With more and more information becoming available to physical therapists, much of it on the Internet, it is increasingly important to be selective in what is read. In this, the second in a series of three Keynotes, Joan M. Walker continues her step-by-step approach to assessing how useful an article will be to your practice.

The first paper looked at the value of review articles, how to assess their quality, and how to select useful papers simply by reading the abstract.

This Keynote looks in more detail at the criteria a physical therapist should use, when determining whether a review article or original research is worth reading. The content is based on “Critical Evaluation of Research in Physical Rehabilitation” by A. Helewa and J.M. Walker, and articles in the Canadian Medical Association Journal and the Journal of the American Medical Association.

For every paper you locate, there are five key questions you must ask to determine quality. Only if an article passes all these tests, can you conclude that the article is definitely worth your time.

1. Does it address a focused question?

A well-focused question guides the researcher into developing clear and appropriate means of data collection and analysis. The meaning of the study and its relevance to physical therapy and your own practice will be clear. In other words, does it pass the “So what?” test. Subjects that don’t have applications to various conditions, sites or populations invariably don’t.

A well-focused question should specify the factors and behaviours to be examined, along with the types of data to be examined, the main variables, the target population, and the time period. You must then decide whether the conclusions apply to your own clinical situation. If they do, read on. If not, discard.

2. Are appropriate inclusion and exclusion criteria used?

If the article you are considering is a review article (combining data from various studies) it should clearly define why certain studies were included and others left out. Such criteria are important, because they decrease the likelihood of any bias in the results and conclusions. The last thing you want is a review in which only the studies that support the reviewer’s viewpoint were selected.

Ask whether:
- All the studies included were published?
- The studies included had sufficiently similar designs?
- The studies selected correspond to the questions you want answered?
- The reviewers considered all clinically important outcomes?
- The reviewers used the appropriate inclusion and exclusion criteria to select articles and avoid bias.
- The criteria were agreed by more than one reviewer.

3. How likely is it that relevant studies were omitted?

In assessing this, you should look whether studies were omitted because of a time limit or because of the language used. It is also important to have some understanding of whether the database used was appropriate to the topic. In this computer age, we should avoid the assumptions that references published more than ten years ago are outdated or irrelevant, or that all relevant literature will be listed in some database (Medline, for example, only lists 55% of journals of interest to physical therapists).

It’s worth bearing in mind that editors tend to publish many more studies with positive outcomes than those with negative outcomes – this can skew the analysis in review articles.

4. Does the paper focus on or include randomised controlled trials?

If you want the best car money can buy, you might get a Land Rover, a Lexus or a Lamborghini. And if you want the best evidence on efficacy,
usefulness or even harmful therapy, then study to look for is a randomised controlled trial (RCT). When you are looking for evidence whether a treatment works, these are the studies to concentrate on initially. (See panel)

**Randomised Controlled Trials**

**What to look out for**

You can tell a RCT by the presence of terms such as “randomised trial”, “random allocation” and “random number allocation” in the abstract or methods section. But beware of look-alikes. When patients are “assigned at random” to one therapy or another, it can mean the assignment was done at the investigator’s convenience and this can lead to misleading evidence of efficacy.

In an RCT, every patient involved should have a known probability (usually 50%) of receiving one of the treatments being compared. There will be a control group that usually receives no intervention.

Check that the sample size isn’t too small – even with randomisation, this could make the results misleading. You could toss a coin ten times and get 7 heads by chance. In 100 tosses it would be unexpected to get 70 heads.

Masked or blinded RCTs are the best – it means the researchers and clinicians don’t know who received what treatment until they compile the results. This is not always possible – for example, in a study of manual versus motorised traction, the therapists involved can clearly tell who is receiving which treatment. But some blinding can occur if the therapist measuring the outcomes is unaware of which treatment each patient received.

5. Does the paper have other strengths?

In cases where randomisation is not possible, you will need to bear in mind the relative strengths and weaknesses of other study designs. Other study types, listed in order of reliability, are cohort studies, case-control studies and case series. Cohort studies are the best of these, but even here you should be cautious in accepting the study’s conclusions.

In cohort studies, there are two groups, both with a certain condition – say low back pain – but with only one group given treatment, for example traction. The outcome is improvement in low back pain (yes or no). More in the yes group suggests efficacy, but history and potential to respond may not be equally distributed between the two groups.

**In summary**

Abandon the article and go to the next on your list if the sample selection was unclear, the method of sampling inappropriate, the sample inappropriate for the question posed, or if the sample is not similar to your clinical population.

“No” answers to questions relating the studies’ validity also should cause you to go to the next article.

Consistent use of a set of structured questions will assist you to be an efficient, critical reader

Further reading

CMAJ First Series. Department of Clinical Epidemiology & Biostatistics. How to read clinical journals: I. Why to read them and how to start reading them critically; II. To determine etiology or causation; V. To distinguish useful from useless or even harmful therapy. Can Med Assn J 1981,124:703-710, 985-990, 1156-1162.


Guyatt GH, Sackett DL, Cook DJ. Users’ guides to the medical literature. II. How to use an article about therapy and prevention. Are the results of the study valid? JAMA 1993, 270:2598-2601.


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