MyResearch Graduate Seminars
Module 3 – Search Strategies and Techniques

Genevieve Gore and Kathryn Jacob
Fall 2018
Objectives

• Learn how to choose search terms from your research topic
• Understand how to search different databases
• Find out how to keep up with your research through saved alerts
Steps to searching

1. Define your question and break it down into its separate concepts

2. Identify database(s) to search

3. Develop a search strategy and run your search
   - Search each concept separately: Combine terms for same concept with OR, repeat for each separate concept
   - Combine sets of different concepts with AND
   - Use parentheses to combine search terms in right order, when needed
   - Apply limits when appropriate

4. Evaluate your results and modify your search
Why searching well should matter to you!

REFERENCES

MAKING SURE NO ONE HAS ALREADY WRITTEN YOUR THESIS

PAPERS FOUND ON ONLINE DATABASE

PAPERS FOUND FROM OTHER PAPERS’ REFERENCE LISTS

TOTAL PRINTED OR PHOTOCOPIED: 248
PAPERS ACTUALLY READ: 107
PAPERS ACTUALLY UNDERSTOOD: 5

PAPERS ACTUALLY RELEVANT TO THESIS: 2
PAPERS INCLUDED IN THESIS REFERENCE LIST: 246

PAPER YOUR ADVISOR WROTE TEN YEARS AGO

PAPERS YOUR ADVISOR HAD FORGOTTEN TO TELL YOU ABOUT

PH.D. STANFORD.EDU
JORGE CHAM © STANFORD DAILY

McGill Library. Everything You Need.
1. Start with your research question

What are some examples of keystone predation in freshwater ecosystems?
2. Identify your key concepts

What are some examples of keystone predation in freshwater ecosystems?
2. Identify database(s)

Database 1

Database 2

J O U R N A L S
Example of a couple of databases for Aquatic Science:

- Web of Science*

- ProQuest Aquatic Science Collection

* Web of Science @ McGill = SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BCI-S, BCI-SSH, ESCI
# Identifying subject-specific databases

<table>
<thead>
<tr>
<th>Use the Library</th>
<th>Find</th>
<th>Subject guides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library account</td>
<td>Books</td>
<td>Agriculture &amp; environmental sciences</td>
</tr>
<tr>
<td>Questions? Ask Us!</td>
<td>Articles</td>
<td>Art, architecture &amp; urban planning</td>
</tr>
<tr>
<td>Hours</td>
<td>Journals</td>
<td>Education</td>
</tr>
<tr>
<td>Librarians</td>
<td>Databases</td>
<td>Engineering</td>
</tr>
<tr>
<td>Workshops</td>
<td>Course reserves</td>
<td>Health &amp; biological sciences</td>
</tr>
<tr>
<td>Branch libraries</td>
<td>Course guides</td>
<td>Humanities</td>
</tr>
<tr>
<td>Room booking</td>
<td>Citation guides &amp; software</td>
<td>Law</td>
</tr>
<tr>
<td>Scan / Print / Copy</td>
<td>Reference materials</td>
<td>Management &amp; business</td>
</tr>
<tr>
<td>Borrowing books, etc</td>
<td>Newspapers</td>
<td>Music</td>
</tr>
<tr>
<td>Interlibrary loan (ILL)</td>
<td>Audio/visual materials</td>
<td>Physical sciences</td>
</tr>
<tr>
<td>Computer finder</td>
<td>Theses &amp; dissertations</td>
<td>Social sciences</td>
</tr>
</tbody>
</table>

McGill Library. Everything You Need.
Very basic search strategy

What are some examples of keystone predation in freshwater ecosystems?
Example of a database: Web of Science

Example of a database that uses textword searching
<table>
<thead>
<tr>
<th><strong>CONCEPT 1</strong> Keystone predation</th>
<th><strong>CONCEPT 2</strong> Freshwater ecosystems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keystone predation</td>
<td>Freshwater</td>
</tr>
<tr>
<td>Keystone predator(s)</td>
<td>River(s)</td>
</tr>
<tr>
<td>Keystone species</td>
<td>Riparian</td>
</tr>
<tr>
<td></td>
<td>Stream(s)</td>
</tr>
<tr>
<td></td>
<td>Lake(s)</td>
</tr>
</tbody>
</table>
Many databases allow truncation:
  - E.g., salmon* retrieves salmon / salmonid*

Consider using quotations for phrase searching:
  - Not always necessary, depends on the database
  - E.g., “marine derived nutrient*”

Combine synonymous concepts with OR:
  - E.g., salmon OR oncorhynchus OR andramodus (Note: capitalization doesn’t normally matter—although it does in PubMed; databases usually treat hyphens as spaces)

Combine different concepts with AND:
  - E.g., (keystone predator concept set) AND (freshwater concept set)

Use parentheses to force the order of execution of the Boolean logic
Combining your terms and concepts

- Start by combining terms that get at the same concept with OR
- After you have combined terms for each concept with OR, combine the distinct concept SETS with AND
Run your search:
Start with your first concept

(“keystone predat*” OR “keystone species”)
Run your search:
Continue with your second concept

(freshwater OR “fresh water” OR river* OR riparian OR stream* OR lake*)
Run your search:
Join your concept sets together with AND
Join your concepts with AND:

(“keystone predat*” OR “keystone species”)

AND

(freshwater OR “fresh water” OR river* OR riparian OR stream* OR lake*)
Question too broad?

- Start with a book on the topic!

- Narrow your results to reviews or book chapters to see how research has been synthesized on the topic by others

- Add a focus to your question, for example:
  - Add another concept to your question, such as a focus on a specific region or climate, or
  - Focus on a specific freshwater ecosystem

What are some examples of keystone predation in stream ecosystems?
Join your concepts with AND:

(“keystone predat*” OR “keystone species”)
AND
(stream* OR riparian)
Activity! On your worksheet:

- Describe your research topic and circle the main concepts
- Copy the main concepts below and brainstorm synonyms
- Share your topic and your concepts with your neighbour. Discuss possible other synonyms. Add them to your chart.
- Stop here! The next steps will come later!
Beyond keywords:
Using subject headings
Subject headings in MEDLINE: MeSH

Terms from a list of over 28,000

Indexers assign
Why bother with subject headings (e.g., MeSH)?

There are > 28,000 MeSH terms

- cancer
- tumor(s)
- tumour(s)
- neoplasm(s)
- neoplastic

Neoplasms/
Effect of reducing caffeine intake on birth weight and length of gestation: Randomised controlled trial.

AB OBJECTIVE: To estimate the effect of reducing caffeine intake during pregnancy on birth weight and length of gestation. DESIGN: Randomised double blind controlled trial. SETTING: Denmark. PARTICIPANTS: 1207 pregnant women drinking at least three cups of coffee a day, recruited before 20 weeks' gestation. INTERVENTIONS: Caffeinated instant coffee (568 women) or decaffeinated instant coffee (629 women). MAIN OUTCOME MEASURES: Birth weight and length of gestation. RESULTS: Data on birth weight were obtained for 1150 liveborn singletons and on length of gestation for 1153 liveborn singletons. No significant differences were found for mean birth weight or mean length of gestation between women in the decaffeinated coffee group (whose mean caffeine intake was 182 mg lower than that of the other group) and women in the caffeinated coffee group. After adjustment for length of gestation, parity, prepregnancy body mass index, and smoking at entry to the study the mean birth weight of babies born to women in the decaffeinated group was 16 g (95% confidence interval -40 to 73) higher than those born to women in the caffeinated group. The adjusted difference (decaffeinated group-caffeinated group) of length of gestation was -1.31 days (-2.87 to 0.25). CONCLUSION: A moderate reduction in caffeine intake in the second half of pregnancy has no effect on birth weight or length of gestation.
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Birth Weight /physiology
Caffeine /adverse effects
Coffee /adverse effects
Gestational Age
Maternal Exposure
Patient Compliance
Pregnancy
Pregnancy Complications /etiology
Pregnancy Outcome

This article is indexed with the MeSH term patient compliance, so we know it is about that topic even if the term isn’t in the title or abstract.

birth weight
body mass
coffee
Denmark
food intake
gestation period
maternal smoking
Pregnancy
smoking
caffeine
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Subject Heading</th>
</tr>
</thead>
<tbody>
<tr>
<td>“natural language”</td>
<td>“controlled vocabulary”</td>
</tr>
<tr>
<td>Database will search <strong>multiple fields</strong></td>
<td>Database will search <strong>descriptor field</strong></td>
</tr>
<tr>
<td>May not be the <strong>focus</strong> of the article</td>
<td>Process involves humans, so results will be <strong>more relevant</strong></td>
</tr>
<tr>
<td>Does not take the <strong>meaning</strong> of the word into account</td>
<td><strong>Meaning</strong> of the word is considered ex. mouse (rodent) vs. mouse (computer mouse)</td>
</tr>
<tr>
<td>Can yield <strong>irrelevant</strong> results</td>
<td><strong>Standard list</strong> of terms defines related synonyms</td>
</tr>
<tr>
<td>Necessary if database does not have a controlled vocabulary, or if subject heading does not exist for your term</td>
<td>Different in each database</td>
</tr>
</tbody>
</table>
Strategies for developing search terms

- Subject headings/controlled vocabulary
  - Databases and articles

- Build from your own knowledge base
  - Use relevant articles you have already found and check their indexing and/or the textwords used by the authors
  - Internal dictionary/vocabulary that you’ve developed

- Reading articles and books
  - Familiarize yourself with terms used
Does leucine combined with resistance training improve muscle mass and function in elderly women?
Does leucine combined with resistance training improve muscle mass and function in elderly women?
Does leucine, combined with resistance training, improve muscle mass and function in elderly women?
<table>
<thead>
<tr>
<th>Concept 1</th>
<th>Concept 2</th>
<th>Concept 3</th>
<th>Concept 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR</td>
<td>Leucine</td>
<td>Resistance training</td>
<td>Aged</td>
</tr>
<tr>
<td>OR</td>
<td>Exercise</td>
<td>Aging</td>
<td>Female</td>
</tr>
<tr>
<td>OR</td>
<td>Weight training</td>
<td>Elderly</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>Weight lifting</td>
<td>Senior</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>Strength training</td>
<td>Old</td>
<td></td>
</tr>
</tbody>
</table>
## Generating synonyms

<table>
<thead>
<tr>
<th>Concept 1</th>
<th>Concept 2</th>
<th>Concept 3</th>
<th>Concept 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR Leucine</td>
<td>Resistance training</td>
<td>Aged</td>
<td>Women</td>
</tr>
<tr>
<td>OR Exercise</td>
<td>Aging</td>
<td></td>
<td>Female</td>
</tr>
<tr>
<td>OR Weight training</td>
<td>Elderly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Weight lifting</td>
<td>Senior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Strength training</td>
<td>Old</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Example of the search in Ovid MEDLINE

### Search History

<table>
<thead>
<tr>
<th>#</th>
<th>Searches</th>
<th>Results</th>
<th>Type</th>
<th>Actions</th>
<th>Annotations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>leucine/</td>
<td>26063</td>
<td>Advanced</td>
<td>Display Results</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>leucine.mp.</td>
<td>73256</td>
<td>Advanced</td>
<td>Display Results</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1 or 2</td>
<td>73256</td>
<td>Advanced</td>
<td>Display Results</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Resistance Training/</td>
<td>5504</td>
<td>Advanced</td>
<td>Display Results</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>exp Exercise/</td>
<td>151084</td>
<td>Advanced</td>
<td>Display Results</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>(weight training or resistance training or strength training).mp.</td>
<td>12037</td>
<td>Advanced</td>
<td>Display Results</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>4 or 5 or 6</td>
<td>155601</td>
<td>Advanced</td>
<td>Display Results</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>aging/</td>
<td>206588</td>
<td>Advanced</td>
<td>Display Results</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>exp aged/</td>
<td>2674725</td>
<td>Advanced</td>
<td>Display Results</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>(aging or aged or elder* or senior*$ or old*).mp.</td>
<td>5494779</td>
<td>Advanced</td>
<td>Display Results</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>8 or 9 or 10</td>
<td>5494779</td>
<td>Advanced</td>
<td>Display Results</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>3 and 7 and 11</td>
<td>99</td>
<td>Advanced</td>
<td>Display Results</td>
<td></td>
</tr>
</tbody>
</table>

**Save**  **Remove**  **Combine with**:  **AND**  **OR**

**Save All**  **Edit**  **Create RSS**  **View Saved**

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Limiting your search

**Age groups**
- Neonates, babies
- Elderly people

**Languages**
- English only
- French, German...

**Publication date**
- Last 5 years
- From 1990 –

**Publication Type**
- Systematic Reviews
- Case histories
Recap: Steps to searching

1. Define your question and break it down into its separate concepts

2. Identify database(s) to search

3. Develop a search strategy and run your search
   - Search each concept separately
   - Combine search terms (AND/OR)
   - Apply limits

4. Evaluate your results and modify your search
Activity!

• Choose an Ovid database
• Find subject headings (if applicable)
• Construct a search using subject headings and keywords (if applicable)
• Try a second database if you have time
Keeping up with your research

- Set up email alerts
Keeping up with your research: database alerts

- Most databases allow you to set up alerts based on the searches you create
- Receive results as an email
Sample email alert from an OVID database

Ovid AutoAlert

From: undisclosed-recipients
To: undisclosed-recipients
Cc: undisclosed-recipients
Subject: OvidSP Results--Test AutoAlert: test

Total documents retrieved: 5

Results Generated From:
Ovid MEDLINE(R) <1996 to July Week 4 2008>
   Ovid MEDLINE(R) <2004 to July Week 4 2008> (updates since 2008-07-21)


Set Search Results
001 Happiness/ 512
002 limit 1 to updaterange="medl(20080721111103-20080728123030)" 5

Unique Identifier
18485989
Status
MEDLINE
Authors
Alam M. Barrett KC. Hodapp RM. Arndt KA.
Authors Full Name
Alam, Murad. Barrett, Karen C. Hodapp, Robert M. Arndt, Kenneth A.
Institution
Section of Cutaneous and Aesthetic Surgery, Department of Dermatology, Northwestern University, Chicago, Ill 60611, USA. m-alam@northwestern.edu
Title
Botulinum toxin and the facial feedback hypothesis: can looking better make you feel happier?. [Review] [90 refs]
Source
Abstract
The facial feedback hypothesis suggests that muscular manipulations which result in more positive facial expressions may lead to more positive emotional states in affected individuals. In this essay, we hypothesize that the injection of botulinum toxin for upper face dynamic creases might...
Module 4 – Getting Your Research Out

• Find where to publish
• Impact factors and citation analysis
• Open access and institutional repositories
• Copyright transfer agreement
• Academic integrity and intellectual property

Thursday, Oct. 18 @ 10:00 (2 hrs)
Schulich Library Room 313
Prepping for Your Lit Review

Learn how to:

• Efficiently keep track of authors’ relevant points
• Critically comment on the literature

Monday, November 12, @ 10:00 (1.5 hrs)
Schulich Library Room 413
Questions?

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