National Council for

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Osteopathic Research

Evidence-based practice tutorial – An Introduction to Searching on the Internet

Information gathered from the internet can be useful in practice. The internet is uncontrolled and a significant amount of information can be commercial and inaccurate. However, the internet can be a very useful source of information about medical specialties, the American Osteopathic Association, images for presentations, consumer organisations and charities e.g. BackCare and provide access to free online medical journals such as BMJ (an annual fee of £20-00 will be charged for personal access to BMJ from January 2005) www.bmj.com, NELH www.nelh.nhs.uk and for London based osteopaths HILO www.hilo.nhs.uk. The choice of sites that you use to access information is therefore very important. In order to access a website, you must first select a search engine.

Selecting a Search Engine:

Search engines rely on computer programmes called spiders or robots to crawl the Web and latch onto the words on each page. Keywords related to the topic are typed into a search "box" and the search engines scan its database and returns information from its files that link to websites. Using a search engine is a matter of trial and error, but you will soon find one you feel is the most efficient for your needs. Some examples are:

www.Google.co.uk www.metacrawler.com

www.askjeeves.co.uk www.metafind.com

www.dogpile.co.uk www.excite.co.uk

www.onelist.com www.bigfoot.com

www.lycos.com www.hotbot.com

www.uk.yahoo.com www.AltaVista.com

Once the search engine page has been displayed, search terms can be placed in the search box e.g. typing "osteopathy" can give access to a number of sites including the GOsC, BOA, the accredited colleges of osteopathy, the OCC, a number of private clinics and sites selling books on osteopathy. There is usually an option to limit the search to the United Kingdom or to include the whole of the world wide web. Other sites are not easy to find unless the specific address is known e.g. http://meridianinstitute.com.

HOW TO SEARCH

Once a search engine has been selected it can be helpful to use a site such as Pub Med (this can be accessed simply by typing "pub med" into the search box or the correct address, which is www.ncbi.nlm.nih.gov/entrez/query.fcgi), when looking for research information. There are then 5 basic steps that can be followed when preparing to use Pub Med:

1. State what you want to find.

2. Identify keywords.

3. Select synonyms and variant word forms.

4. Combine synonyms, keywords and variant word forms.

5. Check your spelling.

1. State what you want to find:

The most important part of any search is to have a clear question formulated, either mentally or in written form; without this a significant amount of time can be spent simply going around in circles. Four key components of a question must be considered when looking for information relevant to practice. The question guides the search:

P   **P**opulation or Patient: Who are the patients about whom you need further information?

I   **I**ntervention or Indicator: What is the osteopathic treatment plan, allopathic management, diagnostic test, pharmaceutical management, surgical procedure or dietary change you are interested in?

C   **C**omparator or Control: What is the alternative treatment strategy, technique or other procedure that you will be comparing your intervention to?

O   **O**utcome: What effect will the intervention being considered have on the patient?

A search can now be made using each component: It is helpful to consider synonyms for each of the components considered e.g.

(Patient OR synonym 1 OR synonym 2) AND

(Intervention OR synonym 1 OR synonym 2) AND

(Control OR synonym 1 OR synonym 2) AND

(Outcome OR synonym 1 or synonym 2).

Example:

Question: "In young adults who have had one episode of acute low back pain of unknown cause, compared with other young people who have had no episodes of cause low back pain, what is the increased risk of further episodes?"

Patient/population: young adults OR young people OR adolescents.

Intervention/indicator: one episode of acute low back pain.

Comparator/control: no acute low back pain.

Outcome: further episodes of acute low back pain.

In Evidence Based Practice (EBP) research questions can include a variety of examples: interventions, aetiology and risk factors, frequency, diagnosis, prognosis and prediction. In each case the PICO method can be used to formulate a suitable question.

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2. Identifying Keywords:

When conducting a search, break down the question or topic into key concepts.

Example I. When looking at premanipulative testing of the cervical spine and the potential for vertebrobasilar insufficiency (VBI) keywords could be: VBI test, cervical spine rotation, vertebral artery blood flow and manipulation.

Example II. When looking at cervical range of movement and the relation to cervicogenic headache, keywords could be cervical mobility, cervical spine, cervicogenic headache, manual examination, flexion, extension and rotation.

Example III. When comparing spinal manipulation and epidurals in the treatment of sciatica, keywords could be: manipulation, lumbar spine, drug therapy, sciatica, epidural and pain.

If an answerable question can be formed before the search begins, as shown earlier, the keywords will often be present in the question.

3. Select synonyms and variant word forms:

e.g. Sciatica, leg pain, lower extremity, sciatic nerve etc.

4. Combine synonyms and variant word forms.

Many of you will have heard of the Boolean system when searching, examples of this are given below:

BOOLEAN OR

OR   OR

Low Back pain   OR   Lower extremity pain
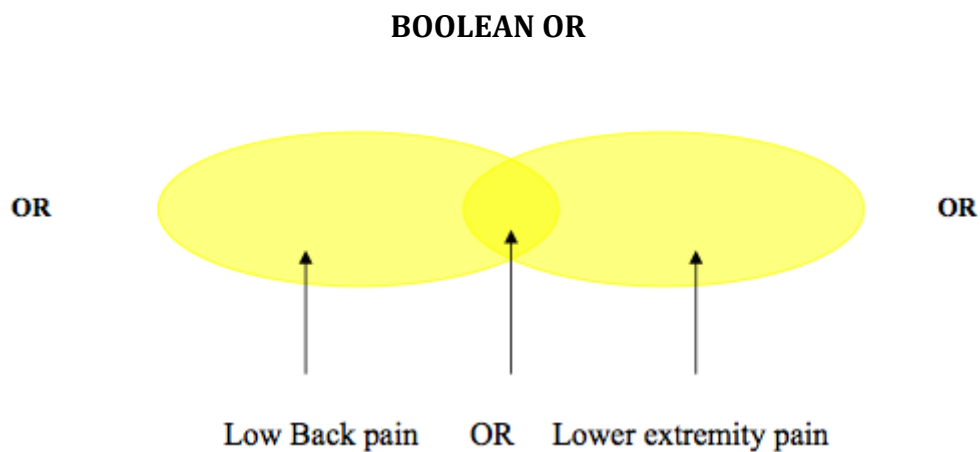
RETRIEVES ALL ARTICLES WITH EITHER KEYWORD

e.g. if "**low back pain OR lower extremity pain**" are the key words, this will produce **more references (17435)** as papers will appear concerning ether low back pain or lower extremity pain as separate entities. Examples of titles of papers that could appear are:

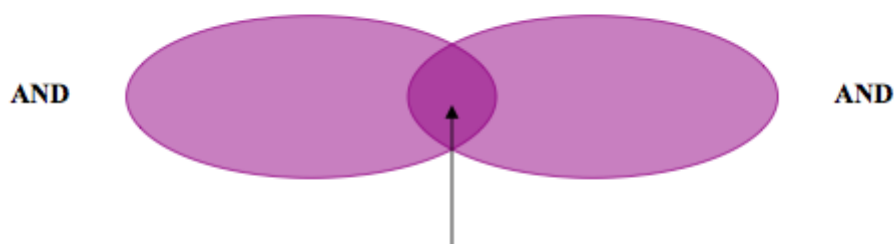"Associations between activities and low back pain in adolescents."

"Returning athletes with severe low back pain and spondylosis to original sporting activities with conservative treatment."

"Ethanol sclerotherapy

"Quality of life in patients with vascular malformations of the lower extremity."

"Lumbar spine arthroplasty using the ProDisc II."

BOOLEAN AND

Low back pain and lower extremity pain

RETRIEVES <u>ONLY </u>ARTICLES WITH <u>BOTH</u> KEYWORDS

e.g. if **low back pain AND lower extremity pain** are the key words, this is likely to produce **fewer references (328)** as it will target references with only low back pain and lower extremity pain within the same paper. [In many search engines, the plus sign (+) is equivalent to the Boolean AND]. Examples of titles of papers that appear are:

"Cauda equina syndrome in patients with low lumbar fractures."

"Leg length inequality in humans: a new neurophysiological approach."

"Pyriformis syndrome and low back pain: a new classification and review of the literature."

"Differential diagnosis of hip disease versus spine disease."

Truncation:

A few search engines support truncation and wildcard features that allow variations in spellings or word forms. The asterisk symbol (*) tells the search engine to return alternate spellings for a word at the point the asterisk appears.

E.g. osteopath* will return references with osteopath, osteopathy and osteopathic.

5. Check your spelling:

Search engines return references with words which match the keywords chosen. If a word is misspelled, this will produce references where the word is also misspelled which are unlikely to be useful. It is also helpful to remember that "American English" can produce slightly different spellings to those in common usage in the United

Kingdom and Europe. E.g. paediatric/pediatric, oedema/edema and ischaemia/ischemia.

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