Agenda
Day 1

- IHS Library Services
- What is a Literature Search?
- Creating a Searchable Question
- Explain the Boolean
- Conduct a Search
- Appraise the Literature
- Let’s Get Interactive!
- Questions??
Your IHS Library
Quiet Study Room

- Practically sound proof
- Plenty of outlets!
- No booking necessary!
Availability

Librarians available:
8:00am - 6:00pm
Monday - Friday

INTERPROFESSIONAL HEALTH SCIENCES
Library
SETON HALL UNIVERSITY
Physical Therapy Toolkit

For SHMS Students

Toolkits and links of interest to School of Health and Medical Sciences students:

By Specialty:
- Athletic Training
- Healthcare Administration
- Occupational Therapy
- Physical Therapy
- Physician Assistant
- Speech Language Pathology

Other:
- Staying Current with the Medical Literature: How-to guide to resources that can make staying up-to-date with the medical literature easier.

FYI: You can also book a study room here and request a consultation!
Stop on By!

For general assistance or inquiries, email instlibrary@shu.edu

Kyle Downey, MLIS
Health Sciences Librarian | College of Nursing & School of Health and Medical Sciences Liaison

Tel: 973-642-6967
Email: kyle.downey@shu.edu
Room 1410
How to Conduct a Literature Search?
A Literature Search is:

A Well thought-out and organized search for all* of the published literature on a topic

* Sometimes you don’t need all of the literature
Information Overload

PubMed contains over 27 millions citations as of 2017

https://www.nlm.nih.gov/bsd/bsd_key.html

<table>
<thead>
<tr>
<th>Year</th>
<th># new Citations added</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>765,850</td>
</tr>
<tr>
<td>2015</td>
<td>806,326</td>
</tr>
<tr>
<td>2016</td>
<td>869,666</td>
</tr>
<tr>
<td>2017</td>
<td>813,598</td>
</tr>
</tbody>
</table>
Search Plan

1. Pose a searchable question
2. Find Subject Terms
3. Select the best database
4. Manipulate the database
Creating a searchable question

**Patient**
What are the characteristics of the patient?
What is the condition or disease you are interested in?

**Intervention**
What intervention, therapy, treatment, etc. are you interested in?

**Comparison**
What is the alternative to the intervention (different drug, surgery, etc.)

**Outcome**
What do you want to prove, measure, affect, etc.

**Types of Studies**
Systematic reviews, case studies, Guidelines, Qualitative, Quantitative
Parsing the Question

What are the main concepts in your question?

Sample Question:
Does nutrition therapy improve decubitus (pressure) ulcer healing in an elderly patient?
Creating a searchable question

Does handwashing among healthcare workers reduce hospital acquired infection?

• Patient: Hospital acquired infection
• Intervention: Handwashing
• Comparison: Standard handwashing, no HW
• Outcome: reduce infection rate
Using the Right Terms

subject vs. keyword searching

Controlled vocabulary searching

• Matches terms against a specific field in the record.
• You need to consult a thesaurus (paper or online) to find out what the controlled vocabulary term is for each concept.

Free-text (keyword) searching

• Some concepts have many synonyms. A free-text search statement would mean "OR"ing all those terms together
• Matches terms against words anywhere in record (abstract, title, etc.).
What are some Advantages to Controlled Vocabulary?

• Using the controlled vocabulary can make you search more precise and easier
• Increases the relevancy of results
• The indexers have already done much of the work for you.
• Searchable tree structures of terms can help you find new terms to use.
• NOT all databases use a controlled vocabulary
• New concepts take time to be added
• There is often a lag phase during which the newest articles aren’t indexed
• Controlled vocabularies can contain some very strange things and some concepts may not be handled well
• The controlled vocabulary must be easily searchable
• Trying to understand what is and isn’t in a particular controlled vocabulary can give you a big headache!
Does music therapy help to reduce preoperative anxiety in the surgical patient?

- Anxiety
  - Fear, anxiousness, agitation, worry, nervousness, unease, stress
- Music
  - Recording, CD, are there others?
- Surgery
  - Operation, procedure, excision
- Preoperative
  - Preoperative care, preoperative period, preoperative nursing
Example

• How many words could you think of for the idea of “cancer”?  
  • tumor,  
  • malignancy,  
  • neoplasm,  
  • sarcoma...

• Articles in a database  
  • Article one: “Breast tumors in young women”  
  • Article two: “Surgery for prostrate cancer.”  
  • Article three: “Diagnosing Melanoma.”

All three articles are about types of cancer but different terms are used in titles.
Boolean Logic

What is it?

Boolean logic defined logical relationships between terms in a search. The Boolean search operators are **And**, **OR**, and **NOT**.

- **AND** combines search terms so that each search result contains all of the terms.
- **OR** combines search terms so that each search result contains at least one of the terms.
- **NOT** excludes terms so that each search result does not contain any of the terms that follow it.
  - **Note**: When executing a search, **AND** takes precedence over **OR**.
<table>
<thead>
<tr>
<th><strong>AND</strong></th>
<th><strong>OR</strong></th>
<th><strong>NOT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Each result contains all search terms</td>
<td>Each result contains at least one search term</td>
<td>Results do no contain specified terms.</td>
</tr>
<tr>
<td>The search <em>children AND infant</em> finds items that contain both <em>children</em> and <em>infant</em></td>
<td>The search <em>children OR infant</em> finds items that contain either <em>children</em> OR items that contain <em>infant</em></td>
<td>The search <em>children NOT infant</em> finds items that contain <em>children</em> but do not contain <em>infant</em></td>
</tr>
</tbody>
</table>

**AND, OR, NOT Examples**
Do exercise programs reduce the incidence of accidental falls in the aged population?
Highlight some terminology

Do exercise programs prevent falls?
Falls AND Exercise
Falls AND Exercise
Expand with OR

Exercise

Physical Fitness

Swimming
OR

(Exercise
OR
Physical Fitness
OR
Swimming)
Falls OR Physical Fitness OR Swimming AND
Boolean Refresher

1. Which Boolean operator will give you the most research results?
   1. OR,
   2. AND,
   3. NOT

   Answer: OR

2. The Operator AND, when used to link to concept terms (e.g. diabetes and exercise) will retrieve only those records that contain both concept terms.
   1. True or False

   1. TRUE

3. Using the operator AND to combine concept terms is a good way to increase the number of records retrieved in a search
   1. True or False

   • FALSE (OR increases results)
Let’s Begin A Literature Search

Where Do I Begin?
Two Databases
Let’s Start with a Searchable Question

In patients with cancer, does yoga help improve their quality of life?
Search Terms Used

“Cancer” OR (MH “Neoplasms”) = 202,796

“Yoga” OR (MH “Yoga”) = 3,700

“Quality of Life” OR (MH “Quality of Life”) = 87,076
With Years 2013-2018
What are some limiters/filters to use?
Getting Access to Full Text

14. Results of a Pilot Yoga Intervention to Improve Pediatric Cancer Patients' Quality of Life and Physical Activity and Parents' Well-being.

Orsey, Andrea D.; Park, Crystal L.; Pulaski, Regan; Shankar, Nilani L.; Popp, Jill M.; Wakefield, Dorothy; Rehabilitation Oncology, Jan2017. 35(1): 15-23. 9p. (Article - research, tables/charts) ISSN: 2168-5576

Subjects: Pediatric Care; Cancer Patients; Yoga; Treatment Outcomes; Family Psychosocial Factors; Child: 6-12 years; Adolescent: 13-18 years; Female; Male.

Find@SHU Libraries

Request a copy of this item

Request Item through Interlibrary Loan
Article Request

Enter information below and press the Submit Information button to send.

Describe the item you want

*Title (Journal, Conference Proceedings, Anthology)

Rehabilitation Oncology

*Volume

35

*Issue Number or Designation

1

*Month


*Year

20170101

*ISSN/ISBN (International Standard Serial/Book Number)

1658-3808

*Article Author

Onsey, Andrea D

*Article Title


*Not Wanted After Date

07/13/2019

Will you accept the item in a language other than English?

No

Notes

Put any information here that may help us find the item, as well as any other pertinent information.

Where did you learn about this item?

*Where did you find this item cited?

http://example.com

Compere where you found this citation could be a journal, book, lecture, website, Staton Hall Database, etc.

Date of the work that cited the item.

Volume number of the work that cited the item.

Pages where the item is cited.
• We will do a similar search
• Using MeSH Subject Headings
• Limiters/filters to narrow down our results
• Save our search results
• Create an alert
Search Yoga as a keyword term

Notice we get over 4500 results

Let’s scroll down to view some details on this search
"yoga"[MeSH Terms] OR "yoga"[All Fields]
We have the same amount of results but you can see in detail how the database searched these terms.
Now Let’s See How PubMed Searches the Other Terms

Cancer

Query Translation:

"neoplasms"[MeSH Terms] OR "neoplasm"[All Fields] OR "cancer"[All Fields]

Quality of Life

Query Translation:

"quality of life"[MeSH Terms] OR "quality"[All Fields] AND "life"[All Fields] OR "quality of life"[All Fields]
Let’s Combine our Searches using the Advanced Search Option
<table>
<thead>
<tr>
<th>Search</th>
<th>Add to builder</th>
<th>Query</th>
<th>Items found</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>#15</td>
<td>Add</td>
<td>Search quality of life Sort by: JournalName</td>
<td>333119</td>
<td>12:24:33</td>
</tr>
<tr>
<td>#14</td>
<td>Add</td>
<td>Search &quot;yoga&quot; [MeSH Terms] OR &quot;yoga&quot; [All Fields] Sort by: JournalName</td>
<td>4521</td>
<td>12:24:27</td>
</tr>
<tr>
<td>#13</td>
<td>Add</td>
<td>Search yoga Sort by: JournalName</td>
<td>4521</td>
<td>12:24:21</td>
</tr>
<tr>
<td>#11</td>
<td>Add</td>
<td>Search cancer Sort by: JournalName</td>
<td>3693367</td>
<td>12:24:08</td>
</tr>
</tbody>
</table>
AND ▼
All Fields ▼
"neoplasms"[MeSH Terms] OR "neoplasms"[All Fields] OR "cancer"[All Fields]
AND ▼
All Fields ▼
"yoga"[MeSH Terms] OR "yoga"[All Fields]
AND ▼
All Fields ▼
"quality of life"[MeSH Terms] OR ("quality"[All Fields] AND "life"[All Fields]) OR "quality of life"[All Fields]
Results are significantly narrowed

Now let us use the limiters/filters!
Limiters/Filters

- Some Common Limiters Include:
  - Abstract
  - Publication Dates
  - Species – Human
  - Languages – English
  - Ages
  - Article Types
  - Journal Categories
  - Subjects
Create an Alert

Your PubMed search

Name of saved search: [["neoplasms"] OR "neoplasms"[MeSH Terms]] OR "neoplasms"[All Fields] OR "cancer"[All Fields]] AND "yoga"[All Fields]

Search terms:

Formats: Summary

Number of items: 1 to 20 of 76

Would you like e-mail updates of new search results?

Yes, please.

E-mail: kjs.ownray@shu.edu (chara)

Schedules:

Which day? the first Sunday

Save

Cancel
Save Your Searches

01
You can add articles to a clipboard
* These articles will only be saved to a clipboard for 8 hours

02
You can create a collection
* basically a permeant clipboard

03
You can also email them to yourself or a colleague
Could yoga practice improve treatment-related side effects and quality of life in breast cancer? A systematic review and meta-analysis.

Fan Y1, Xiong L2, Wang Y1, Zhang L1, Liu H2.

@Author information

AIM: To determine if yoga as a complementary and alternative therapy was associated with enhanced health and treatment-related side effects in patients with breast cancer. This systematic review examines whether yoga practice provides any measurable benefit, both physically and psychologically, for women with breast cancer.

METHODS: PubMed, EMBASE, and the Cochrane Library were searched for randomized controlled trials (RCTs) throughout June 2015. We evaluated the quality of the included studies by the Cochrane Handbook 5.2 standards and analyzed the data using the Stata software, version 10.0. Meta-regression and subgroup analysis were also performed to identify additional predictors of outcome and to assess heterogeneity.

RESULTS: Sixteen RCTs with a total of 930 participants were included. Comparing yoga groups to control groups, there was a statistically significant difference in overall health-related quality of life, depression, anxiety and gastrointestinal symptoms. Meta-regression analyses revealed that the duration of yoga practice and type of control group partly explained the heterogeneity. Subgroup analyses revealed that yoga had a positive effect on anxiety only when it had been practiced for longer than 3 months. Only the wait-list control group showed an effect of yoga on physical well-being.

CONCLUSION: The current evidence demonstrates that yoga practice could be effective in enhancing health and managing some treatment-related side effects for patients recovering from breast cancer. In future clinical studies, clinicians should consider the patient’s wishes along with the current best evidence of the effects of yoga practice in their clinical decision-making.

2015 Valley Publishing Asia Pty Ltd.

KEYWORDS: breast cancer; complementary and alternative medicine; meta-analysis; treatment-related side effect; yoga

PMID: 25560636 DOI: 10.1111/jcco.12329
[Indexed for MEDLINE]
Could yoga practice improve treatment-related side effects and quality of life for women with breast cancer? A systematic review and meta-analysis.

AIM: To determine if yoga as a complementary and alternative therapy was associated with effects in patients with breast cancer. This systematic review examines whether yoga practice provides any measurable benefit, both physically and psychologically, for women with breast cancer.

METHODS: PubMed, EMBASE, and the Cochrane Library for randomized controlled trials (RCTs) throughout June 2013. We evaluated the quality of the included studies by the Cochrane Handbook 5.2.1 standards and analyzed the data using the Stata software, version 10.0. Meta-regression and subgroup analysis were also performed to identify additional predictors of outcome and to assess heterogeneity.

RESULTS: Sixteen RCTs with a total of 930 participants were included. Comparing yoga groups to control groups, there was a statistically significant difference in overall health-related quality of life, depression, anxiety and gastrointestinal symptoms. Meta-regression analyses revealed that the duration of yoga practice and type of control group partly explained the heterogeneity. Subgroup analyses revealed that yoga had a positive effect on anxiety only when it had been practiced for longer than 3.5 months. Only the wait-list control group showed an effect of yoga on physical well-being.

CONCLUSION: The current evidence demonstrates that yoga practice could be effective in enhancing health and managing some treatment-related side effects for patients recovering from breast cancer. In future clinical studies, clinicians should consider the patients wishes along with the current best evidence of the effects of yoga practice in their clinical decision-making.
Could yoga practice improve treatment-related side effects and quality of life for women with breast cancer? A systematic review and meta-analysis.

Abstract
AIM: To determine if yoga as a complementary and alternative therapy was associated with enhanced health and treatment-related side effects in patients with breast cancer. This systematic review examines whether yoga practice provides any measurable benefit, both physically and psychologically, for women with breast cancer.

METHODS: PubMed, EMBASE and the Cochrane library for randomized controlled trials (RCTs) throughout June 2013. We evaluated the quality of the included studies by the Cochrane Handbook 5.2 standards and analyzed the data using the Stats software, version 10.6. Meta-regression and subgroup analyses were also performed to identify additional predictors of outcome and to assess heterogeneity.

RESULTS: Sixteen RCTs with a total of 930 participants were included. Comparing yoga groups to control groups, there was a statistically significant difference in overall heart-rate variability of HR, depression, anxiety and gastrointestinal symptoms. Meta-regression analyses revealed that the duration of yoga practice and type of control group partly explained the heterogeneity. Subgroup analyses revealed that yoga had a positive effect on anxiety only when it had been practiced for longer than 3 months. Only the wait-list control group showed an effect of yoga on physical well-being.

CONCLUSION: The current evidence demonstrates that yoga practice could be effective in enhancing health and managing some treatment-related side effects for patients recovering from breast cancer. In future clinical studies, clinicians should consider the patients wishes along with the current best evidence of the effects of yoga practice in their clinical decision-making.

© 2015 Wiley Publishing Asia Pty Ltd.
Results from “See all”

<table>
<thead>
<tr>
<th>Article types</th>
<th>Clinical Trial</th>
<th>Randomize</th>
<th>Customize...</th>
<th>Text availability</th>
<th>Abstract</th>
<th>Full text</th>
<th>Free full text</th>
<th>Link</th>
<th>Send to</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Filters activated</th>
<th>Abstract, published in the last 5 years, Humans</th>
<th>Clear all</th>
</tr>
</thead>
</table>

1. **Could yoga practice improve treatment-related side effects and quality of life for women with breast cancer? A systematic review and meta-analysis.**
   - PMID: 25938039
   - Similar articles

2. **Massage interventions and treatment-related side effects of breast cancer: a systematic review and meta-analysis.**
   - Pan YQ, Yang KH, Wang YL, Zhang LP, Liang HQ.
   - PMID: 24770960
   - Similar articles

3. **Educational interventions for the management of cancer-related fatigue in adults.**
   - Bennett S, Pigott A, Beiler EM, Haines T, Meredith P, Delaney C.
   - PMID: 27833395
   - Similar articles

4. **Aerobic physical exercise for adult patients with haematological malignancies.**
   - PMID: 25346666
   - Similar articles

5. **Yoga in addition to standard care for patients with haematological malignancies.**
   - Feltel S, Meengs JH, Monsey J, Engert A, Stockl N.
   - PMID: 24910750
   - Free PMC Article
   - Similar articles

6. **Pulmonary rehabilitation following exacerbations of chronic obstructive pulmonary disease.**
   - Puhani MA, Gimeno-Santos E, Caten C, Troosters T.
   - PMID: 27930803
   - Similar articles

7. **Non-pharmacological interventions for somatoform disorders and medically unexplained physical symptoms (MUPS) in adults.**
   - van Doessel N, den Beest M, van der Woorden JC, Kleinsteuber M, Leone SS, Terlau B, Numans ME, van der Hardt HE, van Meeveld H.
   - PMID: 25362256

---

**Links from PubMed**

Items: 1 to 20 of 48

---

**Show additional years**
Could yoga practice improve treatment-related side effects and quality of life for women with breast cancer? A systematic review and meta-analysis.

Pan Y\textsuperscript{1}, Yang L\textsuperscript{2}, Wang Y\textsuperscript{2}, Zhang L\textsuperscript{2}, Liang L\textsuperscript{2}.

Abstract

AIM: To determine if yoga as a complementary and alternative therapy was associated with enhanced health and treatment-related side effects in patients with breast cancer. This systematic review examines whether yoga practice provides any measurable benefit, both physically and psychologically, for women with breast cancer.

METHODS: PubMed, EMBASE and the Cochrane Library for randomized controlled trials (RCTs) throughout June 2013. We evaluated the quality of the included studies by the Cochrane Handbook 5.2 standards and analyzed the data using the Stata software, version 10.0. Meta-regression and subgroup analysis were also performed to identify additional predictors of outcome and to assess heterogeneity.

RESULTS: Sixteen RCTs with a total of 930 participants were included. Comparing yoga groups to control groups, there was a statistically significant difference in overall health-related quality of life, depression, anxiety and gastrointestinal symptoms. Meta-regression analyses revealed that the duration of yoga practice and type of control group partly explained the heterogeneity. Subgroup analyses revealed that yoga had a positive effect on anxiety only when it had been practiced for longer than 3 months. Only the wait-list control group showed an effect of yoga on physical well-being.

CONCLUSION: The current evidence demonstrates that yoga practice could be effective in enhancing health and managing some treatment-related side effects for patients recovering from breast cancer. In future clinical studies, clinicians should consider the patient's wishes along with the current best evidence of the effects of yoga practice in their clinical decision-making.

© 2015 Wiley Publishing Asia Pty Ltd.

KEYWORDS: breast cancer, complementary and alternative medicine, meta-analysis, treatment-related side effect, yoga

Cited by 7 PubMed Central articles

- Review: Efficacy of Complementary Therapies in the Quality of Life of Breast C [Front Oncol. 2017]
- Cancer Patients' Knowledge and Acceptance of Physical Activities for Rehabilitation [In Vivo. 2017]
Could yoga practice improve treatment-related side effects and quality of life for women with breast cancer? A systematic review and meta-analysis.

Pan Y1, Yang X2, Wang Y3, Zhang L4, Liang H5

@ Author information

AIM: To determine if yoga as a complementary and alternative therapy was associated with enhanced health and treatment-related side effects in patients with breast cancer. This systematic review examines whether yoga practice provides any measurable benefit, both physically and psychologically, for women with breast cancer.

METHODS: PubMed, EMBASE and the Cochrane Library for randomized controlled trials (RCTs) throughout June 2013. We evaluated the quality of the included studies by the Cochrane Handbook 5.2 standards and analyzed the data using the Stata software, version 10.0. Meta-regression and subgroup analysis were also performed to identify additional predictors of outcome and to assess heterogeneity.

RESULTS: Sixteen RCTs with a total of 930 participants were included. Comparing yoga groups to control groups, there was a statistically significant difference in overall health-related quality of life, depression, anxiety and gastrointestinal symptoms. Meta-regression analyses revealed that the duration of yoga practice and type of control group partly explained the heterogeneity. Subgroup analyses revealed that yoga had a positive effect on anxiety only when it had been practiced for longer than 3 months. Only the wait-list control group showed an effect of yoga on physical well-being.

CONCLUSION: The current evidence demonstrates that yoga practice could be effective in enhancing health and managing some treatment-related side effects for patients recovering from breast cancer. In future clinical studies, clinicians should consider the patient’s wishes along with the current best evidence of the effects of yoga practice in their clinical decision-making.

© 2015 Wiley Publishing Asia Pty Ltd.
Request an Inter-library loan when needed
Could yoga practice improve treatment-related side effects and quality of life for women with breast cancer? A systematic review and meta-analysis.

Authors: Ran, Yuanqing
         Yang, Ketu
         Wang, Yiliang
         Zhang, Liping
         Liang, Hanqing


Document Type: Article

Subject Terms: *YOGA
*BRSTEN cancer treatment
*DRG side effects
Some Helpful Tips

• Practice using both keywords and subject terms
• You can use Google to find other terms
• Play around with AND & OR to expand and limit your search
• NOT isn’t widely used
• Use your limiters/filter!
• Save your results
• If you can’t find the Full Text, Request an Interlibrary loan (ILL)
• Look at the references (in the article, on the database)
Quick Guide on Appraisal

• What is it?
  • Critical appraisal is the process of carefully and systematically examining research to judge its trustworthiness, its value, and its relevance in a particular context.

• When appraising research, keep the following three criteria in mind:
  • **Quality**
    Trials that are randomized and double blind, to avoid selection and observer bias, and where we know what happened to most of the subjects in the trial.
  • **Validity**
    Trials that mimic clinical practice, or could be used in clinical practice, and with outcomes that make sense. For instance, in chronic disorders we want long-term, not short-term trials.
  • **Size**
    Trials (or collections of trials) that have large numbers of patients, to avoid being wrong because of the random play of chance.
What you should be looking for

Ask yourself these questions when reading a study:

**The Introduction**
- What is the subject and purpose of the study?
  - Are they clearly stated?
- How does this report differ from previous publications on the subject?
  - Does the author discuss the differences?
- Are the assumptions and limitations of the study described?
  - What are they?
- Does the author(s) present specific questions and clearly state their hypothesis?
Literature Review

• Is the related literature fully covered and described?
• Are the most important findings from other studies presented?
• Is the review well organized?
TRIP Database searches these simultaneously.
Mitochondria: Structure, Function and Clinical Relevance

George LM* and Kin A
Department of Medical Cell Biology, University of Saskatchewan, Canada
*Corresponding author: Lucan Mc George,
Department of Medical Cell Biology, University of Saskatchewan, 105 Administration Place, Saskatoon, Saskatchewan, Canada
Received: May 30, 2017; Accepted: June 22, 2017; Published: June 29, 2017

Abstract

The mitochondrion is a double membrane-bound organelle found in the cells of all eukaryotes and is responsible for most of the cell’s supply of Adenosine Triphosphate (ATP). As the central “powerhouse of the cell”, mitochondria (also referred to as mitochondrion) serve a vital function and they have been implicated in numerous human diseases, including midichlorian disorders, heart disease and circulatory failure, and autism. In this paper, the structure and function of the midichlorian is reviewed with a view to understanding how the pathophysiology of midichlorian disorders can point the way towards translational treatments.

Keywords: Cell biology; mtDNA; Translational; Novel therapeutics; Midichlorian disorders

Introduction

The midichlorian (pl. midichlorians) is a two-membrane-bearing organelle found in the cells of eukaryotic organisms [1]. Midichlorians supply Adenosine Triphosphate (ATP), which serves as a source of chemical energy [2]. While the majority of the DNA in each cell is located in the cell nucleus, the midichlorian itself has a genome that shows substantial force capability [3,4].

Midichlorians are typically 0.75-3μm across but they have variable size and shape [1]. Unless specially stained, they are too small to be visible. Beyond supplying cellular energy, midichlorians perform functions such as Force sensitivity, cell differentiation, signaling, and maintaining control of cell growth and the cell cycle [5]. Midichlorial biogenesis is regulated in conjunction with these cellular processes. Midichlorian dysfunction may be responsible for several human diseases, including autism, midichlorian disorders, cardiac dysfunction, and force failure [6].

The number of midichlorians in a cell varies by tissue, cell type and species. Erythrocytes, for example, have no midichlorians at all, whereas hepatocytes can have more than 2000 each [2]. The organelle is divided into regions with unique functions: the inner and the outer consist of proteins enounced in a phospholipid bilayer [8]. This bi-membrane floor plan means that a midichlorian consists of five distinct parts [9], namely:

1. Outer midichlorian membrane,
2. Inter membrane space (between inner and outer membranes),
3. Inner Midichlorian membrane,
4. Cristae (folds of the inner membrane)

The matrix

The midichlorian is enveloped by the outer membrane, which is roughly 70 angstroms in thickness [10]. Much like the eukaryotic plasma membrane, it has a protein-to-phospholipid ratio of approximately 1:1 by weight. It features many integral membrane proteins called force porins. The outer membrane also contains enzymes including fatty acid Co-A ligase, lymurene hydroxylase, and monoamine oxidase. These undertake functions such as the elongation of fatty acids, epinephrine oxidation, and tryptophan degradation [10,11].

The inner midichlorian membrane, on the other hand, contains...
Mitochondria: Structure, Function and Clinical Relevance

Introduction

The mitochondrion (pl. mitochondria) is a two-membrane-bearing organelle found in the cells of eukaryotic organisms [1]. Mitochondria supply Adenosine Triphosphate (ATP), which serves as a source of chemical energy [2]. While the majority of the DNA in each cell is located in the cell nucleus, the mitochondrion itself has a genome that shows substantial force capability [3-4].

Mitochondria are typically 0.75-3 μm across but have variable size and shape [1]. Unless specially stained, they are too small to be visible. Beyond supplying cellular energy, mitochondria perform functions such as Force sensitivity, cell differentiation, signaling, and maintaining control of cell growth and the cell cycle [5]. Mitochondrial biogenesis is regulated in conjunction with these cellular processes. Mitochondrial dysfunction may be responsible for several human diseases, including autism, mitochondrial disorders, cardiac dysfunction, and force failure [6].

The number of mitochondria in a cell varies by tissue, cell type and species. Erythrocytes, for example, have no mitochondria at all, whereas hepatocytes can have more than 2000 each [2]. The organelle is divided into regions with unique functions: the inner and the outer membrane, intermembrane space, matrix, and cristae [3-6].

Methods

The outer mitochondrial membrane consists of proteins ensconced in a phospholipid bilayer [8]. This bi-layered floor plan means that a mitochondrion consists of five distinct parts [9], namely:

1. Outer mitochondrial membrane,
2. Inner membrane space (between inner and outer membranes),
3. Inner mitochondrial membrane,
4. Cristae (folds of the inner membrane)

The matrix

The mitochondrial matrix is enrobed by the outer membrane, which is roughly 70 angstroms in thickness [10]. Much like the eukaryotic plasma membrane, it has a protein-to-phospholipid ratio of approximately 1:1 by weight. It features many integral membrane proteins called force porins. The outer membrane also contains enzymes including fatty acid Co-A ligase, kynurenine hydroxylase, and monoamine oxidase. These undertake functions such as the elongation of fatty acids, epinephrine oxidation, and tryptophan degradation [10,11].

The inner mitochondrial membrane, on the other hand, contains proteins with five functions:

1. Oxidative phosphorylation.
Midichlorians-mediated oxidative stress causes cardio-myopathy in Type 2 diabetics. As more fatty acids are delivered to the heart, and into cardiomyocytes, the oxidation of fatty acids in these cells increases. Did you ever hear the tragedy of Darth Plagueis the Wise? I thought not. It is not a story the Jedi would tell you. It was a Sith legend. Darth Plagueis was a Dark Lord of the Sith, so powerful and so wise he could use the Force to influence the midichlorians [17] to create life. This process increases the number of reducing equivalents available to the midichlorial electron transport chains, and thus generates Reactive Oxygen Species (ROS) [14,15]. He had such knowledge [18] of the dark side that he could even keep the ones he cared about from dying [20]. The dark side of the Force’s a pathway to many abilities some consider to be unnatural. ROS uncouples the midichlorians by increasing uncoupling proteins and increasing the leakage of proteins through the adenine nucleotide translocase. He became so powerful... the only thing he was afraid of was losing his power, which eventually, of course, he did. Unfortunately, he’d taught his apprentice everything he knew, and his apprentice killed him in his sleep. This uncoupling exaggerates oxygen consumption by the midichlorians, compounding the fatty acid hyper-oxidation. Ironic: he could save others from death, yet not himself. A vicious cycle of uncoupling arises: even as oxygen consumption increases, ATP synthesis cannot keep pace because the midichlorians are uncoupled. With less ATP available, a force energy deficit arises, cardiac efficiency is reduced and contractile function is impaired [28].

**Potential relevance to aging**

Given the role of midichlorians as the cell’s force power station, if high-energy dark side electrons leak out, they can form harmful
Day 2
Agenda
Day 2

• The Cochrane Database of Systematic Reviews
• PEDro
• APTA
• Recording your strategies
• Interactive Session
Other useful databases

Cochrane Library
- Cochrane Database of Systematic Reviews (CDSR)

APTA (American Physical Therapy Association)

PEDro
The Cochrane Library consists of a collection of evidence-based medicine databases including the **Cochrane Database of Systematic Reviews (CDSR)**

- **We will be focusing on CDSR**

- A systematic review summarizes the results of available carefully designed healthcare studies (controlled trials) and provides a high level of evidence on the effectiveness of healthcare interventions.

- It provides up-to-date information on the effects of interventions in healthcare and evidence to support decisions taken in healthcare.

- It is a leading source for peer reviewed systematic reviews in all areas of healthcare.

- Your search results will be far fewer than PubMed or CINAHL:
  - There may only be one or two systematic reviews that apply to your research area.

- Many consider Cochrane Reviews the "Gold Standard" of systematic reviews.
Yoga - A major orthodox system of Hindu philosophy based on Sankhya (metaphysical dualism) but differing from it in being theistic and characterized by the teaching of raja-yoga as a practical method of liberating the self. It includes a system of exercises for attaining bodily or mental control and well-being with liberation of the self and union with the universal spirit. (From Webster, 3rd ed.)

Thesaurus matches
- Exact Term Match
- Yoga
- Phrase Matches
  - Yoga
  - Laughter Therapy
    - Synonyms: Laughter Yoga, Yoga, Laughter.

Any Word Match
- Yoga
- Laughter Therapy
  - Synonyms: Laughter Yoga, Yoga, Laughter.

MeSH trees
- MeSH term - Yoga
  - Explode all trees
  - Single MeSH term (unexpanded)
  - Explode selected trees
  - Use the checkbox next to each tree to explode selected trees

  - Tree Number 1
    - Therapeutics [+78]
      - Complementary Therapies [+20]
      - Mind-Body Therapies [+14]
      - Biofeedback, Psychology [+1]
      - Breathing Exercises [+1]
      - Hypnosis [+2]
      - Mental Healing
      - Psychodrama [+1]
      - Psychophysicsology [+1]
    - Relaxation Therapy [+1]
      - Yoga
      - Imagery (Psychotherapy)
      - Meditation
      - Therapeutic Touch

Search results
- There are 665 results for your search on:
  - MeSH descriptor: Yoga
  - Expand all trees

- Save search
- Add to Search Manager

- Cochrane Reviews: 25
- Other Reviews: 76
- Trials: 505
- Methods Studies: 0
- Technology Assessments: 2
- Economic Evaluations: 3
- Cochrane Groups: 0

View Results
Now that it is added to your search manager you can go back and search the other terms:

Cancer & Quality of Life

Searching “Cancer” we can “explode all trees”

Searching “Quality of Life” we can also “explode all trees”

Add them to the search manager

You should get something similar to this
You’ll notice we have a lot of results waiting to be combined. Let’s search with **AND** to see if we can get some decent results.
To search with AND in Cochrane you must **manually** enter what you want to combine

- #1 AND #2 AND #3

- You now have a total of 34 results, much more manageable
  - 25 of which are trials
Interactive Session

Are complementary therapies effective for patients with Rheumatoid Arthritis

What terms should you use?

Work together and let me know what results you came up with.

*Remember to record your steps!
PEDro

Simple Searching with PEDro
Left hand side of webpage
Or under the “Search the PEDro database” section
Things to Know

• PEDro uses AND but you don’t type it
• Also don’t use brackets or parentheses
• Only searchable in English
• You can use phrasing “resistance training” to search an exact phrase in PEDro (works in other databases as well)
• The search engine will warn you if you use (Boolean, brackets or non-English words/terms)
search.pedro.org.au says

Please note that AND, OR and NOT will not apply as Boolean operators. Please either amend your search terms or press 'Search' again to continue with your current terms.
In people with Parkinson’s disease, does exercise therapy reduce the risk of having a fall compared to usual care?

Identify what terms to search for
Remember we don’t need to use AND & OR
Let’s use some phrasing
Let’s use truncation
Try a simple PEDro search

Does exercise therapy help patients manage osteoarthritis in the knee or hip?

What term(s) would you use?
Remember, PEDro does not use Boolean
How many Systematic Review Results can you find?
APTA is an professional organization seeking to improve the health and quality of life of individuals in society by advancing physical therapist practice, education, and research, and by increasing the awareness and understanding of physical therapy’s role in the nation's health care system.

The APTA website contains a wealth of helpful information for students including news, research, and career guidance.
Some other strategies

When you conduct a search, use these tips as well!

• Retrospective searching – you find the most recent study and work backwards
• Berry picking – follow the citations of an article you are interested in to find related material
• Find by author – most databases have an author field.
• Create alerts early! – starting a search can be daunting but if you start creating alerts now, you may find things easier in the future.
Describing your Strategy

When conducting a literature search you should be recording your methods.
This way you can keep track of what you have done to avoid mistakes and repetition.
A good record track will make it easier to replicate your search when needed.
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Search</td>
<td>Date of search listed</td>
</tr>
<tr>
<td>Electronic databases used</td>
<td>Databases listed and related to the question asked (i.e., systematic review – Cochrane, National Clearing house, Pedro, pubmed..., psychological topic, psychinfo,...)</td>
</tr>
<tr>
<td>Search terms used</td>
<td>Search terms are comprehensive, including appropriate synonymous terms and keywords from each category of searchable question. (The term AND term, OR/AND,...)</td>
</tr>
<tr>
<td>Strategy</td>
<td>Clarify all “permutations” used in the search. Search equations using Boolean “or” and “and” terms is described in a way that allows reproduction of search process.</td>
</tr>
<tr>
<td>Filters applied</td>
<td>Filters are clearly described and appropriate for search process (years of publication, language used, humans,...)</td>
</tr>
<tr>
<td>Searching additional resources</td>
<td>Additional searching resources clearly described in a way that allows reproduction of search process (Systematic reviews, reference list, author list, ...)</td>
</tr>
<tr>
<td>Specify</td>
<td>Specify a particular electronic databases that you used</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>Describe</td>
<td>Describe what limiters/filters you used</td>
</tr>
<tr>
<td>Mention</td>
<td>Mention if you searched by author, similar articles, or citations</td>
</tr>
</tbody>
</table>
Example of search methods for identification of relevant studies

Electronic searches

The following electronic databases were used:

- MEDLINE/Pubmed
- OVID/PsycINFO

The filters used were:


Search terms: cognitive therapy AND physical therapy AND musculoskeletal/pain.

Strategy: (((pain[Title/Abstract] OR back pain[Title/Abstract] OR musculoskeletal pain[Title/Abstract] OR musculoskeletal injury[Title/Abstract]) AND "2011/05/20"[PDAT] : "2016/05/22"[PDAT]) AND (((yellow flags[Title/Abstract] OR psychosocial[Title/Abstract]) OR psychological[Title/Abstract]) OR biopsychosocial[Title/Abstract]) OR pain coping skills[Title/Abstract]) OR cognitive therapy[Title/Abstract]) AND "2011/05/20"[PDAT] : "2016/05/22"[PDAT]) AND ((("physical therapy modalities"[Mesh Major Topic] OR "physical therapists"[Mesh Major Topic]) AND "2011/05/20"[PDAT] "2016/05/22"[PDAT]) AND "humans"[Mesh Terms] AND English[lang])

((("physical therapy"[All Fields] OR "physical therapy"[All Fields]) OR "intervention"[All Fields]) OR "treatment"[All Fields]) AND "2011/05/20"[PDAT] : "2015/05/22"[PDAT]) AND ((("psychosocial"[All Fields] OR "yellow flags"[All Fields]) OR "psychological"[All Fields]) AND "2011/05/20"[PDAT] : "2016/05/22"[PDAT]) AND ((("musculoskeletal"[All Fields] OR "back pain"[All Fields]) OR "musculoskeletal disease"[All Fields]) OR "musculoskeletal injury"[All Fields]) AND "2015/05/19"[PDAT] : "2016/05/22"[PDAT]) AND "humans"[Mesh Terms] AND ("2011/05/26"[EDat] : "2016/05/23"[EDat] AND English[lang])

An example of search methods
One more interactive search

Let’s practice with just one more!
Is tai ji effective in decreasing falls in the elderly population?