for further information.
ISBS Officers & Directors

ISBS Officers

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Treasurer: Silvio Lorenzetti

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## ISBS Officers & Directors

### ISBS Directors

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