PUBMED OVERVIEW

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WHAT’S PUBMED?

Hopefully a rhetorical question
PUBMED

• NLM’s web-based interface to MEDLINE, (the premier biomedical health sciences database of literature).

• 27 million+ citations and abstracts
  • biomedicine and health
  • life sciences
  • Dentistry
  • behavioral sciences
  • chemical sciences
  • bioengineering.
  • veterinary medicine
  • (and more!)

• Freely available online to search but should be accessed by you at: www.wrnmmc.libguides.com/home (to increase chances of being linked to the full-text article) or with your NCBI account
Go to the library's homepage

www.wrnmmc.libguides.com/home

Click on PubMed, located on the left hand side of the page.

Because searching shouldn’t be overwhelming!
In the clinic, you meet 2LT Roark, a 29 year old active duty male. 2LT Roark is a little overweight and has been working hard to get into shape for the Army physical fitness test. He runs and bikes fairly regularly. He remembers hearing years ago during high school cross country that chocolate milk might be better than sports drinks, such as Gatorade, after a long workout for muscle recovery. 2LT Roark wants to know if this is actually true.
BEFORE YOU SEARCH:

HAVE YOUR QUESTION & DETERMINE SOME KEY CONCEPTS

- P (Population) = Post-exercise/after workout
- I (Intervention) = Chocolate milk
- C (Comparison) = (Sports drink OR water OR Gatorade)
- O (Outcome) = Muscle recovery

Concept 1 = exercise
Concept 2 = chocolate milk / sports drink
Concept 3 = recovery
CREATING A MORE ADVANCED KEYWORD SEARCH – THINK OF SYNONYMS

Concept 1: (_____ OR _____ OR _____ OR _____)

AND

Concept 2: (_____ OR _____ OR _____ OR _____)

AND

Concept 3: (_____ OR _____ OR _____ OR _____)
AND, OR, & NOT

Chocolate Milk

Sports Drink
BACKGROUND INFORMATION:
METHODS OF SEARCHING
In a comprehensive literature review, a combination of keyword and controlled vocabulary searching is the best choice.

Method 1: Keywords
your own terms, synonyms, and “natural language”

Method 2: Controlled Vocabulary
Medical Subject Headings “MeSH” – an authoritative list of terms used to tag articles

A Combo of the two methods
METHOD 1: KEYWORD SEARCHING

For whatever term you enter, the computer will try to find that exact term in any field of the record.

Pro: you capture the most recent articles.

Con: chance of retrieving “false positives” – see image

Abstract
Vasoreactivity is the most basic and direct indicator to reflect the artery vascular functional state in the body. The majority of previous studies have shown that a high-fat diet (HD) is often associated with a variety of cardiovascular diseases. However, the type of exercise that improves vasoreactivity, as is induced by a HD, remains to be elucidated. In the present study, the effects of aerobic moderate-intensity intermittent exercise through swimming were investigated on thoracic aortic vascular ring contraction and free radical metabolism using Sprague-Dawley rat models of common diet (CD: 23 g protein, 49 g carbohydrate, 4 g fat, 5 g fiber, 7 g bone meal and 6 g vitamins per 100 g), HD (peanuts, cake and sweet biscuits in a weight ratio of 3:2:1), CD with intermittent exercise (CIE) and HD with intermittent exercise (HIE). The food utilization rate in the swimming group (CIE) decreased in comparison with the CD group. Leptin index in the CIE group decreased in comparison to that of CD after 8 weeks (P<0.05) and also HIE decreased compared to HD (P<0.05) after 8 weeks. Compared with the HD group, contractile response of the thoracic aortic rings to NA decreased in the HIE group, while high-density lipoprotein cholesterol content increased, total cholesterol, triglycerides and low-density lipoprotein cholesterol decreased (P<0.05), the malondialdehyde (MDA) concentration reduced in the myocardium, but the superoxide dismutase (SOD) level improved (P<0.05). In the HIE group, nitric oxide level was similar to the CD group. Compared with CD, contractile response of the thoracic aortic rings to NA increased in the CIE (P<0.05), the MDA concentration reduced in the myocardium, but the SOD level improved (P<0.05). Tunica media smooth muscle of the thoracic aortic rings in the CIE group arranged more regularly in comparison with the CD group (without swimming training). In conclusion, intermittent exercise improves the thoracic aorta vasoreactivity and function by enhanced antioxidant enzyme activity and reduced free radical generating.

KEYWORDS: high-fat diet; intermittent exercise; vasoreactivity

PMID: 27776080 PMCID: PMC4812592 DOI: 10.3892/endo.2016.484

A Comparison between Chocolate Milk and a Raw Milk Honey Solution’s Influence on Delayed Onset of Muscle Soreness.
Hatchett L, Berry C, Dova C, Wray D, St-Hilaire P, Lafortune A

Abstract
This investigation sought to examine the effect that chocolate milk solution (CMS) and a raw milk solution (RMS) had on lower extremity induced delayed onset muscle soreness (DOMS). Twenty trained male participants completed a set of questionnaires, prior to completing a lower extremity DOMS protocol, to determine the level of discomfort and functional limitations. Once the DOMS protocol was completed, participants were allocated to either CMS or RMS for 7 consecutive days. Statistical analysis revealed that CMS was significantly better at reducing DOMS when compared to RMS (P<0.05).
AUTOMATIC TERM MAPPING (ATM)

• Get used to looking at the Search Details Box!

• Found on the right hand side of your screen, this box will tell you what behind-the-scenes magic PubMed is doing, and what MeSH terms your keywords are automatically mapping to (or not).

• If something funny is happening with your search, this will also tell you why!
Controlled vocabulary are also known as “indexed terms” or subject headings. They are a predefined list of terms (e.g. words, phrases) that is used to tag articles in a consistent way.
As you can see in the image to the right, this article has been tagged with the MeSH “Cacao” and “milk” and “beverages.” If we click on any of these (like Cacao), we will be able to see all of the other articles that are also about that same topic.
We can build a search where we use several Medical Subject Headings to locate articles tagged with the headings of your choice. This ensures maximum precision as the article will definitely be about both of those concepts.
IN A NUTSHELL, MESH...

• **Groups different ways of describing a concept under a single word or phrase**
  • can think of it like one umbrella term for all the synonyms, singular/plural pairs, spelling variants and the like.

• **Makes searching more efficient and precise; reduces the chances you’ll retrieve ‘false positives.’**

• **But—the caveats:**
  • There’s a lag time - it takes 5+ months for an article to be assigned subject headings.
  • Sometimes a MeSH term won’t exist for your concept (but you can suggest new ones!)
  • Sometimes a MeSH term is very new; in those cases, terms will not be retroactively assigned to articles.
PubMed by Publication Date

- All PubMed: 88%
- 2013-2017: 66%
- 2016-2017: 38%

Legend: MEDLINE, "Future MEDLINE", Other
STARTING YOUR SEARCH

From basic to advanced
THE SEARCH: START BASIC AND SIMPLE

Typically, we would start a search in the following fashion (with keywords and ATM) just to get a sense of what's out there.

Chocolate milk exercise recovery
(or however you'd like to break this up – try different things!)

Don’t forget your can switch your viewing format to Abstract so you don’t have to click open every article to read what it’s about!
As you examine your search results, pay attention to the MeSH terms that were used to tag the articles.

Add appropriate MeSH to your list of terms to use (Harvesting) – you can try to incorporate them in future searches.
IMPROVING A SEARCH: IDENTIFYING TERMS

AKA

“HARVESTING TERMS”

• The process that expert searchers use to locate appropriate controlled vocabulary (e.g. MeSH terms) and user-supplied keywords is referred to as “harvesting”
  • We are collecting and gathering all potential terms—including synonyms—that we need to consider when putting together a comprehensive search of the literature.

• Excellent way to keep track of useful search terms and search strategies.

• Essential for systematic reviews and meta-analysis, wherein the Methods section encompasses your search strategy and inclusion/exclusion criteria.
Divide your research questions into distinct topics or concepts. Establishing your question using the PICO format will help, as you have in essence already divided your question into distinct concepts.

Come up with synonyms or keywords to describe each concept.

- Identify the best Medical Subject Headings (MeSH) for each of your concepts. Do the same with controlled vocabulary from other databases.

Tips: use a target article(s) to help get you started.
## EXAMPLE OF HARVESTING TERMS

<table>
<thead>
<tr>
<th>Concept 1: Chocolate Milk</th>
<th>Concept 2: Exercise</th>
<th>Concept 3: Muscle Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Keywords</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>— use your expertise!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Think of variant spellings + synonyms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chocolate milk OR chocolate milks OR (chocolate AND milk*) OR chocolate beverage OR (chocolate AND soy milk) OR etc…</td>
<td>(exercise OR post exercise OR post-exercise OR after exercise OR after workout OR post workout OR activity OR biking OR cycling OR running OR run OR run* OR cycles)</td>
<td>Muscle recovery OR recovery OR muscle OR recover OR recovers OR sore* OR stiffness OR muscle soreness OR muscle stiffness OR …</td>
</tr>
</tbody>
</table>

You don’t have to use all concepts in every search
### Concept 1: Chocolate Milk

**Keywords**
- use your expertise!
- Think of variant spellings + synonyms

**MeSH (PubMed)**

### Concept 2: Exercise

**Keywords**
- (exercise OR post exercise OR post-exercise OR after exercise OR after workout OR post workout OR activity OR biking OR cycling OR running OR run OR run* OR cycles)

**MeSH (PubMed)**

### Concept 3: Muscle Recovery

**Keywords**

**MeSH (PubMed)**
SEARCH EACH TERM (OR GROUP OF CONCEPTS) ONE AT TIME

- Check your search details box to make sure nothing funky is happening. If something weird is happening, go back and check to find out why!
- Don’t forget you can edit the search details box if needed! It’s better to fix your term itself, but you can force the box to cooperate too.
- Consider how to make phrases work in different ways, or use synonyms.
Creating a More Advanced Keyword Search

- Once you have all of your individual concepts searched, click on the Advanced link below the PubMed search box.
- Use the boxes to build your search. Use the “Add” feature so you don’t have to re-type anything. Think about one concept per box; use ORs to join your synonyms (e.g. exercise OR running)
- Purpose: to cast a wide enough net so as to capture more articles.
PubMed Advanced Search Builder


AND •

AND •

AND •

Search or Add to history

History

Add to history

Query

Items found

Time

#3  Add

Search (Exercise[MeSH] OR running[MeSH] OR jogging[MeSH] OR bicycling[MeSH] OR physical exertion[MeSH]) OR (exercise OR post exercise OR post-exercise OR after exercise OR after workout OR post workout OR activity OR biking OR cycling OR running OR run OR run* OR cycles)

3157984

10:32:20

#3  Add


126579

10:32:04

#3  Add


3249200

10:31:46

#3  Add


221899

10:30:29

#3  Add


21978

10:30:21
YOUR TURN!

Let’s try a practice search together – how would you approach this, and how can we make it better?
TROUBLESHOOTING COMMON PROBLEMS: MORE ADVANCED HELP IN PUBMED
SEARCHING WORDS WITH DIFFERENT ENDINGS?

• Truncation of a word and adding an asterisk (*) to the end will allow you to search simultaneously for the different endings of a word.

You can also do a space then a * for different words that might follow each other. Alternately, you can spell out different endings and combine with an OR between words.

Eg. Exam* vs (exam OR examine OR exams OR examining OR examines OR ___)
chocolate milk* ← chocolate milk, chocolate milks, chocolate milkshake
Run* ← run, runner, running, runners (will stop after 600 variations!)
Recovery aid* ← recovery aid, recovery aids
HOW ABOUT PHRASES?

\"\" will search exactly as written

\[tiab\] will force a phrase, and will search for the phrase in the title and abstract

Title abstract searching allows for hyphenation and different spellings of words

You can combine the *\[tiab\] to look for different endings of a word that might appear in a title and abstract

Eg. Chocolate milk*\[tiab\] vs. chocolate milk\[tiab\] vs. “chocolate milk” vs. chocolate milk\[ti\]

\[ti\] after the word will look for just the title; no \[ab\] for just the abstract right now, unfortunately.
WHAT IF I STILL HAVE TOO MANY RESULTS?

• Troubleshoot!
• Then, see if you can adjust your search terms by adding/subtracting pieces (play around with the concepts – you don’t have to put every synonym in there; you can also add more from your PICO to create more specificity).
• Then, Filters and [TIAB]
• Contact Emily for help!
Almost all journal article databases (PubMed, CINAHL, PsycINFO, etc.) allow to apply filters or limits.

Be sure to apply these limits LAST, after you have run your search (otherwise, you risk the change of applying too many limits and may retrieve zero results).

Apply your limits incrementally.

Depending on your search or information needs, good limits include:

- Language
- Publication Date range
- Ages / Age Groups
Customize filters
Bold to activate
* [tiab] vs ““
Check your terms
Add more of your PICO
EMILY, THIS IS TOO MUCH!
WHAT IF I JUST WANT A SIMILAR ARTICLE TO SOMETHING I ALREADY FOUND?
ANOTHER OPTION WHEN YOU’RE SHORT ON TIME BUT UPTODATE ISN’T CUTTING IT:

PUBMED CLINICAL QUERIES

• Specialized PubMed search filters intended for clinicians to limit retrieval to articles based on clinical question type.

• Filters include the following Clinical Study Categories:
  
  • **Therapy:** Retrieves clinical studies that discuss the treatment of disease. This is the search default.
  
  • **Diagnosis:** Retrieves clinical studies addressing disease diagnosis.
  
  • **Etiology:** Retrieves clinical studies addressing causation/harm in disease and diagnostics.
  
  • **Prognosis:** Retrieves clinical studies addressing disease prognosis.
  
  • **Clinical Prediction Guides:** Retrieves clinical studies which discuss methods for predicting the likelihood of disease presence or absence.
Other filters include:

**Systematic Reviews**
This feature is provided to help locate systematic reviews and similar articles.

**Medical Genetics**
Filters citations to topics in medical genetics.
Customize your PubMed account if you’ll be using it with any regularity to save your preferences and searches.

For getting highlighted search terms, permanent linkouts to full texts without going to the library website first, and defaulting to abstract view. Plus the ability to save your searches in an account!
REGISTER FOR A PUBMED – MY NCBI ACCOUNT
### Setting up Preferences + Filters within My NCBI

**Note:** Your account password, email address, and linked accounts are managed in the Account Settings page. You can also access this page by clicking on your hyperlinked username at the top right of NCBI web pages.

#### Common Preferences
- **Username:**
- **Links Display:** Popup Menu
- **Auto Submit:** On
- **Shared Settings:** None

#### PubMed Preferences
- **Abstract Supplemental Data:** Closed
- **Document Delivery:** Loansome Doc
- **Filters & Icons:**
  - Dallas Medical Library
  - Free Full Text
  - Harvard Library
  - Therapy sensitive/broad
  - Therapy specific/narrow
  - Diagnosis sensitive/broad
  - Etiology sensitive/broad
  - Etiology specific/narrow
  - Prognosis sensitive/broad
  - Prognosis specific/narrow
  - Clinical Prediction Guides sensitive/broad
  - Clinical Prediction Guides specific/narrow
  - Child filter
  - Cochrane RCT filter
  - Veterans (Rhoads Allard USUHS)
  - Military or veterans (Tracy Shields Portsmouth VA)
  - Qualitative Research Filter (UW)
  - Dallas Medical Library (Provider Icon)
  - Harvard Library (Provider Icon)
- **Outside Tool:** None Selected
- **Author information:** Off
- **Result Display Settings:** Abstract, 50, Most Recent

#### PMC Preferences
- **Article View:** Remember last selection

#### Gene Preferences
- **Filters & Icons:** None Selected
- **Result Display Settings:** Full Report; Minimized section(s): none; 20; Relevance

#### FTP Preferences

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**Source:** Screenshot of a web page from NCBI showing settings for preferences and filters.
ADDING LINKOUT TO YOUR NCBI ACCOUNT
EMAIL ALERTS: CUSTOMIZED SEARCH ALERT FROM PUBMED

- Use your (free!) PubMed MyNCBI account to save searches and set up search alerts.
- You can opt to be notified daily, weekly, or monthly when new articles match your search criteria.
- Here’s how:
  - Step 1: Log into MyNCBI
  - Step 2: Run your search
  - Step 3: Select “create alert”
  - Step 4: Select the schedule, format and number of items for your alert
After you save a customized search, you can opt in or out of email notifications.

Check your “saved searches” in your NCBI account for updates on articles since you last ran the search.
SAVING SET COLLECTIONS

- You can save a collection of articles in PubMed and store them in your account for access later.
- You can also change their settings to “public” to create a link to share with a coworker or friend, rather than sending giant lists of citations to them.
SAVING TO A COLLECTION

1. Run your search
2. Select the articles you’d like to save
3. Click on “Send To” in the upper right hand side
4. Select “Collections”
5. Click “Add to Collections”
6. Decide if you’d like to add to an existing collection, or create a new collection. If a new collection, name your collection.
7. “Save” and make sure there’s a green check box.
8. If you would like to share this collection, click “edit” collection, then change the privacy from “private” to “public” collection, then copy and paste the link to share with someone.
LOCATING FULL TEXT ARTICLES

• Some databases contain the PDF full text articles within them.

• Others will provide a link to the full text via our Locate@Darnall icon (such as in PubMed). If we do not have the full text, the article may be ordered for you for free via our interlibrary loan service.

• To request articles, go to: http://wrnmmc.libanswers.com/ask

• In order to maximize the chances that you will be connected to the full text articles, ALWAYS access PubMed via the links on the library’s website.

• As you review article abstracts, you should see a purple Locate@Darnall icon to the upper right.

• Click on this link to be connected to the full text article.
QUESTIONS??
MEET WITH ME!

I’m always happy to meet with you in order to provide literature search assistance.

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THANK YOU!