

Review of: "Translational Mobility Medicine and Ugo Carraro: A Life of Significant Scientific Contributions Reviewed in Celebration"

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When I was asked to write a review for the article Translational Mobility Medicine and Ugo Carraro: A Life of Significant Scientific Contributions Reviewed in Celebration written by Barbara Ravara, Walter P Giuriati and Amber L Pond, I accepted with enthusiasm. In fact, after the first reading of this manuscript, summarizing the life journey of Prof. Ugo Carraro, numerous and spontaneous reflections have arisen. Indeed, it is not a piece of writing that unmoves the reader after reading.

The article succeeds in summarizing the great achievements of Prof. Carraro, starting from the study of the behaviour of skeletal muscle fibers after denervation to the most recent uses of Functional Electrical Stimulation in paraplegic human skeletal muscles: Prof. Carraro's career is portrayed in the article as it really was, fascinating and epic.

Prof. Carraro's brilliant career started with the choice to study structural and molecular myology while he was a young researcher at the University of Padua (Italy) in the 1970s. This led him to gain specialized knowledge in the molecular studies of contractile muscle proteins, which at the time relied on gel electrophoresis and then on bi-dimensional gel electrophoresis. Introduced to the study of muscle denervation/reinnervation, he developed a specific research interest on denervated muscle, which is still his focus today. This interest led him to conduct several research project, from the experimental stimulation of denervated muscles in rat models to the study on Dynamic Cardiomyoplasty and Spinal Cord Injury-related muscle denervation.¹ The management of the denervated muscle through electrical stimulation became the driving topic of Prof. Carraro's research and this both nurtured and followed implementation of the EU Project RISE (Use of electrical stimulation to restore standing in paraplegics with long-term denervated degenerated muscles (QLG5-CT-2001-02191)).¹

Nowadays, more than half a century of skeletal muscle research is continuing at Padua University (Italy) under the auspices of the Interdepartmental Research Centre of Myology (CIR-Myo), the European Journal of Translational Myology (EJTM) and recently also with the support of the A&CM Carraro Foundation for Translational Myology, Padova, Italy.²

Nevertheless, Prof. Carraro's scientific dreams are not over yet. Coming its eightieth birthday, Prof. Carraro intends to develop research projects related to the monitoring of anti- and pro-inflammatory cytokines and to the validation of the

Home-based Full-Body in-Bed Gym (hbFBiBG) as a clinical accepted rehabilitation program. The hbFBiBG is a rehabilitation workout easy to independently repeat at home, eventually combined with neuro-muscular electrical stimulation (NMES).^{3,4} Prof. Carraro believes that this self-administered physical exercise learned during hospitalization, but then performed regularly by elderly subjects at home, can represent a valid method to improve and maintain muscle strength, better mood and self-confidence for a healthy lifestyle.^{3,4} His passion, combined with the solid scientific bases with which he manages to convey his ideas, have stimulated a group of young doctors, enrolled at the Physical and Rehabilitation Medicine School of Padua, directed by Prof. Stefano Masiero, to share these recent projects. Together with Prof. Carraro, in fact, they are involving in a research project elderly subjects who, once learned at the hospital the hbFBiBG protocol, can continue to perform the exercise at home improving their conditions. Once again Prof. Carraro proves to be a person capable of transmitting his numerous knowledge and of making other young pupils, as he likes to call them, fall in love with research.

Knowledge transfer, in a continuity between past, present and future, represents another of the still open aims of Prof. Carraro. Indeed, he would like to achieve an increased impact and dissemination of the scientific journal edited by him, European Journal of Translational Myology (EJTM). Founded as Basic and Applied Myology (BAM) journal, from 2010 the journal changed name to EJTM, whose contents are related to Myology, though their implications are of foremost importance in neurological disorders, cancer cachexia and aging. Indeed, from 1991, this journal began publishing original articles concerning biomedical research in myology and applications of new knowledge to prevent, cure and rehabilitate mobility impaired young and old persons.¹

Finally, Prof. Carraro persists in the desire to contribute to the dissemination of knowledge also through annual meetings. Since the necessity for meetings focusing on Translational Myology was acknowledged by a sizable community of international Basic Biologists, Clinicians, and Biomedical Technologists, the Padua Muscle Days (PMD) were inaugurated. The first Padua Myology Meeting, held in 1986 in Abano Terme, concentrated on the prevention and treatment of muscular problems. The Meetings were initially conducted every three years, but many researchers strongly supported the need to meet more frequently, so the PMD changed to yearly and eventually bi-annual occasions, Spring and Autumn PMD. Over time, as attendees' interest in the meetings rose, so did the range of topics they discussed during the PMD. Even if prevention and treatment of injuries connected to the muscles have continued to be priorities, further topics have become integral parts of the PMD, including the pathophysiology of the cardiac muscle, Health Resort Medicine and the role of fascia.⁵ Nevertheless, these topics are not static but are constantly expanding. Without a doubt, the PMD to be held from March 29th to April 1st, 2023 in the Euganean Hills (Padua), Italy will attract familiar faces, researchers who meet every year for this great event organized by Prof. Carraro. However, several of the new sessions' topics are cutting-edge in translational myology, so new perspectives and new researchers are expected.⁶ Indeed, it is a tradition of the PMD to offer to young clinical, biomedical researchers and engineers the opportunity to hear Senior Myologists. One of Prof. Carraro's greatest strengths lies precisely in this. To have not only been a great researcher, but to have worked hard, with great commitment, constancy and passion, to spread knowledge and to favor the encounter between international and intergenerational ideas.

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