Evidence-Based Research

HNF 610: Nutrition & Fitness
Susan Arnold
Definition of Evidence-Based Medicine:

- “Evidence-based medicine (EBM) is the practice of making medical decisions through the judicious identification, evaluation, and application of the most relevant published information.”

5 Basic Steps for Practicing EBP

✓ Convert information needs into answerable questions.

✓ Track down with maximum efficiency the best evidence with which to answer them.

✓ Critically appraise the evidence for its validity and usefulness in clinical practice.

✓ Apply the results of this appraisal in clinical practice.

✓ Evaluate the outcomes.
PICO—a means to formulate questions

✓ P = patient, population, or problem
  • For what group do you need information?

✓ I = intervention
  • What do you need to study the effect of?

✓ C = comparison
  • Usually this is no intervention or a different type of intervention

✓ O = outcome
  • What is the effect of the intervention?
Determining Search Terms

• Look at the subject indexing terms used by the particular database
  • PubMed     MeSH
  • PsycINFO   Thesaurus

• Find an article that you like and look at the major and minor subject terms used to index it
Role of exercise and nutrition in menopause.

Hagey AR, Warren MP.

Department of Obstetrics and Gynecology, Columbia University Medical Center, New York, New York, USA.

Abstract

Menopause and the aging process itself cause many physiologic changes, which explain the increased prevalence of chronic diseases observed in postmenopausal women. Exercise and nutrition play important roles in the prevention and treatment of cardiovascular disease, cancer, obesity, diabetes, osteoporosis, and depression.
Therapeutic exercise in the prevention of bone loss: a controlled trial with women after menopause.

Authors: Preisinger E; Alacamlunga Y; Pils K; Sadadeth T; Schneider B

Affiliation: Department of Physical Medicine and Rehabilitation, University of Vienna, Algemeines Krankenhaus der Stadt Wien

Source: American Journal of Physical Medicine & Rehabilitation (AM J PHYS MED REHABIL), 1995 Mar-Apr; 74(2): 120-3 (29 ref)

Publication Type: Journal article - clinical trial, research, tables/charts

Language: English

Major Subjects: Osteoporosis -- Prevention and Control
Therapeutic Exercise

Minor Subjects: Aged; Analysis of Variance; Bone Density; Chi Square Test; Clinical Trials; Female; Fisher's Exact Test; Middle Age; Outpatients; Patient Compliance; Random Assignment; Regression; Human

Abstract: To evaluate the efficacy of therapeutic exercises in the prevention of bone loss, 146 untrained healthy postmenopausal women were prospectively controlled for (mean + or - SD) 3.0 + or - 1.3 yr. Eighty-two subjects aged (mean + or - SD) 61.5 + or - 6.1 yr participated in an exercise program (group 1) and sixty-four aged (mean + or - SD) 59.1 + or - 7.4 yr served as controls (group 2). Periodically during the study period, we measured women's bone density at two forearm sites and recorded their physical activities. Because bone loss differed insignificantly between the groups, group 1 was retrospectively subdivided into group 1 a (regular exercise) and group 1 b (nonregular exercise). The results showed that only 39 women (48 percent) of group 1 a improved their bone density compared with only 14 percent of group 1 b. The differences were significant. The results suggest that therapeutic exercise may be effective in preventing bone loss. Further studies are needed to confirm these findings.
Finding the Best Evidence

✓ Translate the clinical question into a usable search strategy

✓ Select an appropriate database resource

✓ Enter your search strategy

✓ Browse the records you located to identify those that you think are best
Quality of Evidence Pyramid

- **Systematic Reviews** (Cochrane, DARE)
- **Critically Appraised Topics** (Institution-specific CATS, Clinical Evidence Database, FPIN Clinical Inquiries)
- **Specialty-specific POEMs** (DailyPOEMs)
- **Critically Appraised Individual Articles** (ACP Journal Club)
- **Textbooks** (Up-to-Date, Harrison's Online)
- **Journal Articles** (Original Research found with MEDLINE & other databases)
Within Journal Articles

Quality of Evidence

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EBM Options Online:

- Clinical Practice Guidelines
- Systematic Review Databases
- PubMed or Other Database Searches
- Consumer/Patient Health Information
This search generates 1,500,000 hits!
National Guideline Clearinghouse
National Guideline Clearinghouse

✓ A public resource for evidence-based clinical practice guidelines

✓ Contains ~2,500 current guidelines; including 750 concerning exercise

✓ Guidelines are consensus opinion of experts

✓ The site can be searched, or browsed by topic or organization
ACP Clinical Practice Guidelines

http://www.acponline.org/clinical_information/guidelines/current/

• Evidence-based clinical practice guidelines
  • Freely available on the web
Systematic Review Databases

**Systematic Reviews:** comprehensive, structured reviews of studies that meet explicit criteria and usually focus on diagnosis or therapy

- Identify, select, and critically appraise ALL relevant research. Includes gray literature, unpublished studies and conference proceedings.

- Collects/analyzes data from studies included in review

- Gold standard of evidence-based research
Go to **Clinical Queries** on home page

Enter search term in box, and click **Search**

Results will be listed in 3 columns

Middle column will show **Systematic Reviews**
Consumer/Patient Health Information

- MedlinePlus
- www.medlineplus.gov
Exercise and Physical Fitness

There are 1,440 minutes in every day. Schedule 30 of them for physical activity!

Regular exercise is a critical part of staying healthy. People who are active live longer and feel better. Exercise can help you maintain a healthy weight. It can delay or prevent diabetes, some cancers and heart problems.

Most adults need at least 30 minutes of moderate physical activity at least five days per week. Examples include walking briskly, mowing the lawn, dancing, swimming for recreation or bicycling. Stretching and weight training can also strengthen your body and improve your fitness level.

The key is to find the right exercise for you. If it is fun, you are more likely to stay motivated. You may want to walk with a friend, join a class or plan a group bike ride. If you've been inactive for awhile, use a sensible approach and start out slowly.

Centers for Disease Control and Prevention

Get Exercise and Physical Fitness updates by email

Start Here
- Be Active Your Way: A Guide for Adults (Dept. of Health and Human Services) - PDF
- Physical Activity for Everyone (Centers for Disease Control and Prevention)
  Also available in Spanish
- Tips to Help You Get Active NIH (National Institute of Diabetes and Digestive and Kidney Diseases)
Critical Appraisal of Articles

- Compose a focused, answerable, clinical question
- Weed out articles that do not answer your question
The Challenge is Two-fold

✓ To filter out the best from a larger volume of less credible information

✓ To judge whether to believe the information that remains
Usefulness of Information

Depends on 2 factors:

• Validity
• Relevance to your work
Screening for Validity & Relevance

- Is it in a peer-reviewed journal?
What is a peer-reviewed journal?

- Articles submitted are sent to a group of experts for review before publication
- Reviewers recommend whether article should be published, revised, or rejected
- Review process helps to ensure that research published in the journal is of high quality and contributes new information to the field
Scholarly journal characteristics

• Contain lengthy, in-depth articles that have charts, graphs, and tables. Technical terminology is used.

• Minimal use of photographs and color

• Articles are written by researchers, scientists, and scholars in the field

• Sources are cited in footnotes and bibliographies, which can be extensive

• Publisher is typically a professional organization, university, research institute or scholarly press
How do you find peer-reviewed journals?

• Check journal title in either *Ulrichsweb* or *The Serials Directory*

![Ulrichsweb logo]
Use the Limit for Scholarly/Peer Reviewed Journals when Searching.
Screening for Validity & Relevance

- Is study’s location similar to mine, so results, if valid, would apply to my practice

- Example: Rural general practice vs. university subspecialty clinic practice or tertiary care center study

- Make sure you are comparing apples to apples
Screening for Validity & Relevance

✓ Is study sponsored by an organization that might influence design and results?

✓ Example: potential biases from outside funding; look for assurances from investigators that design and results were not influenced by any association.
Beware of Personal Biases

- **Advocacy bias**: emphasis only on supportive evidence, neglecting contradictory evidence
  - Published studies often have a bias towards positive results
- **Optimistic bias**: tendency to believe treatment effective
Screening for Validity & Relevance

• Is the intervention feasible?

• Did they study outcomes that people would care about?

• Does the study evaluate what it is really trying to evaluate?
  - **Hint:** look at the last sentence in the *Introduction* of the article that is right before the *Methods* section.
Evaluating Validity & Relevance—Final Questions

- Randomized controlled groups?

- Are study and control groups similar in size/composition?

- Were groups studied double-blinded?

- Are the outcomes clearly defined, clinically relevant, and reproducibly?
Assignment Calculator

✓ Available from the home page of the class LibGuide

✓ Plug in the assignment due date; it will calculate when you need to have each step of the assignment done

http://www.libraries.wvu.edu/instruction/assignmentcalculator/