



Samuel Montalvo

Postdoctoral Scholar, Cardiovascular Medicine

Bio

BIO

As a clinical exercise physiologist and sport biomechanist, I am dedicated to advancing human exercise and sports performance. I hold certifications as a Performance and Sport Scientist (CPSS) and as a Strength and Conditioning Specialist with Distinction (CSCS, *D) from the National Strength and Conditioning Association (NSCA). In 2022, I was honored with the Wu Tsai Human Performance Alliance Post-Doctoral Research Fellowship and a T32 Post-Doctoral Fellowship, Research Training in Myocardial Biology (TIMBS) at Stanford University.

My research focuses on understanding the mechanical, molecular, and physiological mechanisms that underpin human performance. I am also committed to developing innovative and practical training methods to enhance exercise and sports performance. Currently, I am a member of the Stanford Bioinformatics Core, contributing to the NIH-funded Molecular Transducers of Physical Activity Consortium (MoTrPAC) project. In this capacity, I analyze extensive clinical and exercise datasets, as well as multi-omic, multi-tissue, multi-exercise modality, and multi-species data, to uncover new insights into the biological mechanisms of physical activity and its impact on human health and performance.

In addition to my primary research focus, I collaborate with several teams at Stanford on projects involving Sports and Electrocardiography, Cardiopulmonary Exercise Testing, Exercise and Neuromuscular Disease, and the Stanford Baseball Team.

Beyond research, I am deeply committed to teaching and mentoring. As a first-generation college graduate and a Mexican-American with Indigenous heritage, I bring a unique perspective to my work, which informs my dedication to creating supportive and inclusive spaces for underrepresented groups in science and education. I serve as a Post-Doc Mentoring Coach in collaboration with the Stanford Office of Postdoctoral Affairs, where I facilitate bi-weekly workshops on mentoring for postdocs. I am also part of the Stanford PRISM program, which promotes opportunities for postdoctoral scholars. Furthermore, I mentor prospective and current medical students through the MAVERICs program (Metascience Analyses and Explorations of Reproducibility in Cardiovascular Science) as part of the Stanford Cardiovascular Institute, supporting their growth in cardiovascular research.

These experiences reflect my dedication to fostering an inclusive and supportive academic environment. My long-term goal is to become a professor, combining my passion for research, education, and mentoring the next generation of scientists to advance the fields of exercise physiology, multi-omics, and sports science.

HONORS AND AWARDS

- T32 Post-Doctoral Fellowship, Research Training in Myocardial Biology at Stanford (TIMBS), Stanford University (8/1/2024)
- Invited International Guest Speaker Award, Universidad Autonoma de Nuevo Leon (UANL), Monterrey, Mexico (9/10/2024)

- Recipient of Recognition for Scientific Research and Applied Sports Sciences, Mexican Federation of Applied Sports Sciences (FEMECAD) | Mexican Sports Confederation (CODEME) (9/14/2024)
- Post-Doctoral Fellowship, Wu Tsai Human Performance Alliance, Stanford University (8/1/2022)
- National Sports Award "Luchador Olmeca", Confederación Deportiva Mexicana (2011)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (2025 - present)
- Post Doctoral Fellow, Wu Tsai Human Performance Alliance (2022 - present)
- Member, American Heart Association (2022 - present)
- Post-Doc, Stanford Cardiovascular Institute (2022 - present)
- Member, National Strength and Conditioning Association (2018 - present)
- Member, American College of Sports Medicine (2018 - present)

PROFESSIONAL EDUCATION

- Doctor of Philosophy, The University of Texas at El Paso , Interdisciplinary Health Sciences - Strength and Conditioning (2021)
- Master of Science, The University of Texas at El Paso , Kinesiology - Clinical Exercise Physiology (2015)
- Bachelor of Science, The University of Texas at El Paso , Kinesiology - Physical Education (2011)

STANFORD ADVISORS

- Matthew Wheeler, Postdoctoral Faculty Sponsor

LINKS

- Google Scholar: <https://scholar.google.com/citations?user=whonnOUAAAAJ&hl=en>
- Wheeler lab: <https://med.stanford.edu/mattlab.html>
- MoTrPAC Data Hub: <https://motrpac-data.org/>

Research & Scholarship

RESEARCH INTERESTS

- Assessment, Testing and Measurement
- Data Sciences
- Research Methods

Publications

PUBLICATIONS

- **Blood Biochemical Responses to Acute Exercise: Findings from the Molecular Transducers of Physical Activity Consortium (MoTrPAC).** *bioRxiv : the preprint server for biology*
Robbins, J. M., Katz, D. H., Many, G. M., Rao, P., Smith, G. R., Tiwari, G., Jin, C., Spielmann, G., Montalvo, S., Iyer, G., Amar, D., Leach, D., Coyne, et al
2026
- **Integrative Multi-omics Analysis of the Human Skeletal Muscle Response to Endurance or Resistance Exercise: Findings from the Molecular Transducers of Physical Activity Consortium (MoTrPAC).** *bioRxiv : the preprint server for biology*
Keshishian, H., Many, G. M., Smith, G., Clark, N. M., Iyer, G., Hart, P., Lindholm, M. E., Montalvo, S., Zhang, Z., Jin, C., Sanford, J. A., Carr, S. A., Adkins, et al
2026

- **Molecular Transducers of Physical Activity Consortium (MoTrPAC): Initial Insights into the Dynamic Human Responses to Exercise.** *bioRxiv : the preprint server for biology*
Brandt, A. R., Fleg, J., Goodpaster, B. H., Jaeger, B., Jin, C. A., Johannsen, N. M., Katz, D., Keshishian, H., Kohrt, W. M., Kraus, W. E., Lester, B., Melanson, E. L., Miller, et al
2026
- **Validity and Reliability of an AI-Based Jump Height App vs. Infrared Contact Mat: Minimal Influence of Skin Pigmentation Under Standardized Lighting.** *Journal of strength and conditioning research*
Ríos-Gallardo, P. T., Carranza-García, L. E., Dietze-Hermosa, M., Gonzalez, M. P., Balsalobre-Fernández, C., Dorgo, S., Montalvo, S.
2026
- **Profiling Fireball Extreme Challenge™ athletes: an exploratory multidimensional study in an emerging co-ed sport.** *The Journal of sports medicine and physical fitness*
Ríos-Gallardo, P. T., Gotoo-Vázquez, P. J., López-Walle, J., Mendoza-Farias, F. J., Figueroa-Jimenez, M. O., Montalvo, S.
2026
- **Race- and Sex-Associated Electrocardiographic Repolarization Characteristics in Young American Athletes in the Digital Age.** *JACC. Advances*
Tso, J. V., Montalvo, S., Ferrari, F., Collins, B., Jones, S., Christle, J. W., Hadley, D., Petek, B. J., Froelicher, V.
2025; 5 (1): 102409
- **Advancing Strength and Conditioning Practices for Collegiate Female Flag Football: A Narrative Review and Practical Framework** *STRENGTH AND CONDITIONING JOURNAL*
Diaz-Ochoa, A., Dietze-Hermosa, M., Montalvo, S.
2025; 47 (6): 648-656
- **Multi-omics analysis of endurance exercise reveals cardioprotective remodeling in rat heart**
Brochet, P., Njoroge, J., Montalvo Hernandez, S., Lindholm, M., Smith, G., Amar, D., Gay, N., Zhao, B., Hung, C., Jin, C., Chavez, C., Nachun, D., Zaslavsky, et al
LIPPINCOTT WILLIAMS & WILKINS.2025
- **Integrated Multi-omics Analysis of Skeletal Muscle in Response to a Bout of Resistance or Endurance Exercise**
Iyer, G., Smith, G., Many, G., Clark, N., Jin, C., Montalvo Hernandez, S., Thalacker-Mercer, A., Houmard, J., Bergman, B., Nie, J., Espinoza, S., Trappe, S., Sparks, et al
LIPPINCOTT WILLIAMS & WILKINS.2025
- **MoTrPAC Cpet Core Lab - Quality Control And Threshold Determinations**
Carnero, E. A., Coyne, B., Christle, J., Brubaker, P., Kraus, W. E., Goodpaster, B., Stowe, C. L., Rejeski, W., Montalvo, S., Fleg, J. L.
LIPPINCOTT WILLIAMS & WILKINS.2025: 426
- **A nonexercise equation to predict oxygen consumption peak in chronic heart failure using: integrating clinical variables for prognostic assessment**
Silva, A., Montalvo, S., Christle, J., Myers, J.
EUROPEAN RESPIRATORY SOC JOURNALS LTD.2025
- **Endurance Training Enhances Sex-Specific Cardioprotective Metabolism.** *Circulation research*
Brochet, P., Montalvo, S., Lindholm, M. E., Jimenez-Morales, D., Jin, C. A., Rasmussen, B. B., Kraus, W. E., Yan, Z., Wheeler, M. T., Katz, D. H.
2025
- **Countermovement jump performance in Malaysian young wushu athletes: normative values and sex-based differences** *REVISTA DE ARTES MARCIALES ASIATICAS*
Tan, E. C. H., Rio-Rodriguez, D., Mancilla, A., Gonzalez, M. P., Montalvo, S.
2025; 20 (2): 209-219
- **Resisted Sprint Training Improves Overground Sprint, Jump, and Isometric Mid-Thigh Pull Kinetics and Kinematics in Male Youth Ice Hockey Players: A Randomized Control Trial.** *Journal of human kinetics*
Dietze-Hermosa, M., Montalvo, S., Gonzalez, M. P., Briggs, A., Dorgo, S.
2025; 98: 117-131
- **Cardiopulmonary Recovery After Maximal Exercise in Individuals with Neuromuscular Disease and Limited Mobility.** *Journal of clinical medicine*

- Blumberg, Y., de Monts, C., Montalvo, S., Tang, W. J., Dunaway Young, S., Hageman, N., Sanchis-Gomar, F., Ashley, E. A., Amar, D., Myers, J., Wheeler, M. T., Day, J. W., Duong, et al
2025; 14 (12)
- **Manual resistance training and resistance training elicit neuromuscular strength adaptations but not body composition changes in an 8-week exercise intervention.** *Journal of bodywork and movement therapies*
Terrazas, L., Montalvo, S., Dorgo, S.
2025; 42: 810-815
 - **Sex-specific electrocardiographic criteria for left ventricular hypertrophy in young athletes.** *Heart rhythm*
Montalvo, S., Tso, J. V., Christle, J. W., Hadley, D., Wheeler, M., Perez, M., Myers, J., Ashley, E., Froelicher, V.
2025
 - **The effects of eccentric cycling on vascular reactivity.** *Frontiers in physiology*
Gomez, M., Montalvo, S., Conde, D., Ibarra-Mejia, G., Gurovich, A. N.
2025; 16: 1554054
 - **Proposed enhanced recommendations for interpretation of electrocardiographic screening of athletes.** *Progress in cardiovascular diseases*
Froelicher, V., Husaini, M., Tso, J. V., Montalvo, S., Christle, J., Perez, M. V., Hadley, D., Wheeler, M., Stein, R., Vetter, V., Hsu, J. J., Asif, I. M., Hedman, et al
2025
 - **Effects of Different Stretching Modalities on the Antagonist and Agonist Muscles on Isokinetic Strength and Vertical Jump Performance in Young Men.** *Journal of strength and conditioning research*
Montalvo, S., Gonzalez, M. P., Dietze-Hermosa, M. S., Martinez, A., Rodriguez, S., Gomez, M., Cubillos, N., Ibarra-Mejia, G., Tan, E., Dorgo, S.
2024
 - **Exercise And Recovery Ventilatory Responses Between Individuals With Neuromuscular Disease And Healthy Adults**
Montalvo, S., Blumberg, Y., de Monts, C., Tang, W. J., Ataide, P., Young, S., Ghiollagain, N., Parker, D. M., Day, J. W., Myers, J. N., Wheeler, M. T., Duong, T., Christle, et al
LIPPINCOTT WILLIAMS & WILKINS.2024: 925-926
 - **Investigating Recovery From Maximal Exercise In Patients With Neuromuscular Disease**
Blumberg, Y., Patti, A., De Monts, C., Montalvo, S., Ataide, P., Tang, W., Young, S., Myers, J., Wheeler, M. T., Duong, T., Christle, J. W., Day, J. W.
LIPPINCOTT WILLIAMS & WILKINS.2024: 657
 - **Comparative kinematic analysis of high-speed treadmill vs. overground sprinting across athletic levels and sex.** *The Journal of sports medicine and physical fitness*
Montalvo, S., Gonzales, F., Lance, G., Gonzalez, M. P., Dietze-Hermosa, M. S., Dorgo, S.
2024
 - **Effects of Different Eccentric Cycling Intensities on Brachial Artery Endothelial Shear Stress and Blood Flow Patterns.** *Research quarterly for exercise and sport*
Gomez, M., Montalvo, S., Sanchez, A., Conde, D., Ibarra-Mejia, G., Peñailillo, L. E., Gurovich, A. N.
2024: 1-11
 - **Can the outlier percentiles from norms increase the sensitivity of the ECG criteria for screening athletes?** *Progress in cardiovascular diseases*
Tso, J. V., Montalvo, S., Christle, J., Froelicher, V.
2024
 - **Measuring Vertical Jump Height With Artificial Intelligence Through a Cell Phone: A Validity and Reliability Report.** *Journal of strength and conditioning research*
Erik, C. H., Weng Onn, S., Montalvo, S.
2024
 - **Carotid Arterial Compliance during Different Intensities of Submaximal Endurance Exercise.** *Journal of clinical medicine*
Gurovich, A. N., Montalvo, S., Hassan, P. F., Gomez, M.
2024; 13 (11)
 - **The Impact of an 8-Week Resisted Sprint Training Program on Ice Skating Performance in Male Youth Ice Hockey Players.** *Journal of strength and conditioning research*

Dietze-Hermosa, M. S., Montalvo, S., Gonzalez, M. P., Dorgo, S.
2024

- **Digitized Electrocardiography Measurements Support the Biological Plausibility of the Pathological Significance of ST Segments in Athletes.** *Clinical journal of sport medicine : official journal of the Canadian Academy of Sport Medicine*
Montalvo, S., Froelicher, V. F., Hadley, D., Wheeler, M. T.
2024
- **Should ECG criteria for Low QRS voltage (LQRSV) be specific for Sex?** *American heart journal*
Tso, J. V., Montalvo, S., Christle, J., Hadley, D., Froelicher, V.
2024
- **Assessing the Assisted Six-Minute Cycling Test as a Measure of Endurance in Non-Ambulatory Patients with Spinal Muscular Atrophy (SMA).** *Journal of clinical medicine*
Tang, W. J., Gu, B., Montalvo, S., Dunaway Young, S., Parker, D. M., de Monts, C., Ataide, P., Ni Ghiollagain, N., Wheeler, M. T., Tesi Rocha, C., Christle, J. W., He, Z., Day, et al
2023; 12 (24)
- **Effects of manual resistance versus weight resistance training on body composition and strength in young adults after a 14-week intervention.** *Journal of bodywork and movement therapies*
Dorgo, S., Terrazas, L. A., Gonzalez, M. P., Dietze-Hermosa, M. S., Montalvo, S.
2023; 36: 313-319
- **ST Segment Depression In Male Athletes**
Montalvo, S., Froelicher, V. F., Myers, J. N., Wheeler, M. T.
LIPPINCOTT WILLIAMS & WILKINS.2023: 202-203
- **Biomechanical Characteristics Of The Carotid Artery During Aerobic Exercise**
Gomez, M., Montalvo, S., Sanchez, A., Hassan, P., Gurovich, A. N.
LIPPINCOTT WILLIAMS & WILKINS.2023: 48
- **Commercial Smart Watches and Heart Rate Monitors: A Concurrent Validity Analysis.** *Journal of strength and conditioning research*
Montalvo, S., Martinez, A., Arias, S., Lozano, A., Gonzalez, M. P., Dietze-Hermosa, M. S., Boyea, B. L., Dorgo, S.
2023
- **Differences in sprint profile, sprint completion times, and jumping performance between division I track and field sprinters** *Journal of Physical Education and Sport*
Dietze-Hermosa, M., Montalvo, S., Gonzales, M. P., Cubillos, N. R., Dorgo, S.
2023; 20: 2076-2085
- **Dynamic stretching improves muscle activation and pain pressure threshold but not isometric hand strength when compared to static stretching** *Journal of Physical Education and Sport*
Montalvo, S., Conde, D., Sanchez, M., Martinez, P., Trevizo, R., Ibarra-Mejia, G.
2023; 2 (23): 293 - 300
- **A Comparison of Morphological, Jump, and Sprint Kinematic Asymmetries in Division I Track and Field Athletes.** *International journal of exercise science*
Gonzalez, M. P., Montalvo, S., Dietze-Hermosa, M., Gomez, M., Dorgo, S.
2023; 16 (1): 1306-1319
- **Near Infrared Spectroscopy is not a Surrogate of Venous Occlusion Plethysmography to Assess Microvascular Resting Blood Flow and Function.** *International journal of exercise science*
Gomez, M., Montalvo, S., Gurovich, A. N.
2022; 15 (2): 1616-1626
- **Differences in Blood Flow Patterns and Endothelial Shear Stress at the Carotid Artery Using Different Exercise Modalities and Intensities** *FRONTIERS IN PHYSIOLOGY*
Montalvo, S., Gomez, M., Lozano, A., Arias, S., Rodriguez, L., Morales-Acuna, F., Gurovich, A. N.
2022; 13: 857816
- **Changes in vertical jump performance and body composition before and after COVID-19 lockdown** *Journal of Human Exercise and Sport*

- Tan, E., Montalvo, S., Gonzales, M. P., Dietze-Hermosa, M. S., MIN, S., Dorgo, S.
2022; 18 (1): 224-241
- **Association and Predictive Ability of Jump Performance with Sprint Profile of Collegiate Track and Field Athletes** *SPORTS BIOMECHANICS*
Dietze-Hermosa, M., Montalvo, S., Gonzalez, M. P., Rodriguez, S., Cubillos, N. R., Dorgo, S.
2021: 1-20
 - **Effects of Augmented Eccentric Load Bench Press Training on One Repetition Maximum Performance and Electromyographic Activity in Trained Powerlifters** *JOURNAL OF STRENGTH AND CONDITIONING RESEARCH*
Montalvo, S., Gruber, L. D., Gonzalez, M. P., Dietze-Hermosa, M. S., Dorgo, S.
2021; 35 (6): 1512-1519
 - **Common Vertical Jump and Reactive Strength Index Measuring Devices: A Validity and Reliability Analysis** *JOURNAL OF STRENGTH AND CONDITIONING RESEARCH*
Montalvo, S., Gonzalez, M. P., Dietze-Hermosa, M. S., Eggleston, J. D., Dorgo, S.
2021; 35 (5): 1234-1243
 - **Association Between the Modified Functional Movement Screen Scores, Fear of Falling, and Self-Perceived Balance in Active Older Adults** *TOPICS IN GERIATRIC REHABILITATION*
Dietze-Hermosa, M. S., Montalvo, S., Gonzalez, M. P., Dorgo, S.
2021; 37 (2): 64-73
 - **Physical fitness in older adults: Is there a relationship with the modified Functional Movement Screen (TM)?** *JOURNAL OF BODYWORK AND MOVEMENT THERAPIES*
Dietze-Hermosa, M., Montalvo, S., Gonzalez, M. P., Dorgo, S.
2021; 25: 28-34
 - **Heart rate percentage as a method for determining intra-set resting during a post-activation performance enhancement exercise to increase vertical jump performance** *Journal of Physical Education and Sport*
Montalvo, S., Conde, D., Gonzales, M. P., Dietze-Hermosa, M. S., Ibarra-Mejia, G., Dorgo, S.
2021; 21 (5): 730 – 2736
 - **Sprint Training on a Treadmill vs. Overground Results in Modality-Specific Impact on Sprint Performance but Similar Positive Improvement in Body Composition in Young Adults** *JOURNAL OF STRENGTH AND CONDITIONING RESEARCH*
Dorgo, S., Perales, J. J., Boyle, J. B., Hausselle, J., Montalvo, S.
2020; 34 (2): 463-472
 - **Association and predictive ability of vertical countermovement jump performance on unilateral agility in recreationally trained individuals** *Journal of Physical Education and Sport*
Dietze-Hermosa, M., Montalvo, S., Cubillo, N. R., Gonzales, M. P., Dorgo, S.
2020; 20: 2076-2085
 - **The effect of different stretching protocols on vertical jump measures in college age gymnasts** *JOURNAL OF SPORTS MEDICINE AND PHYSICAL FITNESS*
Montalvo, S., Dorgo, S.
2019; 59 (12): 1956-1962
 - **Validity of Vertical Jump Measuring Devices** *International Journal of Exercise Science: Conference Proceedings*
Montalvo, S., Dorgo, S., Tune, C. H., Sapien, A. C., Gonzalez, M. P., Sanchez, J. A.
2018
 - **The Effects of Overground and Treadmill Sprint Training on Body Composition** *National Strength and Conditioning Association Conference Proceedings*
Dorgo, S., Perales, J., Montalvo, S.
2018
 - **The Effects of Two Different Sprint Training Modalities on Sprint Speed, Aerobic Fitness and Body Composition** *International Journal of Exercise Science: Conference Proceedings*
Amador, M., Montalvo, S., Perales, J., Dorgo, S., Bajpeyi, S.
2016

- **Effects of Treadmill and Overground Sprint Training Modes on Sprint Speed, Body Composition and Aerobic Power** *National Strength and Conditioning Conference Association Proceeding*
Dorgo, S., Perales, J., Montalvo, S., Amador, M., Bajpeyi, B.
2016