David C Kingston

Curriculum Vitae

17 April 2025

Department of Biomechanics Citizenship: Canadian

College of Education, Health, and Human Sciences Office: 1-402-554-6351

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# EDUCATION

PhDDepartment of Kinesiology, University of Waterloo 2019

MScKinesiology and Health Studies, Queen’s University 2013

BScKinesiology and Health Studies, Queen’s University 2011

# Professional Appointments

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

# Grants and research support

**Total Value of Individual Support Received:** $1,829,350.54

**Total Active (1) –** [**NIH Reporter Page**](https://reporter.nih.gov/search/7h5zp57N4kmQ9zxXwxi2Zg/projects)

**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

**Completed (11)**

**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 - Proof-of-Concept (NU-40787)

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: Collaboration 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: Research Development Program (NU-RDP26231)

Project Period: 2020-2023

Budget: $80,571

Role: PI

**Biomechanics of post-operative treadmill walking rehabilitation in children with cerebral palsy**

Sponsor: Collaboration 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

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| --- | --- |
| **Journal** | **Impact Factor (09/2024)** |
| Human Factors | 3.8 |
| 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 |
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**Peer Reviewed Journal Publications (31)**

Published or Accepted (28)

1. 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](https://doi.org/10.1097/phm.0000000000002750). *American Journal of Physical Medicine & Rehabilitation*; 104(5): TBD. PMID: 40208608.
2. 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.](https://doi.org/10.3389/fneur.2025.1506326) *Frontiers in Neurology*; 16: 1506326*.* PMID: 40098685; PMCID: PMC11912942.
3. 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)](https://doi.org/10.1016/j.gaitpost.2024.10.018). *Gait & Posture*;115: 7-13. PMID: 36549263.
4. 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](https://doi.org/10.1016/j.knee.2024.07.006). *The Knee*; 49(August): 217-225. PMID: 39043017.
5. 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](https://doi.org/10.1177/24730114241235911). *Foot & Ankle Orthopaedics*; 9(1). PMID: 38510515; PMCID: PMC10952987.
6. 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](https://doi-org.leo.lib.unomaha.edu/10.1016/j.clinbiomech.2023.106124). *Clinical Biomechanics*, 110(December): 106124. PMID: 37864920 PMCID: PMC10872897.
7. 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](https://doi.org/10.1007/s10439-023-03381-0). *Annals of Biomedical Engineering*. PMID: 37870663 PMCID: PMC1101657.
8. 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.](https://doi-org.leo.lib.unomaha.edu/10.1016/j.clinbiomech.2023.105967) *Clinical Biomechanics*, 105(May): 105967. PMID: 37087881; PMCID: PMC10198940.
9. 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.](https://doi.org/10.1016/j.jelekin.2022.102737) *Journal of Electromyography and Kinesiology*, 68 (2): 102737. PMID: 36549263; PMCID: PMC9868073.
10. 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.](https://doi.org/10.1016/j.gaitpost.2022.08.018) *Gait & Posture*, 98: 56-61. PMID: 36055183; PMCID: PMC10029144.
11. **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.](https://doi.org/10.1177%2F2473011421998939) *Foot & Ankle Orthopaedics*, 6(1): 1-7. PMID: 35097435; PMCID: PMC8702690.
12. Buchman-Pearle J, **Kingston DC**, Acker SM. (2021). [Lower Limb Movement Pattern Differences Between Males and Females in Squatting and Kneeling](https://doi.org/10.1123/jab.2020-0185). *Journal of Applied Biomechanics*. 37(3): 204-214. PMID: 33690162.
13. 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?](https://doi.org/10.1016/j.apergo.2020.103318) *Applied Ergonomics*. 92(April): 103318. PMID: 33290936.
14. 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](https://doi.org/10.1504/IJVD.2021.117153). *International Journal of Vehicle Design*. 85(1): 32-47.
15. **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.](https://doi.org/10.1016/j.gaitpost.2020.07.015) *Gait & Posture*, 81: 96-101. PMID: 32707403.
16. **Kingston DC**, Acker SM. (2020). [Development of a full flexion 3D musculoskeletal model of the knee considering intersegmental contact during high knee flexion movements.](https://doi.org/10.1123/jab.2019-0335) *Journal of Applied Biomechanics,* 36(6): 444-456. PMID: 32846408.
17. **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.](https://elibrary.asabe.org/abstract.asp?aid=51717) *Journal of Agriculture Safety and Health*, 26(3): 95-104. 1*Selected as 2021 Superior Paper award by ASABE.*
18. **Kingston DC** & Acker SM. (2019). [Prediction of thigh-calf contact parameters from anthropometric regression](https://doi.org/10.1177/0954411919832037). *Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine,* 4(233): 414-423. PMID: 30843468.
19. Gibbons TD, Zuj KA, Prince CN, **Kingston DC**, Peterson SD, Hughson RL. (2019). [Hemodynamic effects of intermittent compression as countermeasure to orthostatic stress](https://doi.org/10.1113/EP088077). *Experimental Physiology*, 104(12): 1790-1800. PMID: 31578774.
20. **Kingston DC** & Acker SM. (2018). [Representing fine-wire EMG with surface EMG in three thigh muscles during high knee flexion movements](https://doi.org/10.1016/j.jelekin.2018.08.006). *Journal of Electromyography and Kinesiology*, 43(6): 55-61. PMID: 30237132.
21. **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](https://doi.org/10.1016/j.jbiomech.2017.11.022). *Journal of Biomechanics*, 67(23): 46-54. PMID: 29248190.
22. **Kingston DC**,Chong HC, Tennant LM, Acker SM. (2017). [Lower limb muscular activation during transitions to symmetric high knee flexion postures in young females](https://doi.org/10.1080/24725838.2017.1326988). *IISE Transactions on Occupational Ergonomics and Human Factors*, 5(2): 82-91.
23. 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](https://doi.org/10.1016/j.knee.2016.12.006). *The Knee*, 24(2): 271-279. PMID: 28169098.
24. **Kingston DC**, Tennant LM, Chong HC, Acker SM. (2016). [Peak activation of lower limb musculature during high flexion kneeling and transitional movements](https://doi.org/10.1080/00140139.2015.1130861). *Ergonomics*, 59(9): 1215-1223. PMID: 26923936. PMID: 26923936
25. **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](https://doi.org/10.1177/0018720815607317). *Human Factors*, 58(1): 107-119.PMID: 26424775.
26. Tennant LM, **Kingston DC,** Chong HC, Acker SM. (2015). [The effect of work boots on the center of pressurelocation at the knee during static kneeling](https://doi.org/10.1123/jab.2014-0276). *Journal of Applied Biomechanics*, 31(5): 363-369. PMID: 26099161.
27. Howarth SJ, **Kingston DC**,Brown SHM, Graham RB. (2013).[Viscoelastic creep induced by repetitive spine flexion and its relationship to dynamic spine stability](https://doi.org/10.1016/j.jelekin.2013.04.002). *Journal of Electromyography and Kinesiology*, 23(4): 791-800. PMID: 23643300.
28. Almosnino S, **Kingston D**,Graham RB. (2013). [Three-dimensional knee joint moments during bodyweight squat performance: Effects of stance width and foot rotation](https://doi.org/10.1123/jab.29.1.33). *Journal of Applied Biomechanics*,29(1): 33-43. PMID: 23462440.

Submitted (3)

1. Mace SM, 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. *Developmental Medicine & Child Neurology*. Ref: X.
2. Mace SM, Harrington JW, Knarr BA, **Kingston DC**. Overground, Conventional, and Aquatic Treadmill Walking Peak and Time-to-Peak Joint Kinematics Differ in Typically Developed Children and Adolescents. *Journal of Biomechanics*. Ref: BM-D-24-00900.
3. Oluwaseye PO, Harrington JW, Likens A, Kingston DC, Knarr BA. An Underwater Treadmill Alters Lower Limb Walking Dynamics in Typically Developing and Children with Cerebral Palsy. Sensors. Ref: X.

**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

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| **Certification** | **Total Value** | **Year** |
| Clinical Gait Analysis Interpreter – Level 2 | - | 2024 |
| [CIMER Mentorship Training](https://cimerproject.org/training/) | - | 2023 |
| Clinical Gait Analysis Interpreter – Level 1 | - | 2023 |
| Fine-Wire EMG – GCMAS | - | 2023 |
|  |  |  |
| **Awards** |  |  |
| ASABE Superior Paper Award – D.Kingston JASH† | - | 2021 |
| University of Waterloo Doctoral Thesis Completion Award | $ 5 000 | 2018 |
| Ontario Graduate Scholarship | $15 000 | 2017-18 |
| University of 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 |

**Travel Awards**

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| --- | --- | --- |
| University of Saskatchewan – College of Medicine | $ 1 500 | 2019 |
| AMTI Force & Motion Foundation | $ 500 | 2018 |
| Canadian Society for Biomechanics (CSB) | $ 300 | 2018 |
| Centre of Research Expertise for the Prevention of Musculoskeletal Disorders (CRE-MSD) | $ 250 | 2011/13 |

# Conference Activity

**Peer Reviewed Conference Abstracts (35)**

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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.
16. 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.
17. 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.
18. **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.
19. **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.
20. **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.
21. **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.
22. 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.
23. 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.
24. **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.
25. **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.
26. 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.
27. 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.
28. **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.
29. **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.
30. 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.
31. **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.
32. **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.
33. 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.
34. **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.
35. **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: 3.67/5 (12/12 responses) S-2024

Advanced Biomechanics 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**

Stephanie Mace PhD Biomechanics (UNO) 2022-present

Joseph Harrington PhD Biomechanics (UNO) 2022-present

Jutharat Poomulna PhD Biomechanics (UNO) 2021-present

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**

Paul Oluwaseye PhD Biomechanics (UNO) 2025-present

Dimitri Hann MSc Biomechanics (UNO) 2024-present

Cameron Jensen MSc Biomechanics (UNO) 2024-present

Takato Ogasawara MSc Biomechanics (UNO) 2023-present

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-present

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 CommitteePDF Representative 2019-2020

**University of Waterloo**

Senate Graduate & Research CouncilAHS Graduate Representative 2016-2017

Faculty Graduate Studies CommitteeKinesiology 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 CounselBiomechanics Department Representative 2012-2013

# Service to profession

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 ISB – David Winter Young Investigator Award Panel 2021-present

Reviewer National Institutes of Health 2022-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