Searching the evidence

Wie finde ich Evidenz für meine Behandlungsansätze?

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Lernziele

Die Teilnehmer kennen / können:

- **Grundzüge** von Evidence Based Practice
- für die eigene Praxis relevante **Fragen** formulieren (**PICO**)
- für die eigene Praxis relevante **Studien** in Pubmed und PEDro bzw. OTseeker **suchen**
- verschiedene **Studiendesigns** (Systematic Review, Randomized Controlled Trial (RCT), Case-control study (CCT), Cohort study, qualitative Designs)
- Vorgehensweise und Hilfsmittel zum **Lesen** und **Beurteilen** wissenschaftlicher Studien
- **PEDro** Kriterien für the methodologische Qualität von RCTs

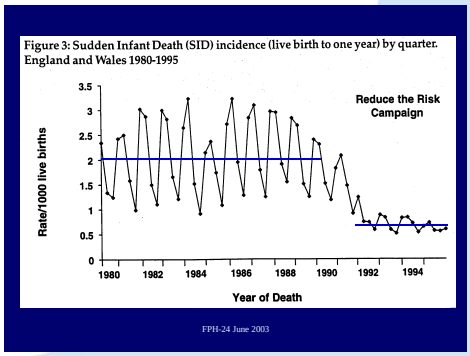
Warum EBP?

Primär: Verursache keinen Schaden!

back. There are two disadvantages to a baby's sleeping on his back. If he vomits, he's more likely to choke on the vomitus. Also, he tends to keep his head turned toward the same side—usually toward the center of the room. This may flatten that side of his head. It won't hurt his brain, and the head will gradually straighten out, but it may take a couple of years. If you start early, you may be able to get him used to turning his head to both sides by putting his head where his feet were the time before, each time you put him to bed.

It is preferabel to accustom a baby to sleep on his stomach from the start

Veränderte Empfehlungen zu "Schlafen in Bauchlage" von Babys



Was ist Evidence-Based Practice?

Evidence Based Practice ist die Integration von:

- individual clinical expertise
- best available external clinical evidence
- patient's values and expectations

Sackett et al: Evidence-based medicine: what it is and what it isn't, BMJ 1996 312, pp. 71-72

„It should build on, not replace clinical judgement and experience."

(World Federation of Occupational Therapy, 2002)

Evidence Based Practice – ein stufenförmiger Prozess

1. Spezifische Frage formulieren
2. Relevante Beweise/ Studien suchen
3. Literatur kritisch auswerten
4. Ergebnisse in Praxis umsetzen
   Integration Studienresultate mit eigener klinischer Erfahrung und Erwartungen der Patienten
5. Evaluieren der (neuen) Praxis

1. Schritt: Formulieren einer spezifischen Frage (PICO)

Klare beantwortbare Fragen!

NICHT:

- Is aquatic therapy helpful for patients with rheumatic disorders?

SONDERN (PICO Format):

- What is the efficacy of aquatic therapy (intervention) compared to no treatment (comparison) in a group of people with hip OA or knee OA (population) in improving stiffness and muscle strength (outcome)?

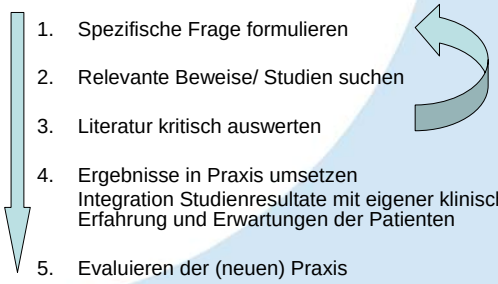
Fragen (Beispiele)

Welche Interventionen verbessern das Kurzzeitgedächtnis nach einem Schädelhirntrauma im Hinblick auf eine Verbesserung der Selbständigkeit im Alltag im Vergleich zu keinen Interventionen?

Gibt es einen Nachweis für die Wirksamkeit des Durchbewegens in Bezug auf die Prävention von Kontrakturen bei Lymphödemen?

Gibt es einen Zusammenhang zwischen einer Verbesserung eines Messwertes im PPB und der Fähigkeit alltägliche, feinmotorische Handlungen durchzuführen bei Patienten mit FM-Problemen? (z.B. Knöpfe schliessen, Schuhe binden, Suppe mit Löffel essen, ...)

Evidence Based Practice – ein stufenförmiger Prozess



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2. Schritt: Suchen relevanter Studien

1. The search for best evidence should first begin with systematic reviews or meta-analyses and evidence-based clinical practice guidelines
2. If systematic reviews or evidence-based guidelines are not available, proceed to randomized controlled trials
3. If randomized controlled trials are not available, continue to other types of studies that generate evidence to guide decision making

Hierarchie der Evidenz in der Forschung

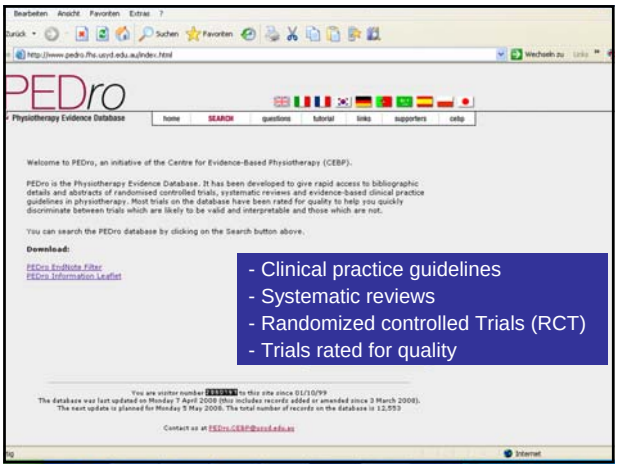
1. Systematic reviews, meta analyses
2. Randomised controlled trials (RCT)
3. Non-randomised controlled trials
   e.g. cohort studies, case-control studies
4. Non-experimental studies
   e.g. qualitative studies, surveys
5. Consensus statements from groups of respected authorities, descriptive studies e.g. case studies
6. Individual expert knowledge

Suche nach „best evidence“ - Wo?

- Datenbanken
- Relevante Zeitschriften / Bücher
- Relevante Autoren
- Literaturangaben relevanter Artikel
- Mündlich: Kollegen, Experten
- Schriftlich: Internet (Foren, News-Groups, Mailing Lists)

Datenbanken

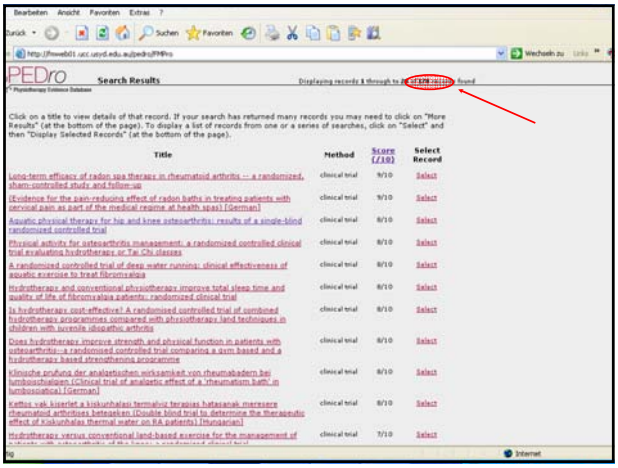
- Pedro bzw. OTseeker
- Cochrane Library
- PubMed
- Google scholar
- CINAHL
- …

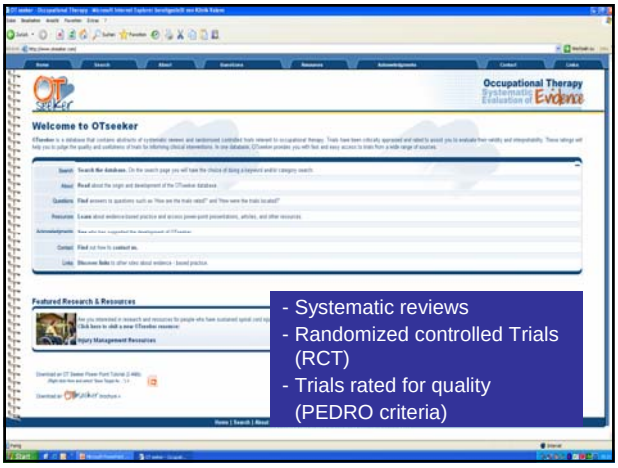


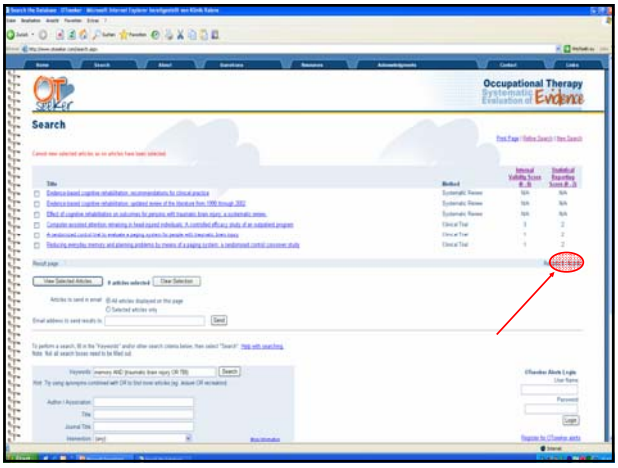
Kritische Studienbeurteilung

Methodological quality of RCT's

1. Randomisation
2. Randomisation concealed
3. Groups comparable before treatment
4. Blinding of all patients
5. Blinding of all therapists
6. Assessor blinding
7. Follow up data in > 85%
8. "Intention to treat" analysis
9. Between groups comparisons
10. Point measures and variability

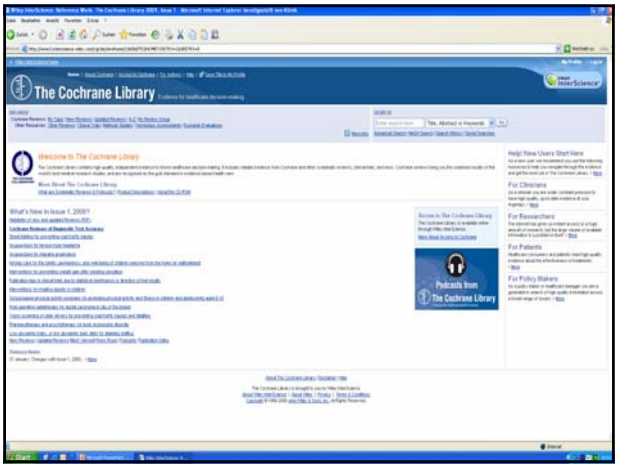






Cochrane Library

- Contains high-quality, independent evidence to inform healthcare decision-making
- Includes reliable evidence from Cochrane and other systematic reviews, clinical trials, and more
- Reviews bring you the combined results of the world's best medical research studies
- Recognized as the gold standard in evidence-based health care



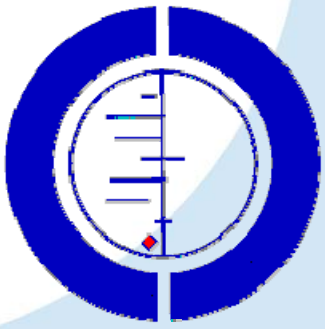
Systematic review

Combining results of all available evidence with regard to one topic/ question according to clear rules
-> intervention is effective or ineffective

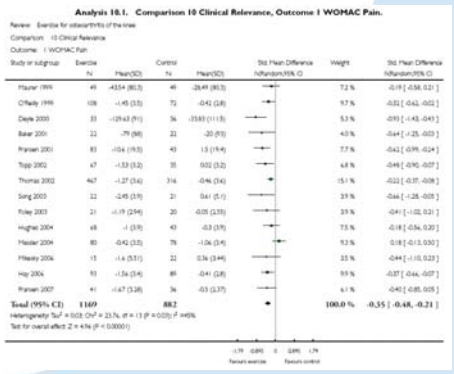
Strong evidence	multiple relevant, high quality RCTs.
Moderate evidence	one relevant, high quality RCT and one or more relevant, low quality RCTs.
Limited evidence	one relevant, high quality RCT or multiple relevant, low quality RCTs.
No evidence	only one relevant, low quality RCT, no relevant RCTs or contradictory outcomes.

U.S. Clinical Practice Guidelines for Acute Low Back Problems in Adults

Systematic Reviews Pooling

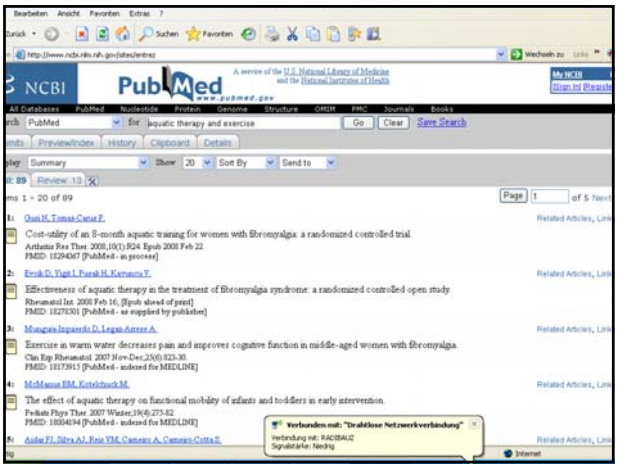


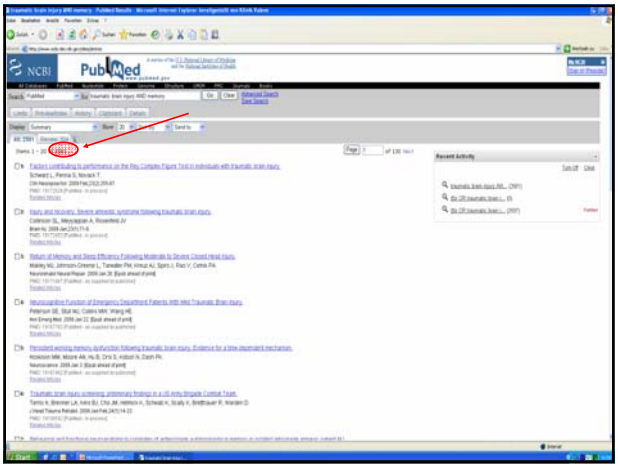
Exercise for osteoarthritis of the knee



PubMed

- Covers the fields of medicine, nursing, dentistry, veterinary medicine, the health care system, and the preclinical sciences
- Contains bibliographic citations and author abstracts from more than 5,000 biomedical journals published in the United States and 80 other countries
- Contains over 15 million citations dating back to the mid-1950's





How to find the evidence – eine Einführung zur Literatursuche

Key concepts in literature searching

MeSH:	Medical subjects heading
***Keywords*:**	Words identifying the concepts of your research
***Boolean Operators*:**	Words combining the search terms
***Truncations*:**	A truncation mark is a symbol added to the stem of a word in order to search all forms of the word
***Citations*:**	The basic information of a record (Author, title of the article, title of the journal, …..)
***Abstract*:**	A summary of the article

Suchen in PubMed: MeSH Terms

- Verwendung der MeSH Database um MeSH terms zu finden
- Verwendung von MeSH terms zur Präzisierung der Literatursuche
  - Hydrotherapy = MeSH term = External application of water for therapeutic purposes
  - Balneotherapy = MeSH term = Therapy by various hot or warm baths in natural mineral waters, spas, or "cures". It includes not only bathing in, but also drinking the waters, but it does not include whirlpool baths (Hydrotherapy).

Schlüsselwörter (Keywords)

- Schlüsselwörter sind Wörter, oder Konzepte, welche im gesuchten Thema verwendet werden
- Schlüsselwörter verwenden falls keine MeSH terms existieren
- Schlüsselwörter re “Wassertherapie”
  - Aquatic therapy
  - Spa resort therapy
  - Baths
  - Immersion therapy

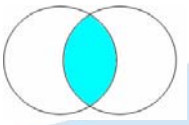
Boolean Search

- A Boolean Search is a computerized search using “operators”
- They are words by which search terms (keywords) are combined
- The operators may be used to expand or narrow a search
- Most widely used operators are
  - AND
  - OR
  - NOT

What do Operators do?

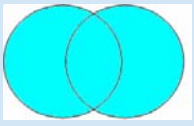
AND

- Hydrotherapy AND exerise
  - All articles or records with BOTH terms in them (narrows the search)



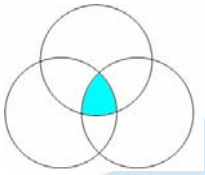
OR

- Hydrotherapy OR exerise
  - All articles with EITHER or BOTH terms (broadens the search)

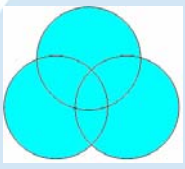


What do Operators do?

- The *more* terms or concepts you combine in a search with **AND** logic, the *fewer* records you will retrieve.



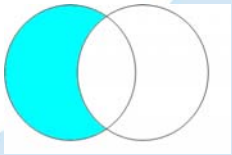
- The *more* terms or concepts you combine in a search with **OR** logic, the *more* records you will retrieve.



What do Operators do?

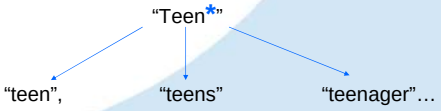
You use **NOT** to exclude unwanted results

- For example, you are researching for records about spa resorts therapy but not balneology
- However, chances are that you will end up with a lot of legitimate records about spa therapy. One of the strategies is to search for the following:
- Spa therapy NOT balneology

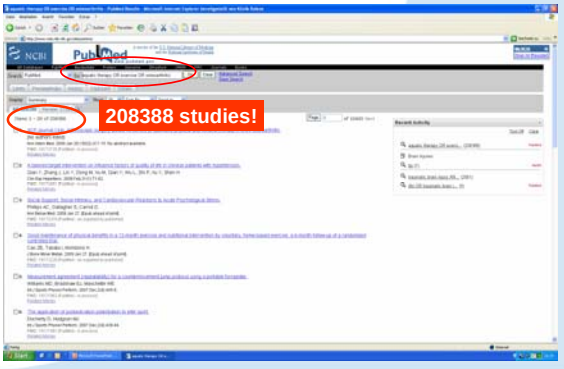


Truncation

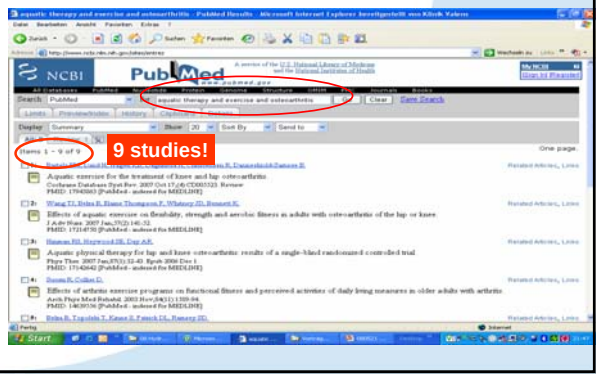
- The truncation mark is usually an "*"
- It tells the software that you wish to obtain ALL possible terminations.
- It is compatible with all computerized search (online or CD). Google and other search engines recognize it, too.



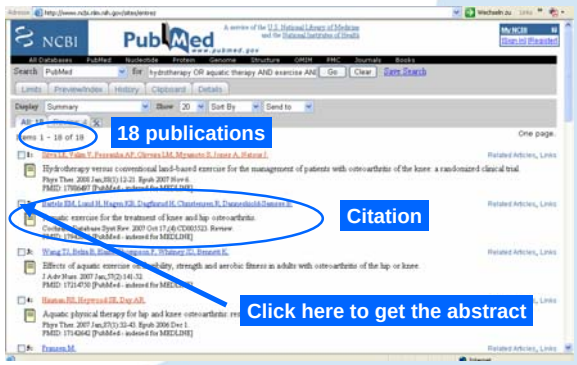
Search result: aquatic therapy OR exercise OR osteoarthritis



Search result: aquatic therapy AND exercise AND osteoarthritis



Search result: hydrotherapy OR aquatic therapy AND exercise AND osteoarthritis NOT hand



Beispiel einer umfassenden Literatursuche für eine Meta-Analyse

To determine whether exercise is more efficient then usual care to reduce sick leave in patients with non-specific non-acute low back pain, and to evaluate which type of exercise is most effective.

•Population

(Back Pain [Mesh] OR back pain [tw] OR low back pain [tw] lumbago [tw] OR backache [tw] OR dorsalgia [tw] OR Sciatica [Mesh] OR Lumbar vertebrae [Mesh] OR Lumbosacral Region[Mesh] OR Sacrum[Mesh] OR Spinal Canal[Mesh] OR Spinal Nerve Roots[Mesh] OR Zygapophyseal Joint[Mesh] OR spinal nerve* [tw] OR facet joint* OR nerve root [tw] OR Spinal Diseases [Mesh] OR Laminectomy[Mesh] OR postlaminectomy [tw] OR arachnoiditis [tw] OR failed back surgery [tw])

•Intervention

(Exercise [Mesh] OR Exercise Therapy [Mesh] OR Exercise Movement Techniques [Mesh] OR Rehabilitation [Mesh] OR Rehabilitation, Vocational [Mesh] OR Physical Therapy Modalities [Mesh] OR functional restoration [tw] OR work hardening [tw] OR occupational intervention [tw] OR physical conditioning OR rehabilitation [tw] OR multidisciplinary [tw] OR graded activity [tw] OR function* [tw] OR training[tw])

•Comparison

(randomized controlled trial [pt] OR controlled clinical trial [pt] OR randomized controlled trials [mh] OR random allocation [mh] OR double-blind method [mh] OR single-blind method [mh] clinical trial [pt] OR clinical trials [mh] OR clinical trial [tw]) OR ((singl* [tw] OR doubl* [tw] OR trebl* [tw] OR tripl* [tw]) AND (mask* [tw] OR blind [tw]) OR (latin square [tw]) OR placebos [mh] OR placebo* [tw] OR random [tw] OR research design [Mh:noexp] OR comparative study [pt] OR evaluation studies [pt] OR follow-up studies OR prospective studies [mh] OR cross-over studies [mh] OR control* [tw] OR prospective* [tw] OR volunteer* [tw] NOT (animal [mh] NOT human [mh]))

•Outcome

(Absenteeism [Mesh] OR Employment [Mesh] OR return to work [tw] OR sick day* [tw] OR working status [tw] OR working inability [tw] OR working ability [tw] OR workers* compensation [tw] OR work capacity [tw] OR days off work [tw] OR time off work [tw] OR work days [tw] OR Sick Leave [Mesh] OR sick leave*[tw] OR sick-leave* [tw] OR work disability [tw] OR work status[tw])

Zusammenfassung 1. und 2. Schritt: Frage und Suchstrategien entwickeln

1. Formulieren einer spezifischen Frage (PICO)
2. Unterteilen der Frage in verschiedene Konzepte
3. Suche in relevanten Datenbanken (u.a.)
4. Suchen des richtigen MeSH Begriffs für diese Konzepte (Alternative: Schlüsselwörter)
5. Literatursuche mittels AND, OR, NOT,*, usw.
6. Anwendung von Einschränkungsmöglichkeiten (Datum, Sprache, Studiendesign, etc.)
7. Evtl. Suchstrategie modifizieren und erneut durchführen

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3. Schritt: Auswertung

- Wie und was lese ich?
- Wie beurteile ich?

Vorgehen beim Lesen

1. Titel
2. Abstract
3. Ziel der Studie
4. Evidenzklasse
5. Conclusions/ Schlussfolgerungen
6. Autor/ Beruf/ Institution
7. Journal
8. Population
9. Evidenzstärke (z.B. p-Wert)
10. Methoden/ Messinstrumente
11. Resultate
12. Literaturliste

Abstracts

- Tells you more about an article than just reading the title.
- The abstract is a summary of the article (anything from 10 to 200 words).
- The abstract will help you assess if the article is relevant to your search/topic.


1: Cochrane Database Syst Rev. 2007 Oct 17;(4):CD005523.

Aquatic exercise for the treatment of knee and hip osteoarthritis.

Bartels EM, Lund H, Hagen KB, Dagfinrud H, Christensen R, Danneskiold-Samsøe B

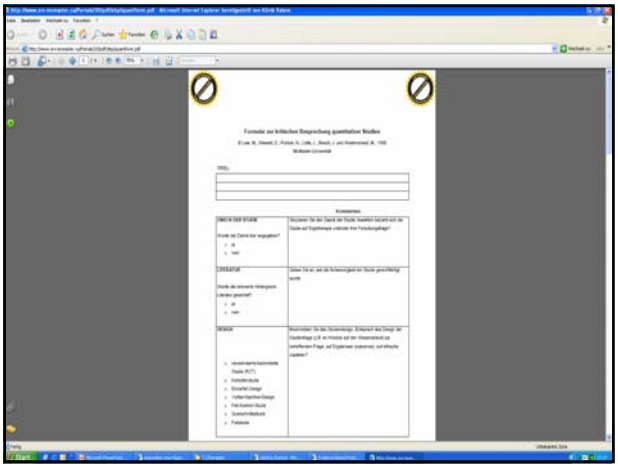
BACKGROUND: Clinical experience indicates that aquatic exercise may have advantages for osteoarthritis patients. OBJECTIVES: To compare the effectiveness and safety of aquatic-exercise interventions in the treatment of knee and hip osteoarthritis. SEARCH STRATEGY: We searched MEDLINE from 1949, EMBASE from 1980, CENTRAL (Issue 2, 2006), CINAHL from 1982, Web of Science from 1945, all up to May 2006. There was no language restriction. SELECTION CRITERIA: Randomised controlled trials (quasi-randomised clinical trials). DATA COLLECTION AND ANALYSIS: Two review authors independently selected trials for inclusion, assessed the internal validity of included trials and extracted data. Pooled results were analyzed using standardized mean differences (SMD). MAIN RESULTS: There is a lack of high-quality studies in this area. In total, six trials (800 participants) were included. At the end of treatment for combined knee and hip osteoarthritis, there was a small-to-moderate effect on function (SMD 0.26, 95% confidence interval (CI) 0.11 to 0.42) and a small-to-moderate effect on quality of life (SMD 0.32, 95% CI 0.03 to 0.6). A minor effect of a 3% absolute reduction (0.6 fewer points on a 0 to 20 scale) and 6.6% relative reduction from baseline was found for pain. There was no evidence of effect on walking ability or stiffness immediately after end of treatment. No evidence of effect on pain, function or quality of life were observed on the one trial including participants with hip osteoarthritis alone. Only one trial was identified including knee osteoarthritis alone, comparing aquatic exercise with land-based exercise. Immediately after treatment, there was a large effect on pain (SMD 0.86, 95%CI 0.25 to 1.47, 22% relative percent improvement), but no evidence of effect on stiffness or walking ability. Only two studies reported adverse effects, that is, the interventions did not increase self-reported pain or symptom scores. No radiographic evaluation was performed in any of the included studies. AUTHORS' CONCLUSIONS: Aquatic exercise appears to have some beneficial short-term effects for patients with hip and/or knee OA while no long-term effects have been documented. Based on this, one may consider using aquatic exercise as the first part of a longer exercise programme for osteoarthritis patients. The controlled and randomised studies in this area are still too few to give further recommendations on how to apply the therapy, and studies of clearly defined patient groups with long-term outcomes are needed to decide on the further use of this therapy in the treatment of osteoarthritis.

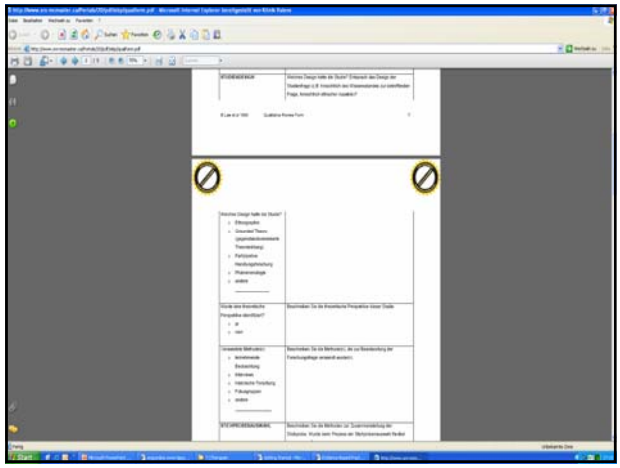
Beurteilung von Studien

- Evidenzklasse (System. Review, RCT)
- Autor(en) / Institution (neutral, sowohl an pos., wie auch an neg. Resultaten interessiert)
- Journal (z.B. Britisches, US, peer review)
- Signifikanz (p-Wert≤0.05)
- Population (≥25 notwendig; ≥ 50 gut)
- Vergleichbarkeit der Gruppen / Randomisierung
- Messinstrumente (Validität, Reliabilität, Sensitiviät)
- Drop-Outs (keine, begründete, ≤20%)
- Ergebnisse sind klinisch relevant

Beurteilung von Studien

- PeDRO Kriterien
- Checklisten als Hilfsmittel
  - Z.B. McMaster University Toronto
    1. quantitative Studien
    2. qualitative Studien





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4. Schritt: Anwendung

- Wie sind die Resultate zu interpretieren?
- Welches sind die Konsequenzen aus den gefundenen Resultaten?
  -> positive Resultate
  -> negative Resultate
  -> keine Resultate
- Wie lassen sich die gefundenen Informationen für die Praxis nutzbar machen?

5. Schritt: Evaluation

- Zeigte die gefundene Massnahme die gewünschte Wirkung bei meinem Patienten?