

Personal data			
<i>Sumame</i>	<i>Name</i>	<i>Organization and position</i>	<i>Date of birth</i>
Pilotto	Andrea	Post-Doctoral Research Fellow Institute of Physiology Department of Molecular Medicine University of Pavia	14/12/1993
			<i>Nationality</i>
			Italian
Education and training			
PhD – Biomedical Sciences and Biotechnology – University of Udine (10/2018 – 10/2022)			
MS – Sport Science and Technology – University of Milan (09/2016 – 07/2018)			
BS – Exercise, Sport and Health Sciences – University of Milan (09/2012 – 11/2015)			
Current Positions			
<ul style="list-style-type: none"> • Post-Doctoral Research Fellow – (06/2022 – present) <u>Institute of Physiology – Department of Molecular Medicine, University of Pavia (Pavia, Italy)</u> Key Words: <i>Sports Sciences, Principles of Exercise Training and Prescription, Physical Activity for Health, Functional Evaluation, Human Physiology, Exercise Physiology, Environmental Physiology, Respiratory Physiology, Cardiovascular Physiology, Muscle Physiology, Ageing.</i> • Contract Professor – (03/2025 – present) <u>University of Pavia (Pavia, Italy)</u> Bachelor's Degree – Sports Science. Course: Human Physiology Key Words: <i>Sports Sciences, Exercise Physiology, Human Physiology, Cardiovascular Physiology, Muscle Physiology, Physiological Adaptations to Exercise, Environmental Physiology, Respiration Physiology.</i> 			
Research and Teaching experience			
RESEARCH PROJECTS			
<ul style="list-style-type: none"> • Project MuTex-CHF: Muscular Alterations Through Exercise Treatment in Chronic Heart Failure. <ul style="list-style-type: none"> - Evaluation of muscle adaptations in Chronic Heart Failure patients with reduced ejection fraction in response to exercise training treatment. Role: coordinator of the physiology unit. • Project PRIN2020: Neuromuscular impairment in aging: structural and functional mechanistic bases of age-related alterations (<i>TRAJECTOR-AGE</i>). <ul style="list-style-type: none"> - Evaluation of age-related longitudinal neuromuscular adaptations during aging in multicentric international project. Funder: Ministry of University and Research. Funding amount: 850.000€. Role: coordinator of the physiology unit. • Project NeuAge: Neuromuscular Aging: Mechanism and Functional Implications. <ul style="list-style-type: none"> - Evaluation of neuromuscular, metabolic, cardiovascular and muscle oxidative metabolism response in healthy and sarcopenic elderly individuals. Funder: Ministry of University and Research. Funding amount: 82.718€. Role: collaborator. • Project MITO: Adaptations of mitochondrial oxidative capacity following repeated aerobic training interventions. <ul style="list-style-type: none"> • Evaluation of metabolic, cardiovascular, mitochondrial, transcription and epigenetics adaptations in response to repeated high-intensity interval training interventions in humans. Funder: Sports Medicine Italian Federation. Funding amount: 10.000€. Role: collaborator. • Project MITOMEMO MICE: Adaptations of mitochondrial oxidative capacity following repeated high-intensity aerobic training interventions in animal model <ul style="list-style-type: none"> - Evaluation of mitochondrial biomarkers in response to repeated high-intensity interval training period in mice. Role: collaborator. • Project MARS-PRE: Biological and Functional Markers of Precision Astronautical Biomedicine (<i>Bed-Rest Campaign SBI-2019</i>). <ul style="list-style-type: none"> - Evaluation of metabolic, cardiovascular and muscle oxidative metabolism response after 10 days of bed-rest. Funder: Italian Space Agency. Funding amount: 1.496.000€. Role: collaborator. • Project CEREBRI-AMS: Cerebral deoxygenation during hypoxic exercise and possible association with acute mountain sickness (<i>High Altitude Expedition 2019 - Gnifetti 3647mt</i>). <ul style="list-style-type: none"> - Investigate the correlation between cerebral deoxygenation measured by NIRS during hypoxic exercise and the occurrence of acute mountain sickness. Funder: Crowdfunding. Funding amount: 5000€. Role: collaborator. • Project WIK-TEST: On-Water Incremental Kayak Test. <ul style="list-style-type: none"> - Validation of a new on-water test for the assessment of blood lactate response to exercise in elite kayakers. Role: collaborator. 			
RESEARCH STAYS			
<ul style="list-style-type: none"> • Respiratory Research Center – The Lundquist Institute at Harbor-UCLA (Torrance, CA, USA) – (10/2025-11/2025). Howard G. "Skip" Knuttgen International Scholar Grant. • GENUD – Universidad de Castilla-La Mancha (Toledo, Spain) – (11/2023; 05/2025; 11/2024; 05/2025; 11/2025). Project PRIN2020 + FEPS Traveling Fellowship 2025. • Sharples Muscle Lab – Norwegian School of Sports Science (Oslo, Norway) – (10/2021-12/2021; 07/2022). Project MITO. • ZRS Koper – General Hospital (Izola, Slovenia) – (08/2019-09/2019). Project MARS-PRE. 			

TEACHING ACTIVITIES

- **Contract Professor** – (03/2025 – present)
Course: Human Physiology (6 ECTS, 93 students, in Italian, 2025-2026).
BSc course – Sports Science – University of Pavia, Pavia (Italy). Hours: 16.
- **Guest Lecturer** – (03/2023 – present)
Course: Integrative Human Physiology III: Functional Biomarkers of Exercise Tolerance (~ 20 students, in Italian, 2023-2026)
Higher Education Programme (Post-Master's Degree): Exercise Physiology and Endurance Performance – University of Pavia, Pavia (Italy). Hours: 50.
- **Teaching Assistant** – (04/2026 – present)
Course: Physiological Determinants of Exercise Intolerance In Disease Population (3 ECTS, ~ 15 students, in English, 2026)
MSc course – Medicine and Surgery “Golgi”– University of Pavia – Pavia (Italy). Hours: 12.
- **Teaching Assistant** – (11/2023 – present)
Course: Respiratory Physiology (3 ECTS, ~ 100 students, in Italian, 2023-2026)
MSc course – Medicine and Surgery “Golgi”– University of Pavia – Pavia (Italy). Hours: 18.
- **Teaching Assistant** – (01/2022 – present)
Course: Physiology Laboratory (1 ECTS, ~ 30 students, in English, 2022-2026)
MSc course – Medicine and Surgery “Harvey” – University of Pavia–Pavia (Italy). Hours: 36.
- **Teaching Assistant** – (03/2020 – present)
Course: Exercise Physiology (6 ECTS, ~ 40 students, in Italian, 2020-2026)
MSc course – Sport Science and Techniques – University of Pavia – Pavia (Italy). Hours: 63.

STUDENT GUIDANCE (thesis projects)

- **Master students:** 7 as co-supervisor (2020 – 2026)
- **Bachelor students:** 1 as co-supervisor (2022)

ACADEMIC SERVICE

• Institutional Roles

Member, Degree Committee, Exercise Physiology and Endurance Performance (Post-Master's Degree) – University of Pavia (2024 – present)

Course Examiner, Course: Human Physiology – Sports Science, BSc course – University of Pavia (2024 – present)

• Conference committees

Member, Organizing Committee – mNIRS Conference 2026

Member, Scientific Committee – mNIRS Conference 2026

• Editorial and Reviewing Activity

Reviewer for: European Journal of Applied Physiology, Experimental Physiology, Medicine & Science in Sports & Exercise, Frontiers in Physiology, Frontiers in Sports and Active Living

PROFESSIONAL AFFILIATIONS

Member – American College of Sports Medicine

Member – American Physiological Society

Member – The Physiological Society

Member – Società Italiana delle Scienze Motorie e Sportive

Training courses, technical skills and competences

TRAINING COURSES

Harbor-UCLA Exercise Practicum – (10/2025)

The Lundquist Institute for Biomedical Innovation at Harbor-UCLA (Torrance, CA, USA)

145th International Workshop on High-Resolution Respirometry (HRR) – (01/2020)

Oroboros Instruments (Innsbruck, Austria)

COMPETENCES

- Guidance and supervision of a research team;
- Exercise tolerance evaluation of athletes, healthy subjects and individuals affected by different diseases;
- Pulmonary, cardiovascular and metabolic responses to exercise in normoxia and hypobaric hypoxia;
- Mechanisms of regulation of skeletal muscle oxidative metabolism;
- Molecular adaptations of skeletal muscle bioenergetics in response to training interventions.

TECHNICAL SKILLS

- Cardiopulmonary exercise test on different ergometers (cycle-ergometer, treadmill etc.);
- On-water performance evaluation in kayak athletes;
- Determination of anaerobic thresholds (gas exchange threshold and lactate threshold);
- Determination of oxygen uptake kinetics;
- Determination of cardiac function by the transthoracic bioimpedance technique;
- Determination of muscle fractional oxygen extraction by near infrared spectroscopy during exercise;
- Estimation of muscle oxidative capacity by near infrared spectroscopy;
- Estimation of oxygen diffusion limiting factor by near infrared spectroscopy;
- Estimation of microvascular function by near infrared spectroscopy;
- Estimation of endothelial function by ultrasound technique;

- Measurements of mitochondrial respiration in permeabilized fibers using high-resolution respirometry;
- Measurements of gene expression on muscle samples using real time qPCR;
- Performance evaluation and exercise training in rodents.

Researcher profile

ORCID ID: <https://orcid.org/0000-0002-4639-4207>

Scopus Author ID: 57211773574

Web of Science ID: NKP-3283-2025

Scientific publications

h-index: 6 (Scopus / Web of Science)

List of the publications as first author

Pilotto AM, Higuera-Liévana E, Ansaldo M, Baltasar-Fernandez I, Neri M, Giusti L, Buendía-Romero Á, Valenzuela PL, Alcazar J, Lauretani F, Re R, Botter A, Franchi MV, Ara I, Porcelli S

Exploring the physiological limits of aging: A case study of the male 50-km world record in the 80+ age category.

Frontiers in Physiology. 16:1735019, 2026. doi:10.3389/fphys.2025.1735019

Pilotto AM, Turner DC, Crea E, Mazzolari R, Brocca L, Pellegrino MA, Miotti D, Bottinelli R, Sharples AP, Porcelli S

Human skeletal muscle possesses an epigenetic memory of high intensity interval training.

American Journal of Physiology - Cell Physiology. 328(1):C258-C272, 2025. doi:10.1152/ajpcell.00423.2024

Pilotto AM, Adami A, Mazzolari R, Brocca L, Crea E, Pellegrino MA, Bottinelli R, Zuccarelli L, Grassi B, Rossiter HB & Porcelli S.

Reply to the letter from Manferdelli et al.: 'Muscle O₂ diffusion capacity by NIRS: a new approach in the air'.

Journal of Physiology. 600(23):5165-5166, 2022. doi: 10.1113/JP283919

Pilotto AM, Adami A, Mazzolari R, Brocca L, Crea E, Pellegrino MA, Bottinelli R, Zuccarelli L, Grassi B, Rossiter HB & Porcelli S.

Near-infrared spectroscopy estimation of combined skeletal muscle oxidative capacity and O₂ diffusion capacity in humans.

Journal of Physiology. 600(18):4153-4168, 2022. doi: 10.1113/JP283267

Pilotto AM, Rasica L, Scalise G, Annoni S, La Torre A, Marzorati M, Porcelli S.

New on-water test for the assessment of blood lactate response to exercise in elite kayakers.

Medicine & Science in Sports & Exercise. 51(12):2595-2602, 2019. doi: 10.1249/MSS.0000000000002077

List of the publications as last author

Pérez-Regalado S, Ansaldo M, Lopez-Garzon M, Ruvira S, Benavente C, Porcelli S, Feriche B, Bishop DJ, **Pilotto AM**.

Exploring the synergistic effects of endurance training regimens and intermittent hypoxia exposure on Mitochondrial Bioenergetics: A Systematic Review and Meta-analysis.

Experimental Physiology. *In submission*

List of the publications as one of the authors

Colosio M, **Pilotto AM**, Ansaldo M, Dobrzycki I, Pellegrino MA, Bottinelli R, Re R, Botter A, Franchi MV, Sundberg CW, Porcelli S.

One half of the sprinting coin: The oxygen transport cascade of a 91-year-old female world-record sprinter.

Journal of Applied Physiology. 2026. doi: 10.1152/jappphysiol.00279.2026

Manferdelli G, Rasica L, **Pilotto AM**, Zuccarelli L, Baldassarre G, Burleigh M, Easton C, Marzorati M, Šimunič B, Pišot R, Narici M, Grassi B, Porcelli S.

Post-occlusive muscle reoxygenation kinetics and nitric oxide bioavailability following 10-day bed rest.

American Journal of Physiology – Regulatory, Integrative and Comparative Physiology. 2026. doi: 10.1152/ajpregu.00093.2025

Carbonaro M, Boccardo M, Müller Brusco C, **Pilotto AM**, Re R, Lauretani F, Porcelli S, Franchi MV, Botter A.

Motor unit behaviour adaptations across the lifespan: sex differences in young, middle-aged and old adults

bioRxiv 2025.12.19.695460. doi: <https://doi.org/10.64898/2025.12.19.695460>

Lauretani F, Maggio M, **Pilotto AM**, Ansaldo M, Brusco CM, Carbonaro M, Amendola C, Nabacino M, Testa C, Ciuni A, Sverzellati N, Zucchini I, Salvi M, Mastropietro A, Re R, Botter A, Franchi MV, Porcelli S.

The trajectories of neuromuscular aging (TRAJECTOR-AGE clinical trial): study rationale and methodological protocol.

Journal of the American Geriatrics Society. 73(9), 2819–2827, 2025. doi: 10.1111/jgs.70005.

Villanova S, Pastorio E, **Pilotto AM**, Marciano A, Quaresima V, Adami A, Rossiter HB, Cardinale D, Porcelli S.

Oxidative and O₂ Diffusive Function in Triceps Brachii of Recreational to World Class Swimmers.

Experimental Physiology. 110(11), 1721–1731, 2025. doi: 10.1113/EP092299.

Simpson A, **Pilotto AM**, Brocca L, Mazzolari R, Rosier BT, Carda-Diéguez M, Casas-Agustench P, Bescos R, Porcelli S, Mira A, Easton C, Henriquez FL & Burleigh M.

Eight weeks of high-intensity interval training alters the tongue microbiome and impacts nitrate and nitrite levels in previously sedentary men.

Free Radical Biology and Medicine. 231:11-22, 2025. doi: 10.1016/j.freeradbiomed.2025.02.006

Porcelli S, **Pilotto AM**, Rossiter HB.

NIRS-Based Muscle Oxygenation Is Not Suitable to Compute Convective and Diffusive Components of O₂ Transport at $\dot{V}O_{2max}$: Response to Manferdelli, Barstow, and Millet.

Medicine & Science in Sports & Exercise. 55(11):2112-2113, 2023. doi: 10.1249/MSS.0000000000003240.

Porcelli S, **Pilotto AM**, Rossiter HB.

NIRS-Based Muscle Oxygenation Is Not Suitable to Compute Convective and Diffusive Components of O₂ Transport at $\dot{V}O_{2max}$.

Medicine & Science in Sports & Exercise. 55(11):2106-2109, 2023. doi: 10.1249/MSS.0000000000003239.

Baldassarre G, Zuccarelli L, Manferdelli G, Manfredini V, Marzorati M, **Pilotto A**, Porcelli S, Rasica L, Smimunič B, Pišot R, Narici M, Grassi B.

Decrease in work rate in order to keep a constant heart rate: biomarker of exercise intolerance following a 10- day bed rest. *Journal of Applied Physiology*. 132(6):1569-1579, 2022 doi: 10.1152/jappphysiol.00052.2022

Zuccarelli L, Baldassarre G, Magnesa B, Degano C, Comelli M, Gasparini M, Manferdelli G, Marzorati M, Mavelli I, **Pilotto A**, Porcelli S, Rasica L, Smimunič B, Pišot R, Narici M, Grassi B.

Peripheral impairments of oxidative metabolism after a 10-day bed rest are upstream of mitochondrial respiration. *Journal of Physiology*. 599(21):4813-4829, 2021. doi: 10.1113/JP281800

Bertozi F, Porcelli S, Marzorati M, **Pilotto AM**, Galli M, Sforza C & Zago M.

Whole-body kinematics during a simulated sprint in flat-water kayakers.

European Journal of Sport Science. 22(6):817–825, 2022. doi: 10.1080/17461391.2021.1930190

Conferences - Oral communications - Grants

INVITED TALKS:

“Muscle Weakness and Exercise (In)tolerance in Long-COVID Patients: Mechanistic Bases and Predictive Biomarkers”.

Invited Oral Presentation, Symposium: “Rising from Ashes” - Physiology of Exercise Intolerance in Long COVID Patients and Effective Recovery Strategies”. ACSM 73rd Annual Meeting. Salt Lake City (UT) 29/05/2026

“Assessing Skeletal Muscle O₂ Diffusing Capacity and Intramuscular O₂ Flux Limitations using NIRS”.

Seminar at Marquette University. Milwaukee, Wisconsin, USA 02/06/2025

“Assessing Skeletal Muscle O₂ Diffusing Capacity and Intramuscular O₂ Flux Limitations using NIRS”.

Invited Oral Presentation, Highlighted Symposium: “Oxygen at the Final Frontier: Advances in the Assessment of Aerobic Function in Health and Disease”. ACSM 72nd Annual Meeting. Atlanta (GA) 29/05/2025

“Muscle Memory: Don't Forget (to) Exercise at High-Intensity”.

Advances in Exercise Physiology Pre-APS Conference at The Lundquist Institute at Harbor-UCLA Medical Center. Torrance, CA, 90502, USA 19/04/2023

“Repeated interventions of high-intensity interval training differentially affect mitochondrial adaptations at skeletal muscle level”.

Invited Oral Presentation, Symposium: “Do skeletal muscles remember they have previously been trained? The elephant in the gym”. Europhysiology Congress 2022. Copenhagen 17/10/2022

“Near infra-red spectroscopy estimation of combined skeletal muscle oxidative capacity and O₂ diffusion capacity in young healthy humans”.

Seminar at David Geffen School of Medicine at UCLA. Los Angeles, California, USA 26/05/2021

CONFERENCE COMMUNICATIONS:

ORAL PRESENTATIONS:

“O₂ flow limitation with aging: in vivo and ex vivo evidence of a shift from muscle diffusive to oxidative limitation”.

Pilotto AM, Felles C, Ansaldo M, Neri M, Giusti L, Adami A, Rossiter HB, Goulding RP, Brocca L, Pellegrino MA, Bottinelli R, Re R, Lauretani F, Botter A, Franchi MV, Porcelli S.

20th International Biochemistry of Exercise Conference (IBEC). Roanoke (VA) 01/06/2026

“O₂ diffusion limits oxidative capacity in young and middle-age, but not in elderly muscle”.

Pilotto AM, Adami A, Ansaldo M, Lauretani F, Re R, Botter A, Franchi MV, Bottinelli R, Rossiter HB, Porcelli S.

29th European College Sport Science (ECSS). Glasgow 03/07/2024

“Repeated high-intensity interval training interventions affect human skeletal muscle epigenetics and promote muscle memory”.

Pilotto AM, Mazzolari R, Turner DC, Gorski PP, Crea E, Zuccarelli L, Brocca L, Pellegrino MA, Grassi B, Bottinelli R, Sharples AP, Porcelli S.

28th European College Sport Science (ECSS). Paris 05/07/2023

“Two repeated interventions of high-intensity interval training induce different functional and molecular adaptations of skeletal muscle in mice”.

Pilotto AM, Brocca L, Crea E, Bottinelli R, Porcelli S, Pellegrino MA.

27th European College Sport Science (ECSS). Seville 31/08/2022

“Near infra-red spectroscopy estimation of combined skeletal muscle oxidative capacity and O₂ diffusion capacity in humans”.

Pilotto AM, Adami A, Mazzolari R, Brocca L, Crea E, Pellegrino MA, Bottinelli R, Zuccarelli L, Grassi B, Rossiter HB, Porcelli S.

26th European College of Sport Science (ECSS). Virtual Congress 10/09/2021

“Non-invasive evaluation of the time-course changes in physiological adaptations to low-volume high-intensity interval training”.

Pilotto AM, Mazzolari R, Colosio M, Grassi B, Porcelli S.

25th European College of Sport Science (ECSS). Virtual Congress 28-30/10/2020

“Reliability and validity of the 3-minutes all-out test in flat-water kayakers”.

Pilotto AM, Rasica L, Manferdelli G, Lavarda M, Aliprandi D, Baglioni A, Porcelli S.

24th European College Sport Science (ECSS). Prague 05/07/2019

“Assessment of anaerobic lactate threshold in flat-water kayakers”.

Pilotto A, Rasica L, Scalise G, Pedrali M, La Torre A, Marzorati M, Porcelli S.

23rd European College of Sport Science (ECSS). Dublin 04/07/2018

“Assessment of individual anaerobic threshold in flat-water kayakers”.

Pilotto A, Scalise G, Rasica L, Zuccarelli L, Pedrali M, Aliprandi D, Baglioni A, La Torre A, Marzorati M, Porcelli S.

Società Italiana delle Scienze Motorie e Sportive (SISMES). Brescia 30/09/2017

POSTER PRESENTATIONS:

"Exploring the physiological limits of aging: A case study of the male 50-km world record in the 80+ age category".

Pilotto AM*, Higuera-Liébana E, Ansaldo M, Neri M, Giusti L, Baltasar-Fernandez I, Buendía-Romero Á, Valenzuela PL, Ara I, Alcazar J, Porcelli S.

SWACSM Annual Meeting 2025. Los Angeles (CA) 18/09/2025

"O₂ diffusion limits oxidative capacity in young and middle-age, but not in elderly muscle".

Pilotto AM, Adami A, Ansaldo M, Lauretani F, Re R, Botter A, Franchi MV, Bottinelli R, Rossiter HB, Porcelli S.

mNIRS 2024 conference. Colchester 10/09/2024

"Human skeletal muscle possesses an epigenetic memory of high intensity interval training affecting mitochondrial function".

Pilotto AM, Mazzolari R, Turner DC, Gorski PP, Crea E, Zuccarelli L, Brocca L, Pellegrino MA, Grassi B, Bottinelli R, Sharples AP, Porcelli S.

American Physiology Summit 2023. Long Beach (CA) 21/04/2023

"Near-infrared spectroscopy estimation of combined muscle oxidative capacity and oxygen diffusion capacity in humans".

Pilotto AM, Adami A, Mazzolari R, Brocca L, Crea E, Pellegrino MA, Bottinelli R, Zuccarelli L, Grassi B, Rossiter HB, Porcelli S.

ACSM 69th Annual Meeting. San Diego (CA) 02/06/2022

HONORS:

IBEC Travel Award – (05/2026) International Biochemistry of Exercise Conference (IBEC) – 450\$

Howard G. "Skip" Knuttgen International Scholar Grant – (04/2025) ACSM Foundation – 5500\$

FEPS Traveling Fellowship 2025 – (02/2025) Federation of European Physiological Societies – 1500€

FEPS 2022 Europhysiology Travel Grant – (07/2022) Federation of European Physiological Societies – 600€

PHD AWARD 2023 – (01/2024) University of Udine – 1500€

APS select January 2025 – article: Human skeletal muscle possesses an epigenetic memory of high intensity interval training (10.1152/ajpcell.00423.2024)