Message from the President

Randall Jensen

Dear ISBS members,

The second annual ISBS Mid-Year Symposium was a resounding success! Over 350 people registered for the symposium. Kudos to Tim Exell and the organizing committee, the presenters and everyone who tuned in for a fantastic symposium. If you were unable to join at the time of the presentations, or want to see them again, the videos are available to members here. Also, a great thank you to our Society sponsors, Delsys, Qualisys, Simi, and Vicon for their support of the symposium and the ongoing activities of ISBS.

The next meeting on tap is the 40th Annual Conference to be held in-person in Liverpool on 19-23 July 2022. Mark Robinson & Mark Lake have what looks to be a fantastic conference scheduled at Liverpool John Moores University. There will be Applied Sessions on Cricket, Applied Gymnastics, Cycling, Markerless Motion Capture, and Performance Rehabilitation, as well as an extensive social program. Of special note for student delegates will be the Student Mentor Breakfast. This event partners student delegates with established member mentors and has become a solid success in past years. It is an excellent chance to meet experts in our field to make contacts for the future as well as get suggestions for research, career, and other opportunities. This event is open to all student delegates, but you must register prior to the conference (see p. 19).

A survey from the Diversity Equity and Inclusion Committee has been sent to members. I would encourage you to complete the survey to enable the committee to know your thoughts on how to address these topics within ISBS. Based on the responses, possible changes to the Constitution may take place. Thus, it is important that you make your voice heard.

The 2022 ISBS elections for 10 Directors, a Student Director, and President-Elect are now underway. Those interested in voting, must be a current member in good standing, which means dues for 2022 must have been paid. If yours are not, go to the Society website to register your membership. After confirming your membership, please review the notice sent out to all paid members regarding the election to study the candidates’ bios and vote for the candidates of your choice. Our Society is only as strong as those who participate in it. If you have suggestions or concerns, you can contact members of the Executive Council via the email addresses on the website.

After missing in person conferences for the past two years, I hope we can all get together in Liverpool next July and I hope to see many of you there. Until then, please stay safe and continue to support ISBS. It is after all, your Society.

Randall Jensen
ISBS President
Dear ISBS Members,

I am pleased to announce the following nominations for the Board of Directors and President-Elect of the society. We are really fortunate to have such excellent candidates for these important positions. Thank you very much to all candidates.

Everyone will be asked to vote for ONE president-elect, ONE student director and up to TEN Professional Directors.

Current members should have received an email with a link to the election. The closing date for the election is three weeks after the election went live.

Peter Sinclair (Secretary General)

---

**Candidate for President-Elect**

**Dr. Hiro Nunome**

Hiroyuki (Hiro) Nunome (PhD) is currently Professor of Sports Biomechanics at Fukuoka University, Fellow of International Society of Biomechanics in Sports (ISBS), Board of Japan Society of Biomechanics. He also served ISBS official journal Sports Biomechanics as an Associate Editor for years. Hiro is well-known as a pioneer of biomechanics for football kicking with many advanced publications. He is also well-known as an open-minded, cooperative and innovative scholar in the field of Sports Biomechanics and a good English–Japanese translator for years. In his roles, he gained eight international and seven national research awards with his PhD students.

---

**Candidate for Student Director: 2022 - 2024**

**Molly Goldacre**

Hello! I’m a PhD candidate at the University of Western Australia focused on standardising 3D motion capture practices and machine learning models for the Australian High Performance Sports System. I presented a paper at ISBS 2021 and have co-authored two other ISBS conference papers. The coronavirus pandemic has affected us all and, as students, we have experienced restricted opportunities to connect with, and learn from, established and emerging researchers at a critical time in our careers. If successful, I would like to expand the student mentor program to a longer year-round program and establish a peer-supported student research seminar series.
Candidates for Professional Directors: 2022 - 2024

Dr. Jordan Andersen

Jordan’s research started at University of Waterloo. He was awarded his PhD from University of Sydney and is currently a Postdoc at Macquarie University using a Machine Learning approach and wearable technology to monitor load in military populations. He was awarded the ISBS Student Research Grant in 2018 for work at the University of Porto. As an Exercise Physiologist and coach, Jordan brings research to practice to the clinic and athletes in track and field and swimming. He presented at the 2021 and 2022 Mid-Year Symposium on Neural Networks. Jordan aims to help formulate a clear ISBS Mission Statement.

Dr. Alex Atack

Alex is a Senior Lecturer in Biomechanics at St Mary’s University, Twickenham, UK. Having been a member of ISBS since 2014 she has embodied the ISBS ethos of translating biomechanical research to applied sport practice and has presented at numerous conferences. Since being appointed to the Board of Directors two years ago she has really enjoyed being on several committees organising both the mid-year symposium and annual conference. Additionally, she has instigated an international initiative to support, develop and promote sports biomechanics teaching practices which she is excited to progress, particularly for early career academics, if reappointed.

Dr. Bryan Christensen

I am a Professor in the Department of Health, Nutrition, and Exercise Sciences at North Dakota State University, North Dakota, USA. I have been a member of ISBS since 1997 and have presented numerous times at the conference. ISBS has had a major impact on my professional development throughout my academic career, from my graduate degree to guiding my own graduate students at NDSU. I want to serve on the Board of Directors to help make sure ISBS continues as a strong professional organization for the continued development of current and future sports biomechanics professionals.

Dr. Boyi Dai

Dr. Boyi Dai is an associate professor in Kinesiology and Health at the University of Wyoming in the USA. I have been an ISBS member since 2014 and an associate editor for Sports Biomechanics since 2019. My current research is focused on jump-landing mechanics and anterior cruciate ligament injuries, exoskeleton and low-back loading, and strength and balance assessments for collegiate athletes. If elected, I hope to encourage new and existing members’ engagement with the society, conference, and journal. I am particularly interested in helping students and early-stage researchers to gain experience, promote communications, and develop professional skills through the society.
Dr. Kat Daniels

Kat Daniels is a Senior Lecturer in biomechanics at Manchester Metropolitan University in the UK and previously Head of Biomechanics at Sports Surgery Clinic Dublin. She has experience of sports biomechanics in both academic and clinical sports rehabilitation environments and is passionate about advancing the impact and visibility of the field. Her research is focused on the mechanics and control of change-of-direction tasks and other locomotor manoeuvres, including implications for injury, rehabilitation and performance. Kat currently serves on the executive council for International Women in Biomechanics and would be honoured to support the ISBS scientific community.

Dr. Shariman Ismadi bin Ismail

My name is Shariman Ismadi bin Ismail. I came from Malaysia. Since 2013, I am working as a lecturer of sports biomechanics at Faculty of Sports Science and Recreation, Universiti Teknologi MARA, Malaysia (PhD in Sports and Health Science). In much early days, I have completed my bachelor and master’s degree in Mechanical Engineering at Gunma University, Japan and Newcastle University, United Kingdom respectively. Coming from South East Asia, I believe I can strongly represent my region in our society and hope that more members from different region of the world can be elected as the face of our society.

Dr. Hashem Kilani

Since I was a student at the University of Illinois in 1985, I became a member of the association’s Board, and in 2012 I am currently serving the ArabSBS as a founding president for 3 years. I also worked in several Arab universities in the Emirates, Muscat and Jordan. I also worked during my sabbatical leave at the Universities of Konstanz and Magdeburg. Published a number of research papers related to biomechanics and kinesiology. I like serving the ISBS, which I participated in most of its conferences, including the late semi-annual conference, by organizing a research seminar for our members.

Dr. Mark King

Dr Mark King is a Professor of Sports Biomechanics at Loughborough University, UK investigating optimum performance and minimizing injury risk across a broad range of sports including gymnastics, cricket, athletics, badminton, swimming and tennis. Mark has substantial experience with international bodies; Chair of ISB’s Technical Group on Computer Simulation for eight years, member of Badminton World Federation’s Injury Prevention Working Group and member of International Cricket Council’s Bowling Legality Group. Mark has been a member of ISBS since 2009 attending numerous annual symposia, current board member and looks forward to continuing to help the society in the years to come.
Candidates for Professional Directors (Cont.)

Dr. Kristof Kipp

Kristof Kipp is an Associate Professor in the Program in Exercise Science at Marquette University in Milwaukee, Wisconsin, USA. His research interests focus on high force/impulse sports and activities, such as weightlifting, throwing, and jumping tasks. Kristof attended his first ISBS conference in 2010 and will be a co-host of the ISBS 2023 meeting in Milwaukee. He currently serves on the editorial board of Sports Biomechanics and on the BOD, he would like to continue serving on the BOD and helping with recent initiatives like the annual mid-year symposium as well as ISBS’s new committee on diversity, equity, and inclusion.

Dr. Silvio Lorenzetti

Silvio is Prorector for Research and Development and heads the performance sport section at the Swiss Federal Institute of Sport Magglingen. The department includes a team of more than 50 people, a medical center, psychology, physiology, training science and technology. 85% of the Swiss team members who competed in Beijing were supported there. He has secured national funding for the “digital twin” project, which is related to modelling and imaging in the area of strength training. After serving as treasurer (six years), he would like to support the Society in becoming an organization focused on diversity, open science and digitalization.

Dr. Palaniyappan Rajinikumar

This is Dr. P. Rajinikumar, Assistant Professor, Dept. of Sports Biomechanics, Tamil Nadu Physical Education and Sports University, Chennai. India. I would like to be a part of the Board of Directors without having an immediate portfolio of responsibilities. I am eager to learn how ISBS functions and I am interested to serve in the future. This will facilitate me to take ISBS to every part of India and host future ISBS in Chennai at our centre of excellence in biomechanics (25000 sft lab with 3D mocap, force plates (10 nos) and EMG – (32 ch).

Dr. Nahoko Sato

Nahoko Sato is an Associate Professor in the Department of Physical Therapy at Nagoya Gakuin University in Japan and a board member of the Japanese Society of Biomechanics. Her research interests are to develop the evidence-based evaluation system of hip-hop dancing and injury prevention strategy in dance. She is known as a pioneer of biomechanics for hip-hop dancing and received the Hans Gros New Investigator Award in 2012. She has a keen interest to integrate her biomechanical knowledge into the development, safety and education in dance as a sport.
Diversity, Equity and Inclusion Survey

Duane Knudson, Chair of ISBS DEI Committee

The ISBS Board has established a Diversity, Equity and Inclusion Committee. This group has been meeting via Zoom since the last conference and has created a short survey for the membership. If you have not yet responded to the emails inviting you to provide feedback on this issue, please consider doing so soon using this link. The committee is seeking your input on past experiences in society activities and what you think ISBS can do to ensure we are a welcoming and inclusive organization. Your input on four short questions could help us improve ISBS. Thank you.

ISBS Lab Profiles

The Sports Medicine & Movement Lab, Auburn University

The Sports Medicine & Movement Lab at Auburn University specializes in injury prevention and performance enhancement in baseball and softball athletes.

The latest research projects have focused on mechanics and energy flow during baseball and softball pitching and hitting.

Specific study aims for Spring 2022 include:

(1) determining the relationship between stride mechanics and collegiate softball hitting performance,
(2) examining the association between mechanics, energy flow, and performance in softball hitting, and
(3) investigating the influence of proximal energy flow on upper extremity stress and performance during softball pitching.

For more information about the research visit their website or contact Dr. Gretchen Oliver at goliver@auburn.edu.

To feature your lab in a future ISBS newsletter, please contact vppublications@isbs.org
**ISBS Awards 2022**

**Neil Bezdosis, ISBS Vice-President (Awards)**  
Swansea University, UK

---

**Geoffrey Dyson Award**

We look forward to hosting Professor João Paulo Vilas-Boas’ **2022 Geoffrey Dyson Award Lecture** as part of the annual conference. The Dyson Lecture is always an inspiring way to start the conference and we are sure that this year will be no different. Professor Vilas-Boas has a strong academic background with almost 250 published papers, and 90 MSc and 30 PhD completions. He is currently Vice-President of the Olympic Committee of Portugal as well as a former Olympic swimming coach himself, and he led the organisation of the 2011 ISBS Conference in Porto. He truly embodies one of the ISBS primary purposes of bridging the gap between research and practice, and his Dyson Lecture will be entitled “Swimming biomechanics: from the pool to the lab...and back”.

---

**New Investigator Award**

We are also looking forward to seeing some of our rising stars presenting in the **New Investigator Award** sessions at the conference after only being able to enjoy the competition online in 2021, and not at all in 2020. We had 55 papers submitted for the 2022 New Investigator Award and our judges have been working very hard to review these papers. The top eight applicants in each of the oral and poster categories have recently been notified of their success now that the judging has been completed. These presentations will take place in specific sessions at the conference to help determine the winners - please keep your eyes peeled for these sessions on the conference programme and come along to show your support for our new investigators.
**ISBS Awards 2022 (cont.)**

**Neil Bezodis**

**Hans Gros Emerging Researcher Award**

We received some incredibly strong applications for this year’s **Hans Gros Emerging Researcher Award** which were judged by further members of our Awards Committee. We are delighted to announce that the 2022 Hans Gros Emerging Researcher Award recipient will be Dr Marion Mundt from the University of Western Australia. Dr Mundt will deliver an award lecture at the 2022 conference, entitled “*On-field motion analysis: repurposing motion capture datasets and training machine learning models to bring the lab to the field***”, which we are sure will be an excellent showcase of her ground-breaking research.

**Call for Future Award Nominations**

Whilst the Geoffrey Dyson Award for this year is known, now is the time for us to invite you to propose candidates for the **Geoffrey Dyson Award Lecturer in 2023**. 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 we would ask you to think carefully about any colleagues who you feel may be deserving of these awards. The criteria required for each of these awards are available at [www.isbs.org/awards](http://www.isbs.org/awards). Any nominations must be forwarded to vpawards@isbs.org by 30th April 2022. Only nominations forwarded by this date will be considered by the ISBS awards Committee for 2022, and successful candidates will be announced at this year’s Conference in Liverpool.

**The ISB World Athletics Award for Biomechanics**

This year we are hosting the **International Society of Biomechanics (ISB) World Athletics Award for Biomechanics**. This award was first presented in 2021 at the ISB Congress, and ISBS are delighted to be hosting the award every other year. The eligible papers are currently undergoing a thorough review process by members of ISB, ISBS and the Journal of Applied Biomechanics, and we look forward to seeing the winning paper presented in Liverpool at the 2022 conference.
ISBS Member Grants 2022

Ina Janssen
Vice President (Research and Projects)

Call for Student and Full Member Grants

ISBS is pleased to announce that the Student Research Grant, Internship Grant and the Mobility Grant will all be available in 2022. These grants have been developed to support the research activities of ISBS members. 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 15 2022, as communicated in the previous newsletter, member emails, and social media. Look out for similar opportunities in future years as well.

Student Research Grant

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 / Allowable Costs

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

Funding can be used for participant expenses, lab consumables, software/hardware costs, or travel to a collaborating laboratory.

Eligibility

The applicant is a student member of ISBS and is supervised by an established researcher who has been a member of ISBS for at least one year.

Students must be enrolled as a final year undergraduate or a graduate student at the time of application.
Call for Applications: ISBS Research Grants 2022 (Cont.)

Internship Grant

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 ISBS 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. Student interns are offered one year’s free ISBS student membership.

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 have been ISBS members for three consecutive years.

Early Career and Developing Researcher Mobility Grant

The Early Career and Developing Researcher Mobility Grant will provide funds to support full ISBS members to travel to an ISBS member’s or applied organization’s lab. Alternatively, when the applicant is unable to travel due to family obligations or medical reasons, this grant may be utilized to fund an ISBS full member to visit the applicant’s lab. The purpose of this grant 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 organization that utilizes 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.

Early Career Researcher 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 have been ISBS members for three consecutive years.

Ina Janssen

ISBS Vice President (Research and Projects)
The Effects of Load Magnitude on *In Vivo* Tibiofemoral Arthrokinematics During Prolonged Running.

Adventure races are characterized by components of load carriage (rucksacks or weight vests) and observe as high as 70% of the competitors suffering an injury. ~24% of all observed injuries are musculoskeletal injuries (MSI) with the majority occurring at the knee. *In Vivo* tibiofemoral arthrokinematics via biplane radiography provide the most accurate internal joint data (within 0.2mm & 1° of error) which may elucidate potential mechanisms of knee MSI. The purpose of this investigation was to determine the effects of load magnitude on tibiofemoral arthrokinematics during prolonged running in healthy young adults. Nine healthy, recreationally active adults (5 male, 4 female) completed ten-minutes of running followed by three dynamic biplane radiography trials of the dominant limb knee with no load (BW), and an additional 55% of body weight (+55%BW). Load carriage was achieved with a plate carrier and weight vest. All participants were provided with boots to standardize footwear. Prior to data collection trials, gait transition velocity (GTV) was determined as the mean GTV of 3 walk-to-run trials utilizing a ramped treadmill protocol. Mean GTV was obtained for each load condition separately. All experimental trials were executed at a velocity 10% above mean GTV. A volumetric model-based tracking technique was utilized to match the model position to the bone position within an individual frame of the radiograph (see Figure 1). Stride data was then interpolated to 101 data points to represent percent of stance phase. Heel strike was identified as the first instance vGRF exceeded 50N. Excursion was calculated from heel strike through the first 18% of stance phase. Medial translation excursion, proximal (inferior-superior) translation excursion, anterior translation excursion, flexion, internal rotation and abduction were the derived outcomes. Paired T-tests were conducted to analyze differences in load condition (BW vs +55%BW) for each outcome separately. At heel strike, running with +55%BW (152.2±10.3°) exhibited a more flexed knee (p=.01) compared to BW (159.6±6.2°). However, BW and +55%BW exhibited relatively similar flexion excursion. BW (2.6±1.2mm) exhibited more proximal translation excursion (p=.03) compared to +55%BW (2.1±1.2mm). By contrast, +55%BW (6.0±1.9mm) had greater anterior translation excursion (p=0.05) compared to BW (4.8±2.2mm). There were no significant differences between BW and +55%BW for medial translation excursion, internal rotation angle/excursion or abduction angle/excursion. The greater knee flexion angle at heel strike for +55%BW may serve as a mechanism to better attenuate the greater impact force via eccentric muscle action. However, reduced proximal translation excursion during +55%BW could suggest greater loading of the soft tissues which may portend cumulative mechanical stress related MSI of the knee. Further, the increased anterior translation excursion of +55%BW may increase the risk of knee MSI specifically ACL related sprains.

**Figure 1: Data Processing Workflow.** (A) Following a ten-minute running fatiguing protocol, participants ran on an instrumented treadmill while (B) synchronized biplane radiographs were collected at 150 images per second. (C) CT scans were segmented to create subject-specific 3D bone models with coordinate systems established in (D). (E) Digitally reconstructed radiographs, created from segmented bone tissue, were matched to the radiographic images in the virtual lab space using a model-based tracking technique. (F) Six DOF kinematics of the tibiofemoral joint were generated for further analysis.
We were very pleased to receive an ISBS Internship grant to support our study investigating the effect of fatigue on rugby place kicking technique and performance. Unfortunately, the pandemic hit soon after the award of the grant meaning our plans were put on hold, but as the Summer of 2021 approached, we were finally able to use the grant to recruit Hamish Bull as a student intern to lead the project.

The three-dimensional, dynamic nature of the place kicking skill has restricted most previous research to a laboratory environment, using automated motion capture systems. This has unfortunately limited the ecological validity and scope of the investigations conducted. However, the development of wearable sensors (such as IMUs) presents an opportunity to collect data on the field and therefore, broadens the research possibilities. A recent study proposed that accumulated cognitive and physical fatigue may be the reason for reduced kick success in the 10 minutes prior to half-time in international rugby union matches. Thus, we sought to take a multi-disciplinary approach to understanding the potential physical and cognitive effects of rugby-specific fatigue on place kicking.

Following the completion of his BSc Sport Science, Hamish embarked on the eight-week internship. Over this period of time, we collected IMU data (Blue Trident, Vicon) from 7 kickers performing place kicks from a consistent, but challenging location on the pitch, at rest and then following 4 x 10 minute bouts of a rugby-specific fatigue protocol, alongside verbal reports of their thoughts when taking the kicks. Lower limb and trunk kinematic variables were extracted and compared across the four stages of the fatigue protocol, along with kick success. Kick success was found to reduce after block 2 and 4 of the protocol (the latter representing the final 10 minutes of a half), with collapse of the support leg identified as a possible reason. We are excited to present these initial results more fully at the ISBS annual conference in Liverpool this year. However, as a number of you may have found, recruitment post-pandemic has been a little more challenging, and therefore, we are continuing to collect data for this study in the coming year – if you or anyone you know would like to come and take part in London, please get in touch!

**Student’s Perspective – Hamish Bull**

Thanks to the funding from the International Society of Biomechanics in Sport, I gained valuable experience investigating the effect of fatigue on rugby kicking performance. I was heavily involved in the design of the protocol working collaboratively with experienced researchers and senior lecturers but given the license to design this project how I saw fit. This gave me great insight into the behind the scenes of a study and all the hard work that goes into designing a water-tight project where every decision is discussed thoroughly and applied deliberately. Most notably from this project, considerations around the protocol design to fatigue our kickers representatively, which culminated in a design incorporating sprints, jogging, passing, catching and kicking during the first half of a rugby match. I have been fortunate enough to be completing a Masters in Sports Biomechanics where skills such as knowledge of equipment set up, report writing, critical thinking and rationales for decisions are critiqued to an even higher level; something this project prepared me for nicely. This project still today provides me with valuable insight into the range of skills required and the quality of the skills research demands. These demands motivate me to ensure I push myself to produce work of the highest standard consistently through ruthless analysis and detailed and timely preparation.
Following the success of the 2021 Mid Year Symposium, ISBS held its 2nd Virtual Mid Year Symposium on February 2 and 3. This initiative was an opportunity to connect and share research and ideas. ISBS members were able to submit proposals to host sessions which resulted in a total of 16 sessions over the two days. Sessions included:

- Biomechanics Teaching: ISBS Women in Sport Biomechanics – Stress & Motivation; Biomechanics Support for Winter Olympics; Early Insertion of Undergraduate Students into Biomechanics Laboratories; Wearable Sensors and Musculo-Skeletal Injuries; Spanish Language Session; An Exploration of Clinically-Measurable Risk Factors for ACL Injury; Injury Risk, Prevention & Management in Cycling; Field Based Human Performance Measurement in Sports & Occupational Settings – A Machine Learning Approach; Current Research of the Arab Society of Biomechanics in Sports; ISBS Mothers Café; The Challenges and Future Directions of Measuring Horses and their Riders in Motion; ISBS Student Portraits; Monitor Power Output and Wheelchair Mobility Performance in Sport in a Field and Lab-based Setting; Application of Baseball Biomechanics to Individual Athlete Development

Sessions provided participants the opportunity to interact and ask questions via the chat function. The organisation of the Symposium was a group effort by the Symposium Organising Committee who confirmed speakers, moderated sessions, organised the publicity/social media, and the ISBS members and affiliates who suggested topics and participated as speakers.

A total of 220 ISBS members registered to attend the symposium. In addition, 135 members from ISBS Affiliated Societies, including the Société de Biomécanique, European Society of Biomechanics, American Baseball Biomechanics Society, and the Arab Society of Biomechanics in Sport registered for the symposium.

Sessions were recorded and are now available for all ISBS members to access via the website. A huge Thank You to all the Symposium sponsors who helped to make this a success!

We hope that we can continue this initiative and plan to hold the 3rd ISBS Mid Year Symposium in early 2023!

Symposium Sponsors:
After two years of having to move our annual conference online due to global travel restrictions in place in response to the Covid-19 pandemic, plans are progressing very well for our in-person ISBS conference to be hosted in Liverpool, UK 19th—23rd July 2022. The local organising committee and ISBS conference committee are highly optimistic that the conference will take place with very little disruption to the conference activities. We are aware that there are still travel restrictions in place around the globe but hope that these still allow many ISBS members to reconnect in person at the conference, usually the highlight of the year for the society.

A reminder that the deadline for student travel grant applications to be submitted is 22nd April, see the students section of the conference website for details.

Update from ISBS 2022 hosts Dr Mark Robinson and Prof Mark Lake:

Two years has quickly passed since ISBS 2020 was originally postponed. Our team at Liverpool John Moores University are very much looking forward to hosting ISBS 2022 as a return to face-to-face conferences. ISBS 2022 in Liverpool will have all of the conference’s usual highlights, such as: Geoffrey Dyson Lecture | Mentor breakfast | Hans Gros and New Investigator Awards | Keynote lectures | Advancing Women in Biomechanics | Mother’s café | Applied Sessions

The Geoffrey Dyson Lecture is being presented by Professor J. Paulo Vilas-Boas and all keynote speakers are confirmed. Paper submission has closed and all papers have had initial decisions made. Registration is open (early bird rates available until 6th May) via the main ISBS website. There will be a combination of poster and oral presentations with the conference hub being LJMU’s recently opened Student Life Building, also housing the sponsors exhibition.

We are also excited for the many student and non-student specific social events planned including a Liverpool sightseeing tour, dinner at St George’s Hall, Ghetto golf, a visit to Anfield or even axe throwing! Please refer to the conference website (isbs2022.org) or Twitter page (@isbs_conference) for all details and updates. We look forward to seeing you all, in person, at ISBS 2022 in Liverpool this summer.
ISBS is rightfully proud of being the international leader of sports biomechanics. We have this distinction from over 40 years of continuous work by scholars and industry partners. The ISBS leadership is working with upcoming annual conference organizers to celebrate our history and achievements. Having events at three conferences across our three world regions (Americas, Europe/Africa, Asia/Australasia) allows us to celebrate the diversity of sports and scholars from all over the world that have contributed to sports biomechanics.

Having several smaller celebrations makes sense for many reasons. First, we are able to invite and encourage retired ISBS members back to the conference for a reduced cost to attend and participate when the conference is physically close. Second, we avoid the confusion related to founding of ISBS and counting meetings. Over our 40ish years of our work [See Ostarello 2008] we have been forced to cancel in-person conferences three times, holding some of these conference online when the technology was available. See the map below of all the ISBS conferences, including this year’s conference and those held virtually. Third, the next three conference organizers are free to set up any sessions or events that highlight the unique contribution of country/regional past ISBS scholars and sports interests.

Please contribute to our extended 40 years celebrations by making suggestions for these types of sessions/events/socials to conference organizers, encouraging past/retired ISBS members to attend a conference to catch up with veteran and new colleagues, and of course, attending and learning about past achievements of ISBS. We would love to see some founding mothers and fathers of ISBS come to a meeting to present first-person history or attend to celebrate and reconnect. I encourage all members to read John Ostarello’s historical summary to appreciate the cutting-edge scientific meetings in the late 1970s and early 1980s that lead to that first ISBS conference in San Diego, California in June of 1982.
Update from VP Public Relations
Floren Colloud

Society Sponsors

I am very pleased to announce that SIMI and DELSYS have recently joined ISBS as new sponsors. So, the ISBS is now proudly supported by four corporate sponsors (Delsys, QUALISYS, Simi and VICON) for the next three years. The ISBS would like to warmly thank them.

All four sponsors provide important support to the mission of ISBS through their quality products and financial support to the Society. We encourage you to consider these fine vendors of sports biomechanics research equipment and software when purchasing or updating your lab equipment.

Mid Year Symposium Sponsors

The second mid-year symposium, organised online 2nd - 3rd February 2022 was supported by the four ISBS corporate sponsors VICON, QUALISYS, SIMI and DELSYS. Moreover, two sessions were specifically supported by Delsys (wearable session) and Qualisys (risk factors for ACL injuries session). We would like to thank all of them very much.

Affiliated Societies

ISBS is currently affiliated with four societies: the Japanese Society of Biomechanics (JSB), European Society of Biomechanics (ESB), Arab Society of Biomechanics in Sports (ArabSBS), (ISB), and Société de Biomécanique (SB). This is in addition to our continued association with the International Society of Biomechanics. These affiliations are an exciting opportunity for all and we look forward to working closely with these led societies to grow the discipline of sports biomechanics.

I would like to highlight that, as part of our affiliations with ESB, SB, ArabSBS and JSB, members of ISBS can attend their conferences with the same registration fees as their own members. Check out their websites for further information on their annual conferences and deadlines for submitting your abstracts.

National Biomechanics Day 2022

In 2022, National Biomechanics Day (NBD) was held on April 06. ISBS is a proud sponsor of NBD. If you were hosting an event, please send through details and images of your event to me via email at floren.colloud@ensam.eu for inclusion in our November ISBS newsletter.

Sports Biomechanics Twitter Account

Sports Biomechanics, the official journal of ISBS, has a very active Twitter account (@sportsbiomech) animated by our VP Publications, Dr Stuart McErlain-Naylor from Loughborough University, UK. All new research articles are posted as they are published.

I warmly encourage you all to also follow the Sports Biomechanics and ISBS (@ISBSOFFICIAL) Twitter accounts, if you have not already, like, retweet and comment on the research being posted. The dissemination of our activities to the wider community is a key part of our society ethos to bridge the gap between research and practice, so taking few minutes to browse and share help to achieve this goal and grow our discipline further.
New Student Director for 2022-2024

My (Stephanie) 2-year term will come to an end this summer at the ISBS conference. It has been a pleasure representing the students in the board of directors and I have truly enjoyed the online social events we have been able to support in this time. Although I will no longer be on the front line, I am thankful for the continuing efforts of our executive board, board of directors, and various sub committees that are supporting and progressing our society. We are now looking to elect (i.e. membership vote) a new student director to take my place and bring fresh new ideas into our society!

Student Portraits: Panel Insights

The ISBS mid-year symposium brought us a student-specific session with unique stories and perspectives about the challenges students can face (think: mental health, the choices you make during your student journey, finding your work-life balance, and tackling the ever-growing mountain of upskilling “to-dos”). We heard some great advice from our speakers and encourage the membership to watch this session if you missed it (available @ isbs.org).

Liverpool 2022 Conference

We are optimistically looking forward to the conference in Liverpool in July. The conference should be the first opportunity to re/connect in-person with some of our ISBS network. For some students, this will be the first ISBS conference attended (for others, the first in a while!). In general, be sure to:

1. **Sign in for the student social event**: These are always a highlight of the conference, and you meet students from around the world and expand your network of friends.
2. **Participate in the student mentor program** (p. 19): You can network, talk science, talk lifestyle, or seek advice from a Professional member of ISBS (online option too)!
3. **Enjoy the opportunity**: It’s not often you get as many welcoming experts in one place.
4. **Student Grants**: Consider applying for the Student Research Grant to support your student project, and the Travel Grant to support your travel to Liverpool!

We know it’s hard to know what to expect going into your first ISBS conference or presentation. We aim to provide students with some tips and tricks before the event, so if you have questions, please let us know and we will include them! **Contact us here:**

---

**ISBS Student Section**

**Stephanie Moore & Evan Crotty**

**ISBS Student Directors**

**New Student Director for 2022-2024**

My (Stephanie) 2-year term will come to an end this summer at the ISBS conference. It has been a pleasure representing the students in the board of directors and I have truly enjoyed the online social events we have been able to support in this time. Although I will no longer be on the front line, I am thankful for the continuing efforts of our executive board, board of directors, and various sub committees that are supporting and progressing our society. We are now looking to elect (i.e. membership vote) a new student director to take my place and bring fresh new ideas into our society!

**Student Portraits: Panel Insights**

The ISBS mid-year symposium brought us a student-specific session with unique stories and perspectives about the challenges students can face (think: mental health, the choices you make during your student journey, finding your work-life balance, and tackling the ever-growing mountain of upskilling “to-dos”). We heard some great advice from our speakers and encourage the membership to watch this session if you missed it (available @ isbs.org).

**Liverpool 2022 Conference**

We are optimistically looking forward to the conference in Liverpool in July. The conference should be the first opportunity to re/connect in-person with some of our ISBS network. For some students, this will be the first ISBS conference attended (for others, the first in a while!). In general, be sure to:

1. **Sign in for the student social event**: These are always a highlight of the conference, and you meet students from around the world and expand your network of friends.
2. **Participate in the student mentor program** (p. 19): You can network, talk science, talk lifestyle, or seek advice from a Professional member of ISBS (online option too)!
3. **Enjoy the opportunity**: It’s not often you get as many welcoming experts in one place.
4. **Student Grants**: Consider applying for the **Student Research Grant** to support your student project, and the **Travel Grant** to support your travel to Liverpool!

We know it’s hard to know what to expect going into your first ISBS conference or presentation. We aim to provide students with some tips and tricks before the event, so if you have questions, please let us know and we will include them! **Contact us here:**

---
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 November newsletters from 2013-2021).

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. For the first time, student members will be able to participate either in person at the conference (option 1), or online (option 2) if unable to attend the conference.

1. Mentees and mentors will meet at ISBS2022 during the Student Mentor Breakfast on July 20. To participate, please indicate during conference registration that you would like to participate as a mentee.

2. Mentees and mentors will meet online at a time suitable to both. If you would like to be part of the programme, please send an email to vpresearchprojects@isbs.org.

The deadline for registering for the mentor programme is June 1 2022.

Priority will be give to student members that are new to the programme but we will endeavour to include all interested students.
Recent analysis of the ISBS members stats in 2021 revealed the following breakdown for gender identity:

- **Student Membership** – 63% male, 37% female
- **Professional Membership** – 68% male, 32% female
- **Fellow of ISBS** – 75% male, 25% female
- **TOTAL membership** – 67% male, 33% female

Further analysis of the location of female members have highlighted which countries and regions have the most number of female members for student and professional members (see graph below). In order to make ISBS a truly international society, efforts should and will be made to increase membership from the less represented countries in the future with initiatives such as the Mid Year Symposium, ISBS circles, and Student Mentor Programme.

At ISBS2022, a specific session will be dedicated to Advancing Women in Sports Biomechanics on **July 20**. More details to come and all are welcome!

Congratulations to ISBS member Karine Stoelben from the Federal University of Pampa in Brazil for receiving a National Biomechanics Day grant. Her grant proposal was entitled: “Biomechanics in action: from the school to the University.” We look forward to seeing your initiative on National Biomechanics Day!
ISBS Women’s Circle and Mothers Cafe

ISBS women’s circles have been an opportunity for women in sports biomechanics at various stages in their careers to network and share experiences. Each circle is made up of 5-6 women who self-organise to meet on a regular basis. ISBS currently has 12 active circles.

An end-of-year online trivia was organised with some members getting up at 3am to participate! It was a great way to finish off the first circles year!

If you would like to join a circle, send your details and career stage to vpresearch-projects@isbs.org.

Want to stay in touch and share ideas? All members are welcome to join the Women in Sport Biomechanics channel within the ISBS Slack group.

ISBS Mothers Cafe

This regular meet up is an informal way for current and future mothers to meet, support, and share stories. There is also a separate slack channel for the Mothers Café.

During the Mid Year Symposium 2022, Veni Kong and Liz Bradshaw shared their journeys as mothers in biomechanics. We thank them for being so open about the challenges they have faced and shared some tips and suggestions for other mothers in the group.

We are pleased that during ISBS2022, a live ISBS Mothers Café will be held on July 21. All are welcome!
ISBS Teaching Initiative

The ISBS Teaching Initiative began this year and has so far included:

- an informal discussion session (experiences and challenges in teaching and assessing biomechanics)
- a Mid Year Symposium session by Dr Sarah Breen on international perspectives of course delivery, design, and materials for undergraduate introductory biomechanics instruction
- a webinar focused on preparations for the National Biomechanics Day

The schedule continues with another informal discussion planned for 19-22 April 2022 (time zone dependent, two sessions to choose from).

If you would like to take part in these activities or to be informed of future activities and have not already expressed an interest then please don’t hesitate to contact one of us.

Dr Alexandra Atack, Dr Sarah Breen, Dr Stuart McErlain-Naylor and Dr Crystal Kean

Problem-Based Learning Scenarios

As part of the 2021 ISBS annual conference, a team of academics (namely Dr Sarah Breen, Dr ChengTu Hsieh, Dr Duane Knudson and Dr Mellissa Mache) delivered two interactive workshops centred around ‘Teaching Sports Biomechanics Using Problem-Based Learning’. As part of these workshops, attendees were given the opportunity to submit their problem-based learning scenarios for peer review prior to publication in the ISBS repository.

Following this peer review process, the following 8 scenarios are now available online:

- Determining influence of landing technique in ground reaction forces
  Rodrigo Rico Bini
- How to win a tug of war competition
  Eddie Bradley
- Assessment of a 100 m sprint performance
  Eddie Bradley
- A netball / basketball shooting problem for projectile motion
  Stuart A. McErlain-Naylor
- Sit-to-stand: a needs analysis in a care home setting
  Sandy Willmott
- Designing an improved multi-joint finger for a humanoid robot
  Sandy Willmott
- To tape or not to tape a previously sprained ankle?
  Jeff Barfield
- Comparison of methods for calculating vertical jump height in sport
  Katherine A J Daniels
ISBS Officers & Directors

ISBS Officers

President: Randall Jensen
Past President: Duane Knudson
Secretary-General: Peter Sinclair
Treasurer: Marcus Lee

Vice President (Awards): Neil Bezodis
Vice President (Research & Projects): Ina Janssen
Vice President (Conferences & Meetings): Tim Exell
Vice President (Public Relations): Floren Colloud
Vice President (Publications): Stuart McErlain-Naylor

secretary-general@isbs.org
treasurer@isbs.org
vpawards@isbs.org
vpresearch-projects@isbs.org
vpconferences@isbs.org
vppublic-relations@isbs.org
vppublications@isbs.org
ISBS Officers & Directors

ISBS Directors

2020-2022

Alexandra Atack
St Mary's University, UK

Ian Bezodis
Cardiff Metropolitan University, UK

Stephanie Moore
University of Salzburg, Austria
(Student Representative)

2021-2023

Steffi Colyer
University of Bath, UK

Evan Crotty
University of Limerick, Ireland
(Student Director)

Mark King
Loughborough University, UK

Kristof Kipp
Marquette University, UK

Johannes Funken
German Sport University, Germany

Wen-Tzu Tang
National Taiwan Sport University, Taiwan

Gillian Weir
New York Yankees, USA

Drew Harrison
University of Limerick, Ireland

Sven Willwacher
German Sport University, Germany

Hiro Hobara
National Institute of Advanced Industrial Science and technology, Japan

Gretchen Oliver
Auburn University, USA

Hannah Wyatt
Auckland University of Technology, New Zealand

Kelly Sheerin
Auckland University of Technology, New Zealand

Elaine Tor
Victorian Institute of Sport, Australia

(Student Representative)
Thank you to our Society Sponsors: