David C Kingston

Curriculum Vitae

2 March 2026

Department of Biomechanics
College of Education, Health, and Human Sciences
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EDUCATION

PhD	Department of Kinesiology	University of Waterloo	CA	2019
MSc	Kinesiology and Health Studies	Queen's University	CA	2013
BSc	Kinesiology and Health Studies	Queen's University	CA	2011

PROFESSIONAL APPOINTMENTS

Director	Movement Analysis Core University of Nebraska Omaha	2021-present
Assistant Professor	College of Education, Health, and Human Sciences University of Nebraska Omaha	2020-present
PDF	College of Medicine University of Saskatchewan	2019-2020
Manager	Ergonomics Laboratory University of Saskatchewan	2019-2020

GRANTS AND RESEARCH SUPPORT

Total Value of Support Received: $3,199,615

Total Active (4) – NIH Reporter Page

Aquatic Gait Training: Exploring Body Weight Support and Cardiovascular Responses for Cerebral Palsy Rehabilitation

Sponsor: Nebraska Research Initiative (NU-CI55420)
Project Period: 2025-2026
Budget: $93,566
Role: PI

Mechanics of underwater treadmill walking for individuals with subacute stroke.

Sponsor: Nebraska Research Initiative (NU-CI55467)
Project Period: 2025-2026
Budget: $99,758
Role: Co-I

Toward BCI-Mediated Gait Training in Children with CP: Identifying the Neural Correlates of Walking with NMES Assistance
Sponsor: Nebraska Research Initiative (NU-CI55075)
Project Period: 2025-2026
Budget: $99,561
Role: Co-I

The Center for Human Movement Variability – Movement Analysis Core Facility (MOVAN)
Sponsor: NIGMS (NIH-5P30GM159554)
Project Period: 2025-2030
Budget: $5,568,750 (MOVAN allocation $1,606,160)
Role: Core Director

Completed (12)

Mechanics of overground, dry, and aquatic treadmill walking in children & adolescents with cerebral palsy
Sponsor: NICHD (NIH-1R15HD109666)
Project Period: 2022-2025
Budget: $448,118
Role: PI

The Center for Human Movement Variability – Movement Analysis Core Facility (MOVAN)
Sponsor: NIGMS (NIH-5P20GM109090)
Project Period: 2019-2025
Budget: $10,392,394 (MOVAN allocation $1,022,748)
Role: Core Director

Development and efficacy of a feedback-driven treadmill
Sponsor: Nebraska Research Initiative (NU-POC40787)
Project Period: 2023-2024
Budget: $173,844
Role: Co-I

Determining Clinical Gait Analyses Sensitivity in Juvenile Idiopathic Arthritis: A Pilot Study
Sponsor: Child Health Research Institute (UNMC)
Project Period: 2023-2024
Budget: $15,000
Role: Co-I

Markerless Motion Capture for Children with Neurodegenerative Diseases
Sponsor: Early Career Investigator Program (NIH-U54 GM115458)
Project Period: 2022-2024
Budget: $44,550
Role: PI

The effects of a novel phantom exercise execution program on phantom limb pain and mobility in people with unilateral transtibial amputation: a feasibility pilot study
Sponsor: Canadian MSK Rehab Research Network (CIHR FRN: CFI-148081)
Project Period: 2022-2024
Budget: $24,982
Role: Co-I

Movement Analysis Research Core (MOVAN)
Sponsor: Nebraska Research Initiative (NU-NRI45427)
Project Period: 2021-2025
Budget: $400,000
Role: PI

Assessment of markerless motion capture for clinical gait analysis in children with cerebral palsy
Sponsor: Nebraska Research Initiative (NU-CI32082)
Project Period: 2022-2023
Budget: $39,944
Role: PI

Gait mechanics of treadmill and overground walking in children with CP following fixed knee flexion deformity surgery
Sponsor: Nebraska Research Initiative (NU-RDP26231)
Project Period: 2020-2023
Budget: $80,571
Role: PI

Biomechanics of post-operative treadmill walking rehabilitation in children with cerebral palsy
Sponsor: Nebraska Research Initiative (NU-CI26246)
Project Period: 2021-2022
Budget: $39,967
Role: PI

Alterations to plantar pressure, whole-body stability, and overall mobility from walking aid use in persons with type 2 diabetes mellitus
Sponsor: UCRCA (NU-UCRCA1366)
Project Period: 2020-2021
Budget: $5,000
Role: PI

An impactful step: Investigating lower limb joint loads during farm machinery egress
Sponsor: Saskatchewan Health Research Foundation (4921)
Project Period: 2019-2020
Budget: $100,000 (CAD)
Role: PI (Lead/Co Supervisors: Catherine M Trask/Audrey Zucker-Levin)

PUBLICATIONS

Journal	Impact Factor (05/2025)
Journal of Sport and Health Science	10.3
Chaos, Solutions & Fractals	5.6
Neurorehabilitation and Neural Repair	4.9
Human Factors	3.8
Sensors	3.7
Annals of Biomedical Engineering	3.2
IISE Transactions on Occupational Ergonomics and Human Factors	3.2
Applied Ergonomics	3.1
Ergonomics	2.8
Frontiers in Neurology - Pediatric Neurology	2.7
Experimental Physiology	2.6
American Journal of Physical Medicine and Rehabilitation	2.2
Gait & Posture	2.2
Journal of Electromyography and Kinesiology	2.0
Journal of Biomechanics	1.8
Proc of the Inst for Mech Eng, Part H: Journal of Eng in Med	1.8
The Knee	1.6
Clinical Biomechanics	1.4
International Journal of Vehicle Design	1.3
Journal of Applied Biomechanics	1.1
Journal of Agriculture Safety and Health	0.9
Foot & Ankle Orthopaedics	0.7

Peer-Reviewed Journal Publications (34)

Published or Accepted (30)

1. Mace SN, Harrington JW, Knarr BA, **Kingston DC**. (2025). Overground, Conventional, and Aquatic Treadmill Walking Peak and Time-to-Peak Joint Kinematics Differ in Typically Developed Children and Adolescents. *Journal of Biomechanics*, 188(7): 112764. PMID: 40413984. PMCID: PMC12417355.

2. Oluwaseye PO, Harrington JW, Likens A, **Kingston DC**, Knarr BA. (2025). An Aquatic Treadmill Alters Lower Limb Walking Dynamics in Typically Developing Children and Children with Cerebral Palsy. *Sensors*, 25(10):3220. PMID: 40432011; PMCID: PMC12115672. PMCID: PMC12115672.

3. Oluwaseye PO, Harrington JW, Likens A, Knarr BA, **Kingston DC**. (2025). Aquatic Treadmill Walking Lowers Pelvic Motion Complexity in Typically Developing and Children with Cerebral Palsy. *American Journal of Physical Medicine & Rehabilitation*, 104(5). PMID: 40208608. PMCID: PMC12353677.

4. Harrington JW, Dutt V, Knarr BA, **Kingston DC**. (2025). Differences in Lower Limb Co-Contraction Calculations Vary Clinical Interpretation of Aquatic Treadmill Walking in Typically Developing and Children with Cerebral Palsy. *Frontiers in Neurology*; 16: 1506326. PMID: 40098685; PMCID: PMC11912942.

5. Poomulna J, Dutt V, Knarr BA, **Kingston DC**. (2025). Comparison of gait deviation index (GDI) and gait variability index (GVI) measured by marker-based and markerless motion capture systems in children with cerebral palsy (CP). *Gait & Posture*; 115: 7-13. PMID: 39490268. PMCID: PMC12415537.

6. Leutzinger T, **Kingston DC**, Dinkel DM, Wellsandt E, Knarr BA. (2024). Differences in Knee Joint Moments Between Individuals Who are Obese and Those of a Healthy Weight when Negotiating Stairs. *The Knee*; 49(August): 217-225. PMID: 39043017. PMCID: PMC12376230.

7. Gwaltney, H, Anguiano-Hernandez JG, Harrington JW, **Kingston DC**. (2024). Plantar Kinetics During Wheeled Knee Walker Use Compared to Different Assistive Walking Aids in Persons with Type 2 Diabetes Mellitus. *Foot & Ankle Orthopaedics*; 9(1). PMID: 38510515; PMCID: PMC10952987.

8. Anguiano-Hernandez JG, Harrington JW, **Kingston DC**. (2023). Hand loading, rates of perceived exertion, and usability during assisted walking in patients with type 2 diabetes mellitus. *Clinical Biomechanics*, 110(December): 106124. PMID: 37864920 PMCID: PMC10872897.

9. Hinton E, Buffum R, **Kingston D**, Stergiou N, Kesar T, Bierner S, Knarr B. (2023). Real-Time Visual Kinematic Biofeedback During Overground Walking Improves Gait Biomechanics in Individuals Post-Stroke. *Annals of Biomedical Engineering*. PMID: 37870663 PMCID: PMC1101657.

10. Hinton EH, Buffum R, Stergiou N, **Kingston DC**, Bierner S, Knarr BA. (2023). A Portable Visual Biofeedback Device Can Accurately Measure and Improve Hip Extension Angle in Individuals Post-Stroke. *Clinical Biomechanics*, 105(May): 105967. PMID: 37087881; PMCID: PMC10198940.

11. Harrington JW, Anguiano-Hernandez JG, **Kingston DC**. (2023). Muscle Activation and Rating of Perceived Exertion of Typically Developing Children during Dry and Aquatic Treadmill Walking. *Journal of Electromyography and Kinesiology*, 68 (2): 102737. PMID: 36549263; PMCID: PMC9868073.

12. Anguiano-Hernandez JG, Harrington JW, Shivaswamy V, **Kingston DC**. (2022). Alterations to Plantar Loading and Ankle Range of Motion during Normal and Assisted Walking in Patients with Type 2 Diabetes Mellitus. *Gait & Posture*, 98: 56-61. PMID: 36055183; PMCID: PMC10029144.

13. **Kingston DC**, Ferwerda S, Fontaine C, Keeping M, Stewart J, Ward R, Zapski J, Collins K, Essien S, Zucker-Levin AR. (2021). Implications of walking aid selection for non-weight bearing ambulation on stance limb plantar force, walking speed, perceived exertion, and device preference in healthy adults 50 years of age and older. *Foot & Ankle Orthopaedics*, 6(1): 1-7. PMID: 35097435; PMCID: PMC8702690.

14. Buchman-Pearle J, **Kingston DC**, Acker SM. (2021). Lower Limb Movement Pattern Differences Between Males and Females in Squatting and Kneeling. *Journal of Applied Biomechanics*. 37(3): 204-214. PMID: 33690162.

15. Tennant L, Fok D, **Kingston DC**, Winberg TB, Parkinson R, Laing A, Callaghan JP. (2021). Analysis of invoked slips while wearing flip-flops in wet and dry conditions: Does alternative footwear alter slip kinematics? *Applied Ergonomics*. 92(April): 103318. PMID: 33290936.

16. Zehr JD, Fewster KM, **Kingston DC**, Gooyers CE, Parkinson RJ, Callaghan JP. (2021). Quantifying parameters of the seat-occupant interface during laboratory simulated low speed rear impact collisions. *International Journal of Vehicle Design*. 85(1): 32-47.

17. **Kingston DC**, Linassi AG, Zucker-Levin AR. (2020). Changes to stance limb peak, cumulative, and regional plantar foot forces among normal walking and three mobility aids in healthy older adults. *Gait & Posture*, 81: 96-101. PMID: 32707403.

18. **Kingston DC**, Acker SM. (2020). Development of a full flexion 3D musculoskeletal model of the knee considering intersegmental contact during high knee flexion movements. *Journal of Applied Biomechanics,* 36(6): 444-456. PMID: 32846408.

19. **Kingston DC**†, Bashiri B, Omoniyi A, Trask CM. (2020). Body orientation and points of contact during laboratory-based machinery egress: Investigating adherence to safety guidelines. *Journal of Agriculture Safety and Health*, 26(3): 95-104. [1]*Selected as 2021 Superior Paper award by ASABE.*

20. **Kingston DC** & Acker SM. (2019). Prediction of thigh-calf contact parameters from anthropometric regression. *Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine,* 4(233): 414-423. PMID: 30843468.

21. Gibbons TD, Zuj KA, Prince CN, **Kingston DC**, Peterson SD, Hughson RL. (2019). Hemodynamic effects of intermittent compression as countermeasure to orthostatic stress. *Experimental Physiology*, 104(12): 1790-1800. PMID: 31578774.

22. **Kingston DC** & Acker SM. (2018). Representing fine-wire EMG with surface EMG in three thigh muscles during high knee flexion movements. *Journal of Electromyography and Kinesiology*, 43(6): 55-61. PMID: 30237132.

23. **Kingston DC** & Acker SM. (2018). Thigh-calf contact parameters for six high knee flexion postures: Onset, maximum angle, total force, contact area, and center of force. *Journal of Biomechanics*, 67(23): 46-54. PMID: 29248190.

24. **Kingston DC**, Chong HC, Tennant LM, Acker SM. (2017). Lower limb muscular activation during transitions to symmetric high knee flexion postures in young females. *IISE Transactions on Occupational Ergonomics and Human Factors*, 5(2): 82-91.

25. Chong HC, Tennant LM, **Kingston DC**, Acker SM. (2017). Knee joint moment during high flexion movements: Timing of peak moments and the effect of safety footwear. *The Knee*, 24(2): 271-279. PMID: 28169098.

26. **Kingston DC**, Tennant LM, Chong HC, Acker SM. (2016). Peak activation of lower limb musculature during high flexion kneeling and transitional movements. *Ergonomics*, 59(9): 1215-1223. PMID: 26923936. PMID: 26923936

27. **Kingston DC,** Riddell MF, McKinnon CD, Gallagher KM, Callaghan JP. (2015). Influence of Input Hardware and Work Surface Angle on Upper Limb Kinematics in a Hybrid Workstation. *Human Factors*, 58(1): 107-119. PMID: 26424775.

28. Tennant LM, **Kingston DC,** Chong HC, Acker SM. (2015). The effect of work boots on the center of pressure location at the knee during static kneeling. *Journal of Applied Biomechanics*, 31(5): 363-369. PMID: 26099161.

29. Howarth SJ, **Kingston DC**, Brown SHM, Graham RB. (2013). Viscoelastic creep induced by repetitive spine flexion and its relationship to dynamic spine stability. *Journal of Electromyography and Kinesiology*, 23(4): 791-800. PMID: 23643300.

30. Almosnino S, **Kingston D**, Graham RB. (2013). Three-dimensional knee joint moments during bodyweight squat performance: Effects of stance width and foot rotation. *Journal of Applied Biomechanics*, 29(1): 33-43. PMID: 23462440.

Submitted (4)

1. Oluwaseye PO, Harrington JW, Dutt V, **Kingston DC**, Knarr BA. Underwater Treadmill Walking Improved the Hip-Ankle Interjoint Coordination Variability of Childrens with Cerebral Palsy. *Journal of Sport and Health Science*. Ref: JSHS-2025-1646.
2. Mace SN, Harrington JW, Dutt V, Knarr BA, **Kingston DC**. Changes to Dynamic Motor Control During Overground, Aquatic, and Dry Treadmill Walking in Typically Developing and Children with Cerebral Palsy. *Neurorehabilitation and Neural Repair*. Ref: NNR-25-0444.
3. Jensen CB, **Kingston DC**, Wilkins SJ, Rosen AB, Knarr BA. Joint Energy Generation and Absorption During Driver and Iron Swings in Collegiate Golfers. *Journal of Sport and Health Science*. Ref: JSHS-2025-1418.
4. Kim SK, Manifrenti MK, Wiles TM, **Kingston DC**, Stergiou N, Likens AD. Arms and Legs Synchronize Their Local Variability While Walking. *Chaos, Solitons and Fractals*. CHAOS-D-25-08320.

Non-Peer Reviewed Publications (1)

1. Almosnino S, **Kingston DC**, Graham RB, Stevenson JM. (2014). The effects of prolonged load carriage treadmill walking on lower extremity and trunk kinematics, heart rate, and perceived exertion. PWGSC #7711-0607896 on behalf of the *Department of National Defense*.

AWARDS, HONORS, AND CERTIFICATIONS

Certification	Year
Clinical Gait Analysis Interpreter – Level 2	2024
CIMER Mentorship Training	2023
Clinical Gait Analysis Interpreter – Level 1	2023
Fine-Wire EMG – GCMAS	2023

Awards	Total Value	Year
ASABE Superior Paper Award – JASH†	-	2021
Waterloo PhD Thesis Completion Award	$ 5,000	2018
Ontario Graduate Scholarship	$15,000	2017-18
Waterloo President's Graduate Award	$10,000	2017-18
University of Waterloo Staff Association Award	$ 500	2014/18
Queen's Graduate Award	$18,000	2011-13
Sport Information Research Centre Award	$ 2,000	2011
Queen's Academic Excellence Award	$ 2,000	2007
Queen's Athletic Recruitment Award	$ 3,500	2007

CONFERENCE ACTIVITY

Peer Reviewed Conference Abstracts (45)

1. Lee S, Harrington JW, **Kingston DC**. Lower Limb Muscle Datigue During Dry and Aquatic Treadmill Walking in Children with Cerebral Palsy. 10th World Congress of Biomechanics, July 11-16, 2026, Vancouver, BC, CA.

2. Mace SN, Dutt V, **Kingston DC**. Dynamic Stability During Overground Walking in People with Osteogenesis Imperfecta. 10th World Congress of Biomechanics, July 11-16, 2026, Vancouver, BC, CA.

3. Matthews C, Dibbern K, **Kingston DC**. Step-by-Step Foot Progression Angle Variation in Subjects with Cerebral Palsy. 10th World Congress of Biomechanics, July 11-16, 2026, Vancouver, BC, CA.

4. Harrington JW, **Kingston DC**. Detection of Gait Events during Aquatic Treadmill Walking using Shank Angular Velocity. 10th World Congress of Biomechanics, July 11-16, 2026, Vancouver, BC, CA.

5. Mathew SM, Harrington JW, **Kingston DC**. Pressure-Time Integral as a Marker of Fatigue and Compensatory Gait in Pediatric Foot Deformities. Gait and Clinical Movement Analysis Society Annual Meeting, June 9-13, 2026, Phoenix, AZ, US.

6. Mace SN, Dutt V, **Kingston DC.** The impact of leg length discrepancies on functional mobility, mechanical stability, and fatigue in individuals with osteogenesis imperfecta. 15th International Conference on Osteogenesis Imperfecta, October 29-31, 2025, Wanchai, Hong Kong.

7. Mace SN, **Kingston DC**, "Comparing clinician-measured, marker-based, and markerless leg length and margin of stability measures in children with and without cerebral palsy", Presented at the European Society for Movement Analysis in Adults and Children, September 8-13, 2025, Basel, CH.

8. Poomulna J, Knarr BA, Dutt V, **Kingston DC**, "Comparing Theia3D markerless to marker-based lower limb kinetics during walking in typically developing and children with cerebral palsy", Presented at the European Society for Movement Analysis in Adults and Children, September 8-13, 2025, Basel, CH.

9. Mace SN, Harrington JW, Dutt V, Knarr BA, **Kingston DC** (2025). Dynamic motor control during walking can be acutely modulated through manipulations in environment and speed in children with cerebral palsy. American Society of Biomechanics Annual Meeting, August 13-15, 2025, Pittsburgh, Pennsylvania, US.

10. Odanye OP, Harrington JW, **Kingston DC**, Knarr, BA. Aquatic Treadmill Decreases Lower-Limb Joint Coordination Variability of Cerebral Palsy and Typically Developing Children. American Society of Biomechanics Annual Meeting, August 13-15, 2025, Pittsburg, Pennsylvania, US.

11. Poomulna J, Knarr BA, Dutt V, **Kingston DC** Toe-in/out gait and transverse kinematic correlations between marker-based and markerless motion capture systems. 78th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine. October 23-26, 2024, Quebec City, QC, CA.

12. Harrington JW, Matthews C, Knarr BA, Dutt V, **Kingston DC**. Aquatic treadmill walking lowers muscle co-contraction in children with cerebral palsy. American Society of Biomechanics Annual Meeting, August 5-8, 2024, Madison, WI, US.

13. Mace SN, **Kingston DC**. The effect of dynamic treadmill walking on center of mass displacement: A feasibility study for a novel approach. American Society of Biomechanics Annual Meeting, August 5-8, 2024, Madison, WI, US.

14. Poomulna J, Knarr BA, Dutt V, **Kingston DC**. Comparing Theia3D analysis settings to marker-based outcomes in lower limb kinematics of children with cerebral palsy. American Society of Biomechanics Annual Meeting, August 5-8, 2024, Madison, WI, US.

15. Gwaltney HC, Knarr BA, Dinkel D, **Kingston DC**. Hand loading and lower limb kinematics during simulated assisted gait training: Proof of concept. American Society of Biomechanics Annual Meeting, August 5-8, 2024, Madison, WI, US.

16. Kim SK, Manifrenti MK, Wiles TM, **Kingston DC**, Stergiou N, Likens AD. Arm swing and leg swing during gait match trends of variability over time. American Society of Biomechanics Annual Meeting, August 5-8, 2024, Madison, WI, US.

17. Magalhães F, Yamaguchi FK, **Kingston DC**. Comparing marker-based and markerless systems in lower limb kinetic outcomes during gait in typically developed children: A Preliminary Study. Gait and Clinical Movement Analysis Society. June 16-18, 2024, Atlanta, GA, US.

18. Harrington JW, Knarr BA, Dutt V, **Kingston DC**. Lower Limb Muscle Activity During Aquatic Treadmill Walking: A Case Series. 77th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine. September 10-13, 2023, Chicago, IL, US.

19. Poomulna J, Knarr BA, Dutt V, **Kingston DC**. Comparison of Lower Limb Kinematic Outcomes Between Marker-Based and Markerless Motion Capture Systems During Overground Walking in Children with Cerebral Palsy. 77th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine. September 10-13, 2023, Chicago, IL, US.

20. Mace SN, Voto H, Knarr BA, **Kingston DC**. Botulinum Toxin Type A Injections May Improve Gait Kinematics Towards Typically Developing Values in Children with Cerebral Palsy: A Preliminary Report. American Society of Biomechanics Annual Meeting, August 8-10, 2023, Knoxville, TN, US.

21. Harrington JW, Knarr BA, Dutt V, **Kingston DC**. Muscle Activation During Aquatic Treadmill Walking in Children with Cerebral Palsy: Preliminary Evidence. American Society of Biomechanics Annual Meeting, August 8-10, 2023, Knoxville, TN, US.

22. Poomulna J, Dutt V, Knarr BA, **Kingston DC**. Comparison of gait deviation index measured by marker-based and markerless motion capture systems in children with cerebral palsy. American Society of Biomechanics Annual Meeting, August 8-10, 2023, Knoxville, TN, US.

23. Harrington JW, Nahm NJ, **Kingston DC**. Lower Limb Joint Kinematics Using Waterproof IMU and Motion Capture: A Case Study. North American Congress on Biomechanics, August 21-25, 2022, Ottawa, CA.

24. Anguiano-Hernandez JG, Shivaswamy V, **Kingston DC**. Changes to Stance Limb Plantar Force and Ankle Joint Flexion During Assisted Walking in Patients with Type 2 Diabetes. North American Congress on Biomechanics, August 21-25, 2022, Ottawa, ON, CA.

25. Poomulna J, Nahm NJ, **Kingston DC**. Center of Pressure While Standing and Treadmill Walking: Indicators of Dynamic Stability in Children with Cerebral Palsy. North American Congress on Biomechanics, August 21-25, 2022, Ottawa, ON, CA.

26. Hinton EH, Steffensen E, **Kingston D**, Stergiou N, Kesar T, Knarr BA. Visual Biofeedback During Overground Walking Increases Walking Speed in Individuals Post-Stroke. North American Congress on Biomechanics, August 21-25, 2022, Ottawa, ON, CA.

27. Hinton EH, Steffensen E, **Kingston D**, Stergiou N, Kesar T, Knarr BA. Real-Time Biofeedback Increases Hip Extension Angle in Individuals After Stroke. Annual Meeting of The Gait & Clinical Movement Analysis Society, June 7-8, 2022, The Woodlands, TX, US.

28. **Kingston DC**, Collins K, Essien SK, Zucker-Levin AR. Walking aid selection for non-weight bearing ambulation: Effects on stance limb plantar force, walking speed, perceived exertion, and device preference in adults 50 years of age and older. 28th Congress of the International Society of Biomechanics, July 25-29th, 2021, Stockholm, SE.

29. **Kingston DC**, Bashiri B, Omoniyi A, Trask CM. Farm Machinery Operator Egress: Investigating Adherence to Safety Guidelines Following Whole-Body Vibration in a Laboratory Model. 21st Triennial Congress of the International Ergonomics Association, June 11-13th, 2021, Vancouver, BC, CA.

30. **Kingston DC**, Bashiri B, Omoniyi A, Trask CM. Body orientation and points of contact during laboratory-based machinery egress. 21st Biennial Meeting of the Canadian Society for Biomechanics, May 25-28th, 2021, Montreal, QC, CA.

31. **Kingston DC**, Acker SM. Influence of intersegmental contact on tibial contact forces during high knee flexion movements. 27th Congress of the International Society of Biomechanics, July 31-August 4th, 2019, Calgary, AB, CA.

32. Buchman-Pearle J, **Kingston DC**, Acker SM. Effect of Ankle Range of Motion on High Knee Flexion Posture Kinematics. 27th Congress of the International Society of Biomechanics, July 31-August 4th, 2019, Calgary, AB, CA.

33. Tennant L, Fok D, **Kingston DC**, Parkinson R, Laing A, Callaghan JP. Dynamics during Controlled Slips from Standing in Alternative Footwear. 27th Congress of the International Society of Biomechanics, July 31-August 4th, 2019, Calgary, AB, CA.

34. **Kingston DC**, Acker SM. The effect of 3D thigh-calf contact on external knee forces and moment in six high knee flexion movements. 20th Biennial Meeting of the Canadian Society for Biomechanics, August 14-17, 2018, Halifax, NS, CA.

35. **Kingston DC**, Acker SM. Modelling of three lower-limb deep muscle activation profiles with surface EMG during kneeling and squatting movements. 20th Biennial Meeting of the Canadian Society for Biomechanics, August 14-17, 2018, Halifax, NS, CA.

36. Ivanochko NK, **Kingston DC**, Acker SM. Changes in knee extensor muscle activation due to thigh-calf contact. 20th Biennial Meeting of the Canadian Society for Biomechanics, August 14-17, 2018, Halifax, NS, CA.

37. Zehr JD, Fewster KM, **Kingston DC**, Gooyers CE, Callaghan JP. Quantifying the seat-occupant interface during a low speed rear-impact collision. 20th Biennial Meeting of the Canadian Society for Biomechanics, August 14-17, 2018, Halifax, NS, CA.

38. **Kingston DC**, Acker SM. Thigh-calf contact during six high knee flexion movements: onset, range of motion, magnitude, and contact area. 41st Annual Meeting of the American Society of Biomechanics, August 8-11, 2017, Boulder, CO, US.

39. **Kingston DC**, Berry JB, Barrett JM, Acker SM. Identification of muscle synergies during high knee flexion squatting. 19th Biennial Meeting of the Canadian Society for Biomechanics, July 19-22, 2016, Hamilton, ON, CA.

40. Park J, **Kingston DC**, Callaghan JP. Use of dowel-assisted training methods to reduce peak lumbar flexion angles during lifting low-lying objects. 19th Biennial Meeting of the Canadian Society for Biomechanics, July 19-22, 2016, Hamilton, ON, CA.

41. **Kingston DC**, Chong HC, Tennant LM, Acker SM. High knee flexion and lower limb muscle activation: Does movement pattern matter? 39th Annual Meeting of the American Society of Biomechanics, August 5-8, 2015, Columbus, OH, US.

42. **Kingston DC**, Riddell MF, McKinnon CD, Gallagher KM, Callaghan JP. Influence of Input Hardware and Work Surface Angle on Upper Limb Kinematics. 7th World Congress of Biomechanics, July 6-11, 2014, Boston, MA, US.

43. Howarth SJ, **Kingston DC**, Brown SHM, Graham RB. Merging in vivo estimates of passive tissue changes with local dynamic stability of spine movement during repetitive spine flexion. 7th World Congress of Biomechanics, July 6-11, 2014, Boston, MA, US.

44. **Kingston DC**, Stevenson JM, Graham RB, Smallman CL, Abdoli-EM. An Overview of Research Involving the Personal Lift-Assist Device (PLAD). Association of Canadian Ergonomists, August 14-16, 2012, Halifax, NS, CA.

45. **Kingston DC**, Almosnino S, Yang S, Graham RB, Stevenson JM, Costigan PA. Frontal plane knee loading during bodyweight squat performance: Effect of stance width and foot rotation. American College of Sports Medicine Conference May 31-June 4, 2011, Denver, CO, US.

Non-Peer Reviewed Conference Abstracts (46)

1. Odanye PO, Harrington JW, **Kingston DC**, Knarr BA. Aquatic Treadmill Influences Lower Limb Joint Coordination of Children with Cerebral Palsy. 10th Annual Human Movement Variability and 6th Annual Great Plains Biomechanics Conference, May 19-20, 2025, Omaha, NE, US.

2. Poomulna J, **Kingston DC**. Effects of Theia3D User Settings Adjustments on Lower Limb Kinematics During Overground Walking in Typically Developing Children and Children with Cerebral Palsy. 10th Annual Human Movement Variability and 6th Annual Great Plains Biomechanics Conference, May 19-20, 2025, Omaha, NE, US.

3. Mace SN, Harrington JW, Dutt V, Knarr BA, **Kingston DC**. Manipulations of environment and speed can acutely modulate dynamic motor control during walking in children with cerebral palsy. 10th Annual Human Movement Variability and 6th Annual Great Plains Biomechanics Conference, May 19-20, 2025, Omaha, NE, US.

4. Jensen C, **Kingston DC**, Knarr BA. Biomechanical Comparison of Overground, Self-Paced, and Fixed-Speed Treadmill Walking and Running. 10th Annual Human Movement Variability and 6th Annual Great Plains Biomechanics Conference, May 19-20, 2025, Omaha, NE, US.

5. Harrington JW, Matthews C, Knarr BA, Dutt V, **Kingston DC**. Differences in Muscle Co-Contraction using an Aquatic Treadmill in Children with Cerebral Palsy. 9th Annual Human Movement Variability and 5th Annual Great Plains Biomechanics Conference, May 29-30, 2024, Omaha, NE, US.

6. Mace SN & **Kingston DC**. The effect of dynamic treadmill walking on center of mass displacement: A feasibility study for a novel approach. 9th Annual Human Movement Variability and 5th Annual Great Plains Biomechanics Conference, May 29-30, 2024, Omaha, NE, US.

7. Poomulna J & **Kingston DC**. Correlations Between Toe-In/Out Gait and Transverse Kinematic Measured Using Theia3D and Marker-based Motion Capture System. 9th Annual Human Movement Variability and 5th Annual Great Plains Biomechanics Conference, May 29-30 2024, Omaha, NE, US.

8. Gwaltney HC, Knarr BA, Dinkel D, **Kingston DC**. Changes in Hand Loading and Lower Limb Kinematics During Simulated Assisted Gait Training: A Case Study. 9th Annual Human Movement Variability and 5th Annual Great Plains Biomechanics Conference, May 29-30, 2024, Omaha, NE, US.

9. Harrington JW, **Kingston DC**. Using Statistical Parametric Mapping to Compare IMU Calibration Types and 3D Motion Capture. 16th Annual Student Research and Creative Activity Fair, March 22, 2024, Omaha, NE, US.

10. Harrington JW, Knarr BA, Dutt V, **Kingston DC**. Muscle Activation during Aquatic Treadmill Walking in Children with Cerebral Palsy: Preliminary Evidence. 16th Annual Student Research and Creative Activity Fair, March 22, 2024, Omaha, NE, US.

11. Mace SN, Dutt V, **Kingston DC**. Six-week efficacy of botulinum toxin type A injections on gait kinematics in children with cerebral palsy. 16th Annual Student Research and Creative Activity Fair, March 22, 2024, Omaha, NE, US.

12. Mace SN & **Kingston DC**. The effect of unstable treadmill gait training on healthy young adults: A pilot study. 16th Annual Student Research and Creative Activity Fair, March 22, 2024, Omaha, NE, US.

13. Harrington JW, Knarr BA, Dutt V, **Kingston DC**. Effect of Aquatic Treadmill Walking on Muscle Activity in Children with Cerebral Palsy. 8th Annual Human Movement Variability and 4th Annual Great Plains Biomechanics Conference, June 5-6, 2023, Omaha, NE, US.

14. Poomulna J, Knarr BA, Dutt V, **Kingston DC**. Comparison of Lower Limb 3D Kinematic Outcomes Between Marker-Based and Markerless Motion Capture System During Overground

Walking in Children with CP. 8th Annual Human Movement Variability and 4th Annual Great Plains Biomechanics Conference, June 5-6, 2023, Omaha, NE, US.

15. Gwaltney H, Harrington JW, Anguiano-Hernandez JG, **Kingston DC**. Plantar Kinetics During Walking Aid Use in Persons with Type 2 Diabetes Mellitus. 8th Annual Human Movement Variability and 4th Annual Great Plains Biomechanics Conference, June 5-6, 2023, Omaha, NE, US.

16. Mace SN, Voto H, Knarr BA, **Kingston DC**. Six-Week Efficacy of Botulinum Toxin Type A Injections on Gait Kinematics in Children with Cerebral Palsy. 8th Annual Human Movement Variability and 4th Annual Great Plains Biomechanics Conference, June 5-6, 2023, Omaha, NE, US.

17. Harrington JW, Nahm NJ, **Kingston DC**. Comparison of Waterproof IMU Joint Kinematics with Motion Capture: A Case Study. 7th Annual Human Movement Variability and 3rd Annual Great Plains Biomechanics Conference, May 18-20, 2022, Omaha, NE, US.

18. Oluwaseye P, Harrington JW, Likens A, **Kingston DC**, Knarr BA. Aquatic Treadmill Walking Improves Pelvic Dynamics of Typically Developing and Children with Cerebral Palsy. 15th Annual Student Research and Creative Activity Fair, March 15, 2023, Omaha, NE, US.

19. Harrington JW, Nahm NJ, **Kingston DC**. Analysis of Joint Kinematics using Waterproof IMU and Motion Capture: A Case Study. 14th Annual Student Research and Creative Activity Fair, March 4, 2022, Omaha, NE, US.

20. Anguiano-Hernandez JG, Shivaswamy V, **Kingston DC**. Stance Limb Plantar Force and Ankle Joint Mechanics During Assisted Walking in Patients with Type 2 Diabetes. 7th Annual Human Movement Variability and 3rd Annual Great Plains Biomechanics Conference, May 18-20, 2022, Omaha, NE, US.

21. Anguiano-Hernandez JG, Shivaswamy V, **Kingston DC**. Comparison of Plantar Force and Ankle Range of Motion during Walking Aid use in Type 2 Diabetes Patients. 14th Annual Student Research and Creative Activity Fair, March 4, 2022, Omaha, NE, US.

22. Poomulna J, Nahm NJ, **Kingston DC**. Center of Pressure of Children with Cerebral Palsy While Standing and Treadmill Walking: Possible Links to Dynamic Stability. 7th Annual Human Movement Variability and 3rd Annual Great Plains Biomechanics Conference, May 18-20, 2022, Omaha, NE, US.

23. Remski LE, **Kingston DC**, Knarr BA. Usability of a Feedback-Controlled Treadmill in Healthy Adults: A Pilot Study. 7th Annual Human Movement Variability and 3rd Annual Great Plains Biomechanics Conference, May 18-20, 2022, Omaha, NE, US.

24. Hinton EH, Bierner S, **Kingston D**, Stergiou N, Kesar T, Knarr BA. Improving Paretic Gait Mechanics Using Visual Overground Biofeedback. 7th Annual Human Movement Variability and 3rd Annual Great Plains Biomechanics Conference, May 18-20, 2022, Omaha, NE, US.

25. Leutzinger T, **Kingston DC**, Wellsandt E, Dinkel D, Knarr BA. The Effect of Unilateral Handrail Use on Normalized Peak Knee Kinetics in Obese And Healthy Weight Individuals During Stair Negotiation. 7th Annual Human Movement Variability and 3rd Annual Great Plains Biomechanics Conference, May 18-20, 2022, Omaha, NE, US.

26. Servais M, Eggleston G Partusch L, Wilkins S, **Kingston DC**, Knarr BA. Analyzing Thoracic Spine and Hip Mobility and the Effects on Kinematics in the Golf Swing and its Relation to Injury and Performance. 7th Annual Human Movement Variability and 2nd Annual Great Plains Biomechanics Conference, May 18-20, 2022, Omaha, NE, US.

27. Eggleston G, Servais M, Partusch L, **Kingston DC**, Burcal C, Knarr BA. The Effect of External Cues on Lower Back Loading During the Golf Swing. 7th Annual Human Movement Variability and 2nd Annual Great Plains Biomechanics Conference, May 18-20, 2022, Omaha, NE, US.

28. Scott A, Hamer TJ, **Kingston DC**, Rosen AB, Knarr BA. Relationship of Shoulder Strength to Kinetics and Kinematics in Collegiate Baseball Pitchers. 7th Annual Human Movement Variability and 2nd Annual Great Plains Biomechanics Conference, May 18-20, 2022, Omaha, NE, US.

29. **Kingston DC**, Ghoseiri K, Zucker-Levin A. Surrogate Measure of Phantom Hand Motion. Bi-Annual Ontario Association for Amputee Care Conference, May 7, 2021, Virtual, CA.

30. Buchman-Pearle J, **Kingston DC**, Acker SM. Ankle mobility in kneeling and its effect at the knee and hip. 16th Annual Ontario Biomechanics Conference, March 9-11, 2019, Alliston, ON, CA.

31. **Kingston DC**, Acker SM. Modelling of three lower-limb deep muscle activation profiles with surface EMG during kneeling and squatting movements. 15th Annual Ontario Biomechanics Conference, March 9-11, 2018, Alliston, ON, CA.

32. Ivanochko NK, **Kingston DC**, Acker, SM. Influence of thigh-calf contact on quadriceps muscle activity in high knee flexion activities. 15th Annual Ontario Biomechanics Conference, March 9-11, 2018, Alliston, ON, CA.

33. Zehr JD, Fewster KM, **Kingston DC**, Callaghan JP. The influence of lumbar support on the seat-occupant interface during a moderate velocity rear-impact collision. 15th Annual Ontario Biomechanics Conference, March 9-11, 2018, Alliston, ON, CA.

34. Fok D, Tennant L, **Kingston DC**, Parkinson R, Laing A, Callaghan JP. Slipping differences in flip-flops and running shoes on dry and wet surfaces during standing. 15th Annual Ontario Biomechanics Conference, March 9-11, 2018, Alliston, ON, CA.

35. Park J, **Kingston DC**, and Callaghan JP. Transfer of Hip Hinge Movement Pattern Training into Lifting Task Performance of Novice Lifters. Toronto International Strength and Conditioning Summit, May 14-15, 2017 Toronto, ON, CA.

36. **Kingston DC**, Acker SM. Thigh-calf contact during six high knee flexion movements: onset, range of motion, magnitude, and contact area. 14th Annual Ontario Biomechanics Conference, March 10-12, 2017, Alliston, ON, CA.

37. Ivanochko NK, **Kingston DC**, Acker SM. Preliminary feasibility of in-shoe pressure sensors for measuring thigh-calf contact. 14th Annual Ontario Biomechanics Conference, March 10-12, 2017, Alliston, ON, CA.

38. **Kingston DC**, Acker SM. Prediction of thigh-shank contact force and location from movement and anthropometrics. 13th Annual Ontario Biomechanics Conference, March 11-13, 2016, Alliston, ON, CA.

39. Park J, **Kingston DC**, Callaghan JP. Use of dowel-assisted training methods to facilitate hip-dominant lifting performance. 13th Annual Ontario Biomechanics Conference, March 11-13, 2016, Alliston, ON, CA.

40. **Kingston DC**, Tennant LM, Chong HC, Acker SM. High Knee Flexion and Lower Limb Muscle Activation: Does Movement Pattern Matter? 12th Annual Ontario Biomechanics Conference, March 13-15, 2015, Alliston, ON, CA.

41. **Kingston DC**, Almosnino S, Graham RB. Biomechanics of Military Load Carriage 1: The Effects of Prolonged Walking on Movement Kinematics. CIMVHR Forum 2014, November 24-26, 2014, Toronto, ON, CA.

42. **Kingston DC**, Riddell MF, McKinnon CD, Gallagher KM, Callaghan JP. Influence of Input Hardware and Work Surface Angle on Upper Limb Kinematics. 11th Annual Ontario Biomechanics Conference, March 15-17, 2014, Barrie, ON, CA.

43. Graham RB, **Kingston DC**, Almosnino S. Biomechanics of Military Load Carriage 2: The Effects of Walking Speed on Dynamic Gait Stability. CIMVHR Forum 2014, November 24-26, 2014, Toronto, ON, CA.

44. **Kingston D**, Almosnino S, Bardana D, Stevenson J, Graham R. Effects of prolonged load carriage walking on lower extremity and trunk kinematics, heart rate, and subjective responses. 10th Annual Ontario Biomechanics Conference, March 15-17, 2013, Barrie, ON, CA.

45. **Kingston DC**, Costigan PA. The effect of acute injury on knee stability control during the leg extension exercise. 9th Annual Ontario Biomechanics Conference, March 16-18, 2012, Barrie, ON, CA.

46. **Kingston DC**, Almosnino S, Yang S, Graham RB, Stevenson JM, Costigan PA. Knee loading during bodyweight squat performance: Effect of stance width and foot rotation. 13th Rehabilitation Research Colloquium Conference, May 20, 2011, Kingston, Ontario, CA.

INVITED TALKS

1. Biomechanics and Movement Analyses for Pediatric Care. Department of Physical Medicine and Rehabilitation, **Children's Hospital and Medical Center Omaha**, July 25, 2022.
2. Movement control and knee loading in full range of knee motion. Department of Biomechanics, **University of Nebraska Omaha**, March 11, 2020.
3. Variability and joint loading in high knee flexion movements. Department of Biomechanics Seminar Series, **University of Nebraska Omaha**, October 9, 2020.

TEACHING EXPERIENCE

Instructor

Department of Biomechanics – University of Nebraska Omaha

Mathematics of Biomechanical Data Processing	Overall: 4.09/5 (8/9 responses)	S-2025
	Overall: 3.67/5 (12/12 responses)	S-2024
Advanced Biomechanics	Overall: 4.53/5 (13/14 responses)	F-2025
	Overall: 4.04/5 (7/8 responses)	F-2024
	Overall: 4.60/5 (16/17 responses)	F-2023
	Overall: 4.14/5 (7/12 responses)	F-2022
Biomechanics	Overall: 3.94/5 (15/19 responses)	S-2023
Introduction to Biomechanics	Overall: 4.55/5 (21/37 responses)	F-2021
Ethics in Scientific Research	Overall: 3.82/5 (22/22 responses)	S-2021

Course Development

Graduate Level

Mathematics of Biomechanical Data Processing	University of Nebraska Omaha	2023

TRAINEES

Graduate Level

SangYup Lee	PhD Biomechanics (UNO)	2025-present
Stephanie Mace	PhD Biomechanics (UNO)	2022-present
Joseph Harrington	PhD Biomechanics (UNO)	2022-present
Jutharat Poomulna	PhD Biomechanics (UNO)	2021-2025
Colina Matthews	MSc Biomechanics (UNO)	2023-present
†Holton Gwaltney	MSc Biomechanics (UNO)	2022-2024

†*Winner of UNO's CEHHS Outstanding Graduate Student Award 2024*

Jose Anguiano-Hernandez	MSc Biomechanics (UNO)	2020-2022
Joseph Harrington	MSc Biomechanics (UNO)	2020-2022

Undergraduate Level

Amanda Mace	Student Worker (UNO)	2023-2024
Lily Taylor	Fund for Undergraduate Scholarly Experience (UNO)	2023-2024
Jordan Berry	BSc Kinesiology Honours Thesis (Waterloo)	2015
Johnathan Park	BSc Kinesiology Honours Thesis (Waterloo)	2014

Graduate Thesis Committee Member

Madison Kerr	PhD Biomechanics (UNO)	2025-present
Mobina Masaei	MSc Biomechanics (UNO)	2025-present
Cooper Besougloff	MSc Biomechanics (UNO)	2025-present
Paul Oluwaseye	PhD Biomechanics (UNO)	2024-2025
Dimitri Hann	MSc Biomechanics (UNO)	2024-2025
Cameron Jensen	MSc Biomechanics (UNO)	2024-2025
Takato Ogasawara	MSc Biomechanics (UNO)	2023-2025
Martins Amaechi	MSc Biomechanics (UNO)	2023-2024
Emily Steffensen	PhD Biomechanics (UNO)	2022-2024
Seongwoo Mun	MSc Biomechanics (UNO)	2021-2022
Shane Hultine	MSc Biomechanics (UNO)	2020-2023
Kamiar Ghoseiri	PhD Physical Therapy (uSask)	2020-present
Michael Servais	MSc Biomechanics (UNO)	2020-2022
Garrett Eggleston	MSc Biomechanics (UNO)	2020-2022

Angeleau Scott	MSc Biomechanics (UNO)	2020-2022
Erica Hedrick	PhD Biomechanics (UNO)	2019-2022
Todd Leutzinger	PhD Biomechanics (UNO)	2018-2021

DEPARTMENTAL/UNIVERSITY SERVICE

University of Nebraska Omaha

University Budget Advisory Committee	Member	2023-2026
Dept. of Biomechanics – Doctoral Program Committee	Member	2023-2024
Dept. of Biomechanics – Graduate Program Committee	Member	2023-present
Movement Analysis Core	Director	2020-present

University of Saskatchewan

College of Medicine Graduate Studies Committee	PDF Representative	2019-2020

University of Waterloo

Senate Graduate & Research Council	AHS Graduate Representative	2016-2017
Faculty Graduate Studies Committee	Kinesiology Student Representative	2016-2017
Kinesiology Graduate Student Association		
Past-President		2017-2018
President		2016-2017
Vice President		2015-2016
Department Council Representative		2014-2015

Queen's University

Graduate Student Counsel	Biomechanics Department Representative	2012-2013

SERVICE TO PROFESSION

Manuscript Review	Journal of Biomechanics Open	2026-present
Manuscript Review	Artificial Intelligence in Medicine	2025-present
Manuscript Review	Euro Journal of Physical Medicine and Rehabilitation	2025-present
Manuscript Review	Arch of Rehab Research and Clinical Translation	2024-present
Manuscript Review	Annals of Biomedical Engineering	2024-present
Manuscript Review	Scandinavian Journal of Medicine and Sci in Sports	2023-present
Manuscript Review	Proc Inst of Mech Eng, Part H: J Eng in Med	2021-present
Manuscript Review	Gait & Posture	2021-present
Manuscript Review	Frontiers in Bioengineering and Biotechnology	2021-present
Manuscript Review	Journal of Anatomy	2021-present
Manuscript Review	Journal of Clinical Biomechanics	2021-present
Manuscript Review	Journal of Motor Behavior	2021-present
Manuscript Review	Part H: Journal of Engineering in Medicine	2020-present
Manuscript Review	Journal of Applied Ergonomics	2020-present
Manuscript Review	Journal of Biomechanics	2020-present
Manuscript Review	Journal of Applied Biomechanics	2020-present
Manuscript Review	IEEE Translational Engineering in Health & Medicine	2020-present
Manuscript Review	BMJ Open Sport & Exercise Medicine	2019-present
Reviewer	HMV-GPB Conference	2024-present

Reviewer	National Institutes of Health	2022-present
Reviewer	ISB – David Winter Young Investigator Award Panel	2021-present
Reviewer	National Science Foundation	2021
Reviewer	WorkSafe BC Innovation at Work	2021, 2024
Reviewer	WorkSafe BC Research Training Awards	2019-2020, 2024
Technical Committee	Association of Canadian Ergonomists Conference	2019

PROFESSIONAL AFFILIATIONS

Euro Soc for Movement Analysis in Adults and Children	(ESMAC)	2025-present
National Strategic Research Institute – Fellow	(NSRI)	2025-present
American Academy of Cerebral Palsy and Dev Medicine	(AACPDM)	2023-present
Gait and Clinical Movement Analysis Society	(GCMAS)	2023-present
American Society of Biomechanics	(ASB)	2017-present
International Society of Biomechanics	(ISB)	2014-present
Association of Canadian Ergonomists	(ACE)	2019-2022
Canadian Society for Biomechanics	(CSB)	2014-2022