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# Expert practical operative skills teaching in Trauma and Orthopaedics at a nominal cost

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ABSTRACT

*Background and purpose:* The AO Foundation Operative Fracture Management course is the gold standard in training courses currently available for trainees at ST3 level. We have devised a low cost operative skills course comprising instructional lectures, demonstrations and practical dry bone workshops. To assess the quality of teaching, candidates' feedback was analysed in two cohorts for the running of the course over two consecutive years: 2008 and 2009.

*Methods:* Trainees were given short instructional lectures by consultant surgeons followed by workshops, with a trainer to candidate ratio of 1:4. A trauma inventory was provided by Stryker Trauma UK, ensuring a nominal fee for each candidate (£50). Feedback was anonymously collected according to a Likert scale and analysed using non-parametric methods appropriate for ranked data.

*Main findings:* Twenty one of 22 (95%) candidates gave feedback in 2008 and 18 out of 18 candidates (100%) in 2009. The teaching provided was highly rated consistently for both years, apart from an informal session on theatre tips and tricks in 2008. This was not repeated in 2009 to allow more practical time. Only one session, an intramedullary nailing lecture, had a significant difference in scores between the 2 years ($p = 0.044$) because of improved scores in 2009.

*Conclusions:* Due to changes in training, trainees have reduced exposure in theatre and this has implications for the early stages of acquiring practical operative skills. As an adjunct to the AO course, practical skills teaching by consultants in the format of a low cost skills workshop outside of a theatre environment can be achieved with support from a trauma implant supplier.



## Introduction

Since the advent of Modernising Medical Careers (MMC) in 2007 and the adoption of the European Working Time Directive (EWTD), the time available for training junior surgical trainees has reduced.[1–4] Traditionally, surgical training involved a long period of apprenticeship-based training with a high clinical workload.[5,6] Orthopaedics and Trauma requires skills in soft tissue handling, in addition to skills for handling bone and hard tissues such as in arthroplasty and osteosynthesis. Training for

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surgical trainees can be difficult in a time pressured environment, when there are other important competing clinical priorities for trainers.[7,8]

Despite run-though training and moves towards streamlining the process of becoming a consultant, there are few readily accessible courses for junior Orthopaedic trainees. Currently these include the AO Principles in Operative Fracture management and Royal College of Surgeons of England Core Skills in Orthopaedic operative surgery courses. Both are expensive[9,10] and the AO course in particular is over-subscribed.[10]

We have devised a course as an adjunct to the AO Principles course, to improve practical skills and operative knowledge in a small group environment at an affordable cost. This was organised over a weekend, 2 months after the August changeover, with a course fee of £50 allowing trainees greater chance to attend without requiring formal study leave arrangements, and, maximum potential to employ these skills in the remainder of their year of training. The aim of this study was to assess whether, as an adjunct to the AO course, practical skills teaching organised in this format is feasible. This would demonstrate whether developing a low cost course to complement existing conventional trauma operative courses by utilising existing resources and sponsorship is achievable, and indicate whether this makes a useful contribution to training.

## Methods and materials

Trainees were given short instructional lectures by consultant orthopaedic surgeons followed by workshops, with a maximum ratio of 4 candidates per consultant, the course timetable for 2008 is displayed in Table 1. Sponsorship was provided by Stryker UK limited, who supplied the saw bones, trauma implants and loan kits in addition to other consumables including a course bag for each candidate, certificates, name badges, catering and the cost of the course dinner. The venue for the course was the Calderdale and Huddersfield NHS Trust Learning Centre and advertisement provided through a low cost website (Mr Site Ltd, London UK). All of the Consultants had a background in teaching on postgraduate Orthopaedic courses including AO and Royal College courses, and were willing to provide their time without any formal remuneration. Through minimal overheads therefore, a small fee of £50 per candidate was possible.

**Table 1 – Course programme 2008.**

| Time | Session | |
|---|---|---|
| 10.00 | Principles of bone healing | Lecture |
| 10.15 | Concepts of fixation (absolute & relative stability) | Lecture |
| 11.00 | Types of screws | Lecture |
| 11.15 | Coffee break | |
| 11.30 | Principles of plating (compression and conventional versus locking plates) | Lecture |
| 12.30 | Lunch | |
| 13.15 | Small fragment workshop | Workshop |
| 14.30 | Intramedullary nailing | Lecture |
| 15.00 | Proximal femoral nailing | Workshop |
| 15.45 | Coffee break | |
| 16.00 | Intramedullary nailing: tibia and femoral | Workshop |
| 17.30 | Close of Day 1 | |
| Day 2 | | |
| 09.00 | Hip fracture classification and treatment | Lecture |
| 09.15 | Hip fracture: DHS fixation | Workshop |
| 10.15 | Coffee break | |
| 10.30 | Damage control Orthopaedics | Lecture |
| 11.00 | External fixation | Workshop |
| 12.00 | Theatre tips and tricks | Lecture |
| 12.15 | Evaluation and course feedback | |

During the course, candidates provided feedback anonymously by a questionnaire which employed a Likert rating scale of 1–5 (poor to excellent), for each instructional lecture and workshop they attended. Results were analysed using Wilcoxon rank-sum test, by Graph pad Prism software.

## Results

Twenty one of 22 (95%) candidates completed feedback questionnaires in 2008, 18 out of 18 (100%) candidates completed feedback in 2009. In 2008 the male to female ratio was 17:5 and in 2009 it was 16:2. The majority of candidates were in Core surgical training (CT) 1/2 level training posts: 17 of 22 candidates in 2008 and 16 of 18 candidates in 2009. Feedback rating scores for each session for the consecutive years are shown in Table 2. Median scores were either 4 or 5 in both years, apart from an informal Theatre Tips and Tricks session in 2008 which had a score of 3. Of note, there were two sessions in 2008 which had lower first quartile scores (score 3) compared to the other sessions. These were 2 lectures on bone healing and intramedullary nailing. The inter-quartile ranges of these sessions improved in 2009 so that they were in line with the others. Aggregate analysis of the rating scores by categorising them into lectures or workshops is displayed by box and whiskers plot (Fig. 1). This showed there was an improvement in the scores from 2008 to 2009 according to the means (cross inside the box), which may not have been evident from the medians. Overall, one session had a statistically significant improvement, the intramedullary nailing lecture ( $p = 0.044$).

Qualitative feedback from candidates showed that there was a high approval for the course in both years. In 2008, three candidates commented that more time was required for the bone healing lecture, as there was a large amount of information to cover. This was addressed in 2009, and there was no further negative feedback collected on this session. Seven candidates commented in 2009 that handouts accompanying the course would be useful, which is currently being addressed for future courses.

## Discussion

A reduction in formal sessional commitments, where a junior surgical trainee has supervised training and education from a consultant, has been identified as one of the effects of rota compliance with the time constraints of EWTD.[5] Qualitative feedback from candidates indicated that there is a paucity of practical training in theatre experienced by trainees. Many of the candidates reiterated the importance of the approachability