E4000 question

⌘ Which sections of an article are most useful when conducting a critical appraisal?

A. Abstract and References	B. Conclusion
C. Introduction and Methods	D. Methods and Results

This game also works well with an international audience, as the millionaire programme has been shown on networks around the world. You can change the money to Euros, dollars, or other currencies, depending which country you are teaching the session in. This format can be used for other topics, such as evidence-based practice or critical appraisal.

Why not try adapting other games for teaching sessions……?

NICOLA PEARCE-SMITH, MA, MCLIP
Information Scientist
Oxford, UK

EBM notebook

Physiotherapy for tennis elbow

*Procedures used in Bisset L, Beller E, Jull G, et al. Mobilisation with movement and exercise, corticosteroid injection, or wait and see for tennis elbow: randomised trial. BMJ 2006;**333**:939.*

We used 8 physiotherapy sessions of 30 minutes each, consisting of mobilisation with movements (MWM) and exercise,[1] which were applied in order to address key physical impairments of lateral epicondylitis (LE) that cause reduced functional ability in day to day living (ie, lateral elbow pain and reduced capacity to grip without pain).

THE MOBILISATION TECHNIQUE

The 2 MWM techniques primarily used were the lateral glide of the elbow (LAT) and posterio-anterior glide of the radiohumeral joint (PA). MWM are a family of techniques with a common theme,[2] which is the application of a joint glide (*mobilisation*) that is sustained during the performance of an active physical task (*movement*) by the patient. The physical task in LE is usually a pain free grip measured in units of force by a dynamometer. The treatment technique is performed without any pain and a substantial improvement in grip force is expected during its execution. In the case of a patient with LE of the right elbow, the LAT is performed with the patient supine and the affected upper limb fully supported on a treatment table in relaxed elbow extension and forearm pronation (figure 1). The therapist, standing by the patient's right side and facing the patient's head, stabilises the patient's distal humerus laterally with the heel of his or her left hand and 1st web space. The therapist then applies, from the medial side, a laterally directed glide to the ulna through the 1st web space of his or her right hand. While sustaining the glide, the therapist asks the patient to perform a pain free grip. The change in force with the glide in-situ is noted. It is important to note that ongoing use of this technique is contingent upon a substantial change in pain free grip force during the application of the technique. If successful, the technique may be repeated 6–10 times during a single treatment session.

Patients should be warned of the possibility of an exacerbation of pain 48 hours after first treatment. Minor adjustments in the direction of the glide[3] and force applied[4] can be made to the technique to optimise outcome. The same principles apply to the PA technique. With the patient positioned as described above, the therapist applies a posterio-anteriorally directed glide to the head of the radius with his/her thumbs (figure 2). In addition to these MWMs, taping was applied in such a way as to replicate the force applied by the MWM.[1] Taping was encouraged to further sustain the pain relieving effects between treatment bouts,[2] but more critical to the condition's resolution was ongoing self treatment by the patient.

THE EXERCISES

A progressive resistance exercise programme for the wrist extensors (figure 3), flexors, radial and ulnar deviators, as well as the forearm supinators and pronators, was used to restore muscle condition, as it is poor in LE. General upper

Figure 1 The lateral glide MWM.

Figure 2 The postero-anterior glide of the radio-humeral joint MWM.

Figure 3 Exercise for the wrist extensors with rubber band resistance.

limb conditioning exercises were also included.[1] There were 4 key prescription criteria: (i) pain free exercise, (ii) slow movements (eg, 8 seconds per repetition), (iii) regular review by the physiotherapist, and (iv) exercises performed with correct form. Concentric, eccentric, and isometric modes of contraction were used; the latter was used if the former were not pain free. Resistance was supplied mainly in the form of rubber bands, but free weights and manual resistance may also be used. With regards to exercise parameters, we used a 3 set structure of approximately 12–18 repetitions performed daily, which is in line with an endurance-strength adaptation protocol. The overriding principle was a structure that encouraged adherence to regular exercise and no exacerbation of the elbow pain. One pragmatic aspect of the physiotherapy protocol was that therapists were able to modify the MWM and exercises in response to patient feedback and response during and in between sessions.

BILL VICENZINO, BPhty, Grad Dip Sports Phty, MSC, PhD
Leanne Bisset, BPhty, MPhty
(Musculoskeletal + Sports)
School of Health & Rehabilitation Sciences, University of Queensland
St Lucia, Queensland, Australia

1 Vicenzino B. Lateral epicondylalgia: a musculoskeletal physiotherapy perspective. *Man Ther* 2003;**8**:66–79.
2 Mulligan B. *Manual therapy - "NAGS", "SNAGS", "MWMS"*. Wellington, NZ: Plane View Services, 1999.
3 Abbott JH, Patla CE, Jensen RH. The initial effects of an elbow mobilization with movement technique on grip strength in subjects with lateral epicondylalgia. *Man Ther* 2001;**6**:163–69.
4 McLean S, Naish R, Reed L, *et al*. A pilot study of the manual force levels required to produce manipulation induced hypoalgesia. *Clin Biomech* 2002;**17**:304–8.

Methods in research: key principles of graph construction

The aim of this series of articles is to highlight papers that may help in the construction and understanding of journal articles.

Results in a graphical form are one of the best ways to convey information in a research paper. However, key elements for the construction of graphs are generally not well understood, which then lead to poor representations and misunderstandings. Graphs generated depend on the statistical package used in the analysis (Excel, SPSS, STATA). In our research methods journal club we discussed the paper by Puhan *et al*,[1] which describes the basic requirements for adequate construction of a graph to improve understanding. The paper aimed to identify key principles of graph construction and to review guidance on graph construction provided by medical journals. The paper goes on to describe these key principles: (a) visual detection of data symbols, (b) estimation of values and important relationships, and (c) context. The advice given to authors for 7 core journals is also discussed. Puhan *et al* reach the conclusion that generally the information provided in most journals differs from what in theory are the principles for graph construction, and that major gains could be obtained from updating this advice.

Key points:

(a) A correctly constructed graph should comply with 3 basic requirements:

1. Visual detection of data symbols
2. Estimation of values and important relationships
3. Context

(b) Medical journals do not provide authors with adequate guidelines for correct graph construction

(c) Limitations as to the types of graphs that can be generated are set by the software packages used for the data handling and analysis.

RAFAEL PERERA, DPhil
University of Oxford Department of Primary Health Care
Oxford, UK

1 Puhan MA, ter Riet G, Eichler K, *et al*. More medical journals should inform their contributors about three key principles of graph construction. *J Clin Epidemiol* 2006;**59**:1017–22.