Searching PubMed: a basic guide

This guide is designed to help you search PubMed effectively but some of the following principles will also help you search other databases. PubMed provides details of articles, conference proceedings and data from thousands of peer-reviewed journals within the following areas: health, medicine, pharmacy, pharmacology, life sciences and bioengineering. Coverage is international. It is important that you do not limit your searches to PubMed as no single database indexes all relevant literature on a given topic – check the library’s webpages for your subject to find other databases: https://library.bath.ac.uk/home

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1. Accessing PubMed
- It is best to connect to PubMed using a link in the Library website. If you are a student/researcher in health, biology/biosciences or pharmacy/pharmacology, go the Library homepage: https://library.bath.ac.uk/home and then click the relevant link for your subject (right hand column).
- Then click ‘search the literature’ where you may find lists of links to databases including PubMed.
Connect to PubMed. Alternatively, you can connect using the link in the Library Catalogue.
2. Thinking about search terms - read this section before searching PubMed

2a Search terms

When you conduct a basic PubMed search, the database looks for your search terms within the titles and abstracts (summaries) of journal articles. **Think carefully** about your search terms before entering them into PubMed. To help you do this, **look at your assignment title / research question** and identify the most important words or phrases that appear in it i.e. write down those words or phrases that distinguish it from any **other** assignment title or research question.

For this exercise, please either use your own title or use the following title as an example:

"Investigate how the biomechanical load within a jump impacts upon the anterior cruciate ligament"

2b. Sub-themes

The following are the most important words/phrases that appear within the title above. Each represents a separate **sub-theme** that relates to the overall theme of the title

<table>
<thead>
<tr>
<th>Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jump</td>
</tr>
<tr>
<td>Anterior cruciate ligament</td>
</tr>
</tbody>
</table>
2c. Thinking about alternative words or phrases

Think about the potential range of alternative words and phrases that could be used to describe each separate sub-theme (for example, *injuries* can also be defined as *fractures* or *damage*). Consider terminology that you already know from academic books, journal articles, lectures and tutorials, as well as more commonly-used language.

**Why do this?** This will help you decide which words to enter into PubMed’s search boxes. Also, if you enter a large range of relevant search terms, you are more likely to increase the number of useful search results. **Useful tip:** You might find it helpful to write down your alternative words/phrases in separately themed rows as follows:

<table>
<thead>
<tr>
<th>Sub-theme</th>
<th>Alternative words/phrases</th>
<th>Any others?</th>
</tr>
</thead>
<tbody>
<tr>
<td>anterior cruciate ligament</td>
<td>ACL</td>
<td></td>
</tr>
<tr>
<td>Load</td>
<td></td>
<td></td>
</tr>
<tr>
<td>jump</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Entering your search terms

3a. Enter PubMed and click on Advanced Search

![PubMed Advanced Search Builder](image)
Every time you enter a row of search terms, another blank row will appear so you can enter at least three sets of search terms, as relevant to your topic.

**3b. Enter your search terms**

- Enter each set of search terms (i.e. each sub-theme) into its own separate search box.
- Enter the word **or** between each word/phrase (it doesn’t have to be entered in capitals)

<table>
<thead>
<tr>
<th>1st search box</th>
<th>anterior cruciate ligament <strong>or</strong> ACL</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd search box</td>
<td>load*</td>
</tr>
<tr>
<td>4th search box</td>
<td>jump*</td>
</tr>
</tbody>
</table>

**In the above example**, note the default “And” that appears between boxes. This means that at least one word/phrase from each search box will appear in each of your search results.

**PubMed Advanced Search Builder**

```
(((anterior cruciate ligament or acl)) AND load*) AND jump*
```

**Edit**

**Builder**

- **anterior cruciate ligament or acl**
- **load**
- **jump**

[Search] or [Add to history]
3c. Useful search tips!

Truncating words using an asterisk

As in the examples above, enter an asterisk at the end of the stem of a word, as relevant, to find variations – this might help increase your number of search results e.g.

fractur* searches for fracture, fractures, fracturing, fractured… however, note the following!

In PubMed, it’s advisable to try searching both with & without asterisks – when entering some search terms, including an asterisk can reduce numbers of relevant results (unlike Web of Science).

The reason for this: many PubMed records for journal articles include MeSH Subject Headings which define the article's content. When you enter your search terms, PubMed looks for records with any MeSH headings that match your search term. However, if your search term includes an asterisk, PubMed will not be able to map it against the MeSH thesaurus and therefore your results may not include some articles that are relevant to your topic.

Searching for a specific phrase

You can enter “speech marks” around a phrase so that PubMed searches for only those words in exactly the same order.

Click the search button and take a look at your results: consider the range and relevance in relation to your topic. Note the “related data” option on the right-hand side.

“Sort by” options: note the link just above your results. Re-sort your results so that they appear in order of “best match” (i.e. potential relevance) rather than “most recent”.

<table>
<thead>
<tr>
<th>Article types</th>
<th>Clinical Trial</th>
<th>Review</th>
<th>Customize…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text availability</td>
<td>Abstract</td>
<td>Free full text</td>
<td>Full text</td>
</tr>
<tr>
<td>Published Commons</td>
<td>Reader comments</td>
<td>Treadling articles</td>
<td>Publication dates 5 years 10 years Custom range…</td>
</tr>
<tr>
<td>Species</td>
<td>Humans</td>
<td>Other Animals</td>
<td>Clear all Show additional filters</td>
</tr>
</tbody>
</table>

Search results
Items: 1 to 20 of 87

1. The effect of overhead target on the lower limb biomechanics during a vertical jump test in elite femoral athletes.
   Mok KM, Bahr R, Krosshaug T.
   PMID: 20189132
   Similar articles

   Stuecklen MC, MeliMont OB, Gorman AO, Sayers MG.
   J Sports Sci. 2015 Dec 1;7: (Epub ahead of print)
   PMID: 20144000
   Similar articles

   Fox AS, Bonacci J, McLean SG, Spittle M, Saunders N.
   Sports Med. 2015 Dec 1;7: (Epub ahead of print)
   PMID: 20120710
4. Refining & filtering your search

4a. Retrieving too few results?
Consider whether any further terms exist on your topic and if so, add these to the relevant search boxes (again entering the word or in between multiple terms). Try another search. If you still retrieve few results, search more broadly on the topic. You could so this by identifying the least significant of the sub-themes and excluding the associated search terms from your next search.

4b. Retrieving too many irrelevant results?
Consider whether any of your search terms are of only marginal relevance – if so, remove these and try another search. If you continue to retrieve many irrelevant results, consider whether your topic contains a further sub-theme. If so, enter the search term(s) associated with that sub-theme in a further search box.

Using filters
You can filter your results so that only certain "article types" appear e.g. clinical trials, legislation, meta-analyses, practice guidelines, randomised controlled trials, systematic reviews, reviews, validation studies… You can also click "show additional filters" to filter by species, age group and sex.

Try filtering your search results using various filter options. Please note! The next time you search PubMed, you may need to clear your filter settings from your previous search.
Search results
Items: 1 to 20 of 87

1. **Anterior cruciate ligament injury alters preinjury lower extremity biomechanics in the injured and uninjured leg: the JUMP-ACL study.**
   PMID: 24963391
   Similar articles

2. **Relative strain in the anterior cruciate ligament and medial collateral ligament during simulated jump landing and sidestep cutting tasks: implications for injury risk.**
   Bates NA, Nesbitt RJ, Shearn JT, Myer GD, Hewett TE.
   PMID: 26150838
   Similar articles

3. **Elevated gastrocnemius forces compensate for decreased hamstrings forces during the weight-acceptance phase of single-leg jump landing: implications for anterior cruciate ligament injury risk.**
   Morgan KD, Donnelly CJ, Reinbolt JA.
   PMID: 25216505
   Similar articles

4. **Jump landing biomechanics and knee laxity change across the menstrual cycle in women with anterior cruciate ligament reconstruction.**
   PMID: 24588229
   Free PMC Article
   Similar articles

5. **A Systematic Evaluation of Field-Based Screening Methods for the Assessment of Anterior Cruciate Ligament (ACL) Injury Risk.**
   Fox AS, Bonacci J, McLean SG, Spittle M, Saunders N.
   Sports Med. 2010 Dec 1. [Epub ahead of print]
4c. Proximity searching:

Proximity searching can be useful if there are lots of potential variations of a phrase:

“carbohydrate-protein drink” - “carbohydrate drink”
“strength and power training” - “training for power and strength”

By entering the word **near** and a number, you can search for two search terms to appear near each other e.g. within 5 words of each other. For example:

```
carbohydrat* near/5 (drink* OR beverage* OR fluid* OR liquid*)
```

5. **Engaging with PubMed records (abstracts, key words…)**

Click the title of the result in which you are interested. You will then enter the full PubMed record for the relevant article/document. This will normally include an abstract summarising the findings and methodologies of an article, and possibly key words and MeSH headings.

**Note the range of terminology** used across the full record. By increasing your awareness of relevant terminology, this may help you modify/expand your search terms and in turn, help you retrieve a greater number of relevant results.
6. **Checking if you can view the full article**

6a. Checking online availability

- Within the full PubMed record of an article, look towards the top right-hand corner. Here, you may find a publisher’s logo – if so, click this and you may be able to access the full text.

- It is best not to use the “text availability” filters to identify all the articles that are available to you – this does not identify articles available through the Library’s subscriptions.

6b. If the full article is NOT available online via PubMed:

- Search the Library Catalogue via the Library homepage: [https://library.bath.ac.uk/home](https://library.bath.ac.uk/home) - Search for the journal title (not the article title). If we provide the journal and its Catalogue record states ‘copies available’, we provide a print copy (click ‘copies available’ to find out if we hold the relevant year/volume/issue). If we do not provide the article in any format, and it is potentially important for your work, please contact your Subject Librarian for advice.

7. **Broadening your perspective on a topic**

Note that there are links to “similar articles” within PubMed records. You can also click on an author’s names to find other articles indexed by PubMed by the same author.
8. **Saving/emailing results**

a. It is good practice to save multiple copies of selected results so that you have “back-ups” in the event of losing one set (e.g. in your email accounts, memory sticks etc…). Click/select the box next to any individual result(s) of interest.

b. Click the **Send to** drop-down arrow where you will find multiple options for saving including an email option and creating a file of references in MEDLINE format. The file can be saved in any location of your choice or/and imported into EndNote Online/EndNote Desktop. If you are interested in saving them to EndNote, refer to: [https://library.bath.ac.uk/referring/reference-management](https://library.bath.ac.uk/referring/reference-management)

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9. **Try a MESH-only search?**

You could also try a MeSH-headings-only search – this may help you retrieve a more refined and relevant set of results (e.g. including some results that you may not have found through a standard search). A guide to MeSH-only searches is available: [https://www.bath.ac.uk/publications/pubmed-resource-guides/](https://www.bath.ac.uk/publications/pubmed-resource-guides/) - if you are interested in other advanced features (e.g. saving searches/email alerts), please refer to: [http://www.bath.ac.uk/library/pass.bho/infoskills/pubmed-pgskills.pptx](http://www.bath.ac.uk/library/pass.bho/infoskills/pubmed-pgskills.pptx) - if you would like any further support in using this database, please contact your Subject Librarian.

Peter Bradley 30/08/2019