

Matthew K. Armstrong, Ph.D.

Falk College of Sport & Human Dynamics, Syracuse, New York
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EDUCATION & TRAINING

- 2021 - 2024 **Postdoctoral Research Fellow**
University of Iowa, Department of Health and Human Physiology, Iowa City, USA
- 2020 - 2021 **Postdoctoral Research Scholar**
University of Tasmania, Menzies Institute for Medical Research, Hobart, AU
- 2016 - 2020 **Ph.D. in Cardiovascular Physiology**
University of Tasmania, Menzies Institute for Medical Research, Hobart, AU
- 2012 - 2015 **B.Sc. (Hons) in Biomedical Sciences with Health, Exercise & Nutrition**
Cardiff Metropolitan University, Health Sciences, Cardiff, UK

PROFESSIONAL POSTIONS

- 2024 - present **Assistant Professor**
Department of Exercise Science
David B. Falk College of Sport, Syracuse University, Syracuse, NY

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

- 2021 - present American Heart Association
- 2016 - present Association for Research into Arterial Structure and Physiology (ARTERY)
- 2021 - present North American ARTERY

AWARDS & HONORS

- 2022 Journal of Human Hypertension Young Investigator Award 2022
- 2021 NIH Training Program in Kidney and Hypertension Research Fellowship grant
(T32DK007690)
- 2021 Menzies Institute for Medical Research Ten of the Best
- 2020 Excellence in Post Graduate Research Award
- 2019 Menzies Institute for Medical Research Ten of the Best
- 2015 Dr. J. Marsden Award for Excellence in Physiology
- 2015 Effective Communication Award

PUBLICATION SUMMARY

Order	Publications	Talks
First	12	11
Senior/invited	1	2
Second	3	4
Co-author	10	11
Total	25	28

PUBLICATIONS

- **Armstrong MK**, Jain S, Nuckols V, Pewowaruk R, Zhang X, DuBose L, Sodoma M, Madero B, Voss MW, Pierce GL. The association of structural versus load-dependent large artery stiffness mechanisms with cerebrovascular damage and cortical atrophy in humans. *GeroScience*. 2024.
- **Armstrong MK**. JHH Young Investigator Award 2022: interview with the winner Matthew K. Armstrong. *Journal of Human Hypertension*. 2024;1-1.
- Stanesby O, **Armstrong MK**, Otahal P, Goode JP, Fraser BJ, Negishi K, Kidokoro T, Winzenberg T, Juonala M, Wu F, Kelly RK, Xi B, Viikari JSA, Raitakari OT, Daniels SR, et al. Tracking of serum lipid levels from childhood to adulthood: Systematic review and meta-analysis. *Atherosclerosis*. 2024;117482.
- **Armstrong MK**, Nuckols VR, Gimblet CJ, Holwerda SW, DuBose LE, Luehrs RE, Lane AD, Chirinos JA, Voss MW, Pierce GL. Relation of forward and backward traveling pressure waves with subclinical carotid artery wall remodeling and central pulse pressure. *Journal of Applied Physiology*. 2023.
- Gimblet CJ, **Armstrong MK**, Nuckols VR, DuBose LE, Holwerda SW, Luehrs RE, Lane AD, Voss MW, Pierce GL. Sex-specific associations of reservoir-excess pressure parameters with age and subclinical vascular remodeling. *Journal of Hypertension*. 2023;10.1097/HJH.0000000000003378.
- **Armstrong MK**, Chirinos JA, Kapuku GK, Pierce GL. Aortic pressure-only wave separation analysis in adolescents: accuracy and associations with left ventricular mass index. *Journal of Human Hypertension*. 2022;1-7.
- **Nuckols VR**, Stroud AK, Armstrong MK, Brandt DS, Santillan MK, Santillan DA, Pierce GL. Postpartum ambulatory and home blood pressure monitoring in women with history of preeclampsia: Diagnostic agreement and detection of masked hypertension. *Pregnancy Hypertension*. 2022;29:23-29.
- Meng Y, Buscot M, Juonala M, Wu F, **Armstrong MK**, Fraser BJ, Pahkala K, Hutri-Kähönen N, Kähönen M, Laitinen T, Viikari JSA, Raitakari OT, Magnussen CG, Sharman JE. Relative Contribution of Blood Pressure in Childhood, Young- and Mid-Adulthood to Large Artery Stiffness in Mid-Adulthood. *Journal of the American Heart Association*. 2022;11(12):e024394.
- Schultz MG, Picone DS, **Armstrong MK**, Black JA, Dwyer N, Roberts-Thomson P, Sharman JE. Validation Study to Determine the Accuracy of Central Blood Pressure Measurement Using the Sphygmocor Xcel Cuff Device. *Hypertension*. 2020;76(1):244-250.
- **Armstrong MK**, Fraser BJ, Magnussen CG. Early-Life Initiation of Primary Prevention Strategies to Reduce Atherosclerosis Risk—Reply. *JAMA Cardiology*. 2021;6(12):1467-1468.
- **Armstrong MK**, Schultz MG, Hughes AD, Picone DS, Sharman JE. Physiological and clinical insights from reservoir-excess pressure analysis. *Journal of Human Hypertension*. 2021;35(9):758-768.
- **Armstrong MK**, Fraser BJ, Hartiala O, Buscot M-J, Juonala M, Wu F, Koskinen J, Hutri-Kähönen N, Kähönen M, Laitinen TP, Lehtimäki T, Viikari JSA, Raitakari OT, Magnussen CG. Association of Non-

High-Density Lipoprotein Cholesterol Measured in Adolescence, Young Adulthood, and Mid-Adulthood With Coronary Artery Calcification Measured in Mid-Adulthood. *JAMA Cardiology*. 2021;6(6):661.

- Picone DS, Schultz MG, **Armstrong MK**, Black JA, Bos WJW, Chen C-H, Cheng H-M, Cremer A, Dwyer N, Hughes AD, Kim H-L, Lacy PS, Laugesen E, Liang F, Ohte N, et al. Identifying Isolated Systolic Hypertension From Upper-Arm Cuff Blood Pressure Compared With Invasive Measurements. *Hypertension*. 2021;77(2):632–639.
- **Armstrong MK**, Schultz MG, Hughes AD, Picone DS, Black JA, Dwyer N, Roberts-Thomson P, Sharman JE. Excess pressure as an analogue of blood flow velocity. *Journal of Hypertension*. 2021;39(3):421–427.
- Sharman JE, Mynard JP, **Armstrong MK**, Picone DS, Schultz MG. Clarity in validation protocols for central blood pressure devices. *Journal of Hypertension*. 2020;38(5):974.
- Chapman N, McWhirter R, **Armstrong MK**, Fonseca R, Campbell JA, Nelson M, Schultz MG, Sharman JE. Self-directed multimedia process for delivering participant informed consent. *BMJ Open*. 2020;10(7):e036977.
- Schultz MG, Picone DS, **Armstrong MK**, Black JA, Dwyer N, Roberts-Thomson P, Sturgess D, Sharman JE. The influence of SBP amplification on the accuracy of form-factor-derived mean arterial pressure. *Journal of Hypertension*. 2020;38(6):1033–1039.
- **Armstrong MK**, Schultz MG, Picone DS, Black JA, Dwyer N, Roberts-Thomson P, Sharman JE. Associations of Reservoir-Excess Pressure Parameters Derived From Central and Peripheral Arteries With Kidney Function. *American Journal of Hypertension*. 2020;33(4):325–330.
- **Armstrong MK**, Schultz MG, Picone DS, Black JA, Dwyer N, Roberts-Thomson P, Sharman JE. Response by Armstrong et al to Letter Regarding Article “Brachial and Radial Systolic Blood Pressure Are Not the Same: Evidence to Support the Popeye Phenomenon.” *Hypertension*. 2019;74(2):e35–e36.
- **Armstrong MK**, Schultz MG, Picone DS, Black JA, Dwyer N, Roberts-Thomson P, Sharman JE. Brachial and Radial Systolic Blood Pressure Are Not the Same. *Hypertension*. 2019;73(5):1036–1041.
- Dickinson PS, **Armstrong MK**, Dickinson ES, Fernandez R, Miller A, Pong S, Powers BW, Pupo-Wiss A, Stanhope ME, Walsh PJ, Wiwatpanit T, Christie AE. Three members of a peptide family are differentially distributed and elicit differential state-dependent responses in a pattern generator-effector system. *Journal of Neurophysiology*. 2018;119(5):1767–1781.
- **Armstrong MK**, Schultz MG, Picone DS, Sharman JE. Aortic-to-brachial artery stiffness gradient is not blood pressure independent. *Journal of Human Hypertension*. 2019;33(5):385–392.

CONFERENCE PRESENTATIONS

- **Armstrong MK**, The Association of Structural Versus Load-Dependent Large Artery Stiffness Mechanisms with Cerebrovascular Damage and Cortical Atrophy in Humans, North American ARTERY, Denver, USA, Sep-2024
- Davis K, Nuckols V, **Armstrong MK**, Hakes H, Santillan D, Santillan M, Pierce G. Load-dependent but not structural-dependent aortic and carotid stiffness is elevated among postpartum women

with a history of preeclampsia: association with reduced cognitive function. North American ARTERY, Denver, USA, Jun-2024

- Williams P, **Armstrong MK**, Pierce G, Heffernan K. The Effect of Acute Moderate Intensity Exercise on Reservoir and Excess Pressure in Young Adults. North American ARTERY, Denver, USA, Jun-2024
- Davis K, Nuckols N, **Armstrong MK**, Gimblet C, Smith M, Hakes H, Santillan D, Pierce G. Load-Dependent Arterial Stiffness Mechanisms are Responsible for Increased Large Artery Stiffness Observed among Women with a History of Preeclampsia. American Physiology Summit, San Diego, USA, May-2024
- Wakeham D, **Armstrong MK**, Pellegrom I, Howrey M, Brazile T, Leahy M, Balmain B, Tomlinson A, Beckman J, Babb T, MacNamara J, Levine B, Hearon C, Sarma S. Determinants of Aortic Pulse Pressure changes with exercise in adults with Heart Failure with preserved Ejection Fraction. North American ARTERY, Denver, USA, Jun-2024
- **Armstrong MK**, Association of Large Artery Reservoir Function with Cerebral Total, Periventricular, and Deep White Matter Lesions, American Heart Association, Boston, USA, Sep-2023
- **Armstrong MK**, Central Pulsatile Hemodynamic Load and Carotid Artery Structure. North American ARTERY, Iowa City, USA, Jun-2023
- Baller K, Jain S, Springer J, Sodoma M, Oehler C, Daniels W, **Armstrong MK**, Gimblet C, Nuckols V, Muellerleile M, Nagarajan N, Bjarnason T, Harb N, Pierce G, Voss M. Impact of Cardiorespiratory Fitness and White Matter Lesions on Processing Speed with Age. International Neuropsychological Society, San Diego, USA, Nov-2023
- **Armstrong MK**, Gimblet C, DuBose L, Nuckols V, Pierce GL. Cardiorespiratory Fitness and Diastolic Pressure Decay. Iowa Physiology Society, Iowa City, USA, Nov-2022
- Schultz MG, Picone DS, **Armstrong MK**, J.A. Black, Dwyer N, Roberts-Thomson P, Sharman JE. The accuracy of form-factor derived mean arterial pressure is dependent on systolic blood pressure amplification, North American ARTERY, Iowa, United States, May-2019
- Stoneman E, Picone D, Schultz M, **Armstrong MK**, Bos W, Dwyer N, Lacy P, Laugesen E, Omboni S, Pucci G, Roberts-Thomson P, Stouffer G, Takazawa K, Weber T, Westerhof B, Sharman J. The influence of sex on cuff blood pressure accuracy, ARTERY, Budapest, Hungary, Oct-2019
- Morris L, Picone DS, **Armstrong MK**, Schultz MG, Sharman JE. Upper arm cuff inflation induces reactive changes in systolic blood pressure that could influence diagnosis in some individuals. ARTERY, Budapest, Hungary, Oct-2019
- Schultz MG, Picone DS, **Armstrong MK**, Black JA, Dwyer N, Roberts-Thomson P, Sharman JE. Accuracy (validation) of central blood pressure measurement using the SphygmoCor Xcel-cuff device. ARTERY, Budapest, Hungary, Oct-2019
- Picone D, Schultz M, **Armstrong MK**, Bos W, Dwyer N, Lacy P, Laugesen E, Omboni S, Pucci G, Roberts-Thomson P, Stouffer G, Takazawa K, Weber T, Westerhof B, Sharman J. Influence of cuff blood pressure accuracy on identification of isolated systolic hypertension. ARTERY, Budapest, Hungary, Oct-2019

- Picone D, Schultz M, **Armstrong MK**, Dwyer N, Roberts-Thomson P, Weber T, Sharman J. The forgotten black box of blood pressure: error in oscillometric mean arterial pressure is associated with cuff measurement inaccuracy. ARTERY, Budapest, Hungary, Oct-2019
- Morris L, Picone D, **Armstrong MK**, Schultz M, Sharman J. Upper arm cuff inflation induces reactive changes in systolic blood pressure that could influence diagnosis in some individuals. APCH, Brisbane, Australia, Nov-2019
- Stoneman E, Picone D, Schultz M, **Armstrong MK**, Bos W, Dwyer N, Lacy P, Laugesen E, Omboni S, Pucci G, Roberts-Thomson P, Stouffer G, Takazawa K, Weber T, Westerhof B, Sharman J. The influence of sex on cuff blood pressure accuracy. APCH, Brisbane, Australia, Nov-2019
- Morris L, Picone D, **Armstrong MK**, Schultz M, Sharman J. Upper arm cuff inflation induces reactive changes in systolic blood pressure that could influence diagnosis in some individuals. APCH, Brisbane, Australia, Nov-2019
- **Armstrong MK**, Schultz MG, Picone DS, Black JA, Dwyer N, Roberts-Thomson P, Sharman JE. Brachial and radial systolic blood pressure are not the same: potential implications for validation protocols including brachial cuff devices and wrist-based wearables. HBPRCA, Adelaide, Australia, Nov-2018.
- Stoneman E, Picone DS, Schultz MG, **Armstrong MK**, Black JA, Dwyer N, Roberts-Thomson P, Sharman JE. Reservoir-excess pressure characteristics help identify people with high intra-arterial aortic systolic blood pressure. ARTERY, May-2018
- **Armstrong MK**, Schultz MG, Picone DS, Black JA, Dwyer N, Roberts-Thomson P, Sharman JE. Associations between reservoir pressure parameters and kidney function are dependent on the arterial measurement site. HBPRCA, Adelaide, Australia, Nov-2018
- **Armstrong MK**, Schultz MG, Picone DS, Black JA, Dwyer N, Roberts-Thomson P, Sharman JE. Associations between reservoir pressure parameters and kidney function are dependent on the arterial measurement site. ARTERY, Guimaraes, Portugal, Nov-2018
- **Armstrong MK**, Schultz MG, Picone DS, Black JA, Dwyer N, Roberts-Thomson P, Sharman JE. Brachial and radial systolic blood pressure are not the same: potential implications for validation protocols including brachial cuff devices and wrist-based wearables. ARTERY, Guimaraes, Portugal, Nov-2018
- **Armstrong MK**, Schultz MG, Picone DS, Sharman JE. Blood pressure-independence of aortic-to-brachial artery stiffness ratio is dependent on disease status. HBPRCA, Melbourne, Australia, Nov-2017
- **Armstrong MK**, Schultz MG, Picone DS, Sharman JE. Blood pressure-independence of aortic-to-brachial artery stiffness ratio is dependent on disease status. ARTERY, Pisa, Italy, Oct-2017
- **Armstrong MK**, Singh C, Watkeys L, Thekkemuriyil L, Tucker J, Marshall J, Webb R, McDonnell B. Soluble IL-6 receptor concentrations are associated with augmentation index in healthy young males. ARTERY, Kraków, Poland, Oct-2015

Invited talks.

- **Armstrong MK.** Implications of systolic blood pressure amplification on new blood pressure technologies. APCH, Brisbane, Australia, Nov-2019
- **Armstrong MK.** Schultz MG, Picone DS, Black JA, Dwyer N, Roberts-Thomson P, Sharman JE. Brachial and radial systolic blood pressure are not the same. Royal Hobart Hospital, Hobart, Mar-2019

GRANT SUMMARY

	PI	Co-I	Mentor
Pending	-	-	
Active	33,600	12,000	
Complete	-	-	6,500
Totals	33,600	12,000	6,500

ACTIVE GRANTS

- 2024 **Agency:** Iowa Initiative for Artificial Intelligence
Title: Estimation of Vascular Age Using Uncalibrated Non-Invasively-Tonometry Acquired Radial Artery Pulse Waveforms
Co-principal investigators: Matthew Armstrong, Gary Pierce
Granting period: 05/01/2024 – 05/01/2025
Award amount: \$12,000
- 2023 **Agency:** Adolescent and Young Adult Cancer Research Award
Title: Hemodynamic and Vascular Changes Following Chemotherapy for Hematologic malignancies (The MAGICAL Study).
Principal investigator: Matthew Armstrong
Granting period: 01/01/2024 – 01/01/2025
Award amount: \$33,600

MENTORED GRANTS & AWARDS

- 2024 **Agency:** Office of Undergraduate Research, University of Iowa
Title: Arterial stiffness mechanisms among individuals with chronic obstructive pulmonary disease
Principal investigator: Nathan Barlow
Mentor: Matthew Armstrong
Granting period: 05/01/2024 – 08/01/2024
Award amount: \$2,500
- 2023 **Agency:** Office of Undergraduate Research, University of Iowa
Title: Validation status of blood pressure monitors for sale online in the United States
Principal investigator: Hailey Hakes
Mentor: Matthew Armstrong
Granting period: 05/01/2023 – 08/01/2023
Award amount: \$2,500
- 2022 **Agency:** Hawkeye Experience Grant, University of Iowa

Title: Sex differences in the association of diastolic decay and cardiorespiratory fitness
Principal investigator: Hailey Hakes
Mentor: Matthew Armstrong
Granting period: 05/01/2022 – 08/01/2022
Award amount: \$1,500

TEACHING

2024 - **Institute:** Syracuse University, Falk College of Sport
Role: Instructor
Course title: Cardiac Rehabilitation (Undergraduate)
Enrollments: 2024, Fall: 22
2025, Spring: NA

Invited Lectures

2023, 2024 **Institute:** University of Iowa, Department of Health and Human Physiology
Course title: Clinical Exercise Physiology
Lecture title: Exercise and Vascular Aging

2023 **Institute:** University of Iowa, Department of Health and Human Physiology
Course title: Clinical Exercise Physiology
Lecture title: Childhood Risk Factors for Adult Heart Disease

2023 **Institute:** University of Iowa, Department of Health and Human Physiology
Course title: Physical Activity Psychology
Lecture title: Primary and Primordial Prevention of Cardiovascular Disease

2022 **Institute:** University of Iowa, Department of Health and Human Physiology
Course title: Advanced Cardiovascular Physiology
Lecture title: The Role of Hypertension in Premature Vascular Ageing

MENTORSHIP & SUPERVISION

Undergraduate Honors Students

2024 **Student:** Hailey Hakes
Project title: Validation status of commercially available blood pressure monitors in the United States

2023 **Student:** Ryan Staub
Project title: Central artery pulsatile hemodynamics are associated with left-ventricular structure and function in adolescents

2019 **Student:** Lousia Morris, MD
Project title: Reactive systolic blood pressure response to upper-arm cuff inflation

Undergraduate Research Projects

2024 **Student:** Nathan Barlow

Project title: Feasibility of machine learning algorithms for the prediction of aortic stiffness from radial pulse waveforms

- 2023 **Student:** Hailey Hakes
Project title: Validation status of blood pressure monitors for sale online in the United States
- 2022 **Student:** Grace Foster
Project title: Association of resting central hemodynamic parameters with the blood pressure response to exercise
- 2022 **Student:** Hailey Hakes
Project title: Sex differences in the association of diastolic decay and cardiorespiratory fitness

SELECT MEDIA COVERAGE

- 2022 Journal of Human Hypertension Young Investigator Award 2022: interview with the winner Matthew K. Armstrong. <https://www.nature.com/articles/s41371-024-00918-1> (date accessed: 06/25/2024)
- 2021 Matthew Armstrong interview with Norman Swan on Australian Broadcasting Corporation (ABC).
<https://www.abc.net.au/listen/programs/healthreport/cholesterol-and-calcification/13156360> (date accessed: 06/25/2024)

SERVICE

Ad hoc peer reviewer - journals

- 2020 - present Completed 23 manuscript peer reviews across 13 journals including Hypertension, Pediatrics, Journal of Applied Physiology, GeroScience, and PLOS ONE.

Professional leadership roles

- 2023 - present Young Investigator Committee
North American Association for Research into Arterial Structure and Physiology

Other service

- 2020 - present Maintain a GitHub page dedicated to opensource sharing of scripts I have developed in the statistical programming language, R ([Link](#)).