

## 1. Full name and date

- Ardigò Luca Paolo
- Male
- 09/05/2020

## 2. Date and place of birth, nationality, current residence

- 10/09/1967 Milano Italy
- Italian
- Piazza Fulvio De Salvo 9 21100 Varese Italy

## 3. Education and degrees awarded

- Ph.D. in Biomechanics, Exercise and Sport Sciences Department, Institute for Biophysical and Clinical Research into Human Movement, Manchester Metropolitan University, 23/02/2007, Prof Alberto Enrico Minetti [alberto.minetti@unimi.it](mailto:alberto.minetti@unimi.it);
- B.Sc./M.Sc. in Biology, Università degli Studi di Milano, 25/02/1993, Prof Alberto Enrico Minetti [alberto.minetti@unimi.it](mailto:alberto.minetti@unimi.it)

## 4. Other education and training, qualifications and skills

- ECDL, Manchester Metropolitan University, 31/03/2004;
- Microsoft Office;
- LabVIEW (LabVIEW Core 2);
- MatLab (user)

## 5. Linguistic skills

- Italian;
- ZAF (German), Goethe Institut Mailand, 12/06/1986;
- English (CAE level)

## 6. Current position

- Senior Lecturer in Sport Science, School of Exercise and Sport Science, Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona Via Felice Casorati, 43 37131 Verona (Italy). From 03/2005 (current). Main activities: research) bioenergetics and biomechanics of human movement and locomotion, exercise and sport performance evaluation, and portable devices for measuring physical activity and metabolic expenditure; teaching) human locomotion and environmental interferences, principles and methods of training (exercise and sport performance evaluation), and bioenergetics measurement techniques.
- Established researcher.

## 7. Previous work experience

- Senior Research Technician in Physiology/Biomechanics, Exercise and Sport Sciences Department, Institute for Biophysical and Clinical Research into Human Movement, Manchester Metropolitan University (UK). From 04/2002 To 03/2005. Part time (.5). Technician and researcher duties within the project “Performance comparison between young and elderly subjects” (post funded within a BBSRC-supported project, principal investigator Marco Narici).
- Research Associate in Biomechanics, Istituti Ortopedici Rizzoli, Movement Analysis Laboratory, Bologna (Italy). From 08/2001 To 12/2001. Researcher duties within the project

“Molecular and biomechanical study about boneprosthesis integration and advanced therapeutic strategies” (Technical Director: Alberto Leardini BE).

- Senior Research Technician in Biology, Human Movement Laboratory, Fondazione Salvatore Maugeri, Pavia (Italy). From 03/2000 To 02/2001. Technician and researcher duties within activity of Human Movement Laboratory (studies about human movement and locomotion with universities, hospitals and private companies) (Technical Directors: Alberto Minetti and Marco Narici).
- Research Associate in Physiology/Biomechanics, Human Movement Laboratory, Fondazione Salvatore Maugeri, Pavia (Italy). From 03/1999 To 02/2000. Researcher duties within the project “Biomedical and ergonomic study of physical activity as critical capacity outcome” (Technical Directors: Alberto Minetti and Marco Narici).
- Research Associate in Physiology/Biomechanics, Human Movement Laboratory, Fondazione Salvatore Maugeri, Pavia (Italy). From 03/1998 To 02/1999. Researcher duties within the project “Biomechanical research about body motion” (Technical Directors: Alberto Minetti and Marco Narici).
- Research Associate in Physiology/Biomechanics, Institute of Advanced Biomedical Technologies, Italian National Research Council, Segrate (Italy). From 03/1997 To 02/1998. Researcher duties within the project “Exercise physiology in heart transplants” (Technical Director: Claudio Marconi).

#### **8. Research funding as well as leadership and supervision**

- In May 2004: AUD 2000 ISB Travel Grant as partial contribute to expedition expenses (Studies: Human locomotion on snow: determinants of economy and speed of skiing across the ages, and Modern cross-country skiing: metabolism of classical technique and skating; Testing Venue: Vuokatti, Finland).
- In 2007: EUR 50,000 Italian Strategical Research Project “Effect of high intensity physical training on cardiopulmonary responses, gas exchanges and muscular oxygen extraction in heart rate failure subjects during exercise” (Main Investigators: M. Pagani and C. Capelli).
- In 2010: EUR 10,000 funding for a 1 year postdoc job (50% of whole employee’s wage) by my department, Department of Neurosciences, Biomedicine and Movement Sciences, as a result of the yearly departmental ranking (based on members’ scientific production).
- From October 2011 until March 2012: EUR 4,000 COOPERINT (‘for International Cooperation’) scholarship from the University of Verona, for a 6 month research period at the Vrije Universiteit, Institute for Fundamental and Clinical Human Movement Sciences, Amsterdam, The Netherlands, for my then 2nd year Ph.D. Student Gabriela Fischer (thesis title: Biomechanical and Physiological adaptations to Handcycling; Dutch Supervisor: T.W.J. Janssen).
- In 2018: EUR 11,900 funding for a 1 year postdoc job (50% of whole employee’s wage) by my department, Department of Neurosciences, Biomedicine and Movement Sciences, as a result of the yearly departmental ranking (based on members’ scientific production).
- From 1 January 2007 until 31 December 2009, I supervised ALONE (even if only as a senior lecturer) successfully Francesca Nardello, Ph.D. student (thesis title: Human Locomotion: Centre of Mass and Symmetry; external examiner Omar Mian). From 1 January 2010 until 31 December 2012, I supervised ALONE (even if only as a senior lecturer) successfully Gabriela Fischer, Ph.D. student (thesis title: Biomechanical and Physiological adaptations to Handcycling; external examiner Thomas Janssen). From 1 October 2015 until 30 September 2018, I supervised ALONE (even if only as a senior lecturer) successfully Thomas Fugslang (thesis title: Design, manufacturing, and testing human powered boats for disabled people; external examiner Nicola Petrone).

## 9. Teaching interests

Within a university, I think I could integrate myself in a complementary way. My future plans include further teaching about human passively-assisted locomotion modes, in particular different wheeled ones (e.g., alternative-design bikes, handbikes, and handbike-propelled boats). I would be interested in going on with teaching about off-the-shelf portable devices for measuring physical activity and metabolic expenditure for pathological subjects/sedentary people/sportsmen performance evaluation. I would be interested in going on with teaching about different team sports' fundamental skills in athletes and exercise/core stability/repeated sprint ability in obese/elderly/pathological subjects. Finally, I would teach more in depth the eventual relationships between cognitive and motor abilities in children and teenagers. I am fully available to teach on other topics about physiology, biomechanics, and sport science, as well.

## 10. Merits in teaching and pedagogical competence

- Since my Ph.D. course years (2001÷2004) and later since I work for the School of Exercise and Sport Science, Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona (1 March 2005), I taught up to 200 student cohorts several physiology and biomechanics modules at B.Sc. (course in exercise and sport science; 200 students; classes, laboratories, and e-learning), M.Sc. (courses in exercise and sport science, and adapted physical activity; 60 students; classes, small scientific projects, and e-learning) and Ph.D. (course in exercise and sport science; 10 students; classes) level:

(biomechanics area)

- biomechanics laboratories;
- neuroanatomy and neurophysiology;
- preparatory kinesiology;
- biomechanics II;
- human locomotion and environmental interferences;

(physiology area)

- functional evaluation;
- training techniques I;
- techniques and methodologies of sports I;
- principles and techniques of physical conditioning;
- new methods for the evaluation of the energy expenditure in exercising humans in ecological conditions;

(sport science area)

- fitness monitoring;
- physical activities and techniques for wellness;
- monitoring and evaluation of adapted physical activity;
- physical activity in adulthood and old age.

Currently, I teach:

- human locomotion and environmental interferences;
- principles and techniques of physical conditioning (especially about the exercise and sport performance evaluation);
- new methods for the evaluation of the energy expenditure in exercising humans in ecological conditions.

- Experience from examinations. Since I work for the School of Exercise and Sport Science, Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona (1 March 2005):

B.Sc. (course in exercise and sport science)

Biomechanics, Physiology, and Sport science areas modules  
multiple choice questions, open questions, oral exams

M.Sc. (courses in exercise and sport science, and adapted physical activity)

Biomechanics, Physiology, and Sport science areas modules  
oral exams, small whole scientific projects

I would be available to apply for a local teaching fellowship.

- Currently, I am component of:

- Teachers' Committee of the Ph.D. course in exercise and sport science (Program in Physical Exercise and Human Movement), Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona;

- Teachers' Committee of the Ph.D. course in exercise and sport science (Program in Neuroscience, Psychological and Psychiatric Sciences), Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona;

- Council of the degree courses in Exercise and Sport Science, University of Verona:

B.Sc. course in exercise and sport science;

M.Sc. course in exercise and sport science;

M.Sc. course in adapted physical activity.

Council of the Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona.

From 1 January 2007 until 31 December 2010, I was component of the University Administration BOARD, University of Verona.

- Since I work for the School of Exercise and Sport Science, Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona (1 March 2005), I supervised successfully several B.Sc. and M.Sc. students (an average of six *per* academic year).

Some titles:

– A low-cost method for estimating energy expenditure during soccer refereeing: an update. Marco Targhetta, M.Sc. thesis, 2020;

– Nordic Walking Data Analysis. Margherita Giacomuzzi, M.Sc. work, 2012;

– nuclear magnetic resonance for images and symmetry of the human body. Alessandra Cappa, B.Sc. thesis, 2009;

– Analysis of Cardiovascular Responses and Perception of Effort with Different Types of Ergometer for Cardiofitness. Fabiana Infortuna, B.Sc. 2007;

– Doms: Muscle Injury From Exercise. Francesca Fiorentin, B.Sc. thesis, 2007;

– Kinematic Analysis of Endurance and Sprint Running. Daniela Guerra, B.Sc. thesis, 2007;

– Two Different Ways to Use an Elliptical Trainer: Metabolic Adaptations to Load Variation. Alessia Tonin, B.Sc. thesis, 2005;

- Biomechanical and Bioenergetic Analysis of the Sports Activity of the Football Referee. Andrea Zuliani, B.Sc. thesis, 2005;
  - Metabolic Evaluation Of An Elliptical Trainer. Massimo Venturelli, M.Sc. work, 2005.
- My teaching experience at both undergraduate and postgraduate level allowed me develop effective teaching. I always completed traditional learning and media with on-line material. I also believe that several e-learning education systems – VLE included – may be effective to deliver learning to population with difficulties to cope with traditional learning. I commit to further learn any kind of VLE and other technology enhanced learning.
  - I am able to use for on-line teaching purpose the following applications: Moodle, Zoom, Panopto, and Google Hangouts Meet. I commit to learn and use further software for on-line teaching as necessary, both on appointment and as changes in duties and techniques demand.
  - My research and teaching experience witnesses my ability to work as part of a team in the delivery of teaching, the development of new *curriculum*, learning materials, external and collaborative projects across a university as appropriate to my knowledge about physiology, biomechanics, and sport science.
  - I also believe university should be open to the society needs. I think university should assist students in seeking employment once they graduate. Learning makes people better. The best possible teaching should always be developed and provided to allow successful learning.
  - I commit to attend further training in health and safety as necessary, both on appointment and as changes in duties and techniques demand.
  - I deeply agree with the need of developments in research, theory and practice as a *basis* for preparing and supporting students at both undergraduate and postgraduate levels.
  - I am already used to contribute to university activities and initiatives including open days, graduation ceremonies, postgraduate awards, etc. and to undertake administrative activities. I already experienced successful teamwork. I really enjoy working on interdisciplinary activities, as witnessed by heterogeneous research output as well. I really believe in my personal continuous professional development. The search for a job in a relevant university can be considered a way to pursue that goal.
  - I think higher education should finalize students' education path into their adult life. They may become experts about the prescriptive use of exercise for public health, testing, and training elite athletes to allow them to improve performance or lots of other topics. Yet, one thing they should really get from their university experience is to be able to face any issue with curiosity, autonomy, and method. Without preconceptions. That attitude could help them to become valid experts about specific topics but maybe better people as well. Knowledge is limited. To date, the teaching of science students should advance further than the acquisition of knowledge and prompt as main goal creative thinking. That would make future excellent scientists able to explore the environment and give self-explanations of things happening around them, answer questions we neither imagine at present.
  - I was awarded Italian nationwide qualification (equivalent to German Habilitation) for associate professorship in physiology valid until 10/05/2025 (<https://asn18.cineca.it/pubblico/miur/esito/05%252FD1/2/1>) and, being bibliometrically eligible to apply for qualification (equivalent to German Habilitation) for full professorship in physiology, will apply for that as well. I was already deemed as eligible as associate professor in physiology at a national selection procedure. Furthermore, I was

awarded Italian nationwide qualification (equivalent to German Habilitation) for associate professorship (equivalent to German Habilitation) in exercise and sport science (IN ITALY THIS IS THE SUBJECT CULTURALLY CLOSEST TO BIOMECHANICS) valid until 10/04/2023 (<https://asn16.cineca.it/pubblico/miur/esito-abilitato/06%252FN2/2/1>) and for full professorship (equivalent to German Habilitation) in exercise and sport science valid until 27/04/2024 (<https://asn16.cineca.it/pubblico/miur/esito-abilitato/06%252FN2/1/4>). THE ITALIAN NATIONWIDE QUALIFICATION IS THE HIGHEST FORMAL PEDAGOGIC QUALIFICATION AVAILABLE IN ITALY IN ADDITION TO BEING THE ONLY ALWAYS PRESENT ESSENTIAL REQUIREMENT TO APPLY FOR FULL AND ASSOCIATE PROFESSORSHIPS.

## 11. Other academic merits

- Ph.D. (course in exercise and sport science)  
01/2012 external examiner Dr Carlo M. Biancardi (School of Medicine and Surgery, Department of Pathophysiology and Transplantation, University of Milan, Italy; supervisor Prof Alberto E. Minetti)  
12/2015 external examiner Dr. Gary A. Doyle (School of Health, Sport and Bioscience, University of East London, UK; supervisor Dr Ryan Mahaffey)  
07/11/2018 external examiner Stephen Cleary (School of Health and Human Performance, Dublin City University, Ireland; supervisor Dr. Davide Susta)
- I am member of Albo Revisori MIUR (the Reviewers' Registry of the University Research Ministry) and REPRISE (Register of Expert Peer- Review for Italian Scientific Evaluation), lists of potential reviewers for research projects to be funded by the University Research Ministry or universities. I am reviewer for the National Agency for the Evaluation of the University System and the Research (ANVUR). I assess professors for South Africa's National Research Foundation. I peer-review technical and scientific projects for the National Centre of Science and Technology Evaluation (Republic of Kazakhstan). I am member of the Awards Committee, Medicine & Science in Team Sports Interest Group, American College of Sports Medicine.
- I am Associate Editor of *Frontiers in Physiology – Exercise Physiology*, *Frontiers in Sports and Active Living – Exercise Physiology*, *Frontiers in Psychology – Movement Science and Sport Psychology*, *PLoS ONE*, and *Annals of Applied Sport Science*. At present, I act as Topic Editor for the *Frontiers in Physiology – Exercise Physiology Research Topics “Human Ultra-Endurance Exercise”* and *“Children's Exercise Physiology”*, for the *Frontiers in Psychology – Movement Science and Sport Psychology Research Topic “Decision-making in youth sports”*; and as Guest Editor for the *Sports Special Issue "Researching Sports Biomechanics for Disabled People"* and for the *Symmetry Special Issue "Biomechanics Energetics of Natural Assisted Human Comparative Movement Locomotion"*. I provide scientific advice to the *New Scientist*.
- I am habitual reviewer for journals: *International Journal of Environmental Research and Public Health*, *Science and Medicine in Football*, *Journal of Visualized Experiments*, *Education Sciences*, *International Journal of Sports Science and Coaching*, *IEEE Access*, *Human Movement*, *Sports Medicine – Open*, *Advances in Rehabilitation*, *Translational Sports Medicine*, *Journal of Functional Morphology and Kinesiology*, *Motriz*, *Journal of Physical Education*, *BMJ Open Sport & Exercise Medicine*, *Journal of Sleep Research*, *Medical Problems of Performing Artists*, *Sleep Medicine and Disorders: International Journal*, *Human Power*, *Frontiers in Psychology Quantitative Psychology and Measurement*, *International Journal of Exercise Science*, *Journal of Biomechanics*, *International Journal of Performance Analysis in Sport*, *IEEE Journal of Biomedical and Health Informatics*,

Physiology & Behavior, Journal of International Medical Research, Orthopedic Reviews, PeerJ, Symmetry, Frontiers in Physiology Integrative Physiology, Frontiers in Physiology Exercise Physiology, Sensors, Children, The Physician and Sportsmedicine, Journal of Aging and Physical Activity, JMIR mHealth and uHealth, Research Quarterly for Exercise and Sport, Applied Sciences, Sports Medicine International Open, Annals of Applied Sport Science, Journal of Sports Medicine and Physical Fitness, Biology Open, Biology Letters, Biology of Sport, Applied Physiology Nutrition and Metabolism, International Journal of Sports Physiology and Performance, an International Journal, Engineering Science and Technology, Journal of Sport and Health Science, Sports, Human Movement Science (Elsevier Outstanding Reviewer), Research in Sports Medicine, Supportive Care in Cancer, Journal of NeuroEngineering and Rehabilitation, SpringerPlus, Journal of Electromyography and Kinesiology (Elsevier Recognized Reviewer), Sport Sciences for Health, American Journal of Human Biology, Journal of Sports Sciences, Journal of Science and Medicine in Sport, European Journal of Applied Physiology and Occupational Physiology, Gait & posture (Elsevier Outstanding Reviewer), The Journal of Strength and Conditioning Research, Ergonomics, The Gerontologist, Journal of Sports Medicine and Doping Studies, Sports Medicine, Scandinavian Journal of Medicine and Science in Sports (Certified Reviewer), PLoS ONE, and Medicine & Science in Sports & Exercise. I am one of the top 1 *per* cent of peer reviewers in Clinical Medicine (98<sup>th</sup> absolute) according to Publons Peer Reviewers Awards 2018.

- *Research interests*

Within a university, I think I could integrate myself in a complementary way. My future plans include further research about human passively-assisted locomotion modes, in particular different wheeled ones (e.g., alternative-design bikes, handbikes, and handbike-propelled boats). I would be interested in going on with research about off-the-shelf portable devices for measuring physical activity and metabolic expenditure for pathological subjects/sedentary people/sportsmen performance evaluation. I would be interested in going on with research about different team sports' fundamental skills in athletes and exercise/core stability/repeated sprint ability in obese/elderly/pathological subjects. Finally, I would study more in depth the eventual relationships between cognitive and motor abilities in children and teenagers. I am fully available to research on other topics about physiology, biomechanics, and sport science, as well. After meeting with and talking to other staff members, I may find other common interests. I am interested in the built environment, as well.

- *Invited lectures*

- Storia delle carrozzine da pallacanestro: meccanica e metabolismo. Scienze Motorie, Verona, 19/09/2005;
- The best choice for locomotion in mountain environment: walking, running or cycling? Mountain & Sport. Rovereto, 11/11/2005;
- Evoluzione e prestazione dello sci di fondo. Sci Nordico VARESE, Varese, 18/03/2011;
- GUYA TREKKING 2009. 3rd Mountain, Sport & Health. Rovereto, 12/11/2009;
- Ciclismo su Handbike. Una modalità di propulsione umana. Assemblea annuale 2013 dei Soci di Propulsione Umana, Milano, 03/02/2013;
- Ciclismo su Handbike. Una modalità di propulsione umana. Sci Nordico VARESE, Varese, 21/02/2013;
- Gestione di un trekking non-stop estremo: Affi 2013. Sci Nordico VARESE, Varese, 24/02/2014;
- Inquinamento atmosferico: peggio la maratona o le auto? Sci Nordico VARESE, Varese, 15/01/2015;

- ATTIVITÀ FISICA, ANDAMENTO SONNO-VEGLIA E SPESA METABOLICA NELLA VELA D'ALTURA L'esperienza della 500x2. Circolo Velico Riminese, Rimini, 30/01/2015;
- Aspetti di bioenergetica e biomeccanica della corsa. IL RUNNING & IL RUNNER. ASPETTI TECNICI & FISIOLOGICI. Università degli Studi eCampus, Novedrate, 14/05/2015.
- Doping sonoro. Gli effetti psicofisici e fisiologici della musica a diversi bpm su prestazione di resistenza e su prestazione ad alta intensità. Sci Nordico VARESE, Varese, 09/04/2020.

## **12. Scientific and societal impact of research (Scopus 05/05/2020)**

- One book and 91 publications, 10 most cited publications according to a Scopus 10/02/2020



	Publication Year	Document Title	Volume	Issue	Citations
1	2006	Metabolic cost, mechanical work, and efficiency during walking in young and older men Mian O.S., Thom J.M., Ardigo L.P., Narici M.V., Minetti A.E. Acta Physiologica	186	2	191
2	1999	The relationship between mechanical work and energy expenditure of locomotion in horses Minetti A.E., Ardigo L.P., Reinach E., Saibene F. Journal of Experimental Biology	202	17	145
3	1994	The transition between walking and running in humans: metabolic and mechanical aspects at different gradients MINETTI A.E., ARDIGO L.P., SAIBENE F. Acta Physiologica Scandinavica	150	3	120
4	1994	Mechanical determinants of the minimum energy cost of gradient running in humans. Minetti A.E., Ardigo L.P., Saibene F. Journal of Experimental Biology	195		119
5	1993	Mechanical determinants of gradient walking energetics in man. Minetti A.E., Ardigo L.P., Saibene F. The Journal of Physiology	472	1	102
6	2007	Gastrocnemius muscle-tendon behaviour during walking in young and older adults Mian O.S., Thom J.M., Ardigo L.P., Minetti A.E., Narici M.V. Acta Physiologica	189	1	64
7	1995	Metabolic and mechanical aspects of foot landing type, forefoot and rearfoot strike, in human running ARDIGO' L.P., LAFORTUNA C., MINETTI A.E., MOGNONI P., SAIBENE F. Acta Physiologica Scandinavica	155	1	51
8	1994	Pygmy locomotion Minetti A.E., Saibene F., Ardigo L.P., Atchou G., Schena F., Ferretti G. European Journal of Applied Physiology and Occupational Physiology	68	4	46
9	2013	A Paradigm of Uphill Running Padulo J., Powell D., Milia R., Ardigo L.P. PLoS ONE	8	7	43
10	2014	Walking and running on treadmill: The standard criteria for kinematics studies Padulo J., Chamari K., Ardigo L.P. Muscles, Ligaments and Tendons Journal	4	2	42

- Since year 2008, I sit on the board of Sci Nordico Varese, the cross-country skiing club of my town. I am its scientific responsible as well. I am member of Propulsione Umana ("Human Propulsion"), the Italian national association member of WHPVA (World Human Powered Vehicle Association). As Propulsione Umana officer for relations with schools and universities, on 22/08/2013, in my current hometown, Varese, within the first fair of the electrically-powered bicycle, in its turn within the European mobility week, I organized the first human propulsion symposium (a poster session), entitled "Human powered vehicles: ideas, projects, prototypes".

My experience with my local skiing club, the national human powered vehicle association, some national sport federations and the university marathon centre witnesses my interpersonal skills including the ability to communicate complex information to audiences with a mixed level of understanding.

In Verona, I work with my three "historic" Ph.D. students Francesca Nardello, Gabriela Fischer, and Thomas Fuglsang (8 papers published, 3 under submission); and Prof. Paola Zamparo (2 papers published).

At Italian level, I work with my former Ph.D. supervisor, Prof. Alberto Minetti, University of Milan (22 papers published, 2 under submission); and Dr. Johnny Padulo, University e-Campus (59 papers published and 8 under submission).

At international level, I work with Prof. Carlo Capelli, Norwegian School of Sport Sciences (4 papers published and 1 accepted); Dr. Omar Mian, University College London (4 papers published and working on a still un-submitted manuscript); Dr. Prue Cormie, Australian Catholic University (1 paper published); Prof. Karim Chamari, Aspetar Doha (11 papers published); Prof. Nick Maffulli, Queen Mary University of London (3 papers published); Prof. Keith George, Liverpool John Moores University (1 paper published); Dr. Pierre Samozino, University of Savoie Le Bourget du Lac (2 papers published); Prof. Hans-Christer Holmberg, Mid Sweden University (working on 1 still un-submitted manuscripts); Prof. Boye Welde, University of Tromsø (1 paper under submission and working on 5 still un-submitted manuscripts); and Prof. Thomas Stöggl, University of Salzburg (1 paper under submission and working on 5 still un-submitted manuscripts).

I investigate in both laboratory (e.g., school's physiology, fitness, and biomechanics data collection area) and ecological environments (e.g., field pitch, athletics track, mountain paths, and cross-country ski tracks).

### 13. Other merits

14. Since my M.Sc., since about 1992, I deal with biomechanics and bioenergetics of human/comparative, natural movement/locomotion with 37 regular and 3 short papers published, and 5 under submission. Since my Ph.D., since about 2001, I also deal with biomechanics and bioenergetics of human assisted movement/locomotion with one book and 31 papers published and 8 under submission. Since my senior lectureship, since about 2005, I also deal with portable devices for measuring physical activity and metabolic expenditure with 4 papers published and 2 under submission. Over years, I researched about several different specific populations: Children, elderly, Pygmies, dwarfs, Himalayan porters, obese people, paraplegics, cancer patients, and horses. I dealt with studies about testing and training for the following Forward/backward walking, Nordic walking, mountain trekking, sprint/endurance running, track/road/mountain-bike/cyclo-cross cycling, handbiking, downhill/cross-country skiing, swimming, waterpolo, kayaking, offshore sailing, duathlon, triathlon, table tennis, karate, Taekwondo, fencing, Parkour, dancing, piano playing, football playing/refereeing, volleyball, handball, and able-bodied/wheelchair basketball.

At present, following some studies and a Ph.D. student supervision about handbiking, I am LEADING an international team involved in a technologic-scientific-social project for designing and manufacturing a handwaterbike (<https://www.facebook.com/thehandwaterbike/>). A first prototype has already been built and tested.

– There are some internet links to videos showing the boat navigating:

<http://www.youtube.com/watch?v=GoV9Wch5YR4>

<http://www.youtube.com/watch?v=A7hPTYq7KVg>

<http://www.youtube.com/watch?v=DPzKzg4-LtY&feature=youtu.be>

- the same technologic-scientific-social project could be easily reproduced at a university;
- at present, I am in the process of selling the first two pieces to a private company based in Alghero (Sardinia);
- the next step could be to design a handwaterbike assemble-it-yourself kit for larger sales;
- we could go to national and/or international innovation fairs;
- we aim to design and manufacture a second prototype with more performing solutions;
- I just supervised a 3-year Ph.D. student for studies about the handwaterbike including its engineering development.

*Evidence of relevant professional experience/knowledge in the areas of physiology, biomechanics and sport science*

Over the years I constantly dealt with human exercise and sport physiology with particular reference to bioenergetics and biomechanics. I completed several studies with strong practical applications about responses to exercise/sport in different populations: sedentary people, sportsmen, elderly and disabled people. Especially since I work for the University of Verona, I *focus* on both faces of same exercises/sport actions: metabolic expenditure and physical activity. These two issues should always be faced together to better investigate exercise and sport. Throughout different job experiences I came across the other main topics in biomechanics: activity optimization, relationship between morphology and function, and gait analysis. I could also experience several field performance assessments with elite athletes involved in different sports. If biomechanics refers to the study of movement/locomotion, then performance analysis refers to applied exercise physiology/biomechanics.

I have one book and 93 (71 times over 93 papers as submitting, first, and/or last author) papers published on peer-reviewed journals (4 in 2020, 8 in 2019, 10 in 2018, 7 in 2017, 12 in 2016, 10 in 2015, 63 since 2014, 1 accepted, and 15 currently under submission) and about 110 participations in international/national congresses (oral or poster). My *h*-index is 25 (2,453 [two thousands, four hundreds, and fifty three] citations, Google Scholar, 09/05/2020).

During the 90's, I performed several performance assessments for professional football teams (Milan AC, Serie A, and Venezia Calcio SS, Serie B) and the Under 18 Italian ice hockey national team. In year 2000, I dealt with studies about human movement and locomotion with hospitals and private companies. Since its foundation in year 2007, I am member of Centre for Marathon Training, University of Verona.

After my graduate/post-graduate (not Ph.D., yet) period at the Institute of Advanced Biomedical Technologies/National Research Council, where I did a university research work within a small research team, I moved to the Human Movement Laboratory/Fondazione Salvatore Maugeri, a private state-agreed hospital dealing with research, too. There, the team was larger and collaboration with other hospital's departments was frequent. I experienced about the same situation at the Movement Analysis Laboratory/Istituti Ortopedici Rizzoli (state hospital). During my English Ph.D. experience, I had the possibility both to study within a more efficient and larger (than in Italy) university system and to work together with a research group different from my Ph.D. supervisor's one within UK nationally (UK, BBSRC) and internationally (EU) funded research projects.

I took also part to international scientific expeditions to Cameroun (twice, once about pygmy locomotion and another time about high altitude running), France (for an ESA-funded bed-rest study), Finland (about cross-country skiing) and Nepal (twice, both times about high altitude load carrying) with ORGANIZATIONAL duties, too.

I always ran laboratories by myself or almost by myself. Since year 1991, I am user of motion capture systems (ELITE, Smart, Vicon, ProReflex) and force platforms (Kistler, AMTI) for research/clinical purpose. Since year 2003, I am user of portable motion capture system Xsens Xbus Master. Since year 2005 I am user of Dartfish system for research purpose. Since year 1995, I am user of sEMG systems for research/clinical purpose. Since year 1991, I am user of laboratory/portable metabographs (Sensormedics, Medgraphics, K4b2, K5, Quarkb2) for research/clinical purpose.

During the academical year 2005/2006, I organised several faculty scientific seminars within a course called "Seminari di Scienze Motorie del Martedì" ("Tuesday's Motor Sciences Seminars"). Since 1 March 2005, I am component of the public relations commission of my research department (Department of Neurosciences, Biomedicine and Movement Sciences). From year 2006 until 30 September 2012, I edited a bimonthly newsletter about my research department (Department of Neurosciences, Biomedicine and Movement Sciences) scientific achievements.

*Notes about grant application and potential additional human resources at a university*

Over recent years, I applied successfully for a total amount of about € 245,000 made of € 52,000 of external grants and € 193,000 of internal grants (in addition to three 3-year Ph.D. studentships, but excluding my personal research funds personally assigned to me every year on the *basis* of my previous year's scientific production). In case of successful application at a university, I might take with me a post-doc researcher funded by Brasil University Ministry for studies about sport science.

## Publications

### *Published books*

Zeppegno M, Baldissera P, **Ardigò LP**.

CICLISMO: FISICA E FISILOGIA. 10 RISPOSTE DELLA SCIENZA AL CICLISTA CURIOSO ("Bicycling: physics and physiology. Ten answers from science to the curious rider").

Calzetti & Mariucci editori, Torgiano, Italy, 2017

### *Published papers*

1. Editorial: Children's Exercise Physiology.

Clemente FM, **Ardigò LP**, Song W, Lenoir MEM, Rodrigues LP, Sigmundsson H.

Front Physiol. 2020 Apr 15;11:269. doi: 10.3389/fphys.2020.00269.

**IF 3.201**

2. Height-based model for the categorization of athletes in combat sports.

Bešlija T, Čular D, Kezić A, Tomljanović M, **Ardigò LP\***, Dhabhi W, Padulo J.

Eur J Sport Sci. 2020 Mar 17:1-25. doi: 10.1080/17461391.2020.1744735. [Epub ahead of print]

IF 2.376

3. The psychophysiological effects of different tempo music on endurance versus high intensity performances.

Patania MV, Padulo J, Iuliano E, **Ardigò LP**, Čular D, Miletić A, De Giorgio A.

Front Psychol. 2020 Feb 5;11:74. doi: 10.3389/fpsyg.2020.00074. eCollection 2020.

IF 2.129

4. Bioenergetics and Biomechanics of Handcycling at Submaximal Speeds in Athletes with a Spinal Cord Injury.

Fischer G, Figueiredo P, **Ardigò LP**.

Sports (Basel). 2020 Jan 29;8(2). pii: E16. doi: 10.3390/sports8020016.

5. Running Stride Length And Rate Are Changed And Mechanical Efficiency Is Preserved After Cycling In Middle-Level Triathletes.

Gomes da Rosa R, Bianchi de Oliveira H, **Ardigò LP**, Gomeñuka NA, Fischer G, Peyré-Tartaruga LA.

Sci Rep. 2019 Dec 5;9(1):18422. doi: 10.1038/s41598-019-54912-6.

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6. Validity and Reliability of a New Specific Parkour Test: Physiological and Performance Responses.

Padulo J, **Ardigò LP\***, Bianco M, Cular D, Madic D, Markoski B and Dhabhi W.

Front Physiol. 2019 Oct 30;10:1362. doi: 10.3389/fphys.2019.01362.

**IF 3.201**

7. Development and factorial validity of the Psychological Skills Inventory for Sports, Youth Version – Short Form: Assessment of the psychometric properties.

Milavic B, Padulo J, Grgantov Z, Milić M, Mannarini S, Manzoni GM, **Ardigò LP\***, Rossi A.

PLoS One. 2019;14(8):e0220930.

**IF 2.776**

8. The ball kicking speed: A new, efficient performance indicator in youth soccer.

Rađa A, Kuvačić G, De Giorgio A, Sellami M, **Ardigò LP\***, Bragazzi NL, Padulo J.

PLoS One. 2019;14(5):e0217101.

**IF 2.776**

9. Validity and Reliability of a Light-Based Electronic Target for Testing Response Time in Fencers.

De Giorgio A, Iuliano E, Turner A, Millevolte C, Cular D, **Ardigò LP\***, Padulo J.

J Strength Cond Res. 2019 Apr 18. doi: 10.1519/JSC.0000000000003160. [Epub ahead of print]

IF 1.80

10. Acute Effect of Toe Cap Choice on Toe Deviation Angle and Perceived Pain in Female Professional Ballet Dancers.

Salzano A, Camuso F, Sepe M, Sellami M, **Ardigò LP\***, Padulo J.  
Biomed Res Int. **2019**;9515079.

**IF 2.583**

11. The Effect of Physical Activity on Cognitive Performance in an Italian Elementary School: Insights From a Pilot Study Using Structural Equation Modeling.

Padulo J, Bragazzi NL, De Giorgio A, Grgantov Z, Prato S, **Ardigò LP\***.  
Front Physiol. **2019** Mar 5;10:202. doi: 10.3389/fphys.2019.00202.

**IF 3.394**

12. Validity and reliability of a standalone low-end 50-Hz GNSS receiver during running.

Padulo J, Iuliano E, Brisola G, Dello Iacono A, Zagatto AM, Lupo C, Fuglsang T, **Ardigò LP**, Cular D.

Biol Sport. **2019**; 36(1):75-80.

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13. Comment #2 on "Differences in Ventilatory Threshold for Exercise Prescription in Outpatient Diabetic and Sarcopenic Obese Subjects".

Kuvačić G, **Ardigò LP**, Padulo J.

Int J Endocrinol. **2018**;2018:4026463.

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**SD**

14. Leg Press vs. Smith Machine: Quadriceps Activation and Overall Perceived Effort Profiles.

Migliaccio GM, Dello Iacono A, **Ardigò LP\***, Samozino P, Iuliano E, Grgantov Z and Padulo J.  
Front Physiol. **2018** Dec 21;9:1856.

**IF 3.394**

15. Cardio-respiratory values during recovery from exercise in soccer Spanish leagues.

Ramos-Álvarez JJ, Maffulli N, Bragazzi NL, **Ardigò LP\***, Jiménez-Herranz E, Naranjo-Ortiz C, Padulo J, Calderón-Montero FJ.

Physiol Meas. **2018**;39(10):105003.

IF 2.006

16. Vibration effect on ball score test in international vs. national level table tennis.

**Ardigò LP**, Iacono AD, Zagatto AM, Bragazzi NL, Kuvacic G, Bellafiore M, Padulo J.

Biol Sport. **2018**;35(4):329-334.

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17. Nordic walking versus natural walking: an easy approach to comparing metabolic demands.

Padulo J, Iuliano E, Dello Iacono A, Milić M, Rizzi M, **Ardigò LP\***.

Int J Perform Anal Sport. **2018** Sep 4;doi: 10.1080/24748668.2018.1514565

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18. Relative age effect and second-tiers: No second chance for later-born players.

Rađa A, Padulo J, Jelaska I, **Ardigò LP\***, Fumarco L.

PLoS One. **2018** Aug 8;13(8):e0201795.

**IF 2.766**

19. The Effect of Heart Rate on Jump-Shot Accuracy of Adolescent Basketball Players.

Padulo J, Nikolaidis PT, Cular D, Dello Iacono A, Vando S, Galasso M, Lo Storto D, **Ardigò LP\***.

Front Physiol. **2018** Aug 3;9:1065.

**IF 3.394**

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Nikolaidis PT, Villiger E, **Ardigò LP**, Waśkiewicz Z, Rosemann T, Knechtle B.

Open Access J Sports Med. **2018** Jul 18;9:125-130.

21. An Exploratory Study on the Acute Effects of Proprioceptive Exercise and/or Neuromuscular Taping on Balance Performance.

Russo L, Bartolucci P, **Ardigò LP\***, Padulo J, Pausic J, Dello Iacono A.  
Asian J Sports Med. **2018** June; 9(2):e63020.

22. Effect of Heart rate on Basketball Three-Point Shot Accuracy.

**Ardigò LP\***, Kuvacic G, Iacono AD, Dascanio G and Padulo J.  
Front Physiol. **2018** Feb 6;9:75.

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23. Lower limb force, velocity, power capabilities during leg press and squat movements.

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Int J Sports Med. **2017** Dec;38(14):1083-1089.

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24. Development and Testing of a Novel Arm Cranking-Powered Watercraft.

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Grgantov Z, Padulo J, Milić M, **Ardigò LP\***, Erceg M, Cular D.  
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26. Pulmonary function is related to success in junior elite *kumite* karatekas.

Cular D, Milić M, Franchini E, **Ardigò LP\***, Padulo J.  
Sport Science. **2017** Jun;10(Suppl. 1):117-22.

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J Strength Cond Res. **2017** Sep;31(9):2438-2446.

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Milić M, Grgantov Z, Chamari K, **Ardigò LP\***, Bianco A, Padulo J.  
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Pedrinolla A, **Ardigò LP**, Salvagno GL, Volti GL, Cavegion E, Mambrini A, Mazzi P, Cormie P, Guidi GC, Schena F.

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Res Sports Med. **2016** Oct-Dec;24(4):320-330.

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Padulo J, Attene G, **Ardigò LP\***, Bragazzi NL, Maffulli N, Zagatto AM, Dello Iacono A.

Clin J Sport Med. **2017** Jul;27(4):361-368.

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34. Letter to the Editor concerning "Validity and reliability of photographic measures to evaluate waistline asymmetry in idiopathic scoliosis" by Matamalas A, Bagó J, D Agata E, Pellisé F (2016) Eur Spine J. 2016 Mar 14 [Epub ahead of print].

Padulo J, Milić M, Jelaska I, **Ardigò LP\***.

Eur Spine J. **2016** Sep 25(9):3017-8.

IF 2.07

**SD**

35. Lower Arm Muscle Activation during Indirect-Localized Vibration: The Influence of Skill Levels When Applying Different Acceleration Loads.

Padulo J, Di Giminiani R, Dello Iacono A, Zagatto AM, Migliaccio GM, Grgantov Z, **Ardigò LP\***.

Front Physiol. **2016** Jun 16;7:242.

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36. Placebo or Cost of Changing Speed?

**Ardigò LP\***, Padulo J.

Int J Sports Physiol Perform. **2016** Jan;11(1):3.

IF 2.68

**SD**

37. Neuromuscular and technical abilities related to age in water-polo players.

De Siati F, Laffaye G, Gatta G, Dello Iacono A, **Ardigò LP\***, Padulo J.

J Sports Sci. **2016** Aug;34(15):1466-72.

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38. Effect of small-sided games and repeated shuffle sprint training on physical performance in elite handball players.

Dello Iacono A, **Ardigò LP\***, Meckel Y, Padulo J.

J Strength Cond Res. **2016**;30(3):830-40.

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39. Repeated sprint ability related to recovery time in young soccer players.

Padulo J, Tabben M, **Ardigò LP\***, Ionel M, Popa C, Gevat C, Zagatto AM, Dello Iacono A.

Res Sports Med. **2015** Oct-Dec;23(4):412-23.

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40. Letter to the Editor concerning "The validity and reliability of "Spinal Mouse" assessment of spinal curvatures in the frontal plane in pediatric adolescent idiopathic thoraco-lumbar curves" by Livanelioglu A, Kaya F, Nabiye V, Demirkiran G, Fırat T (2015) Eur Spine J Apr 22 [Epub ahead of print].

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**SD**

41. Comment on Iodice P, Cesinaro S, Romani GL, Pezzulo G: More gain less pain: balance control learning shifts the activation patterns of leg and neck muscles and increases muscular parsimony.

Padulo J, Iacono AD, Innocenti B, **Ardigò LP\***.

Exp Brain Res. **2016** Jun;234(6):1781-2.

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**SD**

42. The Impact of Jumping during Recovery on Repeated Sprint Ability in Young Soccer Players.



Padulo J, Tabben M, Attene G, **Ardigò LP\***, Dhahbi W, Chamari K.  
Res Sports Med. **2015** Jul-Sep;23(3):240-52.

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43. Need for Scientific Rigor in the Evaluation of Minimally Invasive Alternative Procedures.

Padulo J, **Ardigò LP\***.

Biomed Res Int. **2015**;2015:876496.

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**SD**

44. Modifications in activation of lower limb muscles as a function of initial foot position in cycling.

Padulo J, Powell DW, **Ardigò LP\***, Viggiano D.

J Electromyogr Kinesiol. **2015**;25:648-652.

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45. Letter to the Editor concerning "Video raster stereography back shape reconstruction: a reliability study for sagittal, frontal, and transversal plane parameters" by Schroeder J, Reer R, Braumann KM (2015) Eur Spine J 24(2):262-269.

Padulo J, Giai Via A, **Ardigò LP\***.

Eur Spine J. **2015** Sep;24(9):2100-1.

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**SD**

46. Physiological performance determinants of the 22 km handbiking time trial.

Fischer G, Figueiredo P, **Ardigò LP\***.

Int J Sports Physiol Perform. **2015** Nov;10(8):965-71.

**IF 2.68**

47. A low-cost method for estimating energy expenditure during soccer refereeing.

**Ardigò LP\***, Padulo J, Zuliani A, Capelli C.

J Sports Sci. **2015**;33(17):1853-8.

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48. Metabolic optimisation of the basketball free throw.

Padulo J, Attene G, Migliaccio GM, Cuzzolin F, Vando S, **Ardigò LP\***.

J Sports Sci. **2015**;33(14):1454-8.

IF 2.08

49. Environmental pollution: worse man or car?

Padulo J, Chamari K, Maffulli N, **Ardigò LP\***.

J Sports Med Phys Fitness. **2016** Jan-Feb;56(1-2):171-2.

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**SD**

50. Walking and running on treadmill: the standard criteria for kinematics studies.

Padulo J, Chamari K, **Ardigò LP\***.

Muscles Ligaments Tendons J. **2014** Jul 14;4(2):159-62.

51. Concentric and eccentric: muscle contraction or exercise? New perspective.

Padulo J, Chamari K, Concu A, Pupo JD, Laffaye G, Zagatto AM, **Ardigò LP\***.

Muscles Ligaments Tendons J. **2014** Jul 14;4(2):158.

**SD**

52. Physical activity, sleep pattern and energy expenditure in double-handed offshore sailing.

Galvani C, **Ardigò LP**, Alberti M, Daniele F, Capelli C.

J Sports Med Phys Fitness. **2015** Dec;55(12):1480-8.

IF 0.73

53. Letter to the Editor concerning "Is the 4 mm height of the vertebral artery groove really a limitation of C1 pedicle screw insertion?" (by Da-Geng Huang, Si-Min He, Jun-Wei Pan, et al. *Eur Spine J*, 2014, 23(5):1109-1114).

Padulo J, **Ardigò LP\***.

*Eur Spine J*. **2014** Sep;23(9):2009-10.

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**SD**

54. Letter to the Editor concerning "Calculation of corrected body height in idiopathic scoliosis: comparison of four methods" by M. Tyrakowski et al. (*Eur Spine J*, doi:10.1007/s00586-014-3275-1).

Padulo J, Oliva F, **Ardigò LP**.

*Eur Spine J*. **2014** Sep;23(9):2000-1.

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**SD**

55. High frequency performance analysis of professional soccer goalkeepers: a pilot study.

Padulo J, Haddad M, **Ardigò LP\***, Chamari K, Pizzolato F.

*J Sports Med Phys Fitness*. **2015** Jun;55(6):557-562.

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56. Letter to the Editor concerning "Range of motion of thoracic spine in sagittal plane".

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*Eur Spine J*. **2014** Jul;23(7):1576-7.

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**SD**

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*Biomed Res Int*. **2014**;2014:315041.

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**SD**

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Padulo J, Maffulli N, **Ardigò LP\***.

*Proc Natl Acad Sci U S A*. **2014** Apr 1;111(13):E1160.

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*Ergonomics*. **2014** Feb;57(2):282-3.

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**SD**

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*Osteoporos Int*. **2014** May;25(5):1651-2.

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**SD**

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Padulo J, **Ardigò LP**.

*Eur Spine J*. **2014** Apr;23(4):922-3.

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**SD**

62. An exploratory study of respiratory muscle endurance training in high lesion level paraplegic handbike athletes.

Fischer G, Tarperi C, George K, **Ardigò LP**.

Clin J Sport Med. **2014** Jan;24(1):69-75.

IF 1.50

63. The acute effect of the tongue position in the mouth on knee isokinetic test performance: a highly surprising pilot study.

Di Vico R, **Ardigò LP\***, Salernitano G, Chamari K, Padulo J.

Muscles Ligaments Tendons. **2014**; 3(4): 318-323.

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66. Letter to the Editor concerning “Vertebral rotation in adolescent idiopathic scoliosis calculated by radiograph and back surface analysis-based methods: correlation between the Raimondi method and rasterstereography”.

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Nardello F, **Ardigò LP**, Minetti AE.

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*Papers under submission*

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Sports Med.

2. 19th century British jumpers reinvented halteres (hand-held loads) and extended ancient Olympians' range by ante litteram 'rocket propulsion'.

Minetti AE, **Ardigò LP**.

Science.

3. Accuracy of the SenseWear Armband during handbiking.

Fischer G, Peyré-Tartaruga LA, **Ardigò LP**.

Int J Sports Med.

4. Pedaling on cycloergometer: the standard criteria for a dynamic study.  
Padulo J, Laffaye G, Nikolaidis PT, Bertucci W, Dello Iacono A, **Ardigò LP**.  
Br J Sports Med.
5. How chest press-based exercises can alleviate the burden of cardiovascular diseases.  
Baldini A, **Ardigò LP\***, Padulo J.  
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6. Biomechanics of handcycling: insights about total mechanical power components.  
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7. Talent identification and selection of young Croatian soccer players: influence of biological and chronological age.  
Rađa A, Erceg M, Kuvačić G, **Ardigò LP\***, Padulo J.  
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