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Assembly 4: the home of clinical physiology in the European Respiratory Society

Meet the Assemblies

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During the second half of the 20th century, respiratory physiology has been one of the core disciplines in respiratory medicine. Undoubtedly, clinical and basic physiologists were crucial to creating the European Respiratory Society (ERS) 25 years ago. What does “respiratory physiology” mean today? And what does respiratory physiology mean to ERS?

Let’s take a patient with chronic obstructive pulmonary disease (COPD) who has serious limitation in performing exercise. Although this is not a surprise, it is not obvious how to answer to a simple question like “what causes this limitation?”. Is it because the patient’s end-expiratory volume, already abnormally high at rest, progressively increases during exercise due to expiratory flow limitation leading to intolerable dyspnoea associated with the lack of inspiratory reserve? Is it because the lower limb muscles in our COPD patient are atrophied, weak, fatigable and metabolically inefficient? Is it because lung hyperinflation and excessive use of respiratory muscles adversely affect cardiocirculatory function and thus ventilatory/locomotor muscle interactions?

Is it a combination of these factors? Are we missing something in the complex series of phenomena wherein ventilation, gas exchange, blood flow, haemoglobin, muscle oxygen/carbon dioxide transport and oxygen utilisation/carbon dioxide production all contribute? Or do we need to better characterise structural alterations in the lungs of our patient by imaging?

This is just an example of the interesting problems in the integrative physiology of disease that have important practical implications; understanding which mechanisms underlie a clinical feature helps to better tailor treatment, for example. At ERS, Assembly 4 is the right place for debating these kinds of questions. It is the place where physicians and physiologists meet. It is the place for clinical physiology.

More than 1200 ERS members with these kinds of interests are organised into three groups: “Clinical respiratory physiology, exercise and functional imaging” (group 4.1), “Sleep” (group 4.2) and “Pulmonary Circulation” (group 4.3). Clinical physiology spans many different areas, so there are many points of contact not only between these



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three groups but also with groups of other Assemblies. These continuous links and contacts lead to a large number of initiatives, such as successful symposia at annual ERS meetings, research and education projects, Task Forces, research seminars and awards.

Group 4.1, formed by about 400 members, was established few years ago by merging the groups “Gas exchange and exercise” and “Respiratory structure and function”. The Group, which is very active, is formed of a heterogeneous and multidisciplinary set of members who have a strong interest in different aspects of applied respiratory physiology, and study the mechanisms underlying alterations in respiratory structure and function. Lung and airway mechanics, lung ventilation, lung perfusion, gas exchange, respiratory and peripheral muscle function, control of breathing, and dyspnoea are typical topics covered by the Group. The study of exercise physiology and pathophysiology, in particular the factors limiting exercise in the different respiratory diseases, represents a core area of initiatives, which include very popular and successful courses on exercise testing. More recently, the Group has also covered the area of respiratory functional imaging, which is the modern way of performing functional evaluation of airway and lung function, traditionally dominated by tests like spirometry, which are of course useful but limited in their specificity. A Task Force organised by the Group is working to create a comprehensive flow chart of up-to-date lung function testing, where all techniques, both traditional and recent, are positioned relative to each other. In the future, the Group is going to further strengthen its links and initiatives with other scientific groups, such as those dealing with physical activity and rehabilitation.

Group 4.2 is the largest in Assembly 4 (over 600 members). The Group represents an opportunity for those scientists and clinicians who are interested in understanding the mechanisms through which breathing is regulated during wakefulness and sleep. Major interests include the nature of disordered respiratory control in disease, and the causes and consequences of sleep disordered breathing. By organising a specific Task Force, the Group has recently focused its activities on raising the awareness of sleep and breathing problems at the level of the European Commission, to identify sleep-related disorders as a major priority in European Union health policies, and to campaign for greater research funding in this area.

The Group carries out educational and scientific activities in cooperation with the European Sleep Research Society and respiratory sleep medicine is a HERMES (Harmonised Education in Respiratory Medicine for European Specialists) project. In the future, the Group will reinforce and better coordinate the activities in the paediatric field, in addition to adult respiratory sleep medicine, and in pathophysiological and translational science.

The objectives of Group 4.3 (about 300 members) are multiple. Firstly, the Group aims to provide a link between basic research with strong physiological background and the pathophysiology of pulmonary arterial hypertension. The Group also develops postgraduate training in the physiology of pulmonary circulation and the diagnosis and treatment of pulmonary vascular disease, and promotes pulmonary circulation as a physiological and clinical topic among members of the ERS and outside the society, with a special emphasis on joint meetings with other learned societies (*e.g.* the American Thoracic Society, the American Heart Association and the European Society of Cardiology (ESC)). Finally, the group is working to generate consensus statements and recommendations that will be endorsed by the ERS (in conjunction with other learned societies) on pulmonary vascular disease. The group is also actively collaborating and joining efforts with the ESC, namely its working group on Right Ventricular Function.

Assembly 4 is highly active and motivated. Just to give an example, in the last ERS International Congress in Amsterdam, the Netherlands, 517 abstracts (12.8% of the total) were presented in several sessions, together with a large number of symposia, challenging clinical cases, Educational Skills Workshops, Grand Rounds, Lunchtime Sessions, Meet the Expert sessions and Postgraduate Courses. A strength and, at the same time, a weakness of the Assembly is that the Groups are quite heterogeneous, and this will be an issue to be faced in the next future. Nevertheless, there are no doubts that Assembly 4 plays a crucial role within the ERS. Applying clinical physiology to respiratory disease not only leads to new insights into how the respiratory system works when it is stressed but also helps to identify new areas where diagnosis and treatment is going to transform the lives of large numbers of people suffering respiratory problems. That's why there will always be a home for clinical physiology at the ERS and this home's door will always be open to those willing to contribute!