



SAPIENZA UNIVERSITÀ DI ROMA

PAOLO PALANGE

**Professore Ordinario di Malattie Apparato Respiratorio
(MED/10) Responsabile UOC Medicina Interna e Disfunzioni
Respiratorie Dipartimento di Sanità Pubblica e Malattie Infettive
Sapienza Università di Roma**

Nome: Paolo Palange

Titoli Professionali:

Laurea in Medicina e Chirurgia, 110/110 e lode, 1981, Università di Roma

Specializzazione in Medicina Interna, 70/70 e lode, 1986, Università di Roma

Specializzazione in Malattie dell'Apparato Respiratorio, 70/70 e lode, 1988, Università di Roma

Posizione attuale:

*Professore Ordinario di Malattie Apparato Respiratorio, Sapienza Università di Roma
Responsabile UOC Medicina Interna e Disfunzioni Respiratorie, Policlinico Umberto I – Roma.*

Dipartimento:

Dipartimento di Sanità Pubblica e Malattie Infettive, Sapienza Università di Roma.

Posizioni precedenti:

- Sapienza Università di Roma; Specializzando e medico frequentatore dal 1981 al 1988
- Sapienza Università di Roma; Funzionario tecnico e dirigente medico dal 1989 al 2000
- Indiana University School of Medicine, Department of Pulmonary Diseases;
visiting scientist and research Fellow 1986-1990
- Sapienza Università di Roma; Ricercatore confermato e dirigente medico (MED/09) dal 2000-2005
- Sapienza Università di Roma; Professore Associato e dirigente medico (MED/09) dal 2005-2013

Attività didattica:

1981/82-1986/87 - Esercitazioni teorico pratiche di Semeiotica Medica e Patologia Medica agli studenti del IV anno del corso di laurea in Medicina e Chirurgia e **1997-2000** Canale Parallelo Romano.

1985 ad oggi - Realizzazione di tutte le tesi sperimentali, di laurea e di specializzazione, in materia di Medicina Interna degli studenti e dei medici specializzandi della III Clinica Medica.

1991-92, 1992-93, 2001-2003 - Responsabile della organizzazione dei Meeting Clinici dell'Istituto di VI Clinica Medica e del Dipartimento di Medicina Clinica dell'Università "La Sapienza" di Roma.

1992 - Ha collaborato con il Prof. Pietro Serra alla prima edizione italiana del trattato di Medicina Interna "Oxford textbook of Medicine", con un contributo sulle malattie polmonari.

1994 - Ha collaborato alla prima edizione italiana del trattato di Medicina Interna "Medicina Clinica", editore Prof. Notarbartolo, con un contributo sulle malattie polmonari.

1997 e nel 2002 - Ha collaborato alla realizzazione di due Monografie dell'European Respiratory Society (ERS) dal titolo: *Clinical Exercise Testing*, (J.Roca and BJ Whipp, Editors) e *Nutrition in Respiratory Medicine* (A.Schols and E.Wouters, Editors).

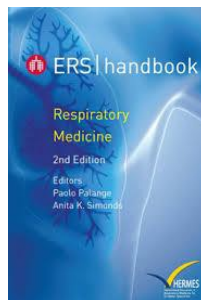
2007 - Editor Monografia *Clinical Exercise Testing* dell'European Respiratory Society (2007)

2001 - Ha collaborato, in qualità di editor ed autore, alla realizzazione di un libro su Il Test da Sforzo Cardio-Polmonare, teoria ed applicazioni.

2005 - Ha collaborato alla realizzazione del capitolo su "Equilibrio Acido-Base" sul trattato di Medicina Interna Sistemica, curatore Prof. Rugarli

2010 - Chief Editor, 1st Edition *ERS Handbook Respiratory Medicine* (ISBN 978-1-904097-99-0)

2013 - Chief Editor, 2nd Edition *ERS Handbook Respiratory Medicine* (ISBN 978-1-849484-040-8)



- ERS video:
Toracentesis
Test da Sforzo Cardio-Polmonare

- App per iPhone
Graphic EGA



Insegnamenti

- 1999-2001** - “Malattie Respiratorie”, Corso di Laurea per Fisioterapisti, Università di Roma “La Sapienza”, sede di Sezze (LT).
- 2000-oggi** - “Terapia Medica”, Scuola di Specializzazione in Medicina Interna III, indirizzo medicina d’urgenza dell’Università di Roma “La Sapienza”.
- 2001-oggi** - “Medicina Interna”, Corso di Laurea per Infermeri, Università di Roma “La Sapienza”, sede di Rieti.
- 2001-oggi** - “Fisiopatologia Respiratoria”, Scuola di Specializzazione in Tisiologia e Malattie dell’Apparato Respiratorio, Università di Roma “La Sapienza”.
- 2002-2010** - “Medicina Interna e Chirurgia Generale 3”, Corso di Laurea B in Medicina e Chirurgia, Università di Roma “La Sapienza”.
- 2005-oggi** - “Patologia Integrata 1 (cardio-respiratorio)”, Corso di Laurea C in Medicina e Chirurgia, Università di Roma “La Sapienza”.
- 2010-oggi** - “Medicina Interna e Chirurgia Generale 3”, Corso di Laurea A in Medicina e Chirurgia, Università di Roma “La Sapienza”.
- 2013-oggi** - “Respratory Physiology”, Corso di Laurea F (lingua Inglese) in Medicina e Chirurgia, Università di Roma “La Sapienza”.
- 2014-oggi** - “Applied Pathology 1 (cardio-respiratory)”, Corso di Laurea F (lingua Inglese) in Medicina e Chirurgia, Università di Roma “La Sapienza”.

Attività di coordinatore didattico:

- 2000-2009** – Segretario e coordinatore didattico della Scuola di Specializzazione in Medicina Interna III, Università di Roma “La Sapienza”
- 2010-oggi** – Coordinatore Meeting Didattici “*Ground-Round*”, Scuola di Specializzazione in Medicina Interna III, Università di Roma “La Sapienza”

Attività di ricerca

1. Meccanismi patogenetici del “cuore polmonare cronico” nei pazienti con broncopneumopatia cronica ostruttiva (BPCO).

Fino alla fine degli anni '70 le alterazioni dell'omeostasi del sodio e dell'acqua nei pazienti con insufficienza respiratoria da BPCO venivano attribuite interamente alla disfunzione del ventricolo destro secondaria all'aumento delle resistenze polmonari dovute all'ipossia. Partendo dall'osservazione clinica che la comparsa di edemi periferici nei pazienti con BPCO è associata quasi esclusivamente alla condizione di ipercapnia, Il Dr Palange ha collaborato con i Professori F Manfredi e MO Farber (Indiana University, Indianapolis USA) ad una serie di studi scientifici che negli anni '80 e '90 ha portato alla scoperta che disfunzioni renali ed ormonali, piuttosto che alterazioni della gittata cardiaca, sono responsabili della ritenzione di sodio e di acqua nei pazienti con BPCO e cosiddetto “cuore polmonare cronico” (*Am.J.Med.Sci.* 298:243-248;1989. *J.Lab.Clin.Med.*116:298-304;1990. *J.Appl.Physiol.* 71:1340-1345;1991. *Chest* 101:341-344;1992). Questi studi suggeriscono oggi un diverso approccio terapeutico al

trattamento degli edemi nella BPCO ed in particolare consigliano di: 1) evitare l'uso dei diuretici, che favorendo la condizione di alcalosi metabolica, possono peggiorare l'ipercapnia; 2) una attenta correzione dell'ipossiemia (senza un peggioramento dell'ipercapnia) che favorisce la natriuresi (*Chest* 97:840-844,1990). Una review su questo filone di ricerca è stata pubblicata dal Dr Palange sulla rivista internazionale *Torax* 53: 989-991; 1998.

2. Meccanismi fisiopatologici responsabili della ridotta tolleranza allo sforzo nei pazienti con broncopneumopatia cronica ostruttiva (BPCO).

La dispnea ed in particolare la ridotta tolleranza all'esercizio sono i sintomi principali della BPCO. Fino alla fine degli anni '80 questi sintomi venivano interamente attribuiti alla ridotta capacità ventilatoria legata alla disfunzione polmonare. Negli anni '90 il Dr. Palange, insieme ad altri ricercatori internazionali, ha ipotizzato che la ridotta tolleranza allo sforzo nella BPCO potesse essere dovuta anche ad un danno sistemico muscolare secondario a molteplici fattori come l'ipossiemia, il decondizionamento muscolare, l'infiammazione sistemica cronica ed il cattivo stato nutrizionale presente in più del 30% dei pazienti con BPCO. Gli studi del Dr. Palange, citati sulle più importanti riviste scientifiche del settore, hanno dimostrato: 1) che nei pazienti con BPCO in corso di esercizio la correzione dell'ipossiemia migliora l'utilizzazione periferica di ossigeno e velocizza la curva di cinetica del consumo di ossigeno (*J.Appl.Physiol.* 78:2228-2234; 1995); 2) che il cattivo stato nutrizionale influenza negativamente la tolleranza allo sforzo nei pazienti con BPCO (*Chest* 107: 1206-1212; 1995; *Chest* 114:12-18; 1998); 3) che la . Il Dr. Palange è stato chairman di un importante seminario di ricerca, a cui hanno partecipato i maggiori esperti internazionali, su "Skeletal Muscle Dysfunction in COPD" (*Eur Resp J* 15:808-815; 2000) ed ha pubblicato alcune review su questi temi (Nutritional state and exercise. In *Nutrition and Metabolism in Respiratory Diseases*, Wouters Editor. *Eur Resp Monograph* 2003. Skeletal muscle dysfunction in chronic obstructive lung disease. *Arch Chest Dis* 56: 418-422; 2001). Attualmente sta conducendo alcuni studi su: 1) rilascio di precursori emopoietici CD34+ in corso di esercizio in pazienti con insufficienza respiratoria cronica da BPCO (dati preliminari presentati all'American Thoracic Society May 2003 – Seattle – 99th International Conference); 2) alterazioni della struttura mitocondriale su campioni biopsici muscolari di pazienti BPCO malnutriti.

3. Il test da sforzo cardio-polmonare nella valutazione funzionale dei pazienti con malattie polmonari e cardiache.

Agli inizi degli anni '90, presso i laboratori diretti dal Prof. Karlman Wasserman (Harbor-UCLA, Torrance, CA, USA), il Dr. Palange ha acquisito esperienza nell'utilizzo del test da sforzo cardio-polmonare nella valutazione funzionale dei pazienti con malattie respiratorie e cardiovascolari (*Chest* 105: 1122-26; 1994). Il Dr Palange è considerato uno dei maggiori esperti europei nell'utilizzo di tale metodica, che viene abitualmente impiegata, ad esempio, per la valutazione del timing di trapianto cardiaco e polmonare. Il Dr Palange ha contribuito alla stesura delle prime linee guida internazionali all'uso del test cardio-polmonare (European Respiratory Society - ERS Guidelines: Clinical exercise testing with reference to lung disease: indications, standardisation and interpretation strategies. *Eur.Resp.J.* 1997; 10:2662-2689). Il Dr Palange ha pubblicato numerosi lavori scientifici che utilizzavano il test cardio-polmonare come metodica principale. Ha descritto le principali differenze negli adattamenti ventilatorio, cardiocircolatorio e metabolico per diverse modalità di esercizio (bicicletta vs cammino) nei pazienti con BPCO (*J Appl Physiol* 88: 1715-1720; 2000. *Eur J Appl Physiol* 89: 331-336; 2003). I risultati di questi studi hanno importanti implicazioni in medicina riabilitativa ed in particolare evidenziano come l'efficienza muscolare e la risposta ventilatoria siano particolarmente sfavorevoli durante il cammino nei pazienti con BPCO. Recentemente ha descritto come nei pazienti con BPCO la tolleranza allo sforzo possa essere significativamente aumentata attraverso la respirazione di Heliox (HeO₂) (*J Appl Physiol* 97:637-1642;2004). Il Dr. Palange è attualmente chairman della Task Force (2003-2005) dell'European Respiratory Society che produrrà le prossime linee guida su: "Clinical Exercise Testing: Evidence Based Guidelines". Il Dr Palange fa parte della faculty internazionale dell'*European Respiratory Practicum* (Chairmen: Prof. K.Wasserman, Prof. BJ Whipp) che ogni anno in una Università europea tiene un corso sul test da sforzo cardio-polmonare (8th Edition, Milan 2004).

Attività di Revisore

European Respiratory Journal, Respiratory Medicine, Respiration, European Journal of Applied Physiology, Thorax, Journal of Applied Physiology, American Journal Respiratory and Critical Care Medicine

Board Editoriale

European Respiratory Journal, American Journal Respiratory and Critical Care Medicine, Breath

Associate Editor

European Respiratory Journal

Titoli onorifici

- Chairman of the Working Group on "Pulmonary circulation, gas exchange and exercise", European Respiratory Society (ERS), 1998-2000
- Chairman, ERS Research Seminar "The Skeletal Muscle in Chronic Respiratory Disorders", Rome-Italy, 1999 (Eur Resp J 15:807-815; 2000).
- Head of the "Clinical Physiology and Integrative Biology" Assembly, European Respiratory Society (ERS), 2000-2000
- Director Post Graduate Courses, European Respiratory Society (ERS), 2005-2008

ERS Task Force Chair or Member

- Clinical Exercise Testing, member (1997)
- Clinical Exercise Testing, Chair (2007)
- Clinical Exercise Testing, Chair (2016)

ERS Research Seminar Chair

- The skeletal muscle in chronic respiratory diseases (1999, first ERS Research Seminar)
- Physical activity, nutritional status and systemic inflammation in COPD (2011)

ERS Educational Seminar Chair

Perspectives in medical education: signposts to the future in educating respiratory specialists (2011).

ERS HandBook of Respiratory Diseases

Editor in Chief, 1st (2010) and 2nd (2013) Editions

European Lung White Book

Contributor to the 2nd (2013) Edition

Premi/Riconoscimenti

ERS Educational Award 2013

Publicazioni scientifiche

Il Dr. Palange è autore di 129 articoli originali su riviste e monografie nazionali ed internazionali e di circa 200 comunicazioni scientifiche a Congressi Nazionali ed Internazionali (European Respiratory Society e American Thoracic Society).

Publicazioni (# 10 più citate)

1: Cazzola M, MacNee W, Martinez FJ, Rabe KF, Franciosi LG, Barnes PJ, Brusasco V, Burge PS, Calverley PM, Celli BR, Jones PW, Mahler DA, Make B, Miravittles M, Page CP, **Palange P**, Parr D, Pistolesi M, Rennard SI, Rutten-van Mölken MP, Stockley R, Sullivan SD, Wedzicha JA, Wouters EF; American Thoracic Society. European Respiratory Society Task Force on outcomes of COPD.. Outcomes for COPD pharmacological trials: from lung function to biomarkers. *Eur Respir J*. 2008 Feb;31(2):416-69. doi: 10.1183/09031936.00099306. Review. PubMed PMID: 18238951. **430 Citations**

2: ERS Task Force, **Palange P**, Ward SA, Carlsen KH, Casaburi R, Gallagher CG, Gosselink R, O'Donnell DE, Puente-Maestu L, Schols AM, Singh S, Whipp BJ. Recommendations on the use of exercise testing in clinical practice. *Eur Respir J*. 2007 Jan;29(1):185-209. Review. PubMed PMID: 17197484. **256 Citations**

3: Roca J, Whipp BJ, Agustí AGN, Anderson SD, Casaburi R, Cotes JE, Donner CF, Estenne M, Folgering H, Higebottam TW, Killian KJ, **Palange P**, Patessio A, Prefaut C, Sergysels R, Wagner PD, Weisman I. Clinical exercise testing with reference to lung diseases: indications, standardization and interpretation strategies. ERS Task Force on Standardization of Clinical Exercise Testing. European Respiratory Society. *Eur Respir J*. 1997 Nov;10(11):2662-89. PMID: 9426113. **161 Citations**

4: Carlsen KH, Anderson SD, Bjermer L, Bonini S, Brusasco V, Canonica W, Cummiskey J, Delgado L, Del Giacco SR, Drobnic F, Haahtela T, Larsson K, **Palange P**, Popov T, van Cauwenberge P; European Respiratory Society.; European Academy of Allergy and Clinical Immunology.. Exercise-induced asthma, respiratory and allergic disorders in elite athletes: epidemiology, mechanisms and diagnosis: part I of the report from the Joint Task Force of the European Respiratory Society (ERS) and the European Academy of Allergy and Clinical Immunology (EAACI) in cooperation with GA2LEN. *Allergy*. 2008 Apr;63(4):387-403. doi:10.1111/j.1398-9995.2008.01662.x. Review. PubMed PMID: 18315727. **132 Citations**

5: **Palange P**, Forte S, Onorati P, Manfredi F, Serra P, Carlone S. Ventilatory and metabolic adaptations to walking and cycling in patients with COPD. *J Appl Physiol* (1985). 2000 May;88(5):1715-20. PubMed PMID: 10797134. **108 Citations**

6: Mannix ET, Farber MO, **Palange P**, Galassetti P, Manfredi F. Exercise-induced asthma in figure skaters. *Chest*. 1996 Feb;109(2):312-5. PubMed PMID: 8620698. **108 Citations**

7: **Palange P**, Testa U, Huertas A, Calabrò L, Antonucci R, Petrucci E, Pelosi E, Pasquini L, Satta A, Morici G, Vignola MA, Bonsignore MR. Circulating haemopoietic and endothelial progenitor cells are decreased in COPD. *Eur Respir J*. 2006 Mar;27(3):529-41. PubMed PMID: 16507853. **98 Citations**

8: **Palange P**, Valli G, Onorati P, Antonucci R, Paoletti P, Rosato A, Manfredi F, Serra P. Effect of heliox on lung dynamic hyperinflation, dyspnea, and exercise endurance capacity in COPD patients. *J Appl Physiol* (1985). 2004 Nov;97(5):1637-42. PubMed PMID: 15234959. **91 Citations**

9: Bonini S, Bonini M, Bousquet J, Brusasco V, Canonica GW, Carlsen KH, Corbetta L, Cummiskey J, Delgado L, Del Giacco SR, Haahtela T, Jaeger S, Moretti C, **Palange P**, Passalacqua G, Passali D, Pedersen BK, Popov T, Rasi G, Ventura MT, Vignola AM. Rhinitis and asthma in athletes: an ARIA document in collaboration with GA2LEN. *Allergy*. 2006 Jun;61(6):681-92. Review. PubMed PMID: 16677236. **62 Citations**

10: Onorati P, Antonucci R, Valli G, Berton E, De Marco F, Serra P, **Palange P**. Non-invasive evaluation of gas exchange during a shuttle walking test vs. a 6-min walking test to assess exercise tolerance in COPD patients. *Eur J Appl Physiol*. 2003 May;89(3-4):331-6. PubMed PMID: 12736842. **61 Citations**

Pubblicazioni (tutte da Pubmed 5 Aprile 2017)

1: Neder JA, Berton DC, Müller PT, Elbehairy AF, Rocha A, Palange P, O'Donnell DE; Canadian Respiratory Research Network (CRRN).. Ventilatory Inefficiency and Exertional Dyspnea in Early Chronic Obstructive Pulmonary Disease. *Ann Am Thorac Soc*. 2017 Mar 27. doi: 10.1513/AnnalsATS.201612-1033FR. [Epub ahead of print]

2: Neder JA, Berton DC, Arbex FF, Alencar MC, Rocha A, Sperandio PA, Palange P, O'Donnell DE. Physiological and clinical relevance of exercise ventilatory efficiency in COPD. *Eur Respir J*. 2017 Mar 8;49(3). pii: 1602036. doi: 10.1183/13993003.02036-2016. Print 2017 Mar. Review. PubMed PMID: 28275174.

3: Strano S, Fanciulli A, Rizzo M, Marinelli P, Palange P, Tiple D, De Vincentis G, Calcagnini G, Censi F, Mecco G, Colosimo C. Cardiovascular dysfunction in untreated Parkinson's disease: A multi-modality assessment. *J Neurol Sci*. 2016 Nov 15;370:251-255. doi: 10.1016/j.jns.2016.09.036. Epub 2016 Sep 21.

4: Loffredo L, Cangemi R, Perri L, Catasca E, Calvieri C, Carnevale R, Nocella C, Equitani F, Ferro D, Violi F; SIXTUS study group.; SIXTUS (thromboSis-related eXTra-pulmonary oUtcomeS in pneumonia) study group., Battaglia S, Bertazzoni G, Biliotti E, Bucci T, Calabrese CM, Casciaro M, Celestini A, De Angelis M, De Marzio P, Esvan R, Falcone M, Fazi L, Sulekova LF, Franchi C, Giordo L, Grieco S, Manzini E, Marinelli P, Mordenti M, Morelli S, Palange P, Pastori D, Pignatelli P, Capparuccia MR, Romiti GF, Rossi E, Ruscio E, Russo A, Scarpellini MG, Solimando L, Taliani G, Trapè S, Toriello F. Impaired flow-mediated dilation in hospitalized patients with community-acquired pneumonia. *Eur J Intern Med*. 2016 Dec;36:74-80. doi: 10.1016/j.ejim.2016.09.008. Epub 2016 Oct 7.

5: Internullo M, Bonini M, Marinelli P, Perli E, Cerbelli B, Palange P. A 22-year-old woman with unexplained exertional dyspnoea. *Thorax*. 2016 Nov;71(11):1057-1060. doi: 10.1136/thoraxjnl-2016-208330. Epub 2016 Sep 21. PubMed PMID: 27655212.

6: Badagliacca R, Papa S, Valli G, Pezzuto B, Poscia R, Manzi G, Giannetta E, Sciomer S, Palange P, Naeije R, Fedele F, Vizza CD. Echocardiography Combined With Cardiopulmonary Exercise Testing for the Prediction of Outcome in Idiopathic Pulmonary Arterial Hypertension. *Chest*. 2016 Dec;150(6):1313-1322. doi: 10.1016/j.chest.2016.07.036. Epub 2016 Aug 20. PubMed PMID: 27554298.

7: Romaniello A, Gigante A, Di Paolo M, Tallerini G, Barbano B, Amoroso D, Palange P, Rosato E. Bosentan for digital ulcers prevention does not worsen cardiopulmonary exercise test parameters in SSc patients with interstitial lung disease. *Int J Cardiol*. 2016 Nov 15;223:113-115. doi: 10.1016/j.ijcard.2016.08.095. Epub 2016 Aug 6. PubMed PMID: 27537734.

8: Cangemi R, Pignatelli P, Carnevale R, Bartimoccia S, Nocella C, Falcone M, Taliani G, Violi F; SIXTUS Study Group.. Low-grade endotoxemia, gut permeability and platelet activation in community-acquired pneumonia. *J Infect*. 2016 Aug;73(2):107-14. doi: 10.1016/j.jinf.2016.05.013. Epub 2016 Jun 8.

9: Falcone M, Tiseo G, Russo A, Giordo L, Manzini E, Bertazzoni G, Palange P, Taliani G, Cangemi R, Farcomeni A, Vullo V, Violi F, Venditti M. Hospitalization

for Pneumonia is Associated With Decreased 1-Year Survival in Patients With Type 2 Diabetes: Results From a Prospective Cohort Study. *Medicine (Baltimore)*. 2016 Feb;95(5):e2531. doi: 10.1097/MD.0000000000002531. PubMed PMID: 26844461; PubMed Central PMCID: PMC4748878.

10: Fontana V, Santinelli S, Internullo M, Marinelli P, Sardo L, Alessandrini G, Borgognoni L, Ferrazza AM, Bonini M, Palange P. Effect of acetazolamide on post-NIV metabolic alkalosis in acute exacerbated COPD patients. *Eur Rev Med Pharmacol Sci*. 2016;20(1):37-43. PubMed PMID: 26813451.

11: Puente-Maestu L, Palange P, Casaburi R, Laveneziana P, Maltais F, Neder JA, O'Donnell DE, Onorati P, Porszasz J, Rabinovich R, Rossiter HB, Singh S, Troosters T, Ward S. Use of exercise testing in the evaluation of interventional efficacy: an official ERS statement. *Eur Respir J*. 2016 Feb;47(2):429-60. doi: 10.1183/13993003.00745-2015. Epub 2016 Jan 21. Review. PubMed PMID: 26797036.

12: Savi D, Simmonds N, Di Paolo M, Quattrucci S, Palange P, Banya W, Hopkinson NS, Bilton D. Relationship between pulmonary exacerbations and daily physical activity in adults with cystic fibrosis. *BMC Pulm Med*. 2015 Dec 1;15:151. doi: 10.1186/s12890-015-0151-7. PubMed PMID: 26627849; PubMed Central PMCID: PMC4667472.

13: Gigante A, Rosato E, Liberatori M, Sardo L, Di Paolo M, Marinelli P, Barilaro G, Palange P, Amoroso A, Tubani L. In systemic sclerosis prolonged QTc interval is associated with reduced exercise tolerance. *Int J Cardiol*. 2016 Jan 15;203:570-2. doi: 10.1016/j.ijcard.2015.11.004. Epub 2015 Nov 9. PubMed PMID: 26569365.

14: Mitchell S, Simonds A, Andreas S, Bonsignore MR, Cooper B, Donic V, McNicholas WT, Morrell M, Palange P, Prest G, Riha R, Trang H, Randerath W, van der Grinten C, Verbraecken J, de Backer W. Introducing a core curriculum for respiratory sleep practitioners. *Breathe (Sheff)*. 2015 Mar;11(1):50-6. doi: 10.1183/20734735.020414. Review.

15: Steffanina A, Proietti L, Antonaglia C, Palange P, Angelici E, Canipari R. The Plasminogen System and Transforming Growth Factor- β in Subjects With Obstructive Sleep Apnea Syndrome: Effects of CPAP Treatment. *Respir Care*. 2015 Nov;60(11):1643-51. doi: 10.4187/respcare.03571. Epub 2015 Aug 18. PubMed PMID: 26286733.

16: Bonini M, Palange P. Exercise-induced bronchoconstriction: new evidence in pathogenesis, diagnosis and treatment. *Asthma Res Pract*. 2015 Jul 2;1:2. eCollection 2015. Review. PubMed PMID: 27965757; PubMed Central PMCID: PMC4970375.

17: Violi F, Carnevale R, Calvieri C, Nocella C, Falcone M, Farcomeni A, Taliani G, Cangemi R; SIXTUS study group.. Nox2 up-regulation is associated with an enhanced risk of atrial fibrillation in patients with pneumonia. *Thorax*. 2015 Oct;70(10):961-6. doi: 10.1136/thoraxjnl-2015-207178.

18: Cangemi R, Calvieri C, Falcone M, Bucci T, Bertazzoni G, Scarpellini MG, Barillà F, Taliani G, Violi F; SIXTUS Study Group.. Relation of Cardiac Complications in the Early Phase of Community-Acquired Pneumonia to Long-Term Mortality and Cardiovascular Events. *Am J Cardiol*. 2015 Aug 15;116(4):647-51. doi: 10.1016/j.amjcard.2015.05.028. Epub 2015 May 22. PubMed PMID: 26089009.

19: Bonini M, Gramiccioni C, Fioretti D, Ruckert B, Rinaldi M, Akdis C, Todaro A,

- Palange P, Carlsen KH, Pelliccia A, Rasi G, Bonini S; AIDA and the Italian Unit of the GA2LEN Olympic Study.. Asthma, allergy and the Olympics: a 12-year survey in elite athletes. *Curr Opin Allergy Clin Immunol*. 2015 Apr;15(2):184-92. doi: 10.1097/ACI.000000000000149. PubMed PMID: 25961393.
- 20: Savi D, Di Paolo M, Simmonds N, Onorati P, Internullo M, Quattrucci S, Winston B, Laveneziana P, Palange P. Relationship between daily physical activity and aerobic fitness in adults with cystic fibrosis. *BMC Pulm Med*. 2015 May 9;15:59. doi: 10.1186/s12890-015-0036-9. PubMed PMID: 25952747; PubMed Central PMCID: PMC4430900.
- 21: Apostolo A, Laveneziana P, Palange P, Agalbato C, Molle R, Popovic D, Bussotti M, Internullo M, Sciomer S, Bonini M, Alencar MC, Godinas L, Arbex F, Garcia G, Neder JA, Agostoni P. Impact of chronic obstructive pulmonary disease on exercise ventilatory efficiency in heart failure. *Int J Cardiol*. 2015;189:134-40. doi: 10.1016/j.ijcard.2015.03.422. Epub 2015 Mar 31.
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