



ISBS 2018

Auckland, New Zealand

10-14 September

COUNTDOWN — 36 days before the opening ceremony

21 days before final registration closes

Key facts:

- 370 (79% international) delegates from 30 countries
- Visa's are required for many countries so please check your visa requirements!

Key dates

26th August 2018

- Monday workshop registration closes
- Final conference registration closes (due to event catering requirements).

10 September 2018

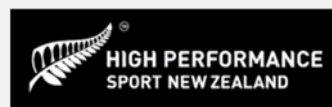
- **Please upload your presentation by sending to ISBS2018@aut.ac.nz, or before 14:40 on Monday 10th September in person at the conference with Dr Jono Neville.** We encourage uploading your presentations early so they can be checked by our team to avoid any software issues (e.g. videos not playing correctly). Then you can relax and enjoy the conference.

10 –14th September 2018

- ISBS 2018 Auckland conference

IMPORTANT NOTICE: This conference is an eco-friendly sustainable conference. Therefore all documents (programme, presentation schedule, papers, proceedings etc.) are **ELECTRONIC ONLY**. Please bring your digital device (e.g. phone, ipad, laptop etc.) so you can read the conference documents, and receive messages during the conference.

HOSTS:



MONDAY 10th WORKSHOP PROGRAMME UPDATE

Workshop: Engaging your audience during your ISBS presentation

This workshop aims to provide delegates with tips and feedback as to how best present their research for the ISBS 2018 congress. This interactive workshop will help delegates to learn how to distill and communicate complex ideas, structure your narrative and how to best visualize your data. Participants are encouraged to bring their ISBS presentations to practice and receive constructive feedback.

KEYNOTE UPDATE—Mounir Zok



Born and raised in Beirut, Mounir is the co-founder and Managing Director of N3XT Sports Inc. A world citizen who is passionate about sports, technology, entrepreneurship, and innovation, he has 15+ years' experience in various positions in the sports industry, the latest of which was Director of Technology and Innovation at the US Olympic Committee; he also sits on the working board of Women in Sports Tech. Mounir holds a PhD in Bioengineering, is fluent in 4 languages, and has recently moved with his wife and 2 kids from the Silicon Valley to Barcelona. Zok's expertise areas of wearable technology, smart textiles and fabric, Internet of Things (IoT), artificial intelligence and cognitive computing are of interest to sports biomechanists in their goal of improving sports performance. Zok's keynote will stimulate biomechanists to think of new ways to help improve athlete's results with technology.

CONFERENCE PRESENTATION TEMPLATES

To assist you with the size and some formatting suggestions, there are templates on the website for:

1. Oral poster pitch (1 minute).
2. Oral digital poster (portrait A0).
3. Oral podium (10 minutes)

CONFERENCE PROGRAMME AND SCHEDULE UPDATE AND LINKS

The conference programme and schedule is nearly finalised and updated information will be available soon:

Academic schedule: https://sprinz.aut.ac.nz/_data/assets/pdf_file/0009/175842/ISBS-2018-conference-schedule.pdf

Programme: https://sprinz.aut.ac.nz/_data/assets/pdf_file/0005/176405/ISBS-2018-Auckland-Conference-Programme-050618.pdf

Social programme: <https://sprinz.aut.ac.nz/isbs-2018/social-programme>

INTERESTING FACT: There were 105 academics on the ISBS 2018 Scientific Review Panel. Each paper was peer reviewed by at least two of the panel academics, and also reviewed by at least one of the Conference Chairs.



Dustin Oranchuk is an ISBS 2018 Conference Assistant, and is the coordinator of the student session co-chairs. An aim of the conference is to give students experience at co-chairing a session, to learn the skills of introducing speakers, keeping speakers to time, posing questions to speakers, and coordinating questions from delegates to the speaker. Contact Dustin.oranchuk@aut.ac.nz if you would like to be a co-chair. See him at the Kiwiana photo booth to have a photo in the Kiwi hat!

Register for the 36th Conference of the International Society of Biomechanics in Sports and join us in Auckland in September for an exciting programme. Details about fees, deadlines and what the registration includes can be found on the website isbs2018.com

How to register? Become an ISBS Member if you are not already: <https://isbs.org/membership>.

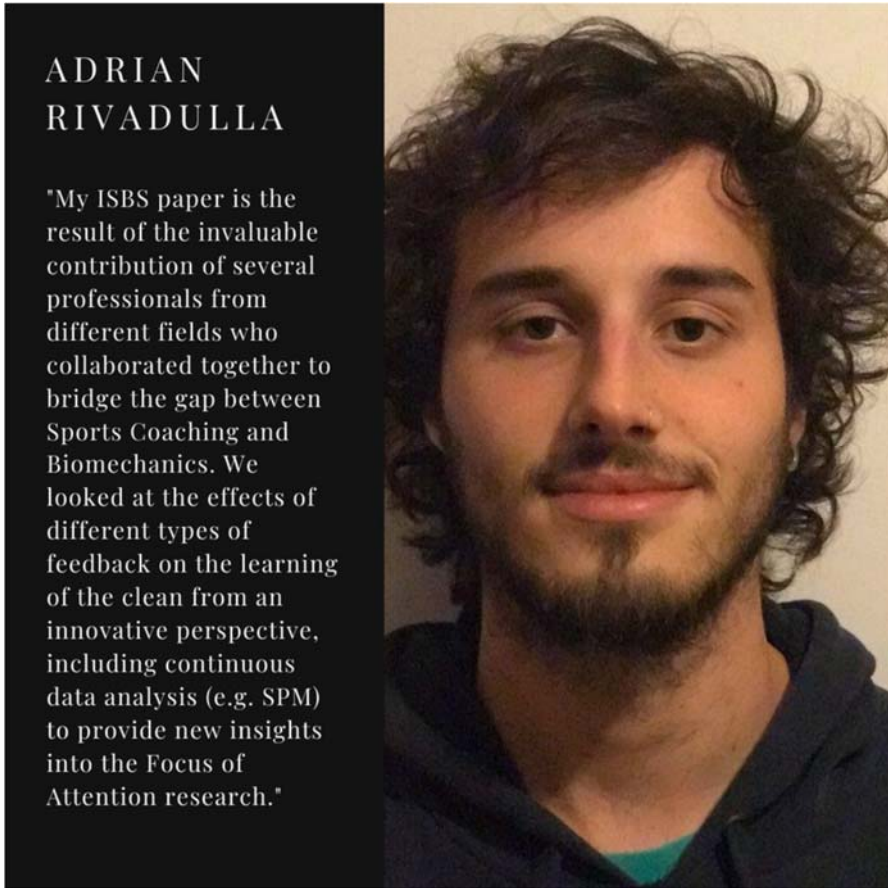
Any questions, contact ISBS Secretary Enora Le Flao at isbs2018@aut.ac.nz

PAPER AUTHOR PROFILE—ADRIAN RIVADULLA

Why and how did you choose your research area? What about it most interests you? My passion for understanding human motion prompted me to choose Biomechanics as the field where I would like to develop my career. Although initially from a Motor Control perspective, my interests have shifted to a more clinical application of Biomechanics through the past years.

What parts of your research do you enjoy most and why? One aspect of a research career I thrive on is the opportunity it gives me to constantly learn new things. I really enjoy planning a new study, that moment when you have identified a gap in the literature and you have the chance to bring a different approach to an unsolved question within the topic. Also, I find it very satisfying and rewarding to develop code for data processing and data analysis.

Could you briefly describe your career journey so far? I obtained my MSc and BSc degrees at the University of A Coruna in Galicia (Spain) where I'm from originally. After being awarded an Erasmus+ scholarship, I moved to the UK to complete a six month internship in the Department for Health at the University of Bath. Whilst there, Dr. Ezio Preatoni and I were awarded an ISBS Internship Grant 2017. This allowed me to put my previous learning into practice by conducting a project on Motor Learning and Weightlifting. It was a great boost to the development of my skills and we are now starting to deliver some of our findings. I then joined the Sports Surgery Clinic (Dublin, IE) where I currently work as Biomechanics Research Assistant.



ADRIAN RIVADULLA

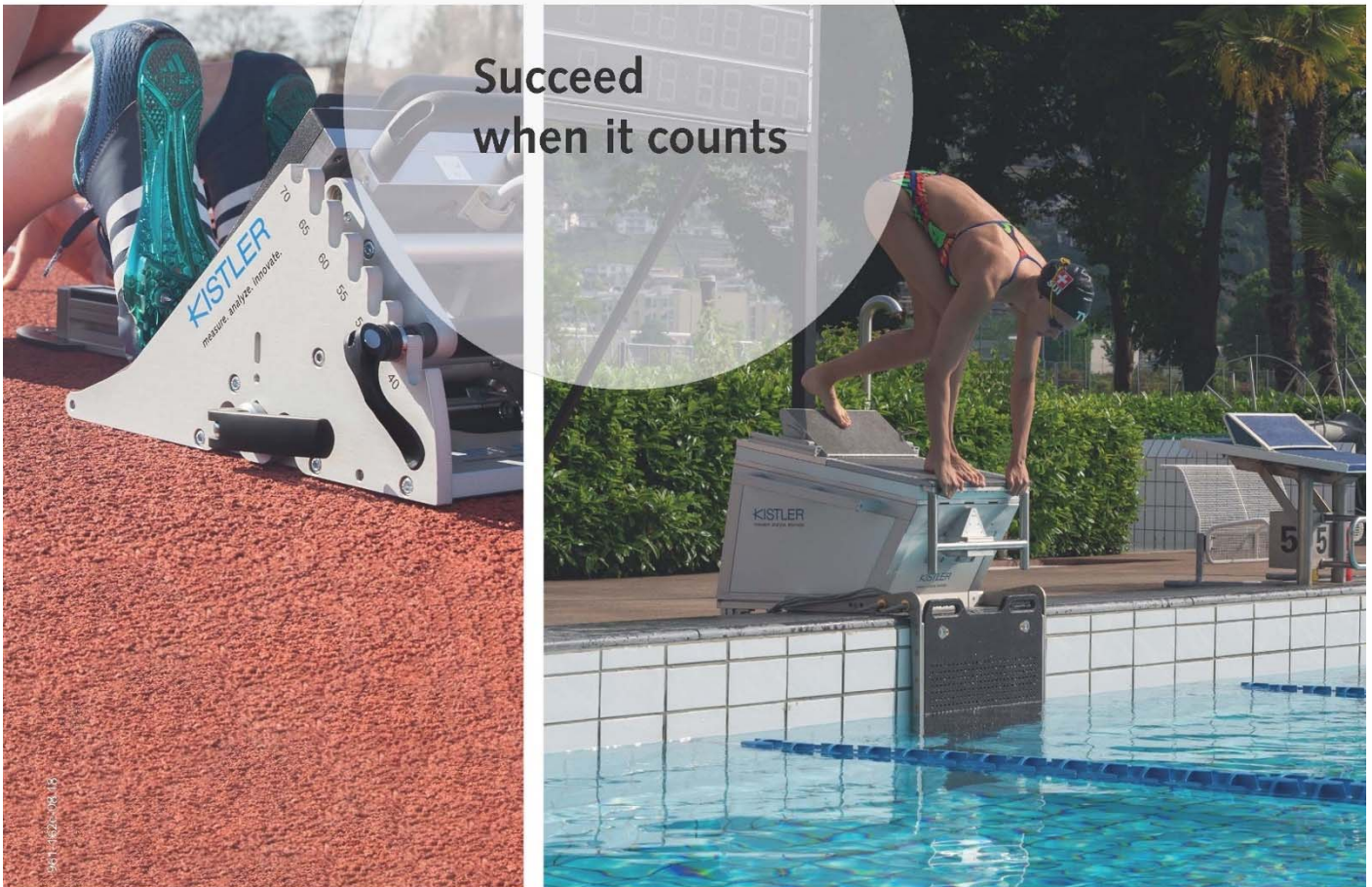
"My ISBS paper is the result of the invaluable contribution of several professionals from different fields who collaborated together to bridge the gap between Sports Coaching and Biomechanics. We looked at the effects of different types of feedback on the learning of the clean from an innovative perspective, including continuous data analysis (e.g. SPM) to provide new insights into the Focus of Attention research."

What excites you about your paper "THE EFFECTS OF FOCUS OF ATTENTION ON THE LEARNING OF THE CLEAN WEIGHTLIFTING TECHNIQUE IN NOVICES." This paper is the result of the invaluable contribution of several professionals from different fields who collaborated together to bridge the gap between Sports Coaching and Biomechanics. We looked at the effects of different types of feedback on the learning of the clean from an innovative perspective, including continuous data analysis (e.g. SPM) to provide new insights into the Focus of Attention research.

What do you hope people will take away from your ISBS presentation? This study attempted to address a few different questions in the current literature, focusing our interest on how the execution of a complex task was completed over the learning process. Our participants improved regardless of the group they were in. This seems to reinforce that at the very early stages of learning, there is no evidence to say that either FOA feedback is more effective than the other. Different types of feedback could be used instead to address different aspects of the training and performance of motor skills.



Katharina Buechli will be at the Kistler GOLD INDUSTRY PARTNER booth.
For information on Kistler products email Katharina.Buechli@kistler.com.



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PAPER AUTHOR PROFILE—INA JANSSEN

Why and how did you choose your research area? What about it most interests you? As part of my daily work, I provide sports science support to the National coaches at the Netherlands Olympic Training Centre. The National BMX program trains at the centre and the last few years we have conducted various testing to try and identify important factors related to BMX performance and how best to optimise that. BMX is a very dynamic, interesting but also challenging sport to support with sports science. There is very little literature on the BMX start and we are trying to contribute to that body of knowledge as we believe this is the most important aspect of the race. I believe there is still a lot to learn and gain from really understanding how BMX athletes produce a successful start.

What parts of your research do you enjoy most and why? This is very applied work and you can immediately see how it impacts performance.

Could you briefly describe your career journey so far? After my PhD at the Australian Institute of Sport, I started working for the Netherlands Olympic Committee. I have been very fortunate to conduct all of my academic research in elite sport as my Master's thesis was in elite swimming turns and my PhD focused on elite volleyball players and to be able to continue this in my daily work.

What excites you about your paper "ELITE BMX CYCLISTS USE INDIVIDUAL STRATEGIES FOR A SUCCESSFUL START?" As far as we know, this is the most amount of kinematic data on the BMX start and we have been able to find some interesting results. This is a very small stepping stone but in the right direction to fully understand the BMX start.

What do you hope people will take away from your ISBS presentation? I hope that this will start the conversation about what a successful start is and how to optimise it, acknowledging between-athlete differences in technique.



INA JANSSEN

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HUMANTRAK MOVEMENT ANALYSIS SYSTEM

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PAPER AUTHOR PROFILE—CERI DISS

Why and how did you choose your research area? What about it most interests you? I chose my area of research mainly due to my own involvement in running and therefore found the biomechanics which underpin running gait fascinating. I became interested in age based running mechanics when I noticed that older athletes did not seem to move in the same way as sedentary individuals.

What parts of your research do you enjoy most and why? I really enjoy data collection and analysis. Going through the process, I potentially can discover something new and exciting.

Could you briefly describe your career journey so far? I love working as a Biomechanist in the capacity of a researcher and lecturer. My progression has been slightly slow due to family commitments and working part-time but I never wanted to give up. Working as an academic is a luxury.

What excites you about your paper? The most exciting aspects about this paper is the design is a longitudinal study (over a seven year period) and showcasing a novel approach to examining the coordination between multiple joints.

What do you hope people will take away from your ISBS presentation? I hope that they will be able to understand the importance of adopting a longitudinal approach when researching ageing and apply the novel approach of examining coordination to their own data sets.

CERI
DISS

"The most exciting aspects about this paper is the design is a longitudinal study (over a seven year period) showcasing a novel approach to examining the coordination between multiple joints."



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PAPER AUTHOR PROFILE—JAN-FRIEDER HARMSSEN

Why and how did you choose your research area? What about it most interests you?

In general, I would describe my research area as skeletal muscle physiology and learning about the adaptability and plasticity of skeletal muscle even with high age fascinates me. It is great to see that in the clinical setting exercise interventions targeting adaptations of skeletal muscle are increasingly used to improve quality of life for all types of patients. Investigating the potential of these interventions in orthopedics to avoid surgery or to accelerate the rehabilitation after surgery by improving muscle function will be exciting in the future.



JAN-FRIEDER
HARMSSEN

"I would like my presentation to encourage other researchers to also investigate the potential recovery-enhancement properties of IPC especially in leg muscles as this would definitely be more relevant for most sports."

What parts of your research do you enjoy most and why?

I enjoy working with other researchers and students in our research area who are passionate and to share ideas and thoughts. Sometimes I get lost in reading heaps of papers over the day when studying a new method or discovering a potential mechanism which could enhance our understanding of a current phenomenon in skeletal muscle physiology. To turn a theoretical idea into practice together with colleagues is perhaps the most exciting part of research that I enjoy independent of the success of the theoretical idea. I also appreciate working with patients and experience firsthand the problems they face because of their pathology.

Could you briefly describe your career journey so far?

In 2015, I earned my Bachelor of Science in Sport and Performance at the German Sport University Cologne. Bachelor degree B. Sc. "Sport and Performance" at the German Sport University Cologne in 2015. For my undergraduate thesis, I conducted a study looking at an electrical stimulation protocol of the calf

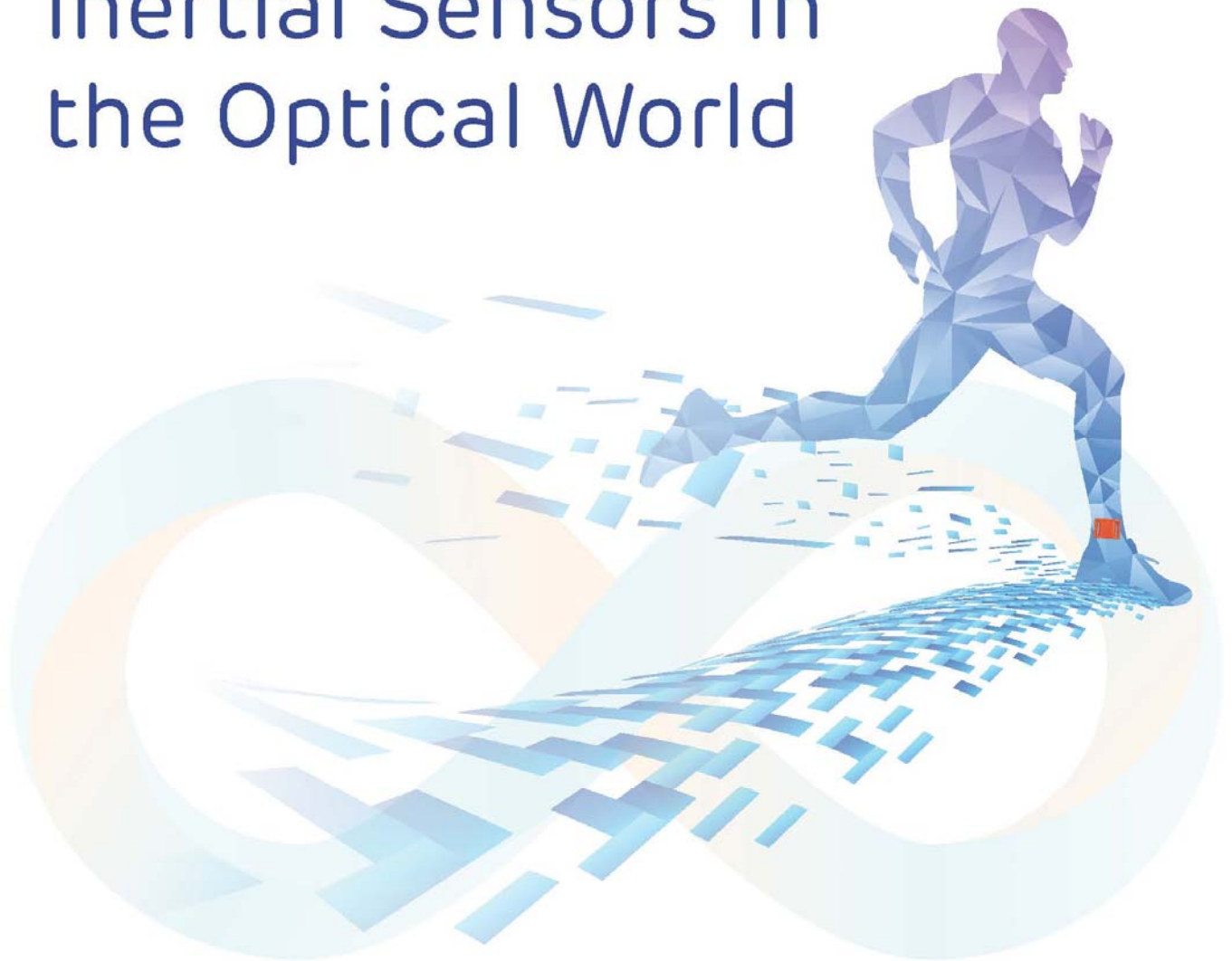
muscles to lower the frequency of muscle cramps in cramp-prone patients which prompted me to continue studying skeletal muscle physiology. I started the Master program in Exercise Science & Coaching. In 2016, I was involved in a research project of the University Hospital Duesseldorf which led to the paper I will present at ISBS 2018. Afterwards, I was convinced to keep studying skeletal muscle physiology. I started the Master program M. Sc. "Exercise Science & Coaching" at the same university in 2016. In the same year, I got involved in a research project of the University Hospital Duesseldorf. Our first study led to the paper I will discuss at the ISBS 2018. I'm currently working with Professor Ken Nosaka at the Edith Cowan University in Perth as a visiting researcher to conduct a study for my Master thesis.

What excites you about your paper? The long-term idea of our group is to investigate the potential benefits of ischemic preconditioning (IPC) prior to surgery of skeletal muscles that will be occluded during surgery as e.g. total knee arthroplasty. In this study, we first wanted to test whether healthy men have some kind of benefit when performing IPC prior to eccentric exercise of the elbow flexors. We could show that IPC blunted the muscle damage response and we hypothesize that this effect was mostly due to reduced oxidative stress. Our findings could indicate that occluding muscles prior to short and intense loading changes their oxidative state bringing the muscles in a better position to deal with the oxidative stress during the subsequent loading.

What do you hope people will take away from your ISBS presentation? I hope people will remember IPC to be rather a recovery- instead of a performance-enhancement tool as research is very contradictory in terms of the latter. I would like to emphasise our study is one of the first studies looking at the potential recovery-enhancement effects of IPC and therefore more controlled trials are needed in the future to confirm our findings. I would like my presentation to encourage other researchers to also investigate the potential recovery-enhancement properties of IPC especially in leg muscles as this would definitely be more relevant for most sports.



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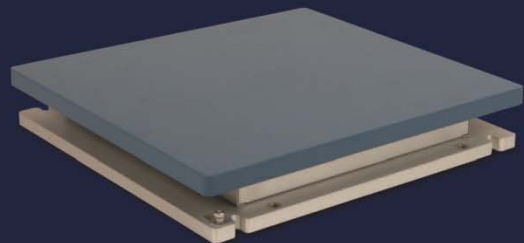


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PAPER AUTHOR PROFILE—JODIE WILLS

Why and how did you choose your research area? What about it most interests you?

My studies to date have been heavily focussed towards applied sports science and professional sport. Biomechanics was always a favoured research area and I also had a keen interest in research applications to the military population. My PhD research focuses on biomechanical and neuromuscular adaptations to a targeted physical training programs for military load carriage which combines these two interests perfectly!

What parts of your research do you enjoy most and why? Personally, being involved with all the differing elements of the research is a highlight for me. I really enjoy actively delivering the strength and conditioning training intervention and having the first-hand contact with research participants. Similarly, data collection and the technical elements of the research project are great as you undertake various testing and analysis methods.

Could you briefly describe your career journey so far? In 2014, I graduated from Nottingham Trent University with a BSc (Hons) in Sport and Exercise Science. I completed a MRes Sports Science degree which involved research via an international collaboration between Nottingham Trent University and the University of Valencia. Whilst working as a lab technician, I sought PhD opportunities within an applied sports science field of research. After applying and successfully attaining an international scholarship through Macquarie University, I moved to Sydney in 2017 to begin my PhD with Dr Tim Doyle.

What excites you about your paper “A TARGETED LOAD-CARRIAGE TRAINING PROGRAM ELICITS POSITIVE ADAPTATIONS AFTER 10-WEEKS?” This is the first evidence-based physical training program targeted specifically towards a load carriage task. What is particularly interesting is that this intervention is one of the shortest compared to other literature to have elicited positive neuromuscular adaptations.

What do you hope people will take away from your ISBS presentation? That an evidence-based resistance training program can induce positive physical performance improvements and physiological adaptations in males. Such a program could positively impact Military organisation as it has been identified that soldiers could be effectively trained over a decreased duration to facilitate improvements in overall task capacity.



JODIE
WILLS

“This research is first evidence-based physical training program targeted specifically towards a load carriage task. What is particularly interesting is that this intervention is one of the shortest compared to other literature to have elicited positive neuromuscular adaptations.”

INDUSTRY PARTNER PLAYING FIELD AEROBE CODAMOTION SYSTEM



Aerobe will be demonstrating their easy to use, marker-less Codamotion system to track the knee and ankle joints during a series of jump activities.

For further information contact:

- Shrey (shrey@aerobe.com)
- Anirudh (anirudh@aerobe.com)
- Roman (roman.brunner@codamotion.com)

PAPER AUTHOR PROFILE—JONATHAN HOLMES

Why and how did you choose your research area? What about it most interests you? I chose my research area in conjunction with my supervisor as I used to be an international sprinter with an enormous interest in athletics and the effects of sports science on sprinting. The sprint start in athletics is a crucial aspect in competition races, which can have significant influence in determining the outcome of the race especially in shorter sprint events. With the International Association of Athletics Federation (IAAF), rule changes for the sprint start, especially if an athlete reacts to the start signal in less than 100 ms leads to automatic disqualification. Small errors in detecting false starts or response times (RT) could have a significant impact on the outcome of a race as this could result in incorrect disqualification or allow an athlete to gain an unfair advantage over other competitors. The opportunity to focus on mapping responses in the sprint start and focus on false start detection systems with the aim to optimise event and response time detection in sprint athletes was exciting to me.

What parts of your research do you enjoy most and why? I enjoy the practical side of research the most and having the opportunity to test sprint athletes and analysing the data. The journey from starting data collection until analysing it is slow and hard work however to be given the opportunity to present the findings for a conference like this is why all the hard work is worth it.

Could you briefly describe your career journey so far? I graduated with my undergraduate degree in Sports Performance at Leeds Metropolitan University in 2011. I was an international sprint athlete and did some athletics coaching before starting my PhD Mapping responses in the sprint start in athletics at the University of Limerick in 2016.

What excites you about your paper “A METHOD COMPARISON STUDY OF ACCELEROMETER BASED BLOCK RESPONSE TIMES IN SPRINTING?” I am excited about the results of the paper from data gathered simultaneously from the IAAF accredited false start detection system (IAAF RT) and accelerometer system determined RT by two methods; A visual inspection with an incline in the accelerometer signal consistent with a significant movement (Visual RT). Secondly, a threshold method where $3 \times SD$ of the accelerometer variance added to the mean accelerometer signal (Rail 3SD) RT. The results of the paper indicate the visual detection method for RT prominently detected RT prior to the IAAF RT. The Rail 3SD RT method provided similar RT to the IAAF RT. The Rail 3SD RT method could provide a lab-based system that produces similar RT to the IAAF RT thereby providing the opportunity to explore event detection. The IAAF-approved system may also introduce delays in the detection of block RT due to RT thresholds leading to late detection of RT and event detection, indicated by the results of Visual RT.

What do you hope people will take away from your ISBS presentation? I hope people will appraise the current false start detection systems and the methods they use to determine RT in athletics. To consider the possibility that the method of current event detection could be improved. Although the Visual RT method in this paper is impractical in competition, further research is required to create an algorithm that can replicate the results of the Visual RT method on a real-time basis. The Visual RT is advantageous over the IAAF RT system used in this paper, as the Visual RT are not biased by variations in the gender, strength or age of athletes and does not require a threshold method.

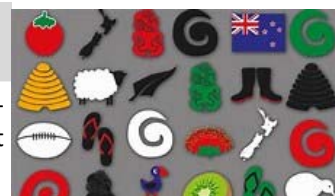


JONATHAN HOLMES

"I chose my research area in conjunction with my supervisor as I used to be an international sprinter with an enormous interest in athletics and the effects of sports science on sprinting. The opportunity to focus on mapping responses in the sprint start and focus on false start detection systems with the aim to optimise event and response time detection in sprint athletes was exciting to me."

POP-UP-SHOP—KIWIANA SOUVENIERS

We are fortunate to have Benny Li from SINONZ Company Limited providing us with a pop-up-store of Kiwiana items throughout the conference. The main store is on 75 Queen Street just down from the conference venue.



PAPER AUTHOR PROFILE—MEAGHAN HARRIS



MEAGHAN HARRIS

"I'm quite a social person so I love being out in the community and working with a variety of athletes and key personnel. Through this engagement, I enjoy connecting with people and providing education about injury risk and how research can assist in this space. I enjoy being able to provide evidence to coaches/and support staff to assist with the decision making processes involved in managing athletes excites me."

Why and how did you choose your research area? What about it most interests you? I knew I wanted to pursue research in the area of injuries as I previously worked in the field of Workers Compensation. I was fortunate enough that my Honours Supervisor Dr Suzi Edwards had a project running with the Basketball Australia Development Camp and I was able to acquire and analyse the data obtained from this time period. Jump-landing mechanics and development of patellar tendinopathy interests me as there is conflicting evidence/research as to key kinematics and kinetics associated with the development of this injury.

What parts of your research do you enjoy most and why? I'm quite a social person so I love being out in the community and working with a variety of athletes and key personnel. Through this engagement, I enjoy connecting with people and providing education about injury risk and how research can assist in this space.

Could you briefly describe your career journey so far? I began my research career in January 2017 enrolling in my Honours Year (Bachelor of Exercise and Sport Science) with Dr Suzi Edwards. My time in Workers Compensation and exposure to a variety of different injuries sparked my interest to return to university to pursue a career in injury research. Following my Honours project, I enrolled in a Higher Research Degree in February 2018 as part of a National Basketball Association (NBA) grant. My current PHD research looks at characterising patellar tendon development in adolescent jumping athletes.

What excites you about your paper "JUMP-LANDING MECHANICS IN PATELLAR TENDINOPATHY IN ELITE JUNIOR BASKETBALL ATHLETES?" Being able to provide evidence to coaches/and support staff to assist with the decision making processes involved in managing athletes excites me.

What do you hope people will take away from your ISBS presentation? I hope that people take away the key message that altered landing mechanics are associated with the injury of patellar tendinopathy. As altered landing mechanics are a key modifiable risk factor for development of this injury further research and attention is warranted in this space.

JAPAN COLLABORATION WORKSHOP

Register for the new Monday Japan Collaboration workshop with Sayumi Iwamoto, Erika Ikeda, Ryu Nagahara, and Aaron Uthoff leading the discussion and suggestions for collaborative links.

Engage with Ryu about his research on running biomechanics. Engages with Sayumi on her tennis and rugby research and learn about the International Rugby Codes Research Group.



RYU NAGAHARA

"This is the first research investigating step-to-step changes in support leg joint kinetics during the acceleration phase. In this study, I could partially reveal the source of the short-term intra-individual difference in sprinting performance and ground reaction force in terms of support leg joint kinetics."

PAPER AUTHOR PROFILE—JOSH GOREHAM



JOSH GOREHAM

"The thing which interests me most is combining knowledge from other scientists, athletes, and coaches to solve a common problem. I am a firm believer that collaboration allows us to push science further by learning other perspectives and testing our theories and methods with the athletes."

Why and how did you choose your research area? What about it most interests you? My research area is in canoe kayak sprint technique. When deciding on a PhD topic I was working with Canoe Kayak Canada's National team where the High Performance director, coaches and myself would often discuss paddling techniques and how we could quantify this.

My interest in sport, biomechanics and technology allowed me to write a research proposal to Canada's Sport Science leader, Own the Podium whom funded my research. The thing which interests me most is combining knowledge from other scientists, athletes, and coaches to solve a common problem. I am a firm believer that collaboration allows us to push science further by learning other perspectives and testing our theories and methods with the athletes.

What parts of your research do

you enjoy most and why? The parts of my research I enjoy most is working with world class athletes to help them better understand their technique and ways we can help them reach their goals as elite paddlers. Getting to combine a team of scientists (i.e. the laboratory) and athletes (i.e. the daily training environment) is an exciting part of sports research.

Could you briefly describe your career journey so far? My career journey has gone in many different directions. I originally studied Geomatics Engineering in college but eventually wanted to apply my knowledge in a sport setting. I decided to complete a BSc and MSc in Kinesiology at Dalhousie University where I was also hired at the Canadian Sport Centre Atlantic as a Performance Analyst. My job allowed me to work and travel with Team Canada to various international events which gave me a new perspective of sport science and biomechanics in an applied setting. I started my PhD where I use inertial sensors and traditional motion capture methods to better understand sport technique. By gaining experience in amateur sport and having started my PhD, it helped me get a job as a sport scientist with the Kansas City Royals of Major League Baseball. I then decided to return to Canada to finish my PhD and that's where I am today.

What excites you about your paper? The thing that excites me the most about my paper is that the findings can likely be used in any sport that requires pacing, not just canoe kayak sprint. I am also excited that using a new statistical technique allows us to better understand pacing strategies in elite athletes, and that the results may help Canada win more medals in the future.

What do you hope people will take away from your ISBS presentation? I hope people not only learn about the methods I used in my paper but also that it is important to have an open mind when analysing sports biomechanics data. After doing literature searches on pacing strategies I noticed that no one else had ever used Functional Data Analysis methods to look into how one should pace themselves for successful performance. I was familiar with principal component analysis in gait-related studies, so I decided I would apply my knowledge in one area to another area, and it proved to give interesting results. I hope others take this approach in the future.

PAPER AUTHOR PROFILE—STEPHANIE BLAIR

Why and how did you choose your research area? What about it most interests you? I got into kicking research as it is one of the main research areas happening in our lab at Victoria University. We specifically chose goal-kicking as it is an under-researched area in Australia Football and we had access to different wearable technologies which allowed us to move much more into this space.

I am really interested in the applied nature of my work and how we can use wearable technology to provide individualised based assessments of technique to enhance a player's performance.

What parts of your research do you enjoy most and why? I really enjoy testing and getting to work directly with the players and coaches and I can apply my biomechanical knowledge in practical settings. As we are using IMUs to measure performance, we've can take our research out of the lab which is very exciting and enabled us to test performance across various scenarios in the field and gain a greater understanding of kicking technique in Australia Football.

Could you briefly describe your career journey so far? I started out at Liverpool John Moores University where I completed my BSc and MSc in Sports Science and Sports Biomechanics. During my Masters, I also completed an internship at Li Ning Sports Goods Company in China where I conducted instability training research. After this, I travelled to Australia to pursue a PhD with Dr Kevin Ball which is where I have spent the last three years. Alongside my PhD, I've had the opportunity to work in the coaching environment and teach Sports Biomechanics at the university is a great experience. I will now relocate back to the UK as I have recently been appointed a Performance Analyst role with the English Institute of Sport/ British Para-cycling team.



STEPHANIE BLAIR

"I really enjoy testing and getting to work directly with the players and coaches and I can apply my biomechanical knowledge in practical settings. As we are using IMUs to measure performance, we've can take our research out of the lab which is very exciting and enabled us to test performance across various scenarios in the field and gain a greater understanding of kicking technique in Australia Football."

What excites you about your paper "THE EFFECT OF ALTERING DISTANCE ON GOAL-KICKING TECHNIQUE IN AUSTRALIAN FOOTBALL". The practical implications of this research can be very important as we have achieved some pretty cool things using wearable technology and to further advance our understanding of factors which influence goal-kicking performance. Importantly, the findings of this research can then affect how we coach the skill and this knowledge can be used to objectively guide development programmes aimed at improving goal-kicking performance across all levels.

What do you hope people will take away from your ISBS presentation? That it is important to consider that technique is very individual at this level, and integrating both individual and group-based analysis can provide us with a more thorough investigation of a skilled performance.

STUDENT MENTORING PROGRAMME—TIM EXELL



I am very excited to join you all here in the wonderful city of Auckland for ISBS 2018. There are some excellent events planned for the student members of ISBS during the conference, starting with the Student Mentor Programme breakfast on Tuesday morning and student night organised by Gillian Weir and Josh McGeown on Tuesday evening. The Student Mentor Programme is now in its 7th year and has proven to be a continued success amongst our student members. This year's mentor breakfast will feature students and mentors from over 13 different countries. I encourage students that are part of the programme to make the most of the excellent opportunity to engage with some of the world's leading sports biomechanists and come well prepared to discuss your own research, applied work and career aspirations. This year's ISBS conference will also feature presentations of students' work supported by the mini-research grant and the first work supported by the internship and career development research grants, started last year. As a board, we have been working hard in recent years to develop initiatives to support both student and full members in their research and applied activities so I am really excited to see how the projects that have been supported by these have progressed.

PAPER AUTHOR PROFILE—KANE MIDDLETON

Why and how did you choose your research area? What about it most interests you? From an early age I had an interest in sport and particularly sporting performance and technique. That drew me towards an undergraduate degree in Human Movement where I was fortunate enough to have very engaging lecturers (ISBS Fellows Bruce Elliot and Jacqueline Alderson).

What parts of your research do you enjoy most and why? The most enjoyable aspect of my research is being able to inform partners and stakeholders of results. It's great to then work with them in interpreting the data and seeing the recommendations implemented to either impact performance, policy or coaching practices.

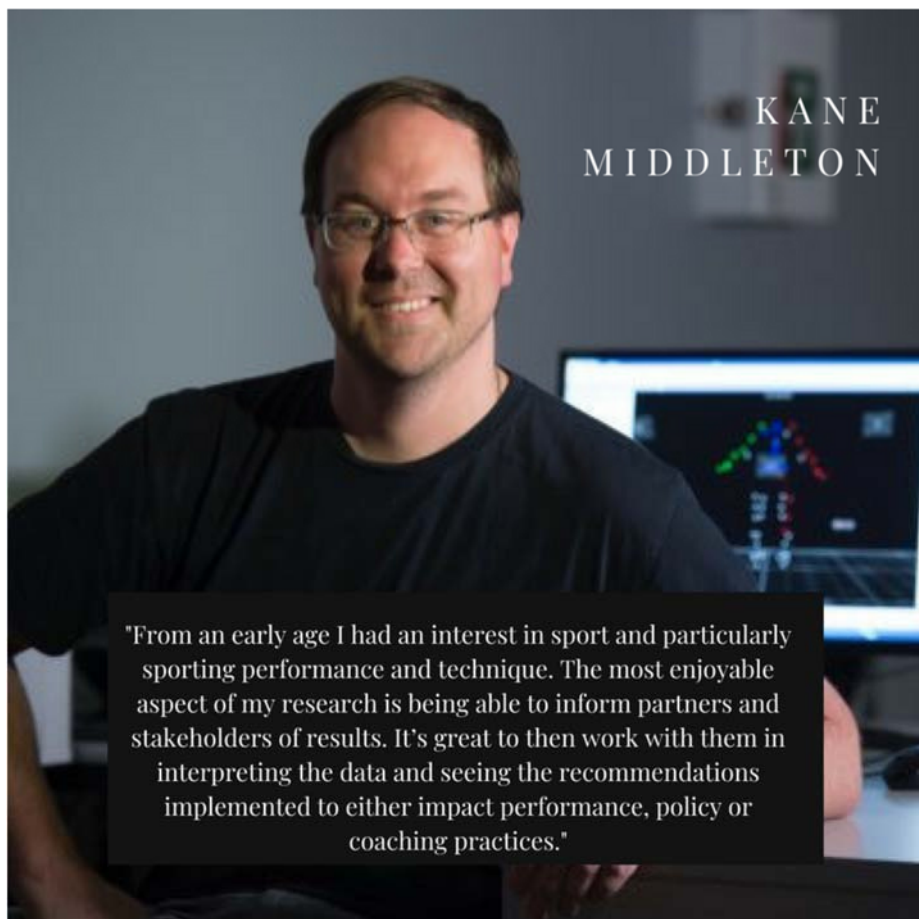
Could you briefly describe your career journey so far? After finishing my PhD, I was employed as a post-doctoral researcher at The University of Western Australia where I was helping to develop a sports performance research centre. I spent three years as a post-doctoral researcher and Lead Scientist with the University of Wollongong and the Defence Science and Technology Group on the development of physical employment standards for the Royal Australian Navy. Since 2015, I have been a Lecturer in Biomechanics at La Trobe University and a researcher within the La Trobe Sport and Exercise Medicine Research Centre (LASEM).

What excites you about your paper "THE INFLUENCE OF KNEE JOINT FLEXION-EXTENSION ON WRIST JOINT SPEED IN CRICKET FAST BOWLERS?"

Our paper uses a novel method of modelling to investigate the effects of manipulating joint kinematics in silico on outcome variables (in this case, wrist speed in cricket bowlers).

What do you hope people will take away from your ISBS presentation?

What works for one may not work for many and what works for many may not work for one.



PAPER AUTHOR PROFILE—SILVIO LORENZETTI

SILVIO
LORENZETTI

"I like to apply the laws of physics to human movement and performance. In our research, we use the Apple Watch to estimate loading and fatigue during strength training."



Why and how did you choose your research area? What about it most interests you? I like to apply the laws of physics to human movement and performance. In our research, we use the Apple Watch to estimate loading and fatigue during strength training.

What parts of your research do you enjoy most and why? Athletes, sportsmen and coaches can directly use the results of my research.

Could you briefly describe your career journey so far? After my studies in physics and astrophysics, my interest moved towards biomechanics. I also was a powerlifter and played American football. After a PhD in bone biomechanics, I founded the Sports Biomechanics group at ETH Zurich and now I lead the section performance sport at the Swiss Federal Institute of Sport Magglingen SFISM. This includes sports medicine, sports psychology, physiology in the area of strength, endurance and game sports and sports science.

What excites you about your paper? It includes widely available sensor technology in the Apple Watch and sophisticated software and has the potential to become a standard application to monitor strength training.

What do you hope people will take away from your ISBS presentation? The way we assess fatigue and the mechanical stimuli during strength training.

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ACC INJURY PREVENTION PANEL KEYNOTE PROFILE—PROFESSOR JAMES SELFE

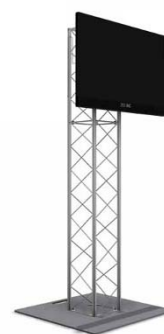


James Selfe, DSc, PhD, MA, GDPhys, FCSP is Professor of Physiotherapy, Manchester Metropolitan University and has been visiting academic Physiotherapist at Satakunta Applied University, Pori, Finland since 1995. James graduated with a distinction in his Diploma of Physiotherapy from Salford in 1984, was awarded a Masters Degree in Health Research from Lancaster University in 1995, gained his PhD in 2000 from the University of Bradford and was awarded a DSc from the University of Central Lancashire in 2015. In 2008 James was honoured by the Chartered Society of Physiotherapy by being awarded a fellowship for his outstanding contribution to musculoskeletal physiotherapy, particularly in the field of patellofemoral pain dysfunction. James has significantly contributed to the body of physiotherapy literature with 300 refereed journal and conference papers and in addition he has coauthored and contributed to 13 books including the very popular and influential *Red Flags: A guide to identifying serious pathology of the spine*. Churchill Livingstone, Elsevier (2006).

James is recognized as a world-leading researcher he appears in the top 5 researcher list with the highest number of publications in 2 domains when searched on Scopus February 2018, Patellofemoral Pain and Red Flags. James expertise in musculoskeletal physiotherapy is much sought after, he has been invited to speak at, give key-note lectures and conduct continuing professional development activities regularly across the UK, Europe, Asia and Africa.

SAMSUNG DIGITAL SCREENS

New Zealand prides itself on being a clean eco-friendly country, and therefore we are promoting a 'sustainable' conference with minimal waste. As part of this initiative we are discouraging the distribution of fliers, which all too often end up in the rubbish, and are instead encouraging the use of technology for Industry Partnership promotion, hence we are supplying industry partners with a TV screen to creatively use for these purposes. In addition we have 20 new SAMSUNG screens throughout the venue for the conference academic poster displays. The ISBS 2018 Conference delegates will not present 'physical posters', but will instead use these screens in the portrait position (note picture shows the landscape position). Outside of the poster sessions, these additional venue screens will be used by our Industry Partners.



PRIZE: the best use of the Samsung screens at the digital poster academic sessions will win a prize—so get creative and think about how you can visually present your research with video.



INDUSTRY PLAYING FIELD—PRIZES TO BE WON

To promote creative and meaningful engagement between Industry Partners and delegates, we have created the *Industry Partnership Playing Field*, which are interactive sessions scheduled for Monday and Tuesday afternoons. Industry partners have interactive games/competitions to showcase interesting and novel uses of their latest technology. Prizes will be awarded at the closing ceremony for winners of the various competitions.

AUT DIGITAL TECHNOLOGY TEAM UPDATE



Jack Mapobpan from Hospitality Services is leading the AUT Digital Technology Team. Dr Jono Neville is coordinating the delegates oral and digital poster presentation with the assistance of Dr Shelley Diewald and Farhan Tinwala. Tim Davison is the digital technology advisor and is the developer of the bot VUTA (the interactive virtual AUter).

POSTER presenters note: All ISBS posters will be presented digitally, on large 55" Samsung screens. Use A0 poster size, 841 x 1189 mm, portrait format. Templates are available on the website.

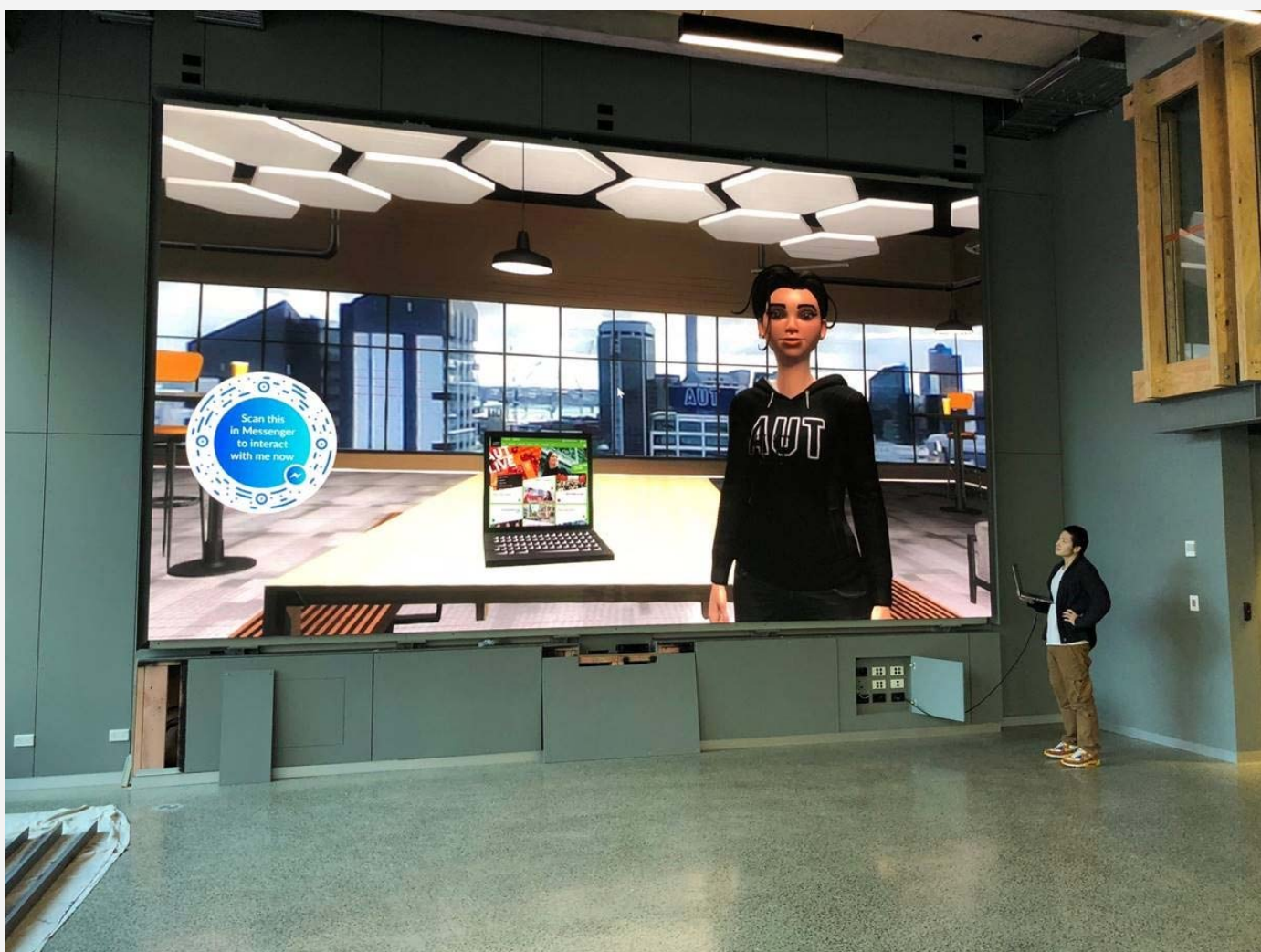


You can insert video into your posters to showcase your methods. A poster templates is available on the conference Website. For advice on technical specifications contact Dr Jono Neville <jono.neville@aut.ac.nz>. Video formats: We recommend posters are submitted using embedded video files using formats supported by Microsoft PowerPoint: avi, mp4, mov, mpg, wmv. We can not guarantee video formats outside of these will operate as intended. Embedded videos should be set to play automatically and loop continuously to enable continued display throughout the day.

Four Samsung flip screens (<https://displaysolutions.samsung.com/digital-signage/e-board/flip>) will be used for directional information and Tim's VUTA. VUTA will be the virtual MC for the Opening Kiwiana event alongside Kelly Sheerin as the in-the-flesh MC! Delegates can interact with her by scanning the code in messenger. VUTA can make announcements, answer questions, display messages, greet people, and move around. Tim has been able to customise her to do just about anything.



All presentations must be uploaded BEFORE 14:40 on Monday 10th September in person at the conference with Dr Jono Neville. Or by sending to ISBS2018@aut.ac.nz.



ISBS 2018 AUT MILLENNIUM TEACHERS DAY—MONDAY 10TH

Teachers Day at AUT Millennium. <https://bit.ly/2GCOG6r>

Dr Sarah Kate Millar <sarahkate.millar@aut.ac.nz> is Coordinator of the Teaching Biomechanics Day.



Dr Duane Knudson is a Professor in the Department of Health & Human Performance at Texas State University. He does research in biomechanics of sport and exercise, learning biomechanics, application of biomechanics in qualitative diagnosis of movement technique, and research impact in biomechanics/kinesiology.

https://www.researchgate.net/profile/Duane_Knudson

Dr Laura-Anne M Furlong is a Lecturer in Biomechanics, currently based in the School of Sport, Exercise and Health Sciences at Loughborough University, and the National Centre for Sports and Exercise Medicine. Her research focuses on understanding the links between muscle function, movement and control during walking and running activities, using a combination of non-invasive in vivo measures of muscle and tendon behaviour and structure with biomechanical analyses of movement, forces and coordination. <http://www.lboro.ac.uk/departments/ssehs/staff/laura-anne-furlong/>

Dr. Kim Hébert-Losier is a Senior Lecturer in Applied Biomechanics and Injury Prevention at the University of Waikato. Kim is an experienced researcher in human movement, muscle function, 3D motion analysis, and injury prevention and screening in recreational to Olympic-level athletes. His current research projects include investigating long-term consequences of anterior cruciate ligament injuries, screening and preventing injuries in badminton and netball players, exploring the effect of kinesiology tape on elite cyclists, and understanding the individualization of running patterns.

<https://www.waikato.ac.nz/homeofcycling/about-us/our-people/kim-hebert-losier>

Dr Philip Fink is Senior Lecturer in motor control and biomechanics at the School of Sport, Exercise and Nutrition at Massey University. Phil's Current research topics include: 1) Studying the relationship of learning of finger sequence patterns and the symmetry properties of those patterns. 2) Using multifractal analyses to study static balance in children with obesity, with the goal of identifying the cause of balance dysfunction. 3) Studying the biomechanics of mountain biking, particularly the sources of resistance and the effects of vibrations. And 4) Examining how beat is perceived in music.

<http://www.massey.ac.nz/massey/expertise/profile.cfm?stref=413040>



Suzie Belcher is currently working with Netball New Zealand as part of their national Injury prevention team, NetballSmart. Suzie is originally from Lincolnshire in the UK; prior to moving out to New Zealand Suzie spent 5 years as a qualified physiotherapist. There she was able to work for the government run program TASS (Talented Athletic Scholarship Scheme), helping National Athlete's gain Olympic status whilst staying in education, based out of Sheffield Hallam University, UK. Alongside completing her MSc in Sport's Injury Management and Therapy. Since being in New Zealand Suzie now 9 years qualified as a physiotherapist has been able to continue her work with international athletes from the UK and NZ, in Winter and Summer sports up to Olympic/Paralympic level. Suzie has worked mainly in the Private Sector as a Clinic Manager and Sport team Specialist, as well as with National Sports groups. Suzie has been working with her clinics as an Educational and Professional Development lead, building up workshops in advanced sports taping, massage, acupuncture use in sport and biomechanical correction of gym exercises. Suzie is also a PhD candidate at SPRINZ. Suzie will be supported in this session by Dr Chris Whatman & Chole McKenzie.



EVENTS UPDATE — AUT Hospitality Services



Selina Nihalani-Sharma, Conference & Event Co-ordinator at Hospitality Services, is coordinator of all the events, and leads the hospital services team, with the assistance of the ISBS conference assistants, to ensure that delegates experience the best conference facilities and activities that AUT has to offer.

Selina and her team have created Kiwiana Opening Reception themed areas with accompanying food. You will get to experience and taste things people from *Aotearoa* have grown up with. Look forward to the seafood station inspired by the typical Kiwi bach (holiday home) that is typically close to the beach, and the farm station inspired by the large meat and dairy exports and vegan options of the conference. Quench your thirst with a selection of Sileni wines, beer and non-alcoholic options. If you have pre-registered your dietary requirements (gluten free, dairy free, vegan, halal, vegetarian, allergies), the staff at the stations will be able to identify you by your name badge coding. We will definitely have options for you.



Paul van Niekerk, Associate Director at AUT Hospitality Services, heads up the team that will deliver the conference for the week. Hospitality Services provides the catering, AV, and event management for the conference and we look forward to a busy week, hosting the many delegates from around the world. Paul has been at AUT for 7 years and experienced considerable growth within the team to become a diverse and professional service provider to the university. We can't wait to showcase our beautiful facilities and share the warm hospitality at the ISBS Conference.



Matt Farley, Group Chef at AUT, has been a chef for over 20 years and is an alumni of the AUT School of Hospitality and Tourism. He has worked in a range of hotels and restaurants across Auckland, specialising in top end banqueting and out catering. With a strong passion for fresh and innovative cuisine and a belief in farm to plate practises, Matt endeavours to have all food made in-house by his highly trained team of chefs within the AUT Hospitality Services kitchens. Matt has enjoyed the challenge of creative a special New Zealand experience for all the ISBS Conference delegates.



Jaikrishna (Jai), Events and Catering Assistant at AUT Hospitality Services, helps to provide exceptional hospitality services to clients and their guests while ensuring the name 'AUT Hospitality Services' symbolizes professionalism and guest satisfaction. Jai is from Kerala, a small state in the southern part of India. He completed a Bachelors' degree in Hospitality and Hotel Administration then spent two years with the TAJ Group of Hotels, Resorts and Palaces in India. Jai then completed his Postgraduate Diploma in International Hospitality Management at AUT in 2018 to gain a deeper understanding of the global hospitality industry and augmented his knowledge of tourism sector in the South Pacific nations.

"The satisfaction that you get when you see the smile on your guests' faces and to receive those heartfelt thanks for the service you provided to them is rewarding. Every positive review that I get after an event motivates me to build a career in hospitality that would make me feel proud to be a part of this industry." Jai, 2018.

- Your name badge indicates you have pre-registered for a dietary requirement, and shows your AUT Millennium sessions and tour option.
- Beer options include Speights, Lion Red, Tui, Steinlager, DB Export, DB Citrus, Moa, Macs Gold.
- Non-alcoholic drinks include Coke Zero, Diet Lemonade, Macs Ginger beer, Macs Passionfruit, Orange juice, Apple juice, Sparkling water, L&P (a lemon and mineral water drink famous in New Zealand).
- Selini wine options include Chardonnay, Marlborough Sauvignon Blanc, Hawkes Bay Sauvignon Blanc, Pinot Gris, Merlot, Syrah, Pinot Noir, and sparkling wine (Brut, Rose, Pinot Gris, Sauvignon Blanc).

NOTE: There is optional themed dressing for the Friday closing MIDDLE EARTH BANQUET.

KIWIANA—what does it mean, and why is the Opening Event celebrating it?

Information adapted from: <https://www.virtualoceania.net/newzealand/culture/kiwiana/> by Lindsay Neill.

lindsay.neill@aut.ac.nz

Kiwiana is defined as items or things that are part of everyday New Zealand culture. Those items and things have come to reflect the attributes of early settler culture, the spirit of Kiwi innovation, making do and mateship. Consequently, many items of kiwiana reflect being male. More recent items of kiwiana are thought to have become iconic as a result of New Zealand's regulated economy in the first half of the twentieth century. Then, laws and tariffs encouraged local manufacture rather than imports. The result was New Zealand had less exposure to goods made overseas with a reliance on locally produced products. When the New Zealand economy was deregulated, in the latter part of the twentieth century, imported goods flooded into the country. As a result locally produced products had to compete with overseas brands. However, imported products served to generate more interest in kiwiana. Consequently, items like the Buzzy Bee became instantly recognisable and made their way into the psyche of New Zealanders. Examples of kiwiana include: black singlets, gumboots, jandals, buzzy bees, paua shells, cabbage trees, the silver fern, hei tiki and swannndri. Māori art and culture are large contributors to kiwiana's catalogue. Food products regarded as Kiwiana, include pavlova, fish and chips, Marmite, Watties tomato sauce, and a fizzy drink called L&P. During the kiwiana event you will get to participate in competitions and food sampling at Kiwi iconic locations recreated at the conference venue.



MODERN KIWIANA

Buzzy bee - A popular child's toy. When pulled, the wings turn round and make a loud clicking noise which is probably why kids love them. Like many items of Kiwiana the origins of the bee are contested. Recent research by Lindsay Neill has found that Maurice Schlesinger developed the bee from wooden balustrade off-cuts. That finding contradicts the popular belief that the bee was developed by brothers Hector and John Ramsey. For generations of New Zealanders the buzzy bee was and is an icon of the New Zealand childhood. When Prince and Princess of Wales toured New Zealand in 1983, six-month-old Prince William was given a Buzzy Bee and he delighted the world's press by playing with the toy during an official photo shoot in the grounds of Government House in Auckland. More recently, presidential candidate Hillary Clinton gave New Zealand Prime Minister, Jacinda Adhern a buzzy bee to celebrate the birth of the Prime Ministers first baby.

Frizzell art - Learn about the art work depicting the NZ famous "Four square man" and Maori tiki from Lindsay during the event.

Chocolate fish - A chocolate coated marshmellow in the shape of a fish.



THE FARM

Sheep - Today's population of sheep is down from its all-time high of 70 million in the 1980s. But New Zealanders are still seriously outnumbered by them. There are countless sheep jokes aimed at New Zealanders, especially from Australians. Ironically Australia has the largest sheep industry in the world, New Zealand comes in at 2nd place. One joke suggests that "there are 50 million sheep in New Zealand and 4 million of them think they are people".



Footrot Flats - A famous cartoon strip from Murray Ball. Set in rural New Zealand on Wal's farm in a small town called Rangipo. The main character in Footrot Flats is a dog called Dog. Other characters include Wal a gumboot and black vest clad farmer and his girlfriend Cheeky, Aunt Dolly, Pongo and Rang. Animal characters include Cecil, Charlie, Delores, Horace and Major. The cartoon appeared in newspapers right across New Zealand and other countries including Australia.



Number 8 wire - The conversion of New Zealand bush into farms created the need for a lot of fences. The preferred wire was known as No 8 gauge, but it was also put to other uses such as a replacement handle of a bucket. No 8 wire represents "Kiwi ingenuity" a quality that was born out of isolation in New Zealand's early history. Number 8 wire can be consider part of kiwiana because it reflects attributes of being Kiwi. It is about "making do" or going without. Kiwis came up with some absolute ingenious creations. A very good example in recent times for Kiwi ingenuity came from a person by the name of John Britten. He decided to build a motor bike in his backyard shed from scratch. Britten not only developed an entirely new fabrication system using space age Kevlar and carbon fibre, but designed the complete engine, making the patterns for casting himself. In the Daytona Battle of the Twins, the Britten team completely blitzed the opposition. Rider Andrew Stroud's kilometre long wheel stands left the crowd awestruck as he passed the cream of Italian and Japanese factory machines. Britten has become an icon for kiwi ingenuity.



COMPETE IN: The number 8 wire creative sculpture competition.

KIWIANA—what does it mean, and why is the Opening Event celebrating it?

THE NZ SEASIDE BACH

Tip Top ice cream - A favourite icecream brand sold in dairies (a corner store). Hokey Pokey flavour is a popular item of kiwiana.

Pavlova - A meringue type of dessert topped with cream and kiwifruit. The pavlova is a popular kiwiana dessert. Until recently its origins were contested. Australia claimed it as theirs. However recent research by Prof. Helen Leach has shown that the pavlova originated in New Zealand.

Fish and Chips - A classic fry up and traditional, Friday evening meal for many Kiwis. While deep fried food may not be the healthiest, crunchy chips and battered fish with salt, pepper and vinegar are a great combination.

Lemon and Paeroa—Otherwise known as L&P. This fizzy drink had its beginnings in Paeroa when locals discovered a fresh water spring. Using this water with some lemon juice for flavour led to the drink being bottled in 1907, by Menzies and Co. The drink became popular throughout the country and was eventually sold to Coca Cola. Although no longer sourced or made in Paeroa, the same ingredients are added to keep its original taste.



Paua shell - A type of abalone indigenous to Aotearoa New Zealand. Paua shells are large. They are often washed up onto New Zealand beaches. The colour in the paua shell changes when viewed at different angles. The shells iridescence quality is similar to that of Mother of Pearl, but is more brilliant because of its different colour tonings and patterns from greens, blues, purples and pinks. The shells are commonly used in jewellery and in decoration in Māori carvings. A once common, but now unpopular, use of the shell was as a convenient home ashtray.



KIWIANA PHOTO BOOTH

Swandri - A woolly water proof long/shirt/coat that comes with a hood. Usually comes in a green colour and is worn on cold and/or wet days by farmers or town's folk who also like to wear **gumboots** (another kiwi icon).

Jandals - Jandals are footwear worn on a sunny weekend day. Similar to a sandal and called by the name of thong or flip flops in other countries. The jandal was adapted from traditional Japanese footwear and as such represents yet another Kiwi innovation



The colour black - The All Blacks (Rugby), The Tall Blacks (Basketball), Black Magic (Yachting), Black Adidas track suit pants, the list goes on. The colour black became famous due to the enormous success of New Zealand's Rugby team the All Blacks. It is thought that the team were first called the by this title due to a typing error in an English newspaper. The name should have been All Backs, but whether that is true or not is irrelevant now. Black is here to stay.

Rugby - New Zealand is the greatest Rugby nation in the world and the National team the All Blacks are legends of the game. New Zealand's first tour was to Britain in 1905 and they were denied a clean sweep when a last minute try was disallowed. In 1925 the All Blacks got their revenge and were undefeated; this team of All Blacks became known as the 'Invincibles'. One of the greatest periods for All Black Rugby commenced just after New Zealand won the world cup in 1987. In 1990 the game of Rugby became professional and changed the game forever. No longer did rugby players have to take time off work to play; rugby became their job and the players receive considerable amounts of money today.

Silver fern – An indigenous fern species, also known as a Ponga tree, is distinguished by a dark green colour on the upper side of the leaf with silver underneath. As a symbol it has been used by many New Zealand companies and on many consumer items. The most famous usage of this symbol is by New Zealand's national rugby team the All Blacks, who proudly wear the fern on the front of their rugby jerseys. New Zealand's national Netball team are called the Silver Ferns. An unfurling silver fern is the koru branding on all Air New Zealand jets.



Bungee jumping - A New Zealand adrenaline sport created by AJ Hackett was inspired by the people of Pentecost Island in Vanuatu who have been throwing themselves from 25 meter (75 foot) bamboo towers for centuries. With vines tied to their ankles to stop them from hitting the ground, this ancient ritual was taken up by the Oxford University Dangerous Sports Club in the 1970s where a few jumps were attempted. AJ Hackett watched a video and was inspired to come up with his own creation. Teaming up with a fellow skier Henry Van Asch in 1988, they developed bungy into a modern ritual that we know today. First came the extensive testing of different bungee cords followed by some jumps that were designed to get worldwide publicity. The first jump was a 91 metre leap from a ski gondola in Tignes, France followed by the Eiffel tower then onto the Golden Gate Bridge in San Francisco. Today there are numerous sites in New Zealand where one can pay to jump including the Sky Jump from the observation deck of Auckland's 192-metre Sky Tower, the tallest structure in the southern hemisphere.



Pohutukawa - Found all over the country this tree flowers around Christmas and early summer. Known as New Zealand's Christmas tree, it makes for a great photo when covered in bright crimson blossoms. They typically grow on the coast and are famous for appearing to defy gravity by clinging precariously to coastal cliffs.



COMPETE IN: The Kiwiana Photo Booth competition.

AUT CONFERENCE HOST SUSTAINABILITY UPDATE

Conference Sustainability—ecological responsibility

Lindsey du Preez is the AUT Sustainability Officer. Lindsey has worked with the AUT Hospitality Services team to provide initiatives that have a strong focus on sustainability for the conference. Some of the key initiatives are:



Head of AUT School of Science's Ian Gillman with his favourite NZ native Raukawa (aka Raukawa edgeryoi) Photo: Auckland University of Technology / L.Henry



- This is a paperless conference and all material is digital including conference proceedings and digital posters.
- The university is working towards eliminating 'single use plastic' and so this is avoided wherever possible. Water will be provided in jugs with glass containers, and unpacked teabags and chocolate have been sourced directly from suppliers to reduce unnecessary plastic packaging.
- Reusable cutlery and crockery will be provided to avoid unnecessary waste.
- Serviettes are compostable.
- 25% of the food provided is vegetarian and food is sourced locally wherever possible.
- A three bin-system will be provided for rubbish, mixed recycling (plastic bottles types 1 & 2—essentially milk bottles and drink bottles, glass, cans) and organic waste.
- All leftover food will be composted and every effort will be made to avoid over catering.
- The university supports Fair Trade and all coffee is Fair Trade.
- The conference is located next to a major bus terminus for easy access to public transport.



LINDSAY NEILL—KIWIANA AND KIWI IDENTITY RESEARCH, SCHOOL OF HOSPITALITY, TOURISM AND EVENTS CONFERENCE HOST SUSTAINABILITY UPDATE



Lindsay Neill will outline the importance of kiwiana to New Zealand. His showcase will include the famous Buzzy Bee and findings from his latest research on kiwiana. Lindsay will highlight the uses of beetroot, tomato sauce, chocolate fish, Tip Top ice cream, and hokey pokey – regular food items for many NZers!

We are really excited to showcase a special modern kiwiana food station with finger food adapted from books by AUT School of Hospitality, Tourism and Events staff. The food you will enjoy come from Robert Oliver and Associate Professor Tracy Berno's *Mea'ai Samoa and Me'a Kai*; Lindsay Neill's *The New Zealand Chef*, Alan Brown's *The Complete Kiwi Pizza Oven Wood, Fire, Food and Friends* and Lian-Hong Bremner and Professor Alison McIntosh's *Taste of Home* which is a cookbook with recipes provided by AUT students of refugee background and recipe tested by a Diploma in Culinary Arts student (book yet to be published). Students from the School's culinary programmes will help staff prepare the food that you will enjoy. The cocktail food-service is by students from the hospitality and culinary programmes. The food for your enjoyment includes:

- Cured salmon, rice cracker, pickled ginger, spring onion
- Corn fritters
- Suqaar Digaag Somali chicken
- White chocolate tart with chocolate cremeux and Swiss merengue
- Misiluki banana pudding with Siamu Popo



ISBS 2018 INDUSTRY PARTNER UPDATE



Kelly Sheerin is the coordinator of the ISBS 2018 Conference Industry Partnership engagement. We have fun activities in the “Industry Playing Field” interactive events, and prizes for delegates. For the last three places available for industry partners, contact Kelly at Kelly.sheerin@aut.ac.nz.

KISTLER APPLIED SESSION—SPRINTING PERFORMANCE AND REHABILITATION



Kim Simperingham is the S&C Manager at the HPSNZ National Training Centre (Auckland) and works with the NZL Sailing team and the All Blacks rugby team. Kim will discuss the multi-disciplinary approach to providing applied research and athlete support in NZ, and specifically how AUT researchers have investigated the impact of wearable resistance training on running, jumping and sprint training. Jamie Douglas is an AUT/HPSNZ PhD scholar whose research has been directed by the experimental and anecdotal evidence indicating the efficacy of eccentric training methods in enhancing sprint performance. A custom-built eccentric loading device will be demonstrated. The application of this device in athletic preparation will also be discussed. Finally, Kistler representatives will present the new KiSprint system. KiSprint is a comprehensive system to analyze, compare and improve sprint starts; incorporating force measurement, high-speed video capturing, speed measurement and software. Scientists, coaches or athletes get reliable parameters immediately after the trial. An elite NZ sprinter will complete some sprint starts during the demonstration.

KISTLER

measure. analyze. innovate.



For information see: isbs2018.com

isbs2018@aut.ac.nz

ISBS 2018 SPORTS TECHNOLOGY SHOWCASE

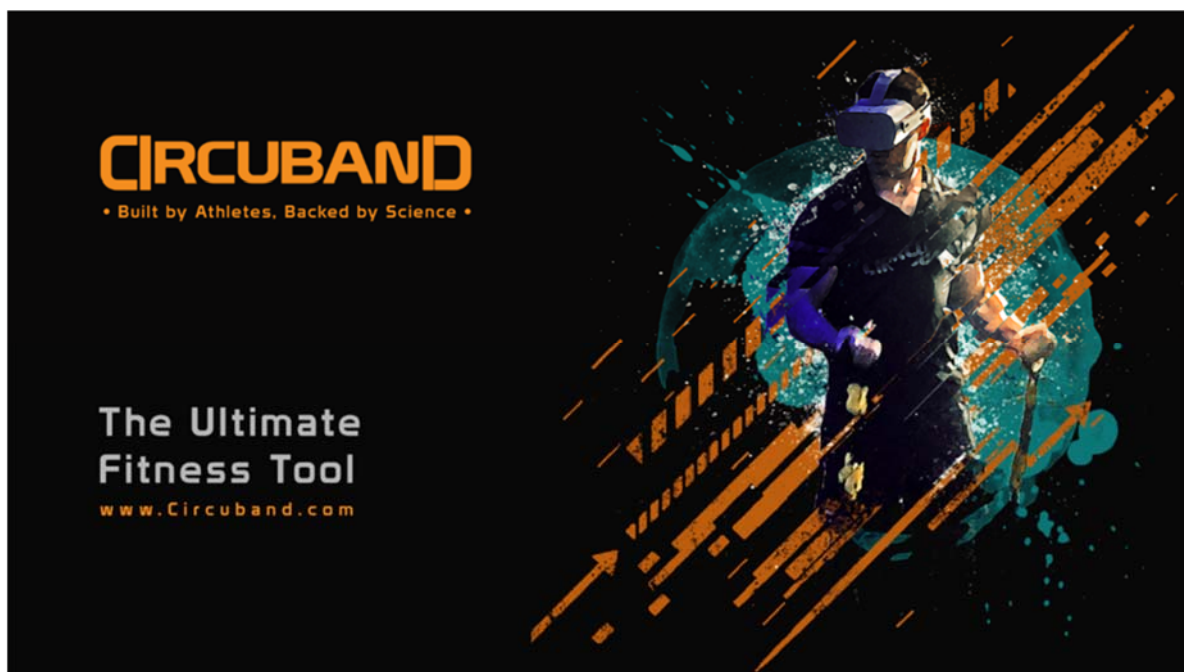
AUT Strain gauge

Farhan Tinwala is a Research Officer with AUT University working under the Sports Technology Research Group. Farhan is also a PhD Student with Goldmine, High Performance Sport New Zealand. His current research topics include; the design, development and validation of a horizontal eccentric towing device to improve sprinting performance; measuring the effects of wearable resistance on sprinting performance using inertial measurement units; and the development of a wireless isometric strength measurement device. Increasing strength is fundamental to most athlete development programs as an individual's maximal force production capability underpins several qualities including power, speed and change of direction ability. Given the significance of the qualities above, practitioners are wise to include regular force and rate of force development monitoring. The development of an isometric strain gauge system allows maximal and explosive strength assessment to occur in a safe and effective environment. Specifically, this tool allows for a valid and reliable assessment of the strength of an entire class or team in a relatively short amount of time.



Circuband

Daniel Thomson is Founder and CEO of Circuband, a company that has been changing the way athletes monitor and track performance. Daniel created Circuband out of a garage after seeing that there was a problem with people not getting out an exercising enough through resistance training. With his pro-athlete brother, Nick, he set out to build the ultimate fitness product. These days the Circuband is used by some of the top exercise enthusiasts in the world including Gunnar Peterson (trainer to the Kardashians, The Rock and the LA Lakers), influencer Casey Neistat, the All Blacks, the NZ Military and many others. Furthermore, Circuband has successfully paired Virtual Reality with Resistance Training to make fitness more engaging and stimulating for both athletes and the public. <https://www.circuband.com/>



Force Mat (Prototype)

Force Mat (Prototype) is a new resistive-sensing contact mat for detecting the pseudo force, of sports activities such as running, jumping, stepping. The mats have the potential to be used for health and physiotherapy applications. The structure of the sensors enables the technology to detect pressure values equivalent to 300 kPa. Results are mapped using a colour scheme, allowing for easy interpretation of results.



ISBS 2018 SPORTS TECHNOLOGY SHOWCASE

Beta-Energy

A healthier natural energy drink that provides sustainable energy so you don't get the crash that you do from a normal energy drink. It provides double the antioxidants as green tea providing a natural, smooth blend and also has one of the lowest sugar levels for a natural energy drink on the market.



Avice



Parn Jones (Director & Chief Technology Officer), is the engineer for Avice. His role is applying knowledge of design, mechanical, electronics, and biomedical engineering to make an idea become an end-user product. He has industrial engineering experience from working at Festo NZ, proven ability to execute engineering projects based on the progressive experience with a Master of Engineering project, and an MBIE project.

Dr. Eric Helms, Head of Strength & Conditioning, is an AUT SPRINZ Research Fellow. He has extensive industry and research experience in applied strength and conditioning. Eric is also the co-founder of two other fitness-related start-ups. He is the president of North Sports Olympic weightlifting based at AUT Millennium and has over a decade of experience as a personal trainer. With over 50,000 social media followers and connections to online fitness influencers, Eric will be driving the initial marketing and sales growth.

<https://www.avicewearables.com/>

Avice is a patent-pending wearable device that gives you real-time actionable feedback during weight training. It measures changes in muscle performance to inform you how close to muscular failure you are – providing motivation and immediate guidance to either continue or stop performing repetitions to ensure your training is effective in every workout.



ISBS 2018 SPORTS TECHNOLOGY SHOWCASE

MyBio Motion

MYBio Motion is a smart wearable knee sleeve that provides support for rehabilitation from post-operative or knee trauma, and prevention from a knee injury, especially in athletes. <https://mybiomotion.com/>

Arien Hielkema (inventor, product development and clinical validation) has a Masters Degree in Creative Technologies from AUT with a thesis focussing on the utilisation of wearable technology to help the athletic community to address issues pertaining to rehabilitation and prevention of injury. Arien has a background in 3D animation, rapid prototyping and programming. He brings a unique combination of knowledge that informs, inspires and challenges conventional technological solutions. A new resistive-sensing contact mat for detecting the pseudo force, of sports activities such as running, jumping, stepping has been developed. The mats have the potential to be used for health and physiotherapy applications. The structure of the sensors enables the technology to detect pressure values equivalent to 300kPa. Results are mapped using a colour scheme, allowing for easy interpretation of results.



Myovolt – Wearable Massage Technology for Muscles

Myovolt is a breakthrough muscle massage system that you wear. It delivers vibration therapy to any part of the body, it's easy to use, lightweight and has benefits backed by clinical research. The innovative soft wearable design is flexible, slim-line and can target vibration on any part of the body. It's comfortable to wear anytime and does not restrict movement. Convenient to use while walking, sitting, standing, lying down or exercising by wrapping Myovolt over clothing or using directly against the skin. <https://www.myovolt.com>



The Sports Technology Showcase being coordinated by Amber Taylor (AUT) and Ryan Archibald (ATEED) is to enable new products to be explored by biomechanists. Gain ideas for your research and learn how to commercialise your products.

ISBS President's welcome message, and Golf Biomechanics Course



Dear ISBS members and colleagues

On behalf of the International Society of Biomechanics in Sports and its Board of Directors, I welcome y'all to the 36th ISBS Annual Conference and to this Maori city of Auckland! Since the first Annual Symposium in San Diego in 1983, ISBS Conference/Symposia have been held in eighteen different countries and it is the first time that New Zealand hosts this conference. This year's conference is held at the City Campus of Auckland University of Technology (AUT). While AUT's history goes back to late 19th century, AUT became a university in 2000. In spite of its relatively young history, AUT is currently ranked in the top 2% of universities worldwide according to the QS World University Rankings. In particular, AUT's sports program is ranked in the top 50 in the world. AUT is indeed a perfect place for hosting an ISBS conference. This year's conference is hosted by Professor Patria Hume's team at AUT's Sport Performance Research Institute New Zealand (SPRINZ) in the partnership with AUT Millennium, High Performance Sport New Zealand (HPSNZ), and Auckland Tourism Events and Economic Development (ATEED). During this multi-disciplinary conference we will have a chance to visit AUT Millennium, a world-class facility for promotion of health and sports, and SPRINZ's research facilities and witness their various research initiatives. I am sure many of you will be inspired by the level of collaboration between SPRINZ and sport organizations in NZ and involvement/contribution of sport biomechanists in developing elite athletes and promoting public health. SPRINZ and AUT Millennium will certainly inspire us as a role model. Like the previous ISBS Symposia/Conferences, the purpose of this year's conference is to facilitate knowledge exchange in sports biomechanics. Since its conception, ISBS Conferences have been the place for information sharing of the latest research findings and development in sport biomechanics, cultural experience, and friendship. I would very much like your deep immersion into the atmosphere of exchange and friendship that this year's AUT Conference offers. We have delegates from a large number of countries and I encourage y'all to make many new friends and deepen your friendship during the conference. The friendship will last long with your professional career. And I'd also like you to enjoy the Maori culture and tradition that Auckland offers. This year's Geoffrey Dyson Lecture, titled "Moving on slopes: Issues and challenges from a biomechanical perspective," will be delivered by Prof. Hermann Schwameder of University of Salzburg. Prof. Schwameder has been a work horse for the Society for a number of years and served for the Society in various posts including the ISBS presidency in 2005-2007. This year's Hans Gros Emerging Researcher Award winner is Steffen Willwacher of German Sports University Cologne and his keynote is titled "Sports equipment: How the transformation from passive to digital systems opens new doors and puts new demands on sports biomechanists." I look forward to attending the award and keynote lectures. Finally, on behalf of the ISBS and its Board of Directors and all the conference participants, I'd like to thank Professor Patria Hume and her team for putting together another world-class ISBS Annual Conference. Your hard work and efforts just added another important page to the history of the Society! Thank you!

Cheers, Professor Young-Hoo Kwon, Ph.D., FISBS, President of the ISBS

Are you interested in a pre-conference course?

Dr. Kwon's Golf Biomechanics Instructor Training Program - Level 1, Fundamental

Dates: Sept. 8-9, 2018

Venue: Remuera Golf Club, Auckland, NZ

Host: PGA of NZ (Josh Longney; josh.longney@pga.org.nz; +64(0)9 488 6617)

Course homepage: <http://drkwongolf.info/courses.html>

Objectives

- To introduce basic mechanical quantities/concepts relevant to golf swing
- To introduce key biomechanical principles of human movement and golf swing
- To provide the mechanical/biomechanical framework of "mechanically robust golf swing"

Course Outline

Day 1 (8:30a – 6:00p)

Chapter 1: Introduction

Chapter 2: Basic mechanical concepts

Chapter 3: Golfer's body

Chapter 4: Linear kinematics

Chapter 5: Functional swing plane

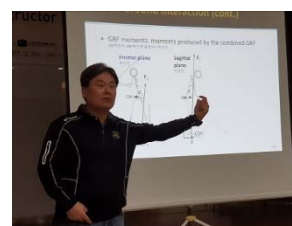
Day 2 (9:00a – 4:00p)

Chapter 6: Angular kinematics

Chapter 7: Linear/angular kinetics

Summary & closing

Please contact Josh Longney (josh.longney@pga.org.nz) of PGA of NZ for additional info on the class.



KIWI SLANG & FUN FACTS

Get ready – Learn your Kiwi slang!

Sweet: Elsewhere in the world "sweet" is used to refer to how something tastes, but in New Zealand it means that something is good or cool. "I just won a million dollars? SWEEEEEEET!"

Sweet as: Second most common phrase in New Zealand after "awesome". Though 'sweet as' is the most common, practically any adjective can be placed before the 'as' – such as 'dark as', as in, 'It's dark as in here'. (Which means 'It's really dark in here'). Often followed by "bro". "How was the surf at Ragland yesterday? – Sweet as bro".

Kiwi = this could mean the person, bird or fruit!

Choice <http://www.mynewzealandcampervantrip.com/about-new-zealand/10-silly-things-kiwis-say/>



Fun facts <https://www.globotreks.com/destinations/new-zealand/33-quirky-facts-new-zealand/>

There are at least two things that New Zealand has more than any other country in the World (per inhabitant), can you guess what they are?

- Hobbits and orcs
- Sheep and golf courses
- Rain and hills

Although all answers will appear correct once you have visited New Zealand, the only one we actually have statistics for are sheep and golf courses: 9 sheep per each person, and 400 gold courses!

Credit: BackpackerGuide.NZ for Sheep photo



The longest single word place name is in New Zealand – 10 points if you can pronounce it!

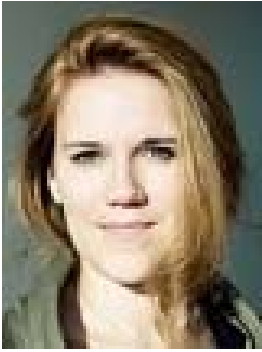
Taumatawhakatangihangakoauauotamateaturipukakapikimaungahoronukupokaiwhenuakitanatahu, which roughly translates to, "the place where Tamatea, the man with the big knees, who slid, climbed and swallowed mountains, known as the land-eater, played his nose flute to his loved ones". It's a hill near Porangahau in Hawke's Bay on the North Island that you climb up for a lovely view over the town.



For information see: isbs2018.com

isbs2018@aut.ac.nz

ISBS VICE PRESIDENT OF CONFERENCES WELCOME MESSAGE



Dear ISBS 2018 delegates

Preparations for the ISBS 2018 are on full speed. We are all ready to go and expectations have been built up ever since Patria performed her Māori welcome on the banks of the river Rhein last year in Cologne! To meet these expectations Patria and her team and ISBS are busily working on organizing another exceptional ISBS conference behind the scenes. The New Zealand team brought lots of fascinating new ideas to the table and we also have worked on routines that will allow for standard processes in registration and abstract submission and revision for future years.

When I booked my flight ticket, I had the option to fly from Salzburg via Hong Kong to Auckland and back via Vancouver making this trip a literally around the world trip. However seeing the world from above the clouds would not be nearly as exciting as being in Auckland and actually meeting you as delegates from all over this world in person and discussing the themes we all are passionate about: Science and research in a sport performance and health related context. With this opportunity to discuss and share our ideas and to network together we will take a further step in raising our research a level higher and continue the path to excellence in science and world leading research.

I look forward to meeting you this year in Auckland!

Gerda Strutzenberger

ISBS VP of Conferences

The red flowers on the tree in the photo below, at the AUT Millennium entrance, are Pouhutakawa.



ISBS 2018 CONFERENCE INDUSTRY PARTNERS AND HOSTS



VICON are providing the blue ISBS 2018 conference puffer jackets to those who registered by the standard registration date. Vicon are also providing beverages for conference events.



SAMSUNG



SILENI are providing amazing wines for all the conference events. We have a large selection from the Sileni range including Marlborough Sauvignon blanc, pinot gris, pinot noir, sparkling cuvee brut, merlot etc.

SAMSUNG are providing new FLIP technology screens and 55" screens for the digital poster sessions.



KISTLER are supporting two round table luncheons, and Olympic athletes at the AUT Millennium event. QUALISYS and NORAXON are providing workshops and AUT Millennium applied sessions. AMTI are providing chocolate box stations and support of the student evening at the marae. ACC is supporting the ACC Keynote panel speakers and a round table luncheon. Force Decks are supporting the Commercialisation and funding Monday workshop.



CHANUI are providing tea and biscuits. AEROBE are supporting the Sky Tower tour programme. TEKSCAN are supporting the sports technology luncheon.

HOSTS:

