Teaching physiology – challenges, successes and rewards

Teaching Special Interest Group co-convenors Judy Harris and Richard Helyer (pictured below planning a new physiology practical class) report on an ‘information-gathering’ workshop held at King’s College London in July for staff responsible for leading and co-ordinating physiology teaching.

This workshop, funded by The Physiological Society’s Education Committee, enabled representatives from 24 institutions across the UK to discuss the challenges, successes and rewards associated with physiology teaching. We also discussed how The Society in general, and the Teaching SIG in particular, could support members with a keen, and possibly principal, interest in teaching.

A widespread current challenge in teaching is preserving physiology as a distinct discipline in the eyes of undergraduates when there are now so few physiology departments in the UK – only one identified physiology department (Bristol) was represented at the workshop and even that was shortly to merge into a department of physiology and pharmacology! An on-line questionnaire completed by around half of the participating HEIs (Fig. 1) showed that, whereas it is still possible to graduate with a degree in physiology from a number of universities, many more students now graduate with a generalist degree in biomedical sciences.

Another common experience was the dwindling number of staff willing and able to teach systems physiology despite its fundamental importance, not only for physiology undergraduates, but also for a wide range of vocational degrees such as medicine, dentistry, nursing and veterinary science. It was agreed that this is largely due to the recent explosion in molecular physiology combined with a cultural shift in the expectations of staff, many of whom no longer expect to teach outside their research area.

These challenges have been partially resolved in several HEIs by the recruitment of physiology teaching specialists and there was a lively debate on the need to support and reward such staff. Prem Kumar (Society Meetings Secretary) suggested that The Society could consider offering full membership to teaching specialists and encourage them to attend meetings and workshops by providing travel grants and bursaries. The new Themed Meetings – at which teaching-related...
As well as the clear potential for Members of The Society to exchange teaching materials and practices amongst ourselves, there was also support for future teaching events to include invited speakers who could address topics such as current changes in the school science curriculum, the school/university interface, learning styles, and educational research approaches that could be applied to physiology.

The workshop was a very useful and enjoyable ‘networking’ opportunity and threw up several ideas for future events – we will do our best to incorporate them into a lively programme of activities for the Teaching Special Interest Group!

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### Teachers turn students for the day...

... but are they as well behaved as their own students? Jayne Hastings, organiser of the latest Physiological Society supported teachers workshop reveals all

A recent A-level teachers’ workshop hosted by the Department of Biomolecular and Sport Sciences at Coventry University drew upon the strengths of lecturers who teach physiology on biological, biomedical, and sport and exercise science degree programmes. The workshop was aimed at those teaching physiology to A-level Biology, PE or Sport Science students by including aspects of cardiovascular and respiratory physiology and metabolism common to both subject areas.

The programme was designed to update the knowledge and practical skills of teachers, provide ideas for teaching physiology in their own classrooms and generally excite interest in the subject area. The laboratory activities were designed to be very ‘hands-on’ and allowed teachers to use equipment which they may not normally have access to in their school/college, but tutors taking the laboratory sessions did provide suggestions for, and give the opportunity to use, alternative and more accessible equipment when available.

Bodycare® products supply equipment used in physiology and sport science teaching to many educational establishments in this country and we were very pleased that they could support the event, with Spencer Newport joining us for the day. The event was organised in collaboration with The Physiological Society.

After a welcome cuppa on arrival, the teachers had a brief introduction followed by a session on Careers in physiology by Rob James. A brief introductory talk then followed to bring the teachers ‘up to speed’ on the physiology behind each of the laboratory sessions that they would be taking part in during the day. It must be noted that the teachers were very well behaved in the classroom and sat quietly throughout this part of the morning (unlike most of their students I bet), but were eager to get into the laboratory after another cuppa!

The first lab session, lead by Andi Drake, allowed teachers to look at methods to determine metabolic rate and energy expenditure using expired air analysis as well as various procedures for the direct determination of oxygen uptake which included the Douglas bag method and a breath by breath online method. Bodycare’s Spencer Newport put a couple of the teachers through their paces on the cycle ergometer whilst demonstrating Fitmate®, a desktop size metabolic system designed by COSMED. This system performs fitness assessments and functional evaluation, including accurate measures of Resting Metabolic Rate (RMR) and oxygen uptake during either sub maximal or maximal oxygen uptake (VO2max) tests.

After a lovely lunch in the University’s Riley Lounge, the teachers then went on to look at the cardiovascular system lead by Ray Carson. Teachers used the PowerLab® setup with LabTutor® software to look at the electrocardiogram (ECG). In this lab