



**Università degli Studi di Padova**  
**Department of Experimental Biomedical Sciences**  
**Viale G. Colombo, 3 - I-35121 PADOVA (Italy)**  
**Interdepartmental Research Center of Myology (cirMYO)**



**Prof. Ugo Carraro**

Interdepartmental Research Center of Myology (cirMYO)  
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**Born:** 23 Febbraio 1943 in Abano Terme (Padova), Italy

**Citizenship:** Italy

**Degree and Academic Positions**

- 1968 - M.D. (Laurea in Medicina e Chirurgia), University of Padua, Italy
- Associate Professor of General Pathology, Faculty of Medicine, University of Padova:
  - Teacher of General Pathology in Faculty of Medicine, Dentistry, Nursing, and Speciality in Plastic Surgery, Orthopedics, Physical Medicine and Rehabilitation – to date
  - Visiting Scientist, Muscle Dept., BBRI, Harvard University, Boston, USA - 1981
  - Visiting Professor, Department of Physiology, University of Lille, France - 1993
  - Acting-director of the Department of Biomedical Science -1998 to 2003;
  - Principal Investigator of the Laboratory of Translational Myology
  - Interdepartmental Research Center of Myology (cirMYO), Head 2005 - 2008

**Main Research Interest**

- Translational Myology: Basics of muscle plasticity and their applications to medical research, in particular:
- Functional Electrical Stimulation (FES) of denervated degenerated human muscle (DDM)
- Reconstruction, neurotization and artificial synaptogenesis of ablated skeletal muscle
- Role of apoptosis and regenerative myogenesis in exercise-induced muscle damage
- Dynamic Cardiomyoplasty and Skeletal-muscle-powered assist devices
- Proteomics and 2D SDS PAGE

**Recent Grants**

- 2007-2008 – Recipient of the Research Contract LBI - Ludwig Boltzman Institute of Electrical Stimulation & EU INTERREG IIIa Program: "Assessment and Restoration of Quadriceps Muscle Function after Total Knee Replacement".
- 2005-2006 - Recipient of the Research Contract of The Willieminenspital and The Medical University of Vienna
- 2004-2005 - Recipient of the Italian PRIN 2004 "From muscle regeneration to muscle reconstruction" for the Padua Unit "Guided Healing and Reconstruction of myopathic, denervated, ablated and ectopic skeletal muscle"
- 2001-2005 - Recipient of the European Union Grant for the project "RISE: Use of electrical stimulation to restore standing in paraplegics with long-term denervated degenerated muscles (DDM)", 2001-2005 (Contract n. QLGS-CT-2001-02191).
- 1998-2001 - Principal Investigator of the MURST Cofin98 - PRIN "Italian Trial of Demand Dynamic Cardiomyoplasty"

**Other professional activities**

- Editor-in-Chief "BAM, Basic and Applied Myology": 1991 to date

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**Interdepartmental Research Center of Myology (cirMYO) - Laboratory of Translational Myology – Prof. Ugo Carraro**  
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**Interdepartmental Research Center of Myology (cirMYO)**

- Guest Editor of “Neurological Research”
- Reviewer for J. Cell Biol., Muscle&Nerve, Artificial Organs, J. Muscle Res. Cell Motility, J. of Artificial Organs, Cell Death & Differentiation, Annals Thoracic Surgery
- Organizer of International Conferences and Courses
- Invited speaker and chairman in International Conferences



## **Publications 2007-2003**

### IN PRESS

Graupe D, Cerrel-Bazo H, Kern H, Carraro U. Walking performance, medical outcomes and patient training in FES of denervated muscles for ambulation by thoracic-level complete paraplegics. *Neurol Res* 2007, in press.

### 2007

1. Boncompagni S, Kern H, Rossini K, Hofer C, Mayr W, Carraro U, Protasi F. Structural differentiation of skeletal muscle fibers in absence of innervation in humans. *Proc Natl Acad Sci U S A*. 2007 Dec 4;104(49):19339-44. Epub 2007 Nov 27.
2. Kern H, Hofer C, Modlin M, Mayr W, Vindigni V, Zampieri S, Boncompagni S, Protasi F, Carraro U. Stable muscle atrophy in long term paraplegics with complete upper motor neuron lesion from 3- to 20-year SCI. *Spinal Cord* (2007). ISSN: 1362-4393. *Spinal Cord*. 2007 Oct 23; [Epub ahead of print] PMID: 17955034 [PubMed - as supplied by publisher].
3. Podhorska-Okolow M, Dziegiel P, Murawska-Cialowicz E, Saczko J, Kulbacka J, Gomulkiewicz A, Rossini K, Jethon Z, Carraro U, Zabel M. Effects of adaptive exercise on apoptosis in cells of rat renal tubuli. *Eur J Appl Physiol*. 2007 (Feb); 99(3): 217-226. Epub 2006 Nov 11. *European Journal of Applied Physiology*. vol. 99, pp. 217-226 ISSN: 1439-6319.

### 2006

4. Podhorska-Okolow M, Dziegiel P, Murawska-Cialowicz E, Saczko J, Kulbacka J, Gomulkiewicz A, Rossini K, Jethon Z, Carraro U, Zabel M. Effects of adaptive exercise on apoptosis in cells of rat renal tubuli. *Eur J Appl Physiol*. 2006 Nov 11; [Epub ahead of print]
5. Podhorska-Okolow M, Dziegiel P, Dolinska-Krajewska B, Dumanska M, Cegielski M, Jethon Z, Rossini K, Carraro U, Zabel M. Expression of metallothionein in renal tubules of rats exposed to acute and endurance exercise. *Folia Histochem Cytobiol*. 2006;44(3):195-200.
6. Podhorska-Okolow M, Dziegiel P, Gomulkiewicz A, Kisiela D, Dolinska-Krajewska B, Jethon Z, Carraro U, Zabel M. Exercise-induced apoptosis in rat kidney is mediated by both angiotensin II AT1 and AT2 receptors. *Histol Histopathol*. 2006 May;21(5):459-66.

### 2005

7. Kern H, Rossini K, Carraro U, Mayr W, Vogelauer M, Hoellwarth U, Hofer C. Muscle biopsies show that FES of denervated muscles reverses human muscle degeneration from permanent spinal motoneuron lesion. *J Rehabil Res Dev*. 2005 May-Jun;42(3 Suppl 1):43-53.
8. Modlin M, Forstner C, Hofer C, Mayr W, Richter W, Carraro U, Protasi F, Kern H. Electrical stimulation of denervated muscles: first results of a clinical study. *Artif Organs*. 2005 Mar;29(3):203-6.
9. Carraro U, Rossini K, Mayr W, Kern H. Muscle fiber regeneration in human permanent lower motoneuron denervation: relevance to safety and effectiveness of FES-training, which induces muscle recovery in SCI subjects. *Artif Organs*. 2005 Mar;29(3):187-91.
10. Kern H, Salmons S, Mayr W, Rossini K, Carraro U. Recovery of long-term denervated human muscles induced by electrical stimulation. *Muscle Nerve*. 2005 Jan;31(1):98-101.

### 2004

11. Vindigni V, Mazzoleni F, Rossini K, Fabbian M, Zanin ME, Carraro U. Reconstruction of ablated rat rectus abdominis by muscle regeneration. *Plastic and Reconstructive Surgery*, 2004 Nov;114(6):1509-15; discussion 1516-8. (I.F.: 2002: 1.436)
12. Carraro U. Video-Assisted Thoracoscopic Transplantation of Myoblasts into the Heart (Invited Editorial). *Ann Thorac Surg*, 2004; 78(1):14-16. (I.F.: 2002: 2.052)
13. Kern H, Rossini K, Boncompagni S, Mayr W, Fanò G, Zanin ME, Podhorska-Okolow M, Protasi F, Carraro U. Long-term denervation in humans causes degeneration of both contractile and excitation-contraction coupling



- apparatus that can be reversed by functional electrical stimulation (FES). A role for myofiber regeneration? *J Neuropathol Exp Neurol*, 2004; 63 (9), 919-931. (I.F.: 2002: 5.533)
14. Kern H, Hofer C, Moedlin M, Forstner C, Vogelauer M, Richter W, Mayr W, Zanin ME, Rossini K, Carraro U. First Sound Evidence of Muscle Regeneration in Recovery of Function of Human Permanent Denervated Muscles by a Long-Lasting Functional Electrical Stimulation (FES) Training: Biopsy Findings. *Zdrav Vestn* 2004; 73: 29-31. (BIOSIS)
  15. Rigatelli GL, Rossini K, Vindigni V, Mazzoleni F, Rigatelli G, Carraro U. New perspectives in the treatment of damaged myocardium using autologous skeletal myoblasts. *Cardiovasc Rad Med*, 2004 Apr-Jun;5(2):84-7. (Elsevier)
- 2003
16. Rigatelli G, Barbiero M, Rigatelli G, Cotogni A, Riccardi R, Cobelli F, Carraro U. Cardiocirculatory bio-assist: is it time to reconsider demand dynamic cardiomyoplasty? Review and future perspectives. *ASAIO J*. 2003 Jan-Feb;49(1):24-9. (I.F.: 2002: 1.043)
  17. Rigatelli G, Barbiero M, Rigatelli G, Riccardi R, Cobelli F, Cotogni A, Bandello A, Carraro U. Maintained benefits and improved survival of dynamic cardiomyoplasty by activity-rest stimulation: 5-year results of the Italian trial on 'demand' dynamic cardiomyoplasty. *Eur J Cardiothorac Surg*. 2003 Jan;23(1):81-5. (I.F.: 2002: 1.451)
  18. Carraro U, Rigatelli G, Rossini K, Barbiero M, Rigatelli G. Demand Dynamic Bio-Girdling in Heart Failure: Improved Efficacy of Dynamic Cardiomyoplasty by LD activation during Aortic Out-Flow. *Int J Artificial Organs*, 2003; 26(3) 217-224. (I.F.: 2002: 1.192)
  19. Rizzi C, Chignola R, Zoccatelli G, Donà M, Dal Belin Peruffo A, Carraro U, Rossini K. Effects of Wheat Germ-Enriched Diet on Skeletal Muscle Regeneration. *Italian Journal of Food Science*. 2003; 15, 417-425. (I.F.: 2002: 0.545)
  20. Rigatelli G, Rigatelli G, Barbiero M, Cotogni A, Bandello A, Riccardi R, Carraro U. "Demand" stimulation of latissimus dorsi heart wrap: experience in humans and comparison with adynamic girdling. *Ann Thorac Surg*. 2003;76:1587-1592. (I.F.: 2002: 2.052)
  21. Dona M, Sandri M, Rossini K, Dell'aica I, Podhorska-Okolow M, Carraro U. Functional in vivo gene transfer into the myofibers of adult skeletal muscle. *Biochem Biophys Res Commun*. 2003; 312(4): 1132-1138. (I.F.: 2002: 2.935)

A. Publications on International Journals	88
B. Publications on Books or Proceedings of International Conferences	40
C. Edited Books or Scientific Journals	22
D. Didactic Publications	14
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Total	154