

NWBS 2023 Symposium Program

Friday, May 19, 2023: Alder Commons

1:00 - 1:30 pm	Registration
1:30 - 1:45 pm	Welcoming Remarks
1:45 - 3:00 pm	Podium Session: Human Development and Aging
3:00– 3:30 pm	Round-table Discussion (refreshments)
3:30 – 4:45 pm	Podium Session: Posture, Balance, and Falls
4:45 – 5:45 pm	Poster Session A
6:30 – 9:00 pm	Dinner & Games (Husky Union Building)

Saturday, May 20, 2023: Alder Commons

8:00 – 8:30 am	Continental Breakfast
8:30 – 10:00 am	Podium Session: Running
10:00 – 11:00 am	Poster Session B
11:00 – 12:00 pm	ASB Keynote Address
12:00 – 1:15 pm	Lunch
1:15 – 2:30 pm	Podium Session: Sports and Performance
2:30 – 3:00 pm	Round-table Discussion (refreshments)
3:00 – 4:00 pm	Podium Session: Gait
4:00 – 4:15 pm	Awards and Closing Remarks

Podium Session 1: Human Development and Aging

Friday, May 19

1:45 - 3:00 pm

THE EFFECTS OF WEAKNESS, CONTRACTURE, AND ALTERED CONTROL ON WALKING ENERGETICS DURING CROUCH GAIT

Elijah C. Kuska and Katherine M. Steele

EFFECTS OF SPINAL STIMULATION AND INTERVAL TREADMILL TRAINING ON MOTOR CONTROL IN CHILDREN WITH CEREBRAL PALSY

Victoria M. Landrum, Charlotte D. Caskey, Siddhi Shrivastav, Kristie Bjornson, Chet T. Moritz, Katherine M. Steele

BONE DENSITY CHANGES ASSOCIATED WITH LUMBAR SPONDYLOLISTHESIS

Brandon Khoo, Celeste Tavolaro, Scott Telfer

QUANTIFYING TODDLER EXPLORATION WITH POWERED MOBILITY IN SEATED AND STANDING POSTURES

Zaino NL, Ingraham KA, Hoffman ME, Feldner HA, Steele KM

MECHANICAL ENVIRONMENT AFFECTS MUSCLE UTILIZATION DURING INFANT ROLLING

Danielle N. Siegel, Safeer F. Siddicky, Wyatt D. Davis, and Erin M. Mannen

Podium Session 2: Posture, Balance, and Falls

Friday, May 19

3:30 - 4:45 pm

DEVELOPMENT OF AN AUTOMATED FRAMEWORK FOR A TINYML-BASED FALL DETECTION SYSTEM

Mojtaba Mohasel, Lindsey Molina, Shane R. Wurdeman, Richard R. Neptune, Corey A. Pew

WHEELED WALKER USERS FALL SIDEWAYS AND BACKWARDS DURING TURNS AND TRANSFERS

Kimberly Nickerson, Kailey Diaz, Brittney Muir

DIFFERENT NEUROCOGNITIVE CONTROLS MODULATE OBSTACLE AVOIDANCE THROUGH PREGNANCY

Pegah Jamali, Kameron M. Kinkade, Asher Ericson, Ben Tyler, Shikha Prashad, Robert D. Catena

INVESTIGATING THE RELATIONSHIP BETWEEN LEG STRENGTH, MOBILITY, AND CENTER OF PRESSURE BALANCE IN OLDER ADULTS

Maya Holmen, Filip Fullerton, Katie Butte, Dale Cannavan

A BIOMECHANICAL CASE STUDY: NON-LINEAR RESPONSE OF THE PELVIS DURING A SIDEWAYS FALL IMPACT

E. Bliven, A. Fung, A. Baker, B. Helgason, P. Guy, P. Crompton

Podium Session 3: Running

Saturday, May 20

8:30 - 10:00 am

ANKLE KINEMATICS OF SELF-SELECTED MAXIMAL AND TRADITIONAL SHOE RUNNERS

Traut, AG. Hannigan, JJ. Bartel, L. Burr, B. Pollard, CD.

EFFECT OF GRADED RUNNING ON LOWER EXTREMITY JOINT WORK ASYMMETRY

Rachel Robinson, Seth Donahue, Aida Chebbi, Michael Hahn

RUN MECHANICS IN INDIVIDUALS WITH RESOLVED PLANTAR FASCIITIS VERSUS NO HISTORY OF PLANTAR FASCIITIS

Lukas Krumpl, Nickolai J.P. Martonick, Joshua P. Bailey

INFLUENCE OF SHOE CUSHIONING ON SKELETAL AND MUSCULAR CONTRIBUTIONS TO LEG STIFFNESS PRE AND POST LONG HILLY RUN

Ashlyn Baird and James Becker

COMPARING PEAK ANTERIOR-POSTERIOR GROUND REACTION FORCES BETWEEN RECREATIONAL RUNNERS IN MAXIMAL AND TRADITIONAL SHOES

Lily Bartel, Andrew Traut, Bethany Burr, Christine Pollard, JJ Hannigan

A BIOMECHANICAL COMPARISON OF "SUPER" SPIKES TO A TRADITIONAL TRACK SPIKE IN COMPETITIVE LONG DISTANCE FEMALE RUNNERS

Christina Geisler and JJ Hannigan

Podium Session 4: Sports and Performance

Saturday, May 20

1:15 - 2:30 pm

UPPER LIMB MOVEMENT IN VIRTUAL AND REAL-WORLD ENVIRONMENTS

Spitzley, KA, Hoffman, Z, Perlman, SE, Karduna, AR

THE EFFECTS OF SUBSCAPULARIS TRIGGER POINT RELEASE ON ROTATOR CUFF FUNCTION

Nathan Allas, Liana Castaneda, Jared Hubbell, Katie Butte, and Dale Cannavan

SEX DIFFERENCES IN PLANTAR PRESSURE DISTRIBUTION IN SOCCER PLAYERS AFTER FATIGUE

Aymeric Feyfant, Emily Karolidis, Michael Hahn

BIOMECHANICAL CONTRIBUTORS TO HEAD IMPACT DURING FALLS IN MOUNTAIN BIKING

Rickie Ma, Sukhman Gosal, Gary Mann, Stephen Robinovitch

A LOOK AT KINEMATIC METRICS IN BOTH HALVES OF PLAYER GAMES IN WOMEN'S SOCCER

Suliat Yakubu and Calvin Kuo

Podium Session 5: Gait

Saturday, May 20

3:00 - 4:00 pm

EFFECT OF COMMERCIAL PROSTHETIC FOOT STIFFNESS ON CONTRALATERAL KNEE LOADING AND PROSTHETIC FOOT-ANKLE BIOMECHANICS

Conrad Slater, Elizabeth Halsne, and David Morgenroth

UNEXPECTED UNDERFOOT PERTURBATIONS ELICIT CONSISTENT RESPONSES IN MEDIOLATERAL STABILITY DURING TURNING GAIT

Tyler Ho, Nicholas Kreter, Cameron Jensen, Peter Fino

COGNITIVE-MOTOR FUNCTION DURING JUMP LANDINGS FOLLOWING ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

Fatemeh Aflatounian, Ezekiel Barden, James N. Becker, Keith A. Hutchison, Janet E. Simon, Dustin R. Grooms, and Scott M. Monfort

COMPARISON OF SEX-BASED BIOMECHANICAL MODELS TO A DEFAULT MODEL

Abigail R. Brittain, Cristian Sandino, and Tyler N. Brown

Poster Session A

Friday, May 19, 2023

4:45 – 5:45 pm

Poster #	
1	ACUTE SKELETAL MUSCLE FATIGUE REDUCES CELLULAR PASSIVE AND ACTIVE STIFFNESS Grace E. Privett, Austin W. Ricci, Jordan D. Cooper, Damien M. Callahan
2	THE EFFECT OF INCREASED SENSORY FEEDBACK FROM NEUROMODULATION AND EXOSKELETON USE ON ANKLE CO-CONTRACTION IN CHILDREN WITH CEREBRAL PALSY Charlotte D. Caskey, Siddhi Shrivastav, Heather Feldner, Kristie Bjornson, Chet T. Moritz, Katherine M. Steele
3	MEASURING PLANTAR TISSUE STIFFNESS WITH THE ULTRASHOE (AN ULTRASOUND EMBEDDED SANDAL) Ellen Y. Li, Scott Telfer, Brittney Muir, William R. Ledoux
4	MANIPULATING IMPLEMENT WEIGHT DURING WARMUPS TO INCREASE SHOT PUT PERFORMANCE Klein, L. Graham, D. Whitten, J. McKibben, K., and Becker, J.
5	AWARENESS OF VISUAL OFFSET REDUCES BUT DOES NOT ELIMINATE UPPER LIMB MOVEMENT ERRORS IN VIRTUAL REALITY Motoki Sakurai and Andrew Karduna
6	GROUND REACTION FORCE DIFFERENCES BETWEEN CONCRETE AND BARK SURFACES DURING OUTDOOR RUNNING Anya Anand, Rachel Robinson, Michael Hahn
7	QUADRICEPS STEADINESS AND JERKY KNEE MOTION FOR INDIVIDUALS WITH KNEE MUSCULOSKELETAL INJURY AND DISEASE Nicholas L. Hunt, Matthew V. Robinett, Tyler N. Brown
8	SOCCER CLEAT STUD SHAPE AND FATIGUE STATE IMPOSE SEX-SPECIFIC DIFFERENCES IN KNEE MECHANICS Emily Karolidis, Michael E. Hahn
9	PEAK TORQUE LIMB COMPARISON AND KINESIOPHOBIA CORRELATION POST-ACLR SURGERY Burr, B, Pollard, CD, Phillips, D, and Hannigan, JJ
10	LOWER EXTREMITY JOINT WORK IN THE NIKE VAPORFLY NEXT% COMPARED TO MINIMALIST FOOTWEAR Reyes, K, Jin, L, Westley, L, and Hannigan, JJ
11	EVALUATING BETWEEN-LIMB DIFFERENCES IN CUTTING, DROP VERTICAL JUMPING, AND RUNNING BIOMECHANICS POST ACL-RECONSTRUCTION Dozhier, H.D, Pollard, C.D, Hannigan, J.J.

12	QUANTIFYING SPATIAL EXPLORATION OF TODDLERS WITH POWERED MOBILITY Grace O'Connor, Miriam Roberts
13	SAGITTAL PLANE TESTING FOR INFANT PRODUCT SAFETY: PROOF OF CONCEPT STUDY Sarah Goldrod, Dr. Erin M Mannen
14	KINEMATICS OF THE FIRST METATARSOPHALANGEAL JOINT: BAREFOOT VS SHOD Eric Thorhauer, William R. Ledoux
15	THE EFFECTS OF SPINAL STIMULATION AND INTERVAL TREADMILL TRAINING ON JOINT KINEMATICS IN CEREBRAL PALSY Avocet Nagle-Christensen, Charlotte D. Caskey, Siddhi Shrivastav, Kristie Bjornson, Chet T. Moritz, Katherine M. Steele
16	THE EFFECTS OF MUSCLE FATIGUE ON LOWER EXTREMITIES BIOMECHANICS DURING LAY-UP AND LANDING IN RECREATIONAL BASKETBALL PLAYERS Brandon Yang, Li Jin
17	CLUSTERING SOCCER ACTIVITIES ASSOCIATED WITH INJURY Shealie Lock, Suliat Yakubu, Wendy Ma, Calvin Kuo
18	EXAMINING HOW MIDSOLE MATERIAL IMPACTS CENTER OF PRESSURE TRAJECTORIES DURING TREADMILL RUNNING Mackenzie N Pitts, Katherine M Steele, Cristine E Agresta
19	IDENTIFICATION OF TISSUE DAMAGE USING FINITE ELEMENT MODELS OF SPINAL CORD INJURY AND MACHINE LEARNING Cesar Jimenez, Mohamad Narimani, and Carolyn Sparrey
20	CADAVERIC SIMULATION OF FLATFOOT AND SURGICAL CORRECTIVE TECHNIQUES: THE EVANS VERSUS THE Z-OSTEOTOMY Corey Wukelic, Grant C. Roush, Eric C. Whittaker, James Meeker, Kelly Apostle, Bruce J. Sangeorzan, William R. Ledoux
21	QUANTIFYING THE ACTIVITY LEVELS OF TODDLERS WITH DOWN SYNDROME PLAYING IN A PARTIAL BODY WEIGHT SUPPORT SYSTEM Mia E Hoffman, Reham Abuatiq, Katherine M Steele, and Heather A Feldner
22	THICKNESS OF DUAL-DENSITY METAMATERIALS INFLUENCES 3D-PRINTED INSOLE PROPERTIES Kimberly Nickerson, Ellen Li, Scott Telfer, William Ledoux, Brittney Muir
23	EFFECTS OF SUBMAXIMAL TREADMILL RUNNING ON PLANTAR FASCIA PROPERTIES IN RESOLVED PLANTAR FASCIITIS INDIVIDUALS Lukas Krumpal & Joshua P. Bailey
24	SEX-DIFFERENCES IN THE BIOMECHANICS OF SOFT TISSUE OVER THE HIP: ANALYSIS OF MUSCLE ACTIVATION AND HIP REGION. Fatemeh Khorami ; Carolyn J Sparrey
25	SEEING PROGRESS: AN AUGMENTED REALITY SYSTEM FOR ASSESSING AND VISUALIZING BIOMECHANICS Matthew A. Sielecki, Marianne S. Black

26	NOVEL METHODS TO ASSESS INTERFRAGMENTARY MOTION IN DISTAL FEMUR FRACTURES: COMPUTED TOMOGRAPHY VALIDATION Aerie Grantham, Elmer Vasquez, William D. Lack, William R. Ledoux
27	EFFECTS OF SHOE CUSHIONING ON KNEE LOADING DURING DOWNHILL RUNNING Lachlan Paige, Katie McKibben, Ashlyn Baird, Jim Becker
28	VALIDATION OF BIPLANE FLUOROSCOPY BONE TRACKING Nick Entress
29	THE EFFECTS OF A MEDITATION INTERVENTION ON SELF-REPORTED SUBJECTIVE AND PHYSIOLOGICAL STRESS IN COLLEGE STUDENTS Kara Lau, Sebastian Vargas, Rory McClelland, Katie Butte, Dale Cannavan
30	EFFECTS OF SURFACE STIFFNESS AND MASS ON HEAD IMPACT SEVERITY Omid Vakili, Stephen N. Robinovitch
31	PRELIMINARY DESIGN PROCESS FOR THE DEVELOPMENT OF A NEW ASSISTIVE WALKING DEVICE Kailey Diaz, Kimberly Nickerson, and Brittney C. Muir
32	ACUTE FATIGUE MODIFIES MUSCULOTENDINOUS STIFFNESS J D Cooper, A W Ricci, D M Callahan
33	EXPLORING THE EFFECT OF PHYSICAL ACTIVITY ON IN VIVO PASSIVE STIFFNESS IN THE LUMBAR SPINE Chelsea M. Dumasal and Kayla M. Fewster
34	EFFECT OF UNANTICIPATED CONSTRAINT ON LOWER EXTREMITY ENERGY ABSORPTION DURING JUMP LANDINGS FOLLOWING ACL RECONSTRUCTION Brendan P. Silvia, Fatemeh Aflatounian, James N. Becker, Keith A. Hutchinson, Janet E. Simon, Dustin R. Grooms, and Scott M. Monfort
35	OCCUPATIONAL THERAPIST'S PERSPECTIVES ON THE HARMONY EXOSKELETON FOR POST-STROKE REHABILITATION Tiffani Teng, Clairra Geller, Matthew Stutzenberger, Abbey Lacey, Ileana Howard, Brittney C. Muir
36	COMPARING PEAK TIBIAL INTERNAL ROTATIONAL VELOCITY IN RECREATIONAL RUNNERS IN MAXIMAL AND TRADITIONAL SHOES Ory, J, Traut, A, Bartel, L, Phillips, D, Pollard, C, Hannigan, J

Poster Session B

Saturday, May 20, 2023

10:00 – 11:00 am

Poster #	
1	KINEMATIC SEQUENCE DIFFERENCES BETWEEN TRAINED BASEBALL PLAYERS AND UNTRAINED ADOLESCENT INDIVIDUALS Wukelic, CP, Machak, S, Gromeier, M, and Shultz, SP
2	A ROBOTIC GAIT SIMULATOR USING A 6-DOFROTOPOD CONTROLLED WITH SIMVITRO SOFTWARE FOR TESTING PROSTHETIC AND CADAVERIC FEET William Lin, William R. Ledoux
3	QUANTIFYING TENSION IN A VERTEBRAL BODY TETHERING SYSTEM FOR SCOLIOSIS TREATMENT Phoebe Cain, Christy Farnsworth, Jason Caffrey, Tony Olmert, Erin Mannen, and Salil Upasani.
4	TRANSPORT DYNAMICS IN THE RAT ACHILLES TENDON DEPEND ON PARTICLE SIZE Forer, JM, Pacheco, YC, Link, K, Hahn, ME, Willett, NJ
5	QUANTIFYING FACET JOINT CAPSULE STRAIN IN THE CERVICAL SPINE Isabel D. Evans, Jeff M. Barrett, Kayla M. Fewster
6	EFFECT OF SPEED ON LOWER LIMB JOINT STIFFNESS DURING DECLINE RUNNING Lee S., Robinson R., Chebbi A., Hahn M.
7	VALIDITY AND RELIABILITY OF A SMARTPHONE IN MEASURING POSTURAL STABILITY Lovekin, Emily; Lugade, Vipul; Davis, April; San Juan, Jun
8	EFFECTS OF PRIOR ACLR AND COGNITIVE CHALLENGE ON POSTURAL CONTROL FOLLOWING A MEDIAL SIDE HOP Kaylan J Wait, Fatemah Aflatounian, Janet E Simon, Dustin R Grooms, James N Becker, Keith A Hutchison, Scott M Monfort
9	EXPLORING CLINICIAN PERSPECTIVE ON STANDARD OF CARE AND 3D-PRINTED ACCOMMODATIVE INSOLES Leo Gagnon, Kimberly Nickerson, Christina Carranza, Brittney Muir
10	QUANTITATIVE EVALUATION OF NOVEL HYBRID ANKLE FOOT ORTHOTIC DESIGN Gagnon, L, Muir, B, Klute, G, Cyr, K, Walling, K and Rogers, E
11	EFFECTS OF MANUAL MOBILIZATIONS ON FOOT KINEMATICS AND MUSCLE ACTIVITY Riley Hagger, Jackson Golden, James Becker, Forest Allan, Lachlan Paige
12	RELIABILITY OF LOW- AND HIGH-TECH METHODS TO QUANTIFY RUNNING FOOTWEAR FEATURES OF AN ERGOGENIC SHOE: A PRELIMINARY ANALYSIS

	Katie Landwehr, Sarah Shultz, Cristine Agresta
13	THE EFFECT OF SPEED ON ANKLE JOINT MECHANICS DURING INCLINE TREADMILL RUNNING Hidetaka Hayashi, Rachel Robinson, Seth Donahue, Aida Chebbi, Michael Hahn
14	DOES SUTURE TYPE OR CONFIGURATION MATTER IN PERCUTANEOUS ACHILLES TENDON REPAIR? Hana Keller, Scott Telfer, Kenneth Chin, Nate Benner, Grant Branam
15	INFANT CARRIAGE STRATEGIES UTILIZED BY NULLIPAROUS WOMEN WHILE NEGOTIATING STAIRS Holly Olvera, Abigail R. Brittain, Erin M. Mannen, Safeer F. Siddicky
16	RELATIONSHIP BETWEEN REACTIVE STRENGTH AND TAKEOFF EFFICIENCY IN THE LONG JUMP Shelby Schweyen and Jim Becker
17	EFFECT OF 3-D PRINTED CUSTOM ACCOMMODATIVE INSOLES ON BALANCE DURING WALKING Mathew Sunil Varre, Patrick Aubin, Jing-Sheng Li, Brittney C. Muir
18	THREE-DIMENSIONAL ANALYSIS OF WINDLASS MECHANISM USING WEIGHTBEARING COMPUTED TOMOGRAPHY IN PATIENTS WITH HALLUX RIGIDUS AND HEALTHY VOLUNTEERS Takumi Kihara
19	DEVELOPING COMPUTATIONAL MODELS OF UNILATERAL CERVICAL CONTUSIONS IN RATS TO QUANTIFY INJURY BIOMECHANICS Dexter L. Zamora, Cesar Jimenez, Shawn Liu, Carolyn J. Sparrey
20	LOWER-LIMB MUSCLE CO-ACTIVATION DOES NOT DIFFER BY AGE DURING DISTRACTED WALKING OVER CHALLENGING SURFACES Matthew V. Robinett, Nicholas L. Hunt, Amy E. Holcomb, Clare K. Fitzpatrick, and Tyler N. Brown
21	MORPHOLOGICAL PROPERTIES OF THE PLANTAR FASCIA: INTERVAL VS. CONTINUOUS RUNNING Margaret A. Lewis, Lukas Krumpl, Joshua P. Bailey
22	EVALUATING EFFICACY OF A FORCE-AMPLIFYING IMPLANTABLE MECHANISM IN A LIVE RABBIT FOREARM MODEL USING ELECTRICAL STIMULATION TO GENERATE MUSCLE TWITCHES Gabriella I Justen, Hantao Ling, Leah Streb, Jennifer Sargent, and Ravi Balasubramanian
23	MYTH OR SCIENCE: INCREASED GLUTEUS MAXIMUS ACTIVATION IMPROVES RUNNING ECONOMY Ricardo Sanchez, Carlos Hernandez, Justus Ortega
24	EFFECTS OF A TOTAL MOTION RELEASE (TMR®) INTERVENTION ON ASYMMETRICAL MOVEMENT PATTERNS Nickolai Martonick, Joshua Bailey
25	EVALUATING FRICTIONAL FORCES AT THE TENDON-IMPLANT INTERFACE WITH AND WITHOUT A LUBRICIOUS NON-FOULING COATING

	Ajay Zubin Ratty, Hantao Ling, Ravi Balasubramanian
26	EVALUATING THE BIOMECHANICAL EFFICACY OF AN ORTHOPEDIC IMPLANT IN AN IN-VIVO RABBIT MODEL Mockel, Stayce A; Bestel, Hans A; Balasubramanian, Ravi
27	MEASURING NATURAL DIVING KINEMATICS Alex Liu, Hayden Sidney-Phillips, Jean-Sébastien Blouin, Peter Cripton, Gunter Siegmund
28	MECHANICAL CHARACTERIZATION OF PAVLIK HARNESS STRAPS Sabrina L Mead, Erin M Mannen
29	EFFECTS OF SIDE LOAD CARRIAGE ON LIMB LOADING AND UNLOADING IN TRANSTIBIAL AMPUTEES Satria Ardiuanauri, Krista M. Cyr, Glenn K. Klute, Richard R. Neptune
30	SURFACE, BUT NOT AGE IMPACT LOWER LIMB JOINT WORK DURING WALK AND STAIR ASCENT Thomas A. Wenzel, Nicholas L. Hunt, Amy E. Holcomb, Clare K. Fitzpatrick, Tyler N. Brown
31	EFFECTS OF CHANGING HIP POSITION ON SCAPULAR KINEMATICS Sarah Schlittler, Dave Suprak, Lorrie Brilla, Jun San Juan
32	EVALUATING EXISTING TRANSTIBIAL AMPUTEE MUSCULOSKELETAL MODELS FOR USE ON FEMALE POPULATIONS: A SYSTEMATIC REVIEW Tess M.R. Carswell, Misha Hasan, and Joshua W. Giles
33	STUDYING SEX DIFFERENCES IN THE PROSTHETIC NEEDS AND PRIORITIES OF LOWER LIMB AMPUTEES BY ADAPTING THE PROSTHESIS EVALUATION QUESTIONNAIRE Tess M.R. Carswell, Helen Monkman, and Joshua W. Giles
34	ACUTE EFFECTS OF A NON-EXHAUSTIVE LONG RUN ON METATARSAL BONE LOADS Kaitlyn McKibben, Megan Peach, and James Becker