Postgraduate medical education: methodology

Sports medicine is a relatively new and rapidly growing specialty that as yet does not have an organised postgraduate training programme. Currently, doctors enter sports medicine from a variety of backgrounds and rely on ad hoc training. If sports medicine is to be encompassed in the NHS, it is important to address the issue of training and organise effective postgraduate training in the specialty. Sports medicine has the opportunity to develop a training programme from a "clean slate", uncomplicated by existing practice. The specialty therefore has the potential to learn from other examples of good practice and avoid some of the problems experienced with higher specialist training in other specialties.

Postgraduate medical education refers to education provided after full registration and before consultant appointment or equivalent career grade. Medical education should be seen as a continuum, with postgraduate medical education supplementing undergraduate education and being continued after appointment to a career post as continuing medical education.[1] There have been major reforms in the United Kingdom's postgraduate medical education during the last decade, prompted in part by demands for greater harmonisation with other European states.[2] There has also been increasing realisation of the importance of self directed learning and development of life long learning skills to allow the doctor to keep pace with continually changing medical knowledge.[3] Previous ad hoc individually organised postgraduate medical education has been replaced in various specialties by structured training programmes providing shorter and more focused training with a predominance of education over service provision.[4]

Such training programmes are overseen and regularly monitored by joint higher training committees or the equivalent set up by the royal colleges to ensure that standards of training are maintained across the country. The committees lay down the criteria for training in the individual specialties and approve training programmes on the basis of suitable facilities in terms of consultant supervision, staffing levels, clinical experience, and opportunities for research. Likewise the committees grant certificates of accreditation (CSST) to trainees on satisfactory completion of specialist training to mark the end of training and show that the doctor has met the requirements for independent practice.

The Department of Health report entitled *Training for the future* made several recommendations about higher specialist training.[4] The training programmes should have clearly defined entry criteria and published curricula with clearly stated objectives. The aim should be to convert the trainee into a doctor ready to take up a consultant post and capable of independent unsupervised practice. Training should create a doctor who can keep pace with the rapid advances in medicine, recognise the patient's perspective, appreciate the skills of other health professionals, and work effectively in a team. The programme therefore needs to address not just clinical skills and knowledge, but also other aspects of clinical competence expected of a doctor such as communication skills, attitude, team working, audit, research, teaching, and self directed learning. The training should offer closely supervised practical experience and protected time for both formal teaching and private study. Protected time for teaching applies to both the trainees and the trainers. The trainee should be provided with support. Every trainee should be nominated a specific educational adviser who can offer a channel for communication and give guidance and support. Current training programmes vary as to how they interpret this: some nominate a consultant trainer for each subspecialty attachment, others nominate a supervisor for the entire training programme. The latter arrangement would seem to offer the opportunity to establish a better support mechanism, but care needs to be taken to ensure appropriate selection of a supervisor for the individual trainee.

Teaching the teachers

Teaching is of vital importance, and those consultants who take on this role should be highly motivated; they should be taught how to teach and their efforts should be valued and rewarded. Teaching offered to trainers should include effective teaching techniques, appraisal and assessment skills, and giving constructive feedback. Teachers need to learn to be facilitators of learning rather than providers of information, and should encourage students to become self directed learners with the desire and skills for life long learning. To achieve this, teachers must provide students with appropriate direction and guidance within a constructive and supportive educational environment. Such skills are generic to all specialties. Relevant courses are becoming more widely available and are usually set up by universities or royal colleges. Consultant trainers need to be made aware of the availability and relevance of such courses and should be encouraged to attend them.

Feedback, appraisal, and assessment

There should be regular two way feedback between the trainee and trainer, to allow improvements both in the trainee's learning and in the training offered. Training programmes should include integrated and structured appraisal and assessment mechanisms. Assessment should include both formative and summative assessment. Formative assessment should occur during a period of training to provide timely feedback to the trainee with the prime intention of helping him or her to progress. Summative assessment occurs at the end of a period of training to check that the objectives have been achieved. Trainers should also promote self assessment by encouraging trainees to reflect on and critically evaluate their own work, so that they can identify their own strengths and weaknesses. The content of assessment should reflect the objectives of the training programme. Assessment should be competency based and criterion referenced. This involves the setting of clear standards expected of the trainee at various stages in their training. Assessment has proved difficult in many specialties, reflecting the current lack of standards and the difficulties both trainees and trainers find in giving constructive feedback. In addition to informal feedback, there should be formal appraisal sessions, with planned confidential meetings taking place between the trainee and trainer at these times. These meetings provide an opportunity to step back from daily work in order to review and discuss performance and progress, so as to agree an educational action plan designed to help the student to progress.

Subspecialty training

The final years of training should be flexible and adapted to the individual trainee's needs so as to allow acquisition of subspecialty training or general training according to the

trainee's future career plans. Training centres should be encouraged to offer subspecialty training in areas of particular local expertise. Currently, such opportunities are not maximised in all specialties or training schemes. Likewise the trainee should be encouraged to transfer between centres to achieve a period of further training in his/her special interest, but again at present such transfer is not always made easy for trainees.

Role of research in training

It is generally agreed that an understanding of the principles of research and the ability to assess critically the results of published work are essential attributes of a doctor. The skills required include developing an inquiring mind, learning how to design studies, managing projects, collecting data, analysing results, writing reports, and presenting at scientific meetings.[5] Active participation in research is the most effective means of acquiring such skills. All doctors should therefore be encouraged to undertake research during their training. Unfortunately some of the research currently performed by trainees is of questionable educational value. Common problems contributing to this are poor support and unsatisfactory supervision. Trainees should be supervised by a consultant with an interest in research. There should also be flexibility in the system to allow the trainee the choice to take time out from clinical training in order to carry out a period of research without this adversely affecting his/her future career.[3 6]

If sports medicine can institute all of the above, it has the potential to develop a model training programme for higher specialist training.

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The role of a masters degree as part of higher training in sports and exercise medicine or why do a masters?

Sports medicine is now recognised as a specialty in some European countries. As an emerging discipline, sports and exercise medicine needs to develop a solid academic footing if it is to gain acceptance by the Royal Colleges in Great Britain and Ireland. A higher professional university degree is a requirement for work in sports and exercise medicine clinics abroad, especially schemes associated with the Fellowship of the Australian College of Sports Medicine. Health insurance companies, professional athletes, and teams now demand a much higher standard of care from their sports physicians, and this makes the higher status of further postgraduate university qualifications even more important.

In Great Britain and Ireland, practitioners engaged in masters programmes develop an understanding of training methods from a wide variety of sports and the prerequisite knowledge to monitor and optimise the health and performance of athletes whether recreational or elite.

The standard postgraduate training schemes are usually hospital based and offer little direct exposure to elite and recreational athletes for practitioners with an interest in sports and exercise medicine. The teaching of musculoskeletal history taking and examination is generally poor even within most hospital orthopaedic departments. Sports medicine relies on a broad based knowledge and is better suited to the general medical training found in the disciplines of accident and emergency and family medicine.

The educational attractions of a masters course are that it provides a multidisciplinary approach to the teaching of functional and applied anatomy, exercise and applied physiology including laboratory based practical fitness testing, and emergency medicine. A knowledge of the techniques and expertise of other practitioners, including physiotherapists, nutritionists, podiatrists, biomechanists, psychologists, coaches, and athletic trainers, is also provided. The teaching of functional clinical anatomy, especially in some universities, has a low priority; however, this knowledge is the key to an understanding of the possible differential diagnoses of most sports related injuries.

The athletes themselves appreciate practitioners with a knowledge of the demands of training and competition for their particular sport. A university based taught masters incorporates sports specific lectures and workshops given by coaches, team medical officers and physiotherapists, and athletes from different sports. Even the best part time, weekend, or distance based course will never be able to address all these areas or pull together the various disciplines that encompass the many facets of sports medicine.

Programmes incorporating research and evidence based medicine are also essential if sports and exercise medicine is to develop. The research thesis required by a masters programme, which is either laboratory or field based and is examined by an external examiner, gives the practitioner an opportunity to develop research skills and a scientific basis for the study of all aspects of sports medicine.

A masters course gives the participants an opportunity to familiarise themselves with the theory, practice, and guidelines for the scientific monitoring and training of athletes from a wide range of sports. The university based masters course here at Trinity College also gives the doctor an opportunity to work with various college sports teams and gain practical experience in how to deal with coaches, athletes, and managers before they act as fully fledged team doctors. It is also essential that they have participated and passed a cardiopulmonary resuscitation course and be able to cope with on field emergencies, particularly potential spinal injuries. A pre hospital trauma/side line care course is a vital element in sports medicine training. It is compulsory to pass both these elements in examinations for the