Research Skills: PICO

Prof. Dr. Eva Grill, MPH

Amanda Phillips, MSc Epidemiology Student

Department of Medical Informatics, Biometry, and Epidemiology

Ludwig Maximilians University Munich

What is PICO?

P = Population

I = Intervention

C = Comparison

O = Outcome

P I   C   O

Sackett, 1997, Evidence-based medicine; how to practice & Teach It, (p. 27.)
http://www.mclibrary.duke.edu/subject/ebm?tab=questiontable

P I C O

P = Identify

- Population w/ (health) condition of interest
- Participants
- Principal person or thing
- Problem
- Predicament

Straus, 2010, Evidence-based medicine; how to practice and teach it, (p. 15 - 18)
Melnyk, 2011, Evidence-based practice in nursing & healthcare: A guide to best practice, (p. 31)

P **I** C O

I = Identify
Intervention, therapy, treatment, tests

OR
- Issue of interest
  - Diagnoses - select, interpret
  - Risk, prevention – screen, reduce
  - Etiology – cause, risk factors
  - Exposure
  - Prognosis

P I **C** O

C = Identify
Comparison

- Another intervention

- True control placebo

- Standard operation

- Standard of care

P I C O

O = Identify
Outcome

- Measurement of comparisons

Formulating a PICO question:
Begin by asking two kinds of questions

Background Question

Asks about general topical elements:

1. who, what, where, when, why, how and a verb.

1. lays foundation for PICO.

Foreground Question

Asks about research elements:

1. what is population, intervention, comparison, outcome
2. formulates research question and search strategy

Straus, 2010, Evidence based medicine; how to practice and teach it, (p. 15)

PICO Question | Healthcare

Background | 5 Ws
What can prevent falls in elderly?

Foreground | PICO
In *elderly at risk of falls* (P), how does *tai chi* (I) compared to *risk assessment* (C) affect *fall prevention/reduction* (O)?
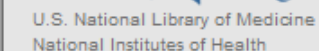
PICO Question | Healthcare

Foreground

In *elderly at risk of falls* (P), how does *tai chi* (I) compared to *risk assessment* (C) affect *fall prevention/reduction* (O)?

Searches in PubMed

SS1 Falls tai

SS2 Falls [ti] tai [ti]

http://www.ncbi.nlm.nih.gov.ezproxy1.lib.asu.edu/pubmed?term=falls%20tai

Google

File   Edit   View   Favorites   Tools   Help

Favorites | Nanc... | Zoho | Add ... | cook... | Desk... | Home... | LibG... | OASI... | Out ... | TMA ... | Prin... | RefG... | Omek...

EDIT Health Science - Buil... | falls tai - PubMed result

NCBI   Resources   How To

PubMed.gov
U.S. National Library of Medicine
National Institutes of Health

Search: PubMed

RSS   Save search   Limits   Advanced search   Help

falls tai

Search   Clear

Display Settings: Summary, 20 per page, Sorted by Recently Added

Send to:

Filter your res

All (137)

Free Full

Review (3

Results: 1 to 20 of 137

<< First   < Prev   Page 1 of 7   Next >   Last >>

Titles with

Community-b
injurious **falls**

Tai Chi and fa

☐ Exercise and osteoporosis-related fractures: perspectives and recommendations of the sports and exercise scientist.
1. Kemmler W, Stengel S.
Phys Sportsmed. 2011 Feb;39(1):142-57.
PMID: 21378497 [PubMed - in process]
Related citations

Lack of effect
falls in elderly

☐ Falls and dizziness in the elderly.
2. Walther LE, Rogowski M, Schaaf H, Hörmann K, Löhler J.
Otolaryngol Pol. 2010 Nov-Dec;64(6):354-7.
PMID: 21299055 [PubMed - indexed for MEDLINE]
Related citations

☐ Reducing the fear of falling among community-dwelling elderly adults through cognitive-behavioural strategies and intense Tai Chi exercise: a
3. randomized controlled trial.
Huang TT, Yang LH, Liu CY.
J Adv Nurs. 2011 May;67(5):961-71. doi: 10.1111/j.1365-2648.2010.05553.x. Epub 2011 Jan 7.
PMID: 21214623 [PubMed - in process]
Related citations

9 free full-
Central

Availability, af
healthful diet

Is **Tai** Chi Chu
limb respons

☐ Tai chi as a balance improvement exercise for older adults: a systematic review.
4. Liu H, Frank A.
J Geriatr Phys Ther. 2010 Jul-Sep;33(3):103-9. Review.
PMID: 21155504 [PubMed - indexed for MEDLINE]
Related citations

Review A rev
qigong in olde

☐ Interventions aiming at balance confidence improvement in older adults: an updated review.

File   Edit   View   Favorites   Tools   Help

Favorites | Nanc...   Zoho ▼   Add ...   cook...   Desk...   Home...   LibG...   OASI...   Out ...   TMA ...   Prin...   RefG...   Omek...

EDIT Health Science - Buil... | falls [ti] tai [ti] - PubMe... ✕

NCBI   Resources ▽   How To ▽

PubMed.gov
U.S. National Library of Medicine
National Institutes of Health

Search: PubMed ▼

🔊 RSS   Save search   Limits   Advanced search   Help

falls [ti] tai [ti]

Search   Clear

Display Settings: ▽ Summary, 20 per page, Sorted by Recently Added

Send to: ▽

Filter your res

All (23)

Results: 1 to 20 of 23

<< First   < Prev   Page 1 of 2   Next >   Last >>

Free Full T

Review (3

☐ **Modelling the population-level impact of tai-chi on falls and fall-related injury among community-dwelling older people.**
1. Day L, Finch CF, Harrison JE, Hoareau E, Segal L, Ullah S.
   Inj Prev. 2010 Oct;16(5):321-6. Epub 2010 Jul 19.
   PMID: 20643871 [PubMed - in process]
   Related citations

Titles with

Reducing frai
investigation

☐ **Comparison of telecommunication, community, and home-based Tai Chi exercise programs on compliance and effectiveness in elders at risk for falls.**
2. Wu G, Keyes L, Callas P, Ren X, Bookchin B.
   Arch Phys Med Rehabil. 2010 Jun;91(6):849-56.
   PMID: 20510973 [PubMed - indexed for MEDLINE]
   Related citations

Evaluation of
improving bal

A study desig
intense Tai C

☐ **An integrative review of Tai Chi research: an alternative form of physical activity to improve balance and prevent falls in older adults.**
3. Wooton AC.
   Orthop Nurs. 2010 Mar-Apr;29(2):108-16; quiz 117-8. Review.
   PMID: 20335770 [PubMed - indexed for MEDLINE]
   Related citations

3 free full-t
Central

Is Tai Chi Chu
limb respons

☐ **Is Tai Chi Chuan effective in improving lower limb response time to prevent backward falls in the elderly?**
4. Wong AM, Pei YC, Lan C, Huang SC, Lin YC, Chou SW.
   Age (Dordr). 2009 Jun;31(2):163-70. Epub 2009 May 5.
   PMID: 19415525 [PubMed]   Free PMC Article
   Free full text   Related citations

Translation o
into a commu

The effect of
among elder

☐ **Lack of effect of Tai Chi Chuan in preventing falls in elderly people living at home: a randomized clinical trial.**

PICO Question | Healthcare

Foreground
In *older people at risk for disability*(P), how does *sarcopenia* (I) compared to *healthy muscle function*(C) affect *incident disability*(O)?

Searches in PubMed
SS1 sarcopenia disability
SS2 sarcopenia [ti] disability [ti]

NCBI   Resources ⊙ How To ⊙   Sign in to NCBI

PubMed.gov   PubMed ▾   sarcopenia disability   ⊗ Search
US National Library of Medicine
National Institutes of Health   RSS   Save search   Advanced   Help

Article types   Summary ▾   20 per page ▾   Sort by Most Recent ▾   Send to: ▾   **Filters:** Manage Filters
Clinical Trial
Review   **Results: 1 to 20 of 313**   << First < Prev Page [1] of 16 Next > Last >>   **New feature**
Customize ...   Try the new Display Settings option -
                           ☐ Frequency of **sarcopenia** and associated factors among hospitalized elderly patients.   **Sort by Relevance**
Text availability   1. Martinez BP, Batista AK, Gomes IB, Olivieri FM, Camelier FW, Camelier AA.
Abstract   BMC Musculoskelet Disord. 2015 May 6;16:108. doi: 10.1186/s12891-015-0570-x.
Free full text   PMID: 25943762   Free PMC Article   **Related searches**
Full text   Related citations
                                                                                                          rehabilitation nutrition for **sarcopenia** with
Publication dates   ☐ Muscle loss and obesity: the health implications of **sarcopenia** and sarcopenic obesity.   **disability**
5 years   2. Wannamethee SG, Atkins JL.
10 years   Proc Nutr Soc. 2015 Apr 27:1-8. [Epub ahead of print]
Custom range...   PMID: 25913270
                               Related citations   **PMC Images search for** sarcopenia
Species   disability
Humans   ☐ Oxandrolone Augmentation of Resistance Training in Older Women: A Randomized Trial.
Other Animals   3. Mavros Y, O'Neill E, Connerty M, Bean JF, Broe K, Kiel DP, MacLean D, Taylor A, Fielding RA,
                               Fiatarone Singh MA.
                               Med Sci Sports Exerc. 2015 Apr 18. [Epub ahead of print]
Clear all   PMID: 25899102
                               Related citations
Show additional filters
                           ☐ Osteoporosis and **sarcopenia** in older age.
                           4. Edwards MH, Dennison EM, Aihie Sayer A, Fielding R, Cooper C.
                               Bone. 2015 Apr 14. pii: S8756-3282(15)00129-5. doi: 10.1016/j.bone.2015.04.016. [Epub ahead of print]   See more (6)...
                               PMID: 25886902
                               Related citations   **Titles with your search terms**

                           ☐ **Sarcopenia** in post-menopausal women: Is there any role for vitamin D?   Low relative skeletal muscle mass (**sarcopenia**)
                           5. Anagnostis P, Dimopoulou C, Karras S, Lambrinoudaki I, Goulis DG.   in older persons is asso [J Am Geriatr Soc. 2002]
                               Maturitas. 2015 Mar 27. pii: S0378-5122(15)00604-0. doi: 10.1016/j.maturitas.2015.03.014. [Epub ahead of print]   Rehabilitation nutrition for **sarcopenia** with
                               Review.   **disability**: a [J Cachexia Sarcopenia Muscle. ...]
                               PMID: 25882761
                               Related citations   **Sarcopenia** according to the european working
                                                                                                          group on **sarcopenia** [J Nutr Health Aging. 2014]
                           ☐ Weaker Seniors Exhibit Motor Cortex Hypoexcitability and Impairments in Voluntary Activation.
                           6. Clark BC, Taylor JL, Hong SL, Law TD, Russ DW.   See more...
                               J Gerontol A Biol Sci Med Sci. 2015 Apr 1. pii: glv030. [Epub ahead of print]
                               PMID: 25834195   **90 free full-text articles in PubMed**
                               Related citations   **Central**

NCBI   Resources ⊙ How To ⊙   Sign in to NCBI

PubMed.gov
US National Library of Medicine
National Institutes of Health

PubMed ▾ | sarcopenia [ti] disability [ti]   ⊗ **Search**

📶 RSS   Save search   Advanced   Help

Article types
Review
Customize ...

Text availability
Abstract
Free full text
Full text

Publication dates
5 years
10 years
Custom range...

Species
Humans
Other Animals

Clear all

Show additional filters

Summary ▾ 20 per page ▾ Sort by Most Recent ▾   Send to: ▾   Filters: **Manage Filters**

Results: 19

☐ **Sarcopenia** Is Associated With Incident **Disability**, Institutionalization, and Mortality in Community-
1.   Dwelling Older Men: The Concord Health and Ageing in Men Project.
    Hirani V, Blyth F, Naganathan V, Le Couteur DG, Seibel MJ, Waite LM, Handelsman DJ, Cumming RG.
    J Am Med Dir Assoc. 2015 Mar 26. pii: S1525-8610(15)00151-6. doi: 10.1016/j.jamda.2015.02.006. [Epub ahead of
    print]
    PMID: 25820131
    Related citations

☐ **Sarcopenia**-related parameters and incident **disability** in older persons: results from the
2.   "invecchiare in Chianti" study.
    Cesari M, Rolland Y, Abellan Van Kan G, Bandinelli S, Vellas B, Ferrucci L.
    J Gerontol A Biol Sci Med Sci. 2015 Apr;70(4):457-63. doi: 10.1093/gerona/glu181. Epub 2014 Oct 15.
    PMID: 25320055
    Related citations

☐ [Transdisciplinary Approach for **Sarcopenia**. **Sarcopenia** and physical **disability** in older adults].
3.   Ikezoe T.
    Clin Calcium. 2014 Oct;24(10):1535-41. doi: CliCa141015351541. Japanese.
    PMID: 25266100
    Related citations

☐ Rehabilitation nutrition for **sarcopenia** with **disability**: a combination of both rehabilitation and
4.   nutrition care management.
    Wakabayashi H, Sakuma K.
    J Cachexia **Sarcopenia** Muscle. 2014 Dec;5(4):269-77. doi: 10.1007/s13539-014-0162-x. Epub 2014 Sep 16.
    PMID: 25223471   **Free PMC Article**
    Related citations

☐ **Sarcopenia** according to the european working group on **sarcopenia** in older people (EWGSOP)
5.   versus Dynapenia as a risk factor for **disability** in the elderly.
    da Silva Alexandre T, de Oliveira Duarte YA, Ferreira Santos JL, Wong R, Lebrão ML.
    J Nutr Health Aging. 2014 May;18(5):547-53. doi: 10.1007/s12603-013-0424-x.
    PMID: 24886743
    Related citations

☐ A pilot study of the SARC-F scale on screening **sarcopenia** and physical **disability** in the Chinese
6.   older people.

New feature
Try the new Display Settings option -
Sort by Relevance

**2 free full-text articles in PubMed
Central**
Rehabilitation nutrition for **sarcopenia** with
disability: a [J Cachexia Sarcopenia Muscle. ...]
Sarcopenia in stroke-facts and numbers on
muscle loss [J Cachexia Sarcopenia Muscle. ...]
                                    See all (2)...

Find related data
Database: Select ▾
Find items

Search details
```
sarcopenia[ti] AND disability[ti]
```

Search   See more...

Recent Activity
                          Turn Off   Clear
🔍 sarcopenia[ti] AND disability[ti] (19)
                                    PubMed
🔍 sarcopenia disability (313)
                                    PubMed
                                    See more...

PICO Question | Across Disciplines

Background | 5 Ws

Foreground | PICO

Who, What Problem

Population,

How, Why

Intervention, Cause

Straus, 2010, Evidence-based medicine; how to practice and teach it, (p. 15)
Melnyk, 2011, Evidence-based practice in nursing & healthcare: A guide to best practice, (p. 31)

My experience...

- Master Thesis

- PhD application process

    - Research Proposal Plan

- Publications

- Specificity

- Goal/Research oriented

- But, there is a process...!

References

Ellen Welty
Sheila Hofstetter

LibGuide
http://libguides.asu.edu/PICO