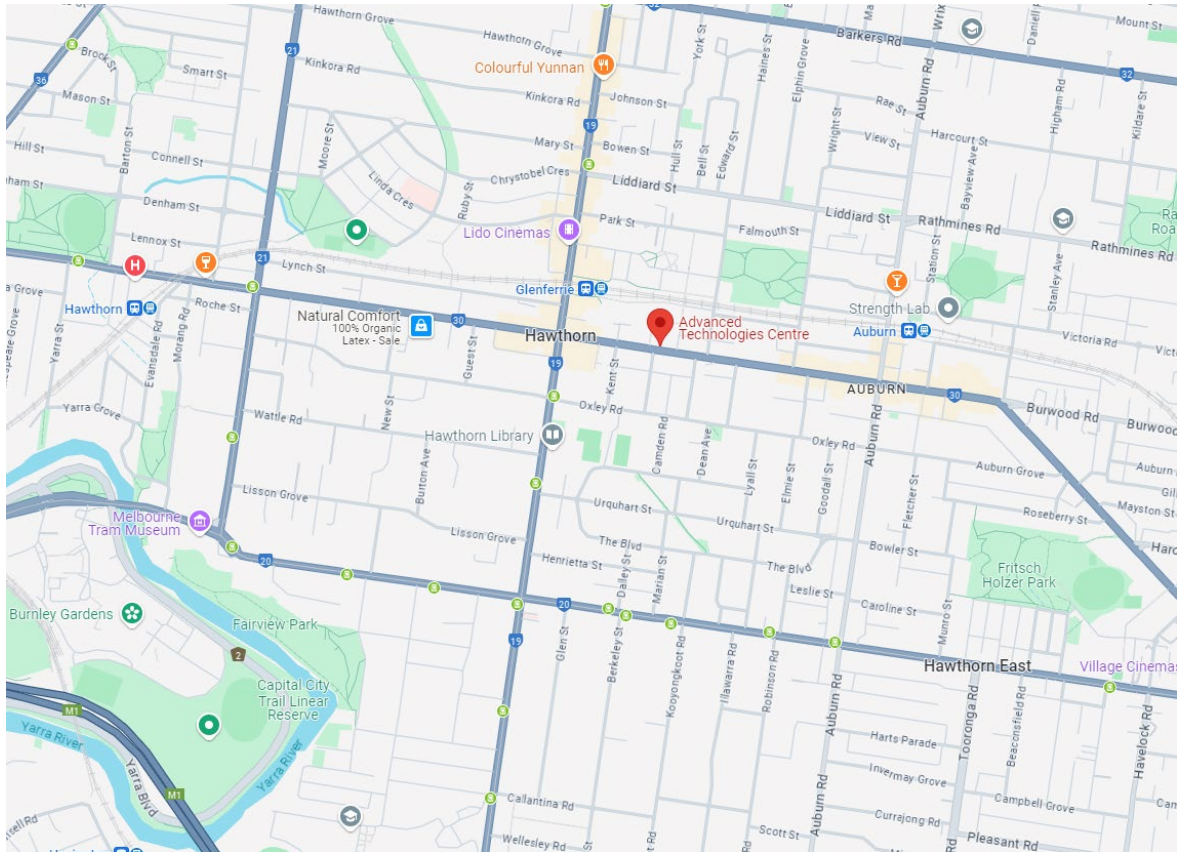


# Venue

**Advanced Technologies Centre (ATC)**  
**Swinburne University of Technology,**  
**John Street, Hawthorn, Victoria, Australia**



[Google maps](#)

**Wi-Fi Access: Events@Swin**  
**Password: swin3324**



# PROGRAM

# Sunday, December 1

Time	Session	Location
8:00-8:30	Conference registration and coffee	Foyer, SPW Building
8:30-10:30	Materialise workshop	SPW Building room 111
10:15-11:00	Morning tea	Foyer, SPW Building
10:30-12:00	Tracklab workshop	SPW Building biomechanics lab room 011
12:00-13:00	Lunch	Foyer, SPW Building
12:00-14:00	Qualisys workshop	SPW Building biomechanics lab room 011
14:00-14:30	Afternoon tea	Foyer, SPW Building
14:00-16:30	Women in biomechanics Wikipedia workshop	SPW Building room 111
15:30-16:30	Conference registration	Foyer, ATC Building
16:30-17:00	<b>Opening Ceremony/Presidents' welcome: Dr Karen Mickle, A/Prof Nathan Pavlos</b>	ATC101 Lecture Theatre
17:00-18:00 Session chair: Dr Karen Mickle	<b>International Keynote: A/Prof Anne Silverman, Colorado School of Mines, Colorado, USA "Muscle Function and Coordination Linking to Whole Body Balance and Injury Risk"</b>	ATC101 Lecture Theatre
18:00-20:00	<b>Welcome Reception</b>	Swinburne University Foyer, ATC building Map: <a href="#">Google maps</a>

# Monday, December 2

<b>07:30-08:20</b>	<b>Women's Breakfast; ATC101 Lecture Theatre</b>		
<b>08:00-08:30</b>	Coffee and registration; Foyer, ATC Building		
<b>08:30-09:00</b> ATC101 Lecture Theatre  Session chair: Dr Elyse Passmore	<b>Keynote: A/Prof Laura Diamond, Griffith University, Gold Coast, Queensland</b> <b>"From mechanisms to management: Precision health technology for hip osteoarthritis"</b>		
<b>09:00-10:00</b>	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ABC Podium 1 – Locomotion &amp; human movement</b> <i>Parallel session</i> ATC101 Lecture Theatre  Session chairs: A/Prof Laura Diamond, Dr Anna Murphy	Julie	Choisne	3D gait analysis in children using wearable sensors and machine learning
	Leanne	Dwan	Two-year 3D gait outcomes following in-situ pinning or modified Dunn procedure in children with slipped capital femoral epiphysis
	Julie	Choisne	Lumbar loads during walking with sagittal spinopelvic alignments
	Rahm	Ranjan	Towards improved clinical kinematic references for gait analysis using human pose estimation
	Kayne	Duncanson	Modelling individual variation in human walking gait across populations and walking conditions via gait recognition
	Zhou	Fang	A digital twin platform for joint motion measurement and task classification in the home
<b>09:00-10:00</b>	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ANZORS Podium 1</b> <i>Parallel session</i> Building EN, room EN313  Session chairs: A/Prof Elizabeth Clarke, A/Prof Laura Wilson	Maya	Braun	Investigating variations in elastin content across different human tendons and ligaments
	Xiaojun	Chen	Targeting Oxr1 to regulate osteoclast differentiation and function
	Carina	Blaker	Age-associated proteomic changes in a mouse model of knee osteoarthritis
	Yixiao	Zhou	The Rab7 guanine nucleotide exchange factor complex Mon1-Ccz1-Rmc1 differentially regulates osteoclast formation, bone resorption and endosome-to-lysosome maturation
	Dean	Mayfield	The history dependence of muscle contraction: insights from a muscle contracting against a spring
	Randika	Perera	An in vivo imaging study of fascia thickness and muscle volume in the lower limb of healthy adult humans
<b>10:00-10:40</b> Morning coffee & tea; Foyer, ATC Building			
<b>10:40-11:50</b>	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ABC Podium 2 – Sports biomechanics</b> <i>Parallel session</i> ATC101 Lecture Theatre  Session chairs: Dr Luke Perraton, Dr Kane Middleton	Elizabeth	Bradshaw	Dangerous high tackles in rugby: measuring what happens to the opponents head
	Ryan	Quarrington	The effect of head-forward posture on risk of lower neck dislocation during head-first impacts: a preliminary computational and dynamic experimental investigation
	Tess	Rolley	Effect of concussion on side-stepping biomechanics in women's Australian football
	Karen	Mickle	Investigating a sports science approach to warm-up practices in dance: can we improve dance performance?
	Aaron	Fox	Barefoot ballet with a rigid foot: are common methodological choices limiting our understanding of foot and ankle biomechanics in ballet?
	Haydee	Ferguson	Can we accurately measure multi-segment foot kinematics in a ballet pointe shoe?
	Ceridwen	Radcliffe	The energetic behaviour of the human foot during landing
<b>10:40-12:00</b>	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ANZORS Podium 2</b> <i>Parallel session</i> Building EN, room EN313  Session chairs: Prof Peter Pivonka, Dr Natalia Castoldi	Kate	Hoare	Structural and biomechanical properties of articular cartilage in different joints
	Phoebe	Del Rosario	Double screw fixation in the surgical repair of unstable scaphoid fractures
	Maxence	Lavail	Spatial tracking of the shoulder bones using optical motion capture and 3D ultrasound: a simulation and cadaveric study
	Melody	Labrune	Validation of a subject specific Opensim shoulder model using in-vitro experimental data

	Roshni	Raghvani	Combined shape model of the torso and upper limb
	Saulo	Martelli	Onlay-Grammont hybrid design increases humeral implant stiffness but not fracture load in reverse shoulder arthroplasty
	Alec	McKenzie	The shoulder toolkit: enhancing end-user application
	Wolbert	Van den Hoorn	Neural drive to the deltoid segments in healthy shoulders
<b>12:00-13:15</b> Lunch & Sponsor exhibition; Foyer, ATC Building			
<b>13:15-13:45</b> ATC101 Lecture Theatre  Session chair: Prof David Ackland	<b>Keynote: Prof Richard Page, Deakin University, Melbourne, Victoria</b> <b>“Shoulder in reverse: a twenty-year journey”</b>		
<b>13:45-14:25</b>	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ABC Podium 3 – Sports biomechanics</b> <i>Parallel session</i> Building EN, room EN313  Session chairs: Dr Yi-Chung Lin, Dr Meghan Keast	Celeste	Coltman	The association between symptoms of pelvic floor dysfunction & running mechanics
	Stephen	Halle-Worrall	Distinct tibialis anterior electromyography profiles in strength and endurance athletes revealed by principal component analysis
	Sienna	Gosney	Profiling the sprint-paddling kinematics of female and male competitive surfers
	Alan	Abraham	Exploring the use of OpenCap in capturing cricket bowling kinematics
<b>13:45-14:25</b>	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ANZORS Minghao Zheng Orthopaedic Innovation Award Final</b> <i>Parallel session</i> ATC101 Lecture Theatre  Session chairs: Prof Richard Page, Dr Kieran Bennett	Alireza	Yahyaiee-Bavil	Effects of varied neck-shaft angle on interfragmentary strains following proximal femoral osteotomies
	Rachel	Li	Circulating microRNA in arthrofibrosis patients of post total knee arthroplasty
	Rui	Ruan	Development of bioactive bone substitute (PearlBone™) using Mother-of-Pearl sourced from Broome, Western Australia
	Peilin	Chen	The efficacy of a novel porcine-derived collagen membrane on guided bone regeneration: a comparative study in canine model
<b>14:25-15:30</b> Afternoon coffee & tea and poster viewing; (poster viewing will take place between 15:00-15:30) Foyer, ATC Building			
<b>15:30-16:50</b>	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ANZORS Podium 4</b> <i>Parallel session</i> ATC101 Lecture Theatre  Session chairs: Dr Carina Blaker, Dr Olga Panagiotopoulou	Fatemeh	Malekipour	Mechanical load distribution in equine metacarpal condyles: a computational model using standing CT images
	Jaqui	Couldrick	Knee joint moment changes following a structured education and exercise program (GLA:D®) for knee osteoarthritis and the relationship to radiological OA severity and body weight
	Egon	Perilli	Ovine vertebral bone strain analysis after overload by combining mechanical testing and micro-CT
	Mark	Taylor	Reduced micromotion of cementless tibial implants is related to increased interference fit: a micro-CT and DVC study
	Harrison	Johansen	Understanding cardiac co-morbidity with osteoarthritis in mice
	Natalia	Castoldi	Experimental-computational platform to study cortical bone remodelling
	Corinna	Modiz	Analysis of bone mineralisation using discrete and continuous models of bone remodelling
	Tyra	Lange	Acoustic and torsional factors as predictors of bone quality and screw purchase
<b>15:30-17:00</b>	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ANZ Clinical Motion Analysis Group</b> <i>Parallel session</i> Building EN, room EN313	<b>Prof Chris Carty, Dr Elyse Passmore, Prof Thor Besier, Motion Connect</b> <b>“Introducing the ANZ clinical motion analysis database”</b>		
	Britney	Kerr	The effect of clusters and inverse kinematics on a cohort with idiopathic torsional deformities

Session chair: Dr Anna Murphy	Jinella	Lopez	Defining the knee joint axis for clinical gait analysis in a paediatric population
	Taylor	Dick	Predictive simulations reveal mechanistic links between altered muscle-tendon form and locomotor function in aging
	Panel discussion: Prof Chris Carty, Dr Elyse Passmore, Prof Thor Besier, Dr Taylor Dick		
<b>18:00-20:40</b>	<p><b>ANZSB Student and ECR Night/ANZORS Young Investigator Event</b></p> <p><b>Honours/Masters/PhD students and ECRs get free meal; must have indicated attendance during registration</b></p> <p>at <a href="#">Holey Moley</a></p> <p>Map: <a href="#">Google maps</a></p>		

# Tuesday, December 3

08:00-08:15	Coffee & tea		
08:15-09:15 ATC101 Lecture Theatre  Session chair: A/Prof Nathan Pavlos	<p align="center"><b>International Keynote: Prof Jess Snedeker, ETH Zurich and University of Zurich, Zurich, Switzerland</b>  <b>“Multiscale Biomechanics and the Cell-Matrix Interactions behind Tendon Adaptation to Exercise”</b></p>		
09:15-10:35	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ABC &amp; David Findlay ECR Award Final</b> ATC101 Lecture Theatre  Session chairs: A/Prof Anne Silverman, A/Prof Celeste Coltman	Julie	Kim	Robust workflow for diaphyseal cortical bone thickness calculation in long bones
	Jean	Kok	Targeting WNT inhibitors to improve bone mass after spinal cord injury
	Kieran	Bennett	Internal tibial bone displacements and strains due to implantation with cementless tibial trays
	Deepti	Sharma	Carboxylated osteocalcin- a potential biomarker of improved cortical and trabecular bone properties
	Elizabeth	Wojciechowski	Validation of wearable sensors against three-dimensional gait analysis
	Cristian	Riveros-Matthey	Optimising muscle mechanics and energetics in human cycling: a prescribed and EMG-assisted approach across saddle variations
	Meghan	Keast	The acute effects of gait and footwear interventions on tibial strain during running
	Danielle	Vickery-Howe	Biomechanics of load carriage walking at military-relevant speeds and loads: differences between males and females
10.35-11:15 Morning coffee & tea; Foyer, ATC Building			
11:15-12:55	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ABC Student &amp; ANZORS PhD Award Final</b> ATC101 Lecture Theatre  Session chairs: Prof Jess Snedeker, Tyra Lange	Nicole	Jones	Quantifying the contralateral repeated bout effect of the triceps surae
	Matthew	Hambly	Rapid calibration of EMG-informed NMS models using differentiable physics
	Ioana	Oprescu	Using predictive musculoskeletal simulations to explore the effect of altered gravity on locomotor performance
	India	Lindemann	Exploring the neuromechanics of the ankle plantar- and dorsi-flexors during slip perturbations to human walking
	Brody	McCarthy	Lower limb joint work in runners with and without a history of knee surgery
	Zhengxu	Cheng	Reduced radiation dose enables multi-positional high resolution computed tomography wrist data for computational modelling without substantial geometric inaccuracy
	Patrick	Beaumont	Using sonography to assess the condition of the lumbar multifidus following restorative neurostimulation: a preliminary analysis
	Mohammad	Yavari	Artificial intelligence in the prediction of persistent foot drop in children with cerebral palsy after gastroc-soleus lengthening
	Ayda	Karimi Dastgerdi	Influence of anterior cruciate ligament reconstruction parameters on kinematics and cartilage stresses in pediatric knee
	Chan Hee	Cho	Optimising early acetabular implant migration thresholds
12.55-13:15	Lunch to be taken into AGMs		
13:15-14:15	<p align="center"><b>ABC &amp; ANZORS AGMs</b>  <b>All delegates welcome and encouraged to attend</b>  <b>Lunch can be taken into AGMs</b></p>		
17:00-19:00	<p align="center"><b>Networking Event</b>  <b>At <a href="#">Abbotsford Convent</a> -Rosina Courtyard</b>  <b>(bus transport provided)</b>  <b>Pickup from 16:30, in front of conference venue</b></p> <p align="center">Map: <a href="#">Google maps</a></p>		

19:00-22:30

**Conference Dinner, including Awards Announcements**

**At [Abbotsford Convent](#)**

(bus transport back to conference venue/Melbourne CBD provided)

Pickup from 22:30, in front of venue

Map: [Google maps](#)



# Wednesday, December 4

<b>08:30-09:00</b>	Coffee & tea; Foyer, ATC Building		
<b>09:00-09:30</b> ATC101 Lecture Theatre  Session chair: A/Prof David Saxby	<b>Keynote: Prof Kay Crossley, La Trobe University, Melbourne, Victoria</b> "Biomechanics and early OA - is underloading the new black?"		
<b>09:30-10:30</b>	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ABC Podium 5 – Locomotion &amp; human movement</b> <i>Parallel session</i> Building EN, room EN313  Session chairs: Dr Brook Galna, A/Prof Michelle Hall	Harry	Driscoll	Dynamic simulation of trunk muscle function during vertical jumping
	Ayden	McCarthy	Stride length significantly decreases in a fatigued state of a jerry can carry
	Shanyuanye	Guan	Patellofemoral joint contact area depends primarily upon the knee flexion angle during daily activities
	Jodie	Wills	Hose drag task demands of aviation firefighters
	Kylie	Tucker	Back in action: asymmetry in paraspinal muscle size, composition and activation in adolescent idiopathic scoliosis
	Robert	Lees	How does motor unit recruitment differ across knee extension tasks? A preliminary analysis
<b>09:30-10:30</b>	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ANZORS Podium 5</b> <i>Parallel session</i> ATC101 Lecture Theatre  Session chairs: Dr Stuart Callary, Dr Luca Modenese	Aaron Scott	Hammat	Septic vs aseptic: a cost-analysis of revision THA at a tertiary referral centre
	Salindi	Herath	Knee joint reaction forces are positively correlated with changes in the bone of the proximal tibia following primary total knee replacement surgery
	Taisha	D'Apollonio	Does the number of previous revision surgeries influence the survivorship of implants used at revision hip arthroplasty?
	Emmanuel	Eghan-Acquah	Effect of blade plate implant size selection on biomechanical surgical outcomes following proximal femoral osteotomy
	Daniel	Hopkins	A fully automated pipeline for medical image reconstruction, surgical planning and simulation of post-operative joint function following revision hip arthroplasty involving acetabular defects
	Simon	Thwaites	Objective kneeling assessments may help discern differences in patient outcomes between tibial nailing approaches: interim results from a pilot RCT
<b>10:30-11:10</b> Morning coffee & tea; Foyer, ATC Building			
<b>11:10-12:00</b>	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ANZORS Podium 6</b> <i>Parallel session</i> ATC101 Lecture Theatre  Session chairs: Dr Fatemeh Malekipour, Dr Ben Ferguson	Natali	Uribe	A parametric finite-element model of the femur spanning the entire adulthood
	Fuyuan	Liu	Finite element analysis of a customized pelvic fracture implant to monitor fracture healing
	Julie	Choisne	Can statistical shape and density models predict femoral and tibial stress in a paediatric population?
	Reza	Arjmandi	Biomechanical advantages of a partial facetectomy in the surgical management of pars interarticularis fractures
	Enzo	Allevard	Tibia and fibula bones prediction from external shank skin shape in a paediatric population
<b>11:10-12:00</b>	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ABC Podium 6 – Clinical biomechanics</b> <i>Parallel session</i> Building EN, room EN313  Session chairs: Prof Kay Crossley, Dr Leane Dwan	Benjamin	Mentiplay	Leg stiffness during running in adults with traumatic brain injury
	Jack	Beard	Postural alignment during unsupported walking following acquired brain injury: application of a new measure
	Matthew	Savage	Are altered knee joint biomechanics associated with the onset and progression of post-traumatic osteoarthritis? A systematic review of longitudinal studies.
	Jodie	McClelland	Altered trunk movements and lower limb moments during running after anterior cruciate ligament reconstruction

	Anna	Butcher	Biomechanical risk factors associated with anterior cruciate ligament injury and the link to pubertal maturation: a systematic review
<b>12:00-13:15</b> Lunch & poster viewing (poster viewing will take place between 12:30-13:00) Foyer, ATC Building			
<b>13:15-13:45</b> Session chair: Dr Julie Choisne	<b>Keynote: Dr Bart Bolsterlee, University of New South Wales, Sydney, New South Wales</b> <b>“Quantitative magnetic resonance imaging to study skeletal muscle during childhood development”</b>		
<b>13:45-14:35</b>	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ABC Podium 7 - Emerging technology Parallel session</b> ATC101 Lecture Theatre  Session chairs: Dr Eduardo Cofre, Dr Alexis Brierty	James	Williamson	The task dependent neuromuscular response of older adults to exoskeleton assistance during standing balance tasks
	Miyuki	Chamberlain	Predictive musculoskeletal simulations to explore the energetics of hopping with a joey in macropods
	Simon	Heinrich	Optimal control simulation of full hand flexion movements exploiting optical marker tracking
	Longbin	Zhang	Quantitative fall risk assessment via an enhanced timed up and go test with markerless motion capture and machine learning
	Grace	McConnochie	Lidar-based scaling of Opensim human models is a viable alternative to marker-based approaches
<b>13:45-14:45</b>	<b>Name</b>	<b>Surname</b>	<b>Abstract title</b>
<b>ANZORS Podium 7 Parallel session</b> Building EN, room EN313  Session chairs: Dr Bart Bolsterlee, Randika Perera	Bradley	Cornish	A physics-informed neural network for estimation of hip biomechanics
	Matheus	Pinto	Medial gastrocnemius muscle and fascicle dynamics in vivo during eccentric contractions
	Manuela	Zimmer	A comprehensive pipeline for in vivo determination of skeletal muscle and connective tissue anatomy using magnetic resonance imaging
	Alice	Hatt	The effect of intramuscular fat on the anisotropic viscoelastic properties of human skeletal muscle in vivo
	Andrea	Sgarzi	Assessment of two muscle models with coupled activation and contraction dynamics
	Ryan	Konno	A neuromechanical model for muscle energy use in vivo
<b>14:45-15:15</b>	<b>Presidents' closing address:</b> <b>Dr Karen Mickle, A/Prof Nathan Pavlos</b>		

# POSTERS presented on Monday, December 2

## ATC Building, room 206

12:00-13:15		Lunch break	
14:25-15:30		Afternoon break	
Poster #	First name	Surname	Abstract title
1	Ayda	Karimi Dastgerdi	Insights into patellofemoral kinematics and cartilage stresses following pediatric anterior cruciate ligament reconstruction
2	Ben	Jones	Between-day reliability of gait variability measures calculated from an inertial measurement unit
3	Brooke	Hoolihan	The effect of biological sex on lower-limb coupling variability in military personnel
4	Cristian	Riveros-Matthey	Regional effects of rapid eccentric stretch on tibialis anterior muscle shear modulus and motor unit discharge frequency during moderate isometric contractions: preliminary results
5	Francois	Bruyer-Monteleone	Predicting humeral version angle for shoulder surgery using statistical pose models
6	Hossein	Mokhtarzadeh	Enhancing scientific reproducibility in biomechanical studies with Google colab
7	James	Williamson	The biomechanics of walking with mnd: a joint-level perspective on the lower-limb
8	John	Kerr	Lower limb prosthesis user gait symmetry across multiple walking speeds
9	Maxence	Lavaill	Automatic segmentation of shoulder anatomy from magnetic resonance imaging using NNU-net
10	Nicolaos	Darras	Movement efficiency can be measured using mixed reality
11	Oscar	Stelzer-Hiller	Assessing an intra-session tackle technique intervention in rugby league for altering head kinematics: a preliminary analysis
12	Ryan	Tiew	Influence of osseointegrated implant length on femoral fracture strength
13	Sami	Alahmari	Effects of arm-cycling exercise during triceps surae neuromuscular electrical stimulation on torque output and fatigue
14	Yareni	Guerrero	Test-retest reliability study of three-dimensional kinematic gait modeling parameters and antropometric measurements in overweight obese adults with knee osteoarthritis
15	Zhengxu	Cheng	Effect of altering ligament-bone attachment bushing stiffness on multibody dynamics simulation of wrist motion

**Please see next page for posters presented on Wednesday.**

**POSTERS presented on Wednesday, December 4**  
**ATC Building, room 206**

10:30-11:00		Morning break	
12:00-13:15		Lunch break	
Poster #	First name	Surname	Abstract title
16	Alireza	Bavil	Computational toolbox for bone deformation modelling in finite element analysis of the femur to aid clinical diagnoses and surgical planning
17	Benjamin	Carling	How knee kinematics relate to function in adults with knee osteoarthritis
18	Brooke	Galna	Synchronisation of multiple unconnected inertial measurement units
19	Ben	Ferguson	Estimating bone modulus of sheep mandible using inverse methodology combining finite element updating method, ex vivo mechanical testing, and digital image correlation
20	Christopher	Bird	Non-invasive estimates of neuromuscular properties using ultra-wideband radar
21	Grace	McConnochie	Optimal control simulations tracking wearable sensor signals provide comparable running gait kinematics to marker-based motion capture
22	James	Davies	Pre-operative EQ-5D-5L is a strong predictor of meaningful improvement in quality of life following primary total knee arthroplasty
23	Yihe (Claire)	Li	Identification of novel small-molecule modulator of sorting nexin 10 to inhibit osteoclastic bone resorption
24	Laura	Wilson	Relevance of bilateral asymmetry for mirror reconstruction techniques in the management of distal tibial fractures
25	Mounir	Boudali	The design and validation of an apparatus for biomechanical testing of patellofemoral and knee joints using a robotic testing platform
26	Nisal	Jayaneththi	Cyclic loading of Achilles tendon using physiologically representative loads
27	Nikolaos	Darras	Evaluating the intellevnt algorithm on an external normal dataset
28	Salindi	Herath	Patient related factors affect bone mineral density in the proximal tibia six months following total knee replacement surgery
29	Sarah	Safavi	A framework for the design of patient-specific porous femoral stems
30	Zhengliang	Xia	Predicting Achilles tendon force using 2D video data
31	Ziming	Chen	Impacts of anterior cruciate ligament rupture on the nuclei of ligament cells: a histology and single-cell gene expression-based study

**All posters will be displayed for the whole duration of the conference and presented on either Monday or Wednesday by the author as indicated.**