

**Anna G. Warrener, Ph.D.**  
Curriculum Vitae

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**EDUCATION**

- 2012                      Ph.D. Washington University in St. Louis, Anthropology
- 2006                      M.A. Washington University in St. Louis, Anthropology
- 2003                      B.A. University of Colorado Boulder, Anthropology, Summa Cum Laude

**PROFESSIONAL EXPERIENCE**

- 2017-present            Assistant Professor  
Department of Anthropology, University of Colorado Denver
- 2016-2017                Lecturer Department of Anthropology, University of Colorado Denver
- 2016-2017                Lecturer Department of Anthropology and Sociology, Metropolitan State University Denver
- 2012-2015                Postdoctoral Fellow/Lecturer/ Biomechanics Laboratory Manager  
Department of Human Evolutionary Biology, Harvard University

**RESEARCH INTERESTS**

Human evolution, biomechanics, bipedalism, childbirth, pregnancy, pelvis, sexual dimorphism, human anatomy and physiology, human variation, evolutionary theory

**PEER REVIEWED PUBLICATIONS**

\* indicates my role as first and/or corresponding author

\*\* indicates my role as a researcher, data collector, analyzer, text-writer, editor

^ indicates invited contribution

- 2024\*\*                      Manthey-Pierce C, Cepon-Robins T, **Warrener A.** Hyperandrogenism associated with polycystic ovary syndrome (PCOS) may have a protective effect against fracture risk in female athletes: a pilot study. American Journal of Human Biology.

- 2024\*^ **Warrener A.** Human lower limb muscle cross sectional area scales with positive allometry reflecting bipedal evolutionary history. *Frontiers in Earth Sciences*. [doi.org/10.3389/feart.2023.1301411](https://doi.org/10.3389/feart.2023.1301411)
- 2023\* **Warrener A.** The multifactor pelvis: An alternative to the adaptationist approach of the obstetrical dilemma. *Evolutionary Anthropology*. DOI: 10.1002/evan.21997
- 2022 Mayne G, DeWitt P, Ringham B, **Warrener A**, Christians U, Dabelea D, Hurt K. Nested case-control study of maternal steroid hormones as preterm birth biomarkers: the healthy start study.
- 2021\* **Warrener AG**, Tamai R, Lieberman DE. The effect of trunk flexion angle on lower limb mechanics during running. *Human Movement Science* 78:102817
- 2018\*^ **Warrener AG.** Childbirth and brain size: evolutionary constraints. In H. Callan (Ed.), *International Encyclopedia of Anthropology*. John Wiley & Sons. <https://doi.org/10.1002/9781118924396.wbiea2034>.
- 2017\*^ **Warrener AG.** Hominin hip biomechanics: changing perspectives. *The Anatomical Record* 300 (5): 932-945.
- 2015\*\* Lieberman DE, **Warrener AG**, Wang J, Castillo ER. Effects of stride frequency and foot position at landing on braking force, hip torque, impact peak force and the metabolic cost of running in humans. *Journal of Experimental Biology* 218:3406-3414.
- 2015\* **Warrener AG**, Lewton KL, Pontzer H, Lieberman DE. A wider pelvis does not increase locomotor cost in humans, with implications for birth. *PLOS ONE* DOI: 10.1371/journal.pone.0118903 (cited over 100 times).
- 2013\*\* Barak M, Lieberman DE, Raichlen D, Pontzer H, **Warrener AG**, Hublin J. Trabecular evidence for a human-like gait in *Australopithecus africanus*. *PLOS ONE* DOI: 10.1371/journal.pone.0077687.
- 2012\*\* Dunsworth H, **Warrener AG**, Deacon T, Ellison P, Pontzer H. A metabolic hypothesis for human altriciality. *PNAS* 109(38):15212-15216.
- 2010\*\* Cowgill L, **Warrener AG**, Pontzer H, Ocobock C. Waddling and toddling: biomechanical effects of immature gait. *American Journal of Physical Anthropology* 143:52-61.
- 2007\* **Blackburn Wittman AG** and Wall L. The evolutionary origins of obstructed labor: bipedalism, encephalization, and the human obstetric

dilemma. *Obstetrical & Gynecological Survey* 62:739-748 (cited over 100 times).

## GRANTS

### External Grant Applications and Funded Grants

- |           |   |
|-----------|---|
| 2023      | NSF Biological Anthropology Program Senior Research Award<br>The role of suspension and climbing in upper limb musculoskeletal anatomy in humans<br>In prep.  |
| 2017      | Johnson & Johnson WiSTEM <sup>2</sup> C Scholar Award Program.<br>No funding received   |
| 2009-2010 | NSF Doctoral Dissertation Improvement Grant<br>Pelvic shape and locomotor cost: an empirical test of biomechanical models of the hip. Advisor: Herman Pontzer.<br>\$13,600 NSF#0850841                        |
| 2009-2010 | L.S.B. Leakey Foundation Research Grant<br>Pelvic shape and locomotor cost: an empirical test of biomechanical models of the hip. Advisor: Dr. Herman Pontzer.<br>\$13,450.                                   |
| 2009-2010 | Wenner-Gren Foundation for Anthropological Research Dissertation Fieldwork Grant<br>Pelvic shape and locomotor cost: an empirical test of biomechanical models of the hip. Advisor: Herman Pontzer.<br>\$3780 |

### Internal Grant Applications and Funded Grants

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|---------------|--|
| 2023 (spring) | Early-Career Professional Development grant, University of Colorado.<br>\$500                    |
| 2022          | Early-Career Professional Development grant, University of Colorado.<br>\$500                    |
| 2021          | University of Colorado Denver Publication Grant<br>\$2500  |
| 2020          | Lorna Grindlay Moore Faculty Launch Fund, University of Colorado Anschutz<br>No funding received |

|           |  |
|-----------|--|
| 2019      | University of Colorado Denver Dissemination Grant<br>\$1040                          |
| 2019      | University of Colorado Denver YUMPs (Young Upwardly Mobile Professor) Grant<br>\$500 |
| 2018-2020 | University of Colorado Denver ORS Small Grant<br>\$4925                              |
| 2017      | University of Colorado Denver Dissemination Grant<br>\$549                           |

### **OTHER INDICATORS OF SCHOLARLY AND CREATIVE ACTIVITY**

2007-present      1145 citations of 26 publications indexed in the Google Scholar database with two first author articles cited over 100 times

### **Field Work and Data Acquisition**

|              |  |
|--------------|--|
| 2020-present | Lead investigator, Pelvic width and stride length during walking and running, Warrener Biomechanics Lab, University of Colorado Denver   |
| 2020-present | Lead investigator, Scaling of lower limb muscle cross-sectional area in humans, Warrener Biomechanics Lab, University of Colorado Denver                                       |
| 2019-present | Lead investigator, Balancing the body during locomotion, Skeletal Biology Laboratory, Harvard University   |
| 2014         | Lead investigator, Balancing the body during locomotion, Skeletal Biology Laboratory, Harvard University   |
| 2012-2013    | Research assistant, Gait retraining and injury in running, Harvard and Boston Children's Hospital, Daniel Lieberman PI   |
| 2008-2010    | Lead investigator, Pelvic shape, hip abductor mechanics and locomotor energetics in extinct hominins. Evolutionary Biomechanics Laboratory, Washington University in St. Louis |
| 2002         | Student, Magapansgat Field School, Institute of Human Origins ASU, South Africa  |

### **PEER REVIEWED CONFERENCE PRESENTATIONS**

- 2023                    **Warrener A.** Allometric scaling in human lower-limb muscle cross-sectional area: implications for locomotion and sexual dimorphism. Podium. American Association of Biological Anthropologist. Las Vegas NV.
- 2022                    **Warrener A.** The multi-factor pelvis model: an alternative to the adaptationist approach of the obstetrical dilemma. Poster. Rocky Mountain Biological Anthropology Association. Estes Park, CO.
- 2022                    Berg E, Hammond A, **Warrener A**, Shirley Mitchell M, Baker S, Herries A, Strait D, Orr C. 2022. Further morphological assessment of a partial hominin pelvis from the site of Drimolen, South Africa. Poster. Paleoanthropology Society. Denver, CO
- 2021                    **Warrener AG.** Adaptation, evolutionary factors and the “obstetrical dilemma”. American Association of Physical Anthropologists (virtual conference)
- 2021                    Mayne G, DeWitt PE, Ringham B, **Warrener A**, Christians U, Dabelea D, Hurt KJ. Neurosteroids and Steroid Hormones in Preterm Birth. Society for Reproductive Investigation (Boston, MA).  
*Graduate student presentation*
- 2021                    Manthey-Pierce C, **Warrener A.** Polycystic ovarian syndrome (PCOS) as an evolutionary mismatch disorder: an argument for the significance of hyperandrogenism on reproductive fitness in ancestral populations. International society for Evolution, Medicine and Public Health (virtual conference).  
*Graduate student presentation*
- 2021                    Mayne GB, Christians U, Dabelea D, Hurt J, **Warrener A.** Allopregnanolone serum concentrations in term vs preterm birth: and exploratory study. American Association of Physical Anthropologists (virtual conference)  
*Graduate student presentation*
- 2020                    DeMay L., Orr C, **Warrener A**, Mitchell Shirly M. Evaluating bilateral asymmetry in femoral neck shaft angle and femoral head diameter in *Homo sapiens*, *Pan troglodytes* and *Papio sp.* American Association of Physical Anthropologist.
- 2018                    **Warrener A**, Tamai R, Lieberman D. The effect of trunk position on lower body mechanics during running. American Association of Physical Anthropologists (Austin, TX)

- 2018 Otarola-Castillo ER, Castillo ER, Hora M, Torquato MG, **Warrener AG**, Pontzer H. walkR: a software package to analyze the biomechanics of human locomotion. American Association of Physical Anthropologists (New Orleans, LA)
- 2015 **Warrener A**, Amanullah S, Castillo E, Lieberman D. Balancing the body: frontal plane dynamics during locomotion. American Association of Physical Anthropologists (St. Louis, MO)
- 2013 **Warrener A**. Skeletal measures dictating hip abductor force production during locomotion (poster). American Association of Anatomists (Boston, MA)
- 2013 **Warrener A**. Lower limb joint mechanics in men and women (poster). American Association of Physical Anthropologists (Knoxville, TN)
- 2013 Darr M, Pontzer H, **Warrener A**. Bicondylar angle in modern humans and its relationship to joint stresses and locomotor economy (poster). American Association of Physical Anthropologists (Knoxville, TN)
- 2013 Barak M, Lieberman D, Raichlen D, Pontzer H, **Warrener A**, Hublin J. Evidence for extended lower limb posture in early hominin locomotion (poster). New England Science Symposium (Boston, MA)
- 2012 **Warrener, A**. Hip abductor force production as a contributor to locomotor cost (podium presentation). American Association of Physical Anthropologists (Portland, OR)
- 2011 **Warrener A**. Relating pelvic shape to hip abductor mechanics and locomotor cost (podium presentation). American Association of Physical Anthropologists (Minneapolis, MN)
- 2011 Dunsworth HM, **Warrener A**, Pontzer H. Life history just isn't hip: human evolution without an "obstetric dilemma" (poster). Society of Vertebrate Paleontology (Las Vegas, NV)
- 2009 **Blackburn Wittman A**, Cowgill L, Pontzer H, Ocobock C. Waddling and toddling: biomechanical effects of immature gait (poster). American Association of Physical Anthropologists (Chicago, IL)
- 2008 **Blackburn Wittman A**, and Pontzer H. The effect of pelvic dimorphism on locomotor cost: are women less efficient than men? (podium presentation) American Association of Physical Anthropologists (Columbus, OH)

2004                    **Blackburn Wittman A**, and Adams J. Examination of the paleoenvironments of two South African caves (poster). American Association of Physical Anthropologists (Tampa, FL)

### **INVITED ACADEMIC TALKS**

2023                    The multifactor pelvis: An alternative to the adaptationist approach of the obstetrical dilemma. Yale University (Oct, 12<sup>th</sup>)

2018                    The obstetrical dilemma redux: how new data on locomotion and childbirth are reshaping an old model. University of Colorado Awards Luncheon for Internal Grants (Oct, 23<sup>rd</sup>)

2016                    A model dilemma: how assumptions about locomotion and birth have shaped the obstetrical dilemma. MSMHA Seminar, University of Colorado Anschutz School of Medicine (April 8<sup>th</sup>)

2014                    Pelvic shape and locomotor mechanics: the case of the obstetrical dilemma. Human Evolutionary Biology Symposia, University of Southern California (spring)

2014                    A model dilemma: how assumptions about locomotion and birth have shaped the obstetrical dilemma. American Association of Anatomists, Los Angeles, CA (spring)

2013                    Human birth and locomotor efficiency: a natural selection tradeoff for women? Department of Anthropology, University of Colorado at Boulder

2012                    Hip Abductor Mechanics and Pelvic Shape: an anthropological perspective with applications for clinical treatment. Massachusetts General Hospital, Sports Medicine and Orthopedic Surgery.

### **PROFESSIONAL AFFILIATIONS AND MEMBERSHIP**

- American Association of Biological (Physical) Anthropologists
- American Association of Anatomists
- Rocky Mountain Biological Anthropology Association
- Lambda Alpha National Anthropology Honors Society, Zeta Colorado chapter founder
- Phi Beta Kappa, 2003

### **PUBLICATIONS IN PREPARATION**

**Submitted**                    Berg E, Hammond A, **Warrener A**, Shirley Mitchell M, Tocheri M, Baker S, Herries A, Strait D, Orr C. Further morphological assessment of a 2.0 million year old partial hominin pelvis (DNH 43) from the site of Drimolen, South Africa.

## TEACHING ACTIVITIES

### Courses Taught

- Biological Anthropology Core: Modern Human Variation (ANTH 6513)
- Biological Anthropology Core: The Fossil Record (ANTH 6503)
- Biological Anthropology Core: Quantitative Methods in Anthropology (ANTH 6530/5040)
- Human Evolution (ANTH 3512)
- Human Variation and Adaptation (ANTH 3560)
- Independent Study (ANTH 901)
- Introduction to Biological Anthropology (ANTH 1313)
- Introduction to Biological Anthropology and Prehistory (ANT 1010), Metropolitan State University
- Introduction to Human Evolution (Anthro 150A), University College, Washington University in St. Louis
- Quantitative Methods in Anthropology (ANTH 4050/5053)
- Research in Comparative Biomechanics (HEB 1210), Harvard University
- Walk this way: sex differences in locomotion (HEB 1275), Harvard University

### Teaching Assistant

- Human Anatomy and Development (M05 AnatNeuro 501A), Washington University in St. Louis School of Medicine
- Human Energetics and Physiology (Anthro 3873), Washington University in St. Louis
- Human Variation (Anthro 307A), Washington University in St. Louis
- Principles of Human Anatomy and Development (Anthro 4581), Washington University in St. Louis

### Students Advised (2017-present)

#### *Graduate Primary Advisor*

|              |  |
|--------------|--|
| 2021-present | Heather Morita   |
| 2018- 2022   | Gabriella Mayne (MA advisor, thesis)                             |
| 2019-2021    | Courtney Manthey-Pierce (MA advisor, thesis)                     |
| 2019-2020    | Andrea Mikes (switched advisor for change in research interests) |
| 2018-2021    | Kevin Hovick (MA advisor, non-thesis)                            |
| 2017         | Mary Shirley Mitchell (thesis)                                   |

#### *Thesis or Portfolio Committee Member*

|                 |                   |
|-----------------|-------------------|
| 2021-presnet    | Bridget McGann    |
| 2023 Graduation | Lia Plankenthorn  |
| 2023 Graduation | Caitlin Konchan   |
| 2023 Graduation | Jose Meza-Radillo |
| 2021 Graduation | Ellie Berg        |
| 2021 Graduation | Tara Friend       |



2019 Graduation John Hedlund  
2018 Graduation Hannah Keller  
2018 Graduation Sewasew Haileselassie Assefa  
2018 Graduation Alexis Hahn  
2017 Graduation Alex Pelissero  
2017 Graduation Lucy Bowland

***School of Medicine Modern Medical Anatomy Capstone committee***

2022 Graduation Jamie Ernwin  
2019 Graduation Leanne DeMay  
2019 Graduation Debra Szuster

***Undergraduate Advisor/Faculty Sponsor***

2019 Taylor Bradly  
2013 Robert Tamai (Harvard University)  
2013 Justin Wang (Harvard University)

**LEADERSHIP AND SERVICE**

**University and Departmental Service**

2017-present CLAS Faculty Council representative for the Department of Anthropology  
2020-present Faculty sponsor Lambda Alpha Anthropology Honors Society Zeta Chapter, CU Denver  
2020 Established Lambda Alpha Anthropology Honors Society chapter for CU Denver  
2019 Faculty sponsor ELC Internship at Landow Performance  
2017, 2018, 2020 Guest lecture Master in Modern Human Anatomy, University of Colorado School of Medicine

**Professional Service**

2023 Session chair, American Association of Biological Anthropology annual meeting, Las Vegas NV  
2021-2022 Local arrangement committee member, American Association of Biological (Physical) Anthropology  
2017-present Reviewer: National Science Foundation, Journal of Human Evolution, Leakey Foundation, Journal of Sports Science, W.W. Norton Publishing, Evolutionary Anthropology, PLOS One, Royal Society Open Science

**Service to the Community**

2023 Mentor for middle school student, Denver Public Schools

**Public Outreach and Press Coverage**

2023 The New York Times “A Theory of Childbirth’s Evolution May Not Be What You’re Expecting”  
July 30<sup>th</sup>, 2023

- <https://www.nytimes.com/2023/07/30/science/childbirth-evolution-obstetrical-dilemma.html>
- 2023 Anthropology News “Pelvic Dilemmas”  
<https://www.anthropology-news.org/articles/pelvic-dilemmas/>
- 2022 New Scientist. “Our ancestors’ prenatal growth sped up after we split from chimps.”  
<https://www.newscientist.com/article/2340725-our-ancestors-prenatal-growth-spiced-up-after-we-split-from-chimps/>
- 2021 EurekAlert AAAS “Want to avoid running overuse injuries? Don’t lean forward so much, says CU Denver study”  
<https://www.eurekalert.org/news-releases/771446>
- 2021 Runner’s World “Why standing up straighter while running may help you prevent injury”  
<https://www.runnersworld.com/news/a37067970/running-posture-injury-prevention-study/>
- 2021 Daily Mail UK “Want to avoid a running injury? Don’t lean forwards so much! Jogging with your trunk tilting too far can increase your risk of knee and back pain, study finds.”  
<https://www.dailymail.co.uk/sciencetech/article-9783707/Exercise-Running-trunk-tilting-far-increase-risk-knee-pain.html>
- 2021 Medical News Today “Reduce running overuse injuries by leaning forward less, says study”  
<https://www.medicalnewstoday.com/articles/reduce-running-overuse-injuries-by-leaning-forward-less-says-study?fbclid=IwAR0BuFkGGMCLBMBvjsakdV4qawsC-xb7I0i5x2bhiAU9aezQRtsH2WmJFE0>
- 2021 Podcast Origin Stories by the Leakey Foundation  
<https://www.youtube.com/watch?v=wpMOB-IUZG4>
- 2021 Podcast The Dissenter with Ricardo Lopes (Aug, 2021)  
<https://www.youtube.com/watch?v=1gnGdFE343Q>
- 2019 Public lecture Standup Science with Shane Mauss at The Black Buzzard at Oscar Blues, Denver
- 2019 Podcast Science of running: running for science with Adam Van Arsdale  
<https://soundcloud.com/running4science/running-for-science-science-for-running-episode-3-anna-warrener>
- 2019 Podcast Here We Are with Shane Mauss  
<https://www.herewerepodcast.com/episodes/episode-227-evolution-childbirth-anna-warrener>
- 2015 “Wide Hips are Just as Efficient for Running” interview on Radio Boston WBUR NPR (April 22<sup>nd</sup>)  
<https://www.wbur.org/radioboston/2015/04/20/wide-hips-running>
- 2015 Science Daily “Evolution of childbirth: wider hips don’t make locomotion easier, so why is labor so hard?”  
<https://www.sciencedaily.com/releases/2015/03/150313094557.htm>
- 2012 Featured in BBC Two Horizon documentary “What Makes us Human” with Dr. Alice Roberts

<https://www.dailymotion.com/video/x13250j> (30min mark)