OMB No. 0925-0001 and 0925-0002 (Rev. 10/2021 Approved Through 01/31/2026)

BIOGRAPHICAL SKETCH

NAME: Manini, Todd

eRA COMMONS USER NAME: TMANINI

POSITION TITLE: Professor

EDUCATION/TRAINING

| INSTITUTION AND LOCATION | Degree | Completion Date | FIELD OF STUDY |
| --- | --- | --- | --- |
| Ohio University, Athens, OH | BS | 06/1997 | Biology |
| Syracuse University, Syracuse, NY | MS | 12/2000 | Exercise Science |
| Syracuse University, Syracuse, NY | PHD | 12/2004 | Exercise Science and Science Education |
| National Institute on Aging, Bethesda, MD | Fellow | 12/2006 | Epidemiology of Aging |

1. **Personal Statement**

Since the start of my career, I’ve pursued building knowledgebase on a gerontological understanding of mobility deficits during the aging process and impact resulting from health events in late-life. I have a wealth of experience conducting both observational studies and clinical trials involving frail and low functioning older adults (minority and non-minority) that will support the organization, administration, planning, compliance, standardization, documentation, monitoring and reporting activities in the current study. As an added asset, I am or have been a key part of several consortia that involve behavioral modifications (UO1 AG022376, U01 AG048270), medication/neutriceutical (U01 AG050499), and body composition (U01 AG15013) studies that overlap operational and scientific elements of the current work. I am also actively leading or have led numerous government-sponsored studies that have strong connections to the ROAMM infrastructure (SBIR 261201500014C, R21 AG031974, UO1 AG022376, U01 AG050499, and R01 HL121023). I feel well qualified and I’m excited to undertake the responsibilities of being a co-investigator on this important study.

I currently serve as the director of the Co-Director of the University of Florida’s Claude D. Pepper Older American’s Independence Center (OAIC) and the Director of the T32 *Translational Research on Aging and Mobility* (TRAM - T32 AG062728) program. I serve as a Professor and Division Chief of Clinical and Population Health Integration in The Department of Health Outcomes and Biomedical Informatics.  Lastly, I am the Co-Leader of the Data Science and Applied Technology Core of the UF OAIC.  In these roles, I lead an interdisciplinary team of investigators, staff and trainees.   I currently lead both clinical trials and observational studies involving cognitive and physical impairments in older adults. In these studies, besides conducting rigorous science, I manage staff, oversee the finances, ensure regulatory compliance, monitor measurement standardization, and report data and safety information for these programs. I involve trainees at all levels for them to gain an appreciation of not just the science methods, but the overall operations of managing a complex primary data collection research program.  I also preach rigorous data collection procedures and transparency throughout the scientific process.  As an added asset, I am or was a key part of several consortia that involve behavioral modifications (UO1 AG022376, U01 AG048270), medication/nutraceutical (U01 AG050499), body composition (U01 AG15013) studies that encompass both operational and scientific elements that are matched to career development goals. My collaborative nature and diverse experiences have prepared me well to closely integrate with the team while being conscience of timely deliverables.

I’ve mentored or coached 42 men and women at various stages of their careers (post-doctoral fellows, pre-doctoral students and faculty). I also currently serve as a co-primary mentor and co-mentor of post-doctoral fellows in the T32 *TRAM* program in which I am Principal Investigator.  In the past 5 years, I’ve served as the primary mentor of six post-doctoral fellows, one of which remain an active part of our research team. I’ve served as the primary or co-primary mentor for six doctoral students, five of which have subsequently gone on to either tenure-track faculty positions or post-doctoral positions. Of note, one of my recent doctoral students was accepted at John’s Hopkins Bloomberg School of Public Health and was recently promoted to a faculty position in the Bloomberg School of Public Health. Another formal doctoral student, who worked as part of our core, is currently employed at Google’s research and development team. My goal for these advanced scientists is to train and instill the Gerontological philosophies— preservation of function in conjunction with chronic disease management— to a variety of researchers and practitioners in health-related disciplines.  As such, I mentor them on how to incorporate gerontology and geriatrics measures into their domain.

**Relevant citations (out of 282 articles as of 6/1/23):** Full list of Medline publications: <https://www.ncbi.nlm.nih.gov/myncbi/todd.manini.1/bibliography/public/>

1. Rouzaud Laborde C, Cenko E, Mardini MT, Nerella S, Kheirkhahan M, Ranka S, Fillingim RB, Corbett DB, Weber E, Rashidi P, **Manini TM.** Satisfaction, Usability, and Compliance With the Use of Smartwatches for Ecological Momentary Assessment of Knee Osteoarthritis Symptoms in Older Adults: Usability Study. JMIR Aging. 2021 Jul 14;4(3). PMID: 34259638; PMCID: PMC8319786.
2. **Manini TM**, Mendoza T, Battula M, Davoudi A, Kheirkhahan M, Young ME, Weber E, Fillingim RB, Rashidi P. Perception of Older Adults Toward Smartwatch Technology for Assessing Pain and Related Patient-Reported Outcomes: Pilot Study. JMIR Mhealth Uhealth. 2019 Mar 26;7(3):e10044. PMCID: PMC6454335.
3. Mardini MT, Nerella S, Kheirkhahan M, Ranka S, Fillingim RB, Hu Y, Corbett DB, Cenko E, Weber E, Rashidi P, **Manini TM**. The Temporal Relationship Between Ecological Pain and Life-Space Mobility in Older Adults With Knee Osteoarthritis: A Smartwatch-Based Demonstration Study. JMIR Mhealth Uhealth. 2021 Jan 13;9(1):e19609. PMCID: PMC7840291.

**Out of a total of 10 NIH funded projects, I am listing only the ongoing projects where I am PI (MPI) or leader (Co-Leader):**

**NIH/NIA P30AG028740 Contact PI: Manini, MPI: Esser 5/31/23-3/31/27**

*University of Florida Older Americans Independence Center (OAIC)*

The UF OAIC aims to maintain health and independence among older adults through preservation of mobility across the lifespan. This mission is accomplished through supporting early stage investigators and generating pilot research that fuels innovation to serve in reducing mobility impairment in late-life — a cornerstone of the 5M’s of Geriatrics.

**U01 AG061389, NIA Multi-PIs: Manini, Clark & Seidler 09/30/18-5/31/24**

*Multimodal imaging of brain activity to investigate walking and mobility decline in older adults*

We will study neural distinctiveness and Compensation Related Utilization of Neural Circuits Hypothesis (CRUNCH) models to explain differences in locomotor neural processes among older adults.

**NIH/NIA R21 AG073769** **Multi-PIs: Rashidi & Manini**  **6/01/22-5/31/24**

*ROAMM-HER: Pilot Trial of a Real-Time Symptom Surveillance System for Post-Discharge Surgical Patients.*We will conduct a RCT to test the effectiveness of a smartwatch-based surveillance system on functional recovery following joint arthroplasty surgery.

**NIH/NIA R33 AG059207 Manini & Ranka (Multi-PIs) 2/01/22-1/31/25**

*Wearable technology infrastructure to enhance capacity for Real-time, Online Assessment and Mobility Monitoring (ROAMM) of intervening health events in older adults.*

This award will build an infrastructure to understand the impact of intervening health events (i.e. episodic falls, injuries, illnesses, hospitalizations) using smartwatch apps.

**NIH/NIA P30AG028740-R6 Core leader: Manini (PI: Pahor) 3/31/17-3/31/27**

*OAIC Data Science and Applied Technology Core*

The Data Science and Applied Technology (DSAT) Core is as an interactive data ecosystem that meets the accelerated demand for data-driven approaches and new interactive technology.

**NIH/NIA U24AG059624-pilot PI: Manini 4/01/20-12/31/23**

*Expanding the capacity for OAIC digital phenotyping using Real-time, Online Assessment and Mobility Monitoring (ROAMM) of falls in older adults*

This demonstration project will transfer technology from the Real-time Online Assessment and Mobility Monitor (ROAMM) platform developed at UF OAIC to the Yale OAIC to offer long-term and continuous connectivity, bidirectional interactivity and remote programmability through a smartwatch.

**NIH/NIA R43AG058312 Site PI: Manini (PI: Dick) 4/1/21-3/31/24**

*Development and validation of a novel non-invasive device for measuring the mechanical properties of cortical bone*. This Phase 2 SBIR grant project that proposes to continue development and commercialization of OsteoDx’s Cortical Bone Mechanics Technology.

**NIH/NIA T32AG062728 PI: Manini 4/01/20-3/31/25**

*Translational research on aging and mobility (TRAM) program*

The overall goal is to develop outstanding independent investigators capable of sustaining productive clinical and translational research careers that help build a translational understanding and interventions that impact mobility in older adults.

1. **Positions, Scientific Appointments, and Honors**

**Positions and Employment**

|  |  |
| --- | --- |
| 2023-present | Co-director of the Claude D. Pepper Older Americans Independence Center |
| 2023-present | Division Chief of Clinical and Population Health Integration |
| 2022-present | Professor, University of Florida, The Department of Health Outcomes and Biomedical Informatics |
| 2019-2021 | Professor, University of Florida, Department of Aging & Geriatric Research, Gainesville, FL |
| 2019-2021 | Division Chief, University of Florida, Department of Aging & Geriatric Research – Division Epidemiology and Data Science in Gerontology, Gainesville, FL |
| 2014 – 2019 | Associate Professor, University of Florida, Department of Aging & Geriatric Research, Gainesville, FL |
| 2008-present | Adjunct Professor, Department of Applied Physiology & Kinesiology |
| 2011-present | Adjunct Professor, Department of Rehabilitation Sciences |
| 2009-present | Adjunct Professor, Department of Epidemiology |
| 2006 – 2014 | Assistant Professor, University of Florida, Department of Aging & Geriatric Research, Gainesville, FL |
| 2004 - 2006 | Post-Doctoral Fellow, National Institute on Aging, Bethesda, MD |
| 1997 - 2001 | Graduate Assistant, Syracuse University, Syracuse, NY |

**Other Experience and Professional Memberships**

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| --- | --- |
| NIH study section | Standing member: Neurological, Aging & Musculoskeletal Epidemiology (NAME) |
| Ad hoc study section member | NAME, GEMSTAR, ZAG1 ZlJ-7 NIA Thrombosis RFA review, ZAG1 ZIJ-M1, NSF/Cyber-Physical Systems Program (NSF 15-541) |
| DSMB member | 1. Researching the Effectiveness of Lumbar Interventions for Enhancing Function Study (RELIEF study)  2. Health Outcomes of Tai Chi in Subsidized Senior Housing |
| Regular referee | Journal of the American Medical Association (JAMA), Journals of Gerontology: Biological & Medical Sciences, Journal of the American Geriatrics Society |

**Honors/Awards**

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| --- | --- |
| 2021 | Associate Editor, Journals of Gerontology Medical Sciences |
| 2017 | Co-Chair, Measurement, Statistics, and Research Design |
| 2017 | Term Professorship – UF recognition of outstanding academic achievement |
| 2017 | Fellowship status, Gerontological Society of America |
| 2016 | Chair of the American College of Sports Medicine Strategic Health Initiative on Aging |
| 2014 | Editorial board, The Journals of Gerontology: Medical Sciences/The Journal of Frailty & Aging |
| 2011 | Exemplary Teachers Award, UF College of Medicine |
| 2010 | Assistant Professor Excellence Award, University of Florida |

**C. Contributions to Science**

1. **Mobility function and disability in late-life**. My research is focused on determinates of age-related changes in mobility performance to mobility disability and rehabilitate losses in physical function among older adults. At the beginning of my career, I spearheaded efforts to identify signs of early declines in physical function and operationalize a pre-clinical stage of disability. Such an approach is ideal for identifying and intervening on physical disability prior to its development. This work suggests that performing physical interventions in a manner that are closely connected to the activity of daily living yield optimal effects. I continue to pursue this area of research as one of the PIs on the Lifestyle Interventions and Independence for Elders Study (The LIFE study) to understand the role of exercise for reducing the incidence of major mobility disability in vulnerable older adults. My contributions suggest that mobility disability and physical impairments can be thwarted with behavioral interventions such exercise and caloric restriction, but the mechanisms that lead to mobility complications are complex and multifactorial.
   1. **Manini TM**, Marko M, VanArnam T, Cook S, Fernhall B, Burke J, Ploutz-Snyder L. Efficacy of resistance and task-specific exercise in older adults who modify tasks of everyday life. J Gerontol A Biol Sci Med Sci. 2007 Jun;62(6):616-23. PubMed PMID: 17595417.
   2. Pahor M, Guralnik JM, Ambrosius WT, Blair S, Bonds DE, Church TS, Espeland MA, Fielding RA, Gill TM, Groessl EJ, King AC, Kritchevsky SB, **Manini TM**, McDermott MM, Miller ME, Newman AB, Rejeski WJ, Sink KM, Williamson JD. Effect of structured physical activity on prevention of major mobility disability in older adults: the LIFE study randomized clinical trial. JAMA. 2014 Jun 18;311(23):2387-96. PMCID: PMC4266388.
   3. **Manini TM,** Beavers DP, Pahor M, Guralnik JM, Spring B, Church TS, King AC, Folta SC, Glynn NW, Marsh AP, Gill TM; LIFE study investigators. Effect of Physical Activity on Self-Reported Disability in Older Adults: Results from the LIFE Study. J Am Geriatr Soc. 2017 May; 65(5):980-988. PMCID: PMC5435532.
   4. Kritchevsky SB, Lovato L, Handing EP, Blair S, Botoseneanu A, Guralnik JM, Liu C, King A, Marsh AP, Pahor M, Rejeski WJ, Spring B, **Manini TM**. Exercise's effect on mobility disability in older adults with and without obesity: The LIFE study randomized clinical trial. Obesity (Silver Spring). 2017 Jul;25(7):1199-1205. PMCID: PMC5567861.
2. **Applied technology and data science for Geriatrics and Gerontology**. My work Co-leading the Data science and Applied Technology core of the University of Florida’s Older American’s Independence Center has led to several fruitful research endeavors. My partners and I have validated mobility disability patterns inside hospital settings as a major factor for poor discharge outcomes and mortality. We have validated public use smart watches (e.g. Samsung Gear S series) and developed apps for capturing symptomatology, GPS mobility patterns, accelerometer-based physical activity and sedentary behaviors in free-living environments. We use advance machine learning approaches on large repositories of wearable sensor data, archived outcome data from clinical trials and prospective cohort studies, and electronic health records to conduct our work. We also reach out to older adults to give us feedback on the technology we develop through focus groups and key informant interviewing.
   1. Kheirkhahan M, Nair S, Davoudi A, Rashidi P, Wanigatunga AA, Corbett DB, Mendoza T, **Manini TM**, Ranka S. A smartwatch-based framework for real-time and online assessment and mobility monitoring. J Biomed Inform. 2019 Jan; 89:29-40.
   2. **Manini TM**, Mendoza T, Battula M, Davoudi A, Kheirkhahan M, Young ME, Weber E, Fillingim RB, Rashidi P. Perception of Older Adults Toward Smartwatch Technology for Assessing Pain and Related Patient-Reported Outcomes: Pilot Study. JMIR Mhealth Uhealth. 2019 Mar 26;7(3):e10044. PMCID: PMC6454335.
   3. Davoudi A, Mardini MT, Nelson D, Albinali F, Ranka S, Rashidi P, **Manini TM**. The Effect of Sensor Placement and Number on Physical Activity Recognition and Energy Expenditure Estimation in Older Adults: Validation Study. JMIR Mhealth Uhealth. PMCID: PMC8129874.
   4. Kheirkhahan M, Chakraborty A, Wanigatunga AA, Corbett DB, **Manini TM**, Ranka S. Wrist accelerometer shape feature derivation methods for assessing activities of daily living. BMC Med Inform Decis Mak. 2018 Dec 12;18(Suppl 4):124. PMCID: PMC6290590.
3. **Interventions in complex older adult populations**. At the beginning of my career, I spearheaded efforts to identify signs of early declines in physical function and operationalize a pre-clinical stage of disability. I then designed and oversaw several behavioral interventions to prevent and rehabilitate losses in physical function. Of note, my work on the *Lifestyle Interventions and Independence for Elders Study (The LIFE Study)* demonstrated that long-term, moderate intensity exercise reduced the incidence of major mobility disability in vulnerable older adults. This study is particularly important, because we demonstrated high behavioral compliance over 4 years in a vulnerable sample of older adults. Interestingly, we discovered several modifiers of the potential benefits which include the degree of social participation, having obesity and with Angiotensin Converting Enzyme medications. We also learned that participation in chronic physical activity is cost-effective, but minimally impacts sedentary behavior which suggests that these behaviors, while correlated, may require separate combative interventions.
4. **Manini TM**, Marko M, VanArnam T, Cook S, Fernhall B, Burke J, Ploutz-Snyder L. Efficacy of resistance and task-specific exercise in older adults who modify tasks of everyday life. J Gerontol A Biol Sci Med Sci. 2007 Jun;62(6):616-23. PMID: 17595417.
5. Pahor M, Guralnik JM, Ambrosius WT, Blair S, Bonds DE, Church TS, Espeland MA, Fielding RA, Gill TM, Groessl EJ, King AC, Kritchevsky SB, **Manini TM**, McDermott MM, Miller ME, Newman AB, Rejeski WJ, Sink KM, Williamson JD. Effect of structured physical activity on prevention of major mobility disability in older adults: the LIFE study randomized clinical trial. JAMA. 2014 Jun 18;311(23):2387-96. PMCID: PMC4266388
6. Brown JD, Smith SM, Strotmeyer ES, Kritchevsky SB, Gill TM, Blair SN, Fielding RA, Buford TW, Pahor M, **Manini TM**. Comparative effects of ACE inhibitors and ARBs on response to a physical activity intervention in older adults: results from Lifestyle Interventions for Elders (LIFE) study. J Gerontol A Biol Sci Med Sci. 2019 May 9. PMCID: PMC7164526
7. Wanigatunga AA, Ambrosius WT, Rejeski WJ, Gill TM, Glynn NW, Tudor-Locke C, **Manini TM**. Association Between Structured Physical Activity and Sedentary Time in Older Adults. JAMA. 2017 Jul 18;318(3):297-299. PMCID: PMC5774303.