

Efficiently Searching for Systematic Reviews - How to Perform High Quality Searches More Efficiently

Erasmus MC
University Medical Center Rotterdam



Wichor Bramer

Erasmus MC - Rotterdam the Netherlands

AGMB Tagung- Basel CH

PubMed.gov PubMed Search

US National National Inst

EMBASE™ Search Browse Results Tools

Quick Wolters Kluwer | OvidSP My Account | Vraag het aan

Health

THE COCHRANE LIBRARY

Search

WEB OF SCIENCE™

Scopus

Search

Using PubMed Full Text PubMed PubMed New and

SEARCH Title, or try a

Scopus

Google ClinicalTrials.gov

A service of the U.S. National Institutes of Health

ClinicalTrials.gov is a clinical studies of human clinical studies and clinical studies

Basic Search

COCHRANE REVIEW Issue (Update) BROV

Exam

Find EBSCO HOST

Clinical

Searching: CINAHL | Choose Databases

Suggest Subject Terms

AND AND

Basic Search Advanced Search Search History

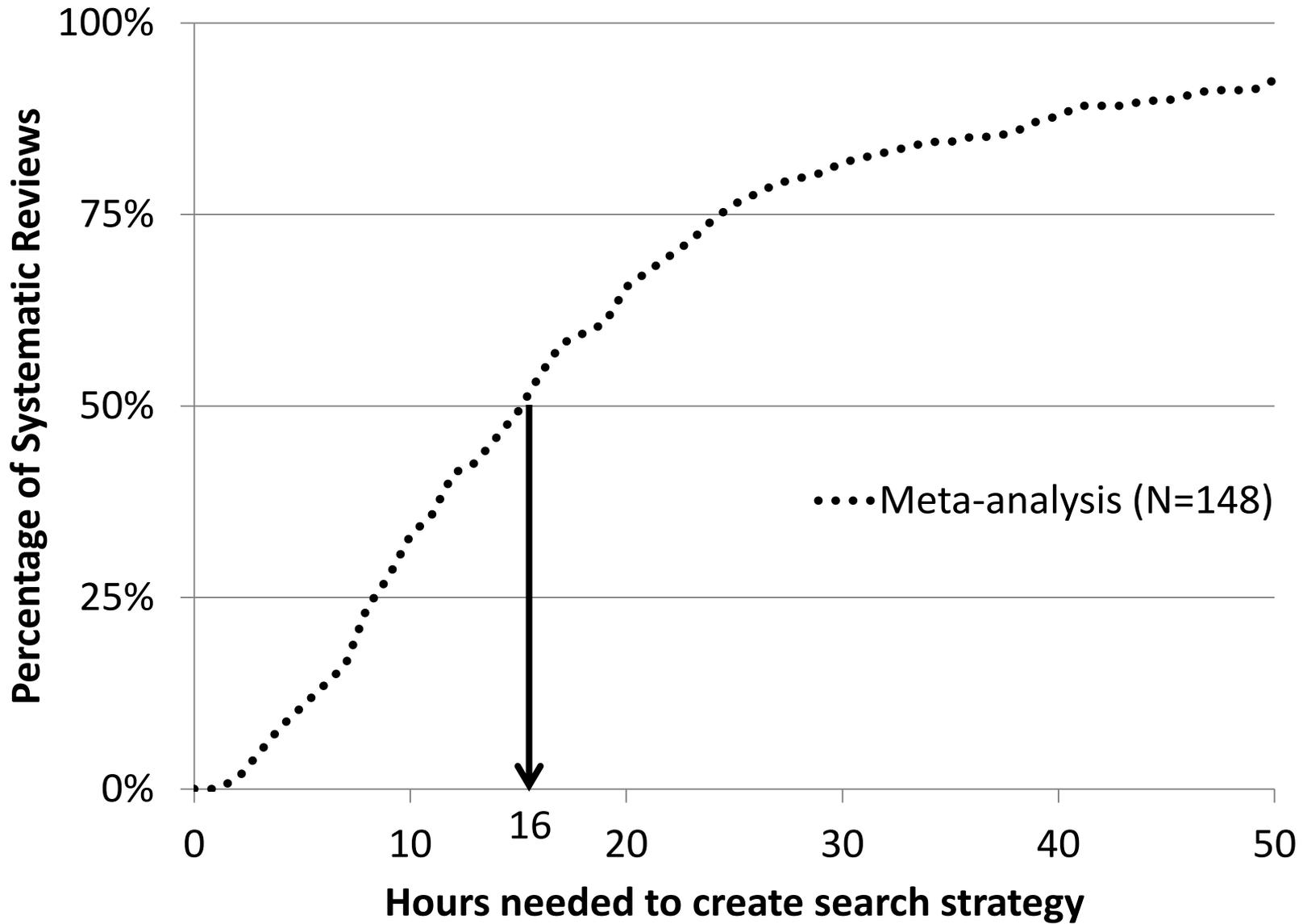
Ent (* o)

TIMESP

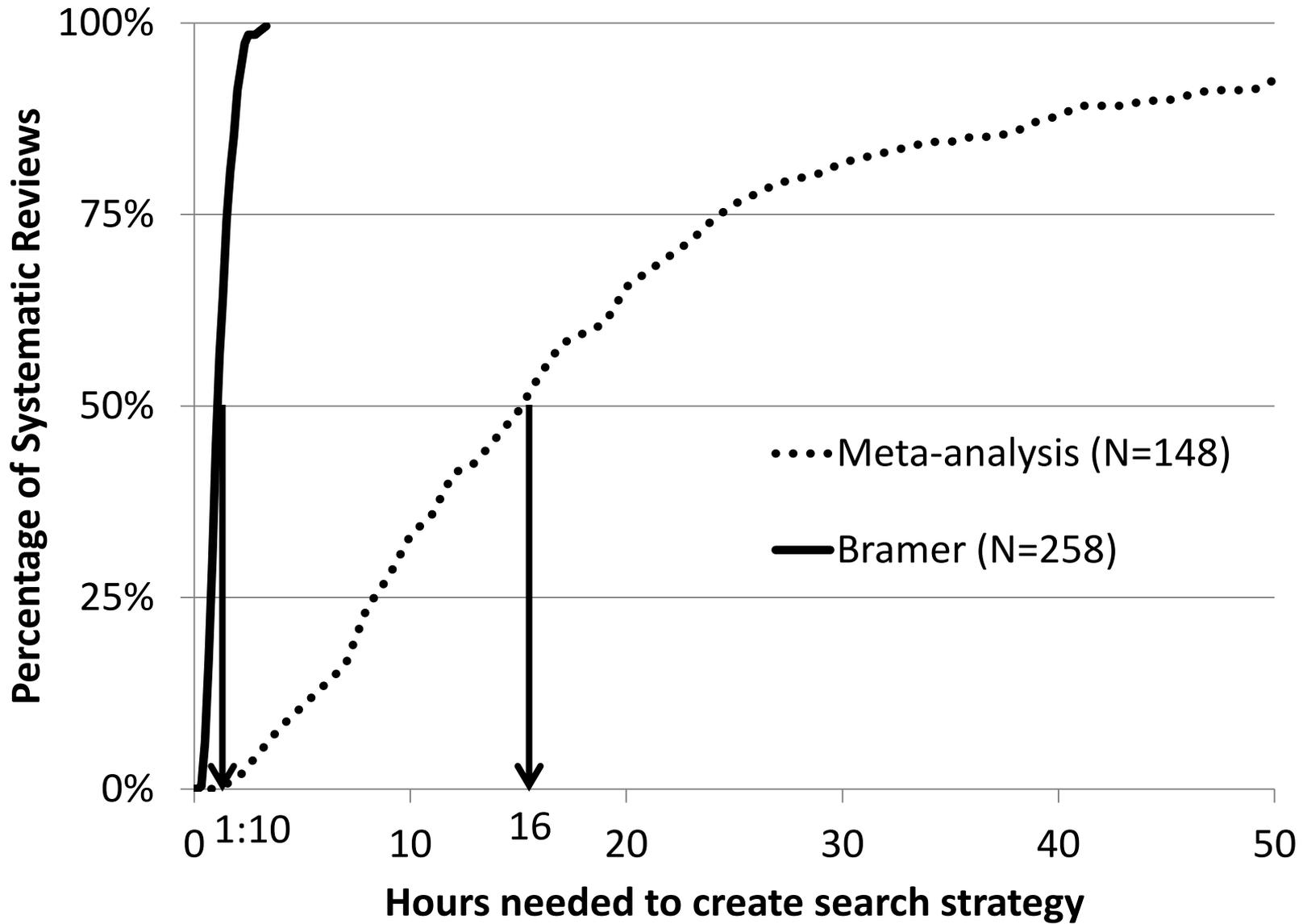
All

From

(512959)
44 or/18-43 (7140484)
45 random\$.tw. (892218)
46 factorial\$.tw. (23405)
47 crossover\$.tw. (49675)
48 cross over\$.tw. (22262)
49 cross-over\$.tw. (22262)
50 placebo\$.tw. (203743)
51 (doubl\$ adj blind\$).tw. (147609)
52 (singl\$ adj blind\$).tw. (14595)
53 assign\$.tw. (241607)
54 allocat\$.tw. (84725)
55 volunteer\$.tw. (181433)
56 Crossover Procedure/ (39305)
57 double-blind procedure.tw. (219)
58 Randomized Controlled Trial/ (347009)
59 Single Blind Procedure/ (18444)
60 or/45-59 (1428276)
61 (animal/ or nonhuman/) not human/ (4623513)
62 60 not 61 (1262127)
63 7 and 12 and 17 and 44 and 62 (952)
64 (201203* or 201204* or 201205* or 201206* or 201207* or 201208* or 201209*
or 201210* or 201011* or 201212* or 2013* or 2014*).dd. (3247786)
65 63 and 64 (263)
66 limit 65 to embase (204)



Hausner, 2015 (13); Saleh, 2014 (17); Allen, 1999 (19); Gann, 2013 (47); Lyon, 2014 (9) [1-5] and unpublished data from London Health Sciences Centre in Canada (43)



Hausner, 2015 (13); Saleh, 2014 (17); Allen, 1999 (19); Gann, 2013 (47); Lyon, 2014 (9) [1-5] and unpublished data from London Health Sciences Centre in Canada (43)

How well do they perform?

	Benchmark	This study
# terms	46	54
# databases	3	7
# hits	1399	2224
# includes	19	25
precision	1.2%	2.0%

Benchmark: 93 systematic reviews from 2014 with an acknowledgement or co-authorship of a medical information specialist from another Dutch academic hospital.

Success factors / Time savers

- Optimization techniques
- Macros for syntax translation

A new method of searching systematically

Is exercise therapy an effective treatment for hip osteoarthritis?

Elements : Bias

Very specific characteristics

→ **Duration of** breastfeeding and intelligence

Judgements

→ **Poor** family functioning, **harsh** parenting and **bullying** behavior

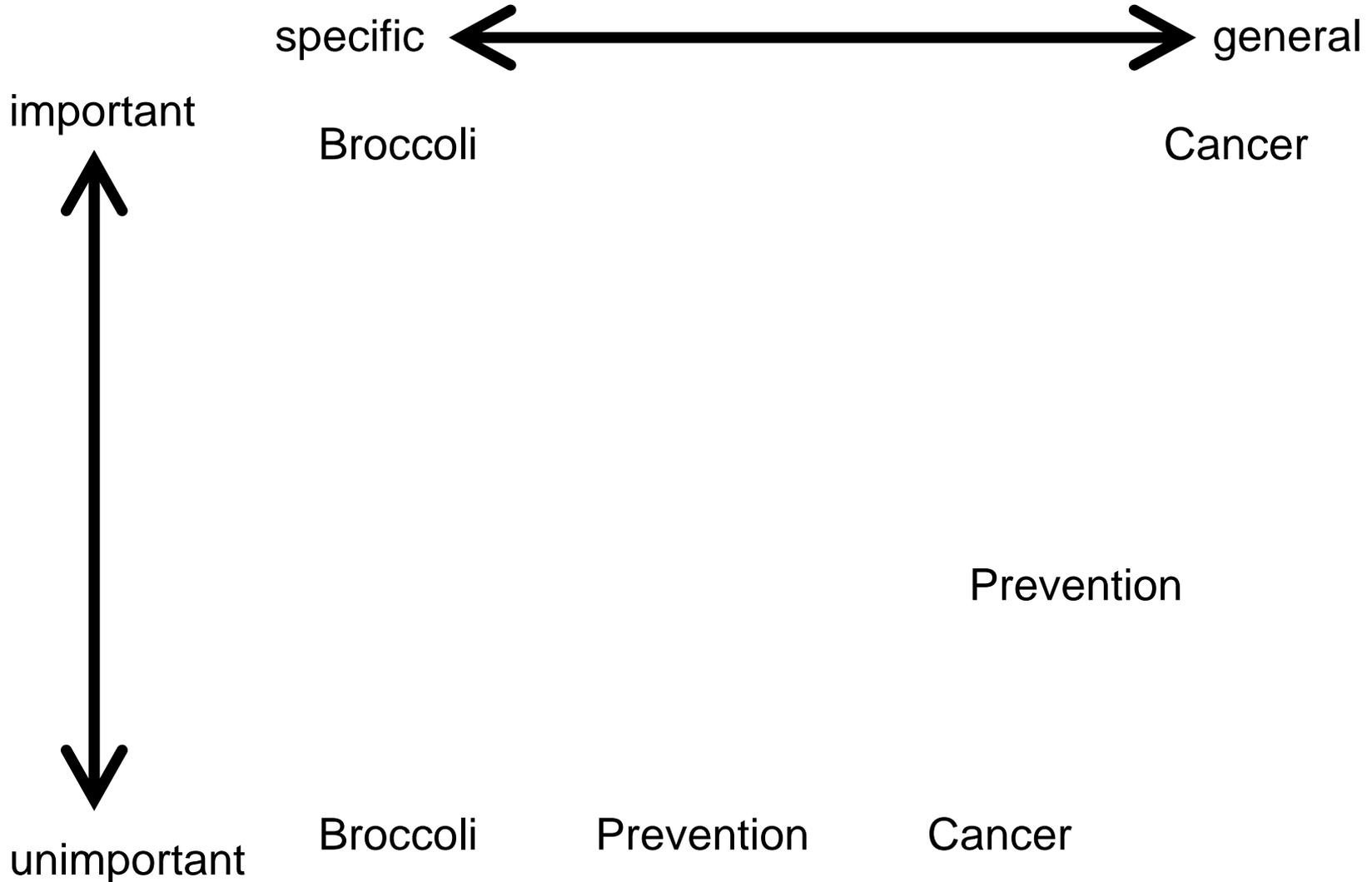
Elements : Duplicates

Pre-eclampsia ~~AND pregnant AND women~~

Lichtenstein therapy ~~AND inguinal hernias~~

Which elements to use:

Does eating Broccoli help in the prevention of cancer?



Which elements to use:

Is exercise therapy effective for hip osteoarthritis?

specific ←————→ general

important

Hip
osteoarthritis

Exercise
therapy

Treatment
effectiveness

unimportant

Exercise
therapy

Treatment
effectiveness

Hip
osteoarthritis



Identifying thesaurus terms

One element → One thesaurus term

One element → Multiple thesaurus terms (OR)

Multiple elements → One thesaurus term

Query Builder

Build a multi-term search query

Find Term

Browse by Facet

Type word or phrase (without quotes)

cancer mortality

Find Term

[cancer mortality](#)

mortality, cancer *use:* [cancer mortality](#)

LIFE SCIENCE SOLUTIONS

Professional Services™

Pathway Studio™

Reaxys® Medicinal Chemistry

Reaxys®

PharmaPendium®

Embase™

QUOSA™

SUPPORT

Help

Webinars

Guides and videos

Contact Support Team

PRODUCT

About Embase

News

Upcoming Events

Newsletter

Terms and Conditions

Privacy Policy

NEWSLETTER

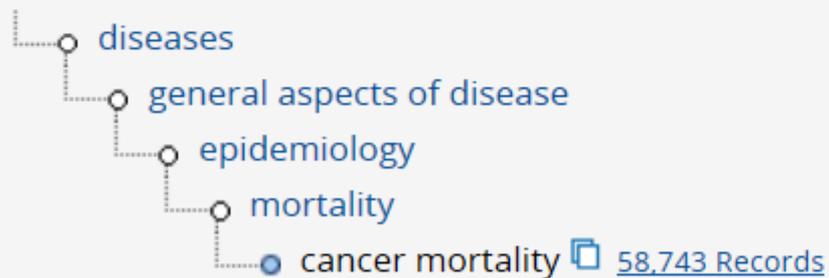
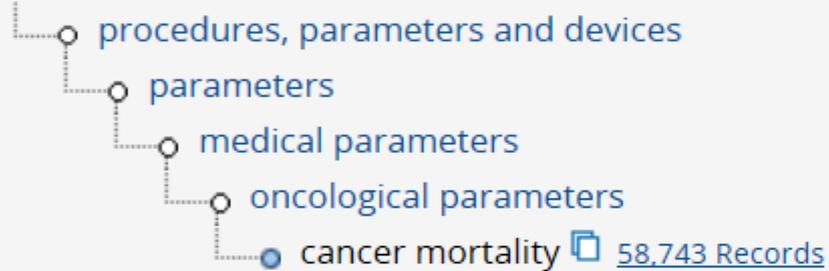
Subscribe to the newsletter to receive search tips and

[Subscribe](#)

Extend your search: Explosion As major focus
or

Take this query to Adv

Entree



History

This term was added to Entree in 1974

Find Term

Browse by Facet

Type word or phrase (without quotes)

cancer|

Find Term

cancer *use:* [neoplasm](#)

abdomen cancer *use:* [abdominal cancer](#)

[abdominal cancer](#)

acoustic nerve cancer *use:* [acoustic neurinoma](#)

adenoid cancer *use:* [adenoid cystic carcinoma](#)

adenoid cystic cancer *use:* [adenoid cystic carcinoma](#)

[adrenal cancer](#)

advanced breast cancer *use:* [breast cancer](#)

[advanced cancer](#)

advanced gynecologic cancer *use:* [gynecologic cancer](#)

advanced pelvic cancer *use:* [pelvis cancer](#)

advanced pelvis cancer *use:* [pelvis cancer](#)

alimentary canal cancer *use:* [digestive system cancer](#)

alimentary tract cancer *use:* [digestive system cancer](#)

alpha gal pancreatic cancer vaccine *use:* [algenpantucel L](#)

alveolar cell cancer *use:* [lung alveolus cell carcinoma](#)

alveolus cell cancer *use:* [lung alveolus cell carcinoma](#)

alveolus cell cancer, lung *use:* [lung alveolus cell carcinoma](#)

american cancer society *use:* [non profit organization](#)

amplified in breast cancer 1 protein *use:* [steroid receptor coactivator 3](#)

anal canal cancer *use:* [anus cancer](#)

anal cancer *use:* [anus cancer](#)

anaplastic cancer *use:* [anaplastic carcinoma](#)

[anaplastic thyroid cancer](#)

anti cancer drug *use:* [antineoplastic agent](#)

anti-cancer gene *use:* [antitumor gene](#)

anti-cancer genes *use:* [antitumor gene](#)

antigen, cancer *use:* [tumor antigen](#)

antigen, cancer associated *use:* [tumor antigen](#)

Type word or phrase (without quotes)

[Find Term](#)

mortality

[cancer mortality](#)

[cardiovascular mortality](#)

[child mortality](#) *use: childhood mortality*

[childhood mortality](#)

[drug mortality](#) *use: drug fatality*

[embryo mortality](#)

[embryonic mortality](#) *use: embryo mortality*

[excess mortality](#) *use: mortality*

[fetal mortality](#) *use: fetus mortality*

[fetus mortality](#)

[foetal mortality](#) *use: fetus mortality*

[foetus mortality](#) *use: fetus mortality*

[hospital mortality](#) *use: mortality*

[infant mortality](#)

[infantile mortality](#) *use: infant mortality*

[intrauterine mortality](#) *use: prenatal mortality*

[maternal mortality](#)

[mortality](#)

[mortality cause](#) *use: cause of death*

[mortality model](#) *use: mortality*

[mortality rate](#) *use: mortality*

[mortality risk](#) *use: mortality*

[mortality, premature](#) *use: premature mortality*

[mortality, cancer](#) *use: cancer mortality*

[mortality, childhood](#) *use: childhood mortality*

[mortality, fetal](#) *use: fetus mortality*

[mortality, foetal](#) *use: fetus mortality*

[mortality, infant](#) *use: infant mortality*

History Save | Delete | Print view | Export | Email

Combine using And Or

^ Collapse

- #4** 'cancer mortality':ti AND 'cancer mortality'/exp NOT ('cancer'/exp AND 'mortality'/exp) 361
- #3** 'cancer mortality':ti AND 'cancer'/exp AND 'mortality'/exp NOT 'cancer mortality'/exp [987](#)

361 results for search #4

Results View | Print | Export | Email | Order | Add to Clipboard 1 - 25 **next**

Sort by: Relevance Publication Year Entry Date Selected: 0 ([clear](#)), or

- 1** [Cancer mortality in Italy, 1979](#)
Decarli A., La Vecchia C.
Tumori 1985 **71:6**(519-528) [Cited by: 1](#)
Embase MEDLINE
- 2** [Cancer mortality after age 65 in metropolitan France \(1973-2003\)](#)
Rican S., Jouglu E., Kerzerho D., Gourdon G., Vaillant Z., Salem G.
Oncologie 2007 **9:3**(200-203) [Cited by: 0](#)
Embase [View Full Text](#)
- 3** [The effect of religious concentration and affiliation on county cancer mortality rates](#)
Dwyer J.W., Clarke L.L., Miller M.K.
Journal of Health and Social Behavior 1990 **31:2**(185-202) [Cited by: 50](#)
Embase MEDLINE [No abstract available] [View Full Text](#)
- 4** [Cancer mortality and urbanization in China](#)
Haynes R.
International Journal of Epidemiology 1986 **15:2**(268-271) [Cited by: 6](#)

Identifying thesaurus terms

One element → One thesaurus term

One element → Multiple thesaurus terms (OR)

Multiple elements → One thesaurus term

('cancer mortality' OR (neoplasm AND mortality))

(neoplasm OR 'cancer mortality') AND (mortality ~~OR 'cancer mortality'~~)

One element → Multiple thesaurus terms (AND)

Bennett Fracture: (Fracture, Bone AND metacarpal bones AND thumb)

Alcohol metabolites: alcohols/metabolism

Identifying free text words

Optimal sensitivity only by additionally searching in title / abstract:

- Relevant, non-inverted terms from synonyms/entry terms

Type word or phrase (without quotes)

shoulder

Find Term

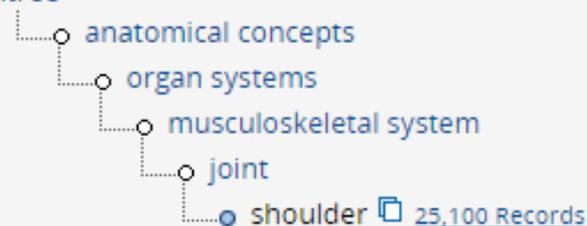
For term: '**shoulder**'

Extend your search: Explosion As major focus
or

Take this query to Advanced Search

Add to Q

Entree



History

This term was added to Entree in 1974

Synonyms

glenohumeral joint; humeroscapular joint; joint, glenohumeral; joint, humeroscapular; scapulo humeral joint; scapulohumeral joint; shoulder joint

Dorland's dictionary

glenohumeral joint = articulatio humeri.

shoulder = the junction of the upper limb and trunk; also that part of the trunk that is bounded at the back by the scapula. See also *regio deltoidea*.

shoulder joint = articulatio humeri.

Definition from *Dorland's Medical Dictionary*, 32nd edition, copyright © 2011 by Elsevier. For more information please go to www.dorlands.com

Shoulder

Year introduced: SHOULDER ARTHROSES was heading 1963-1964

PubMed search builder options

[Subheadings:](#)

- | | | |
|--|---|---|
| <input type="checkbox"/> abnormalities | <input type="checkbox"/> growth and development | <input type="checkbox"/> radiation effects |
| <input type="checkbox"/> analysis | <input type="checkbox"/> injuries | <input type="checkbox"/> radiography |
| <input type="checkbox"/> anatomy and histology | <input type="checkbox"/> innervation | <input type="checkbox"/> radionuclide imaging |
| <input type="checkbox"/> blood supply | <input type="checkbox"/> metabolism | <input type="checkbox"/> surgery |
| <input type="checkbox"/> cytology | <input type="checkbox"/> microbiology | <input type="checkbox"/> therapy |
| <input type="checkbox"/> diagnosis | <input type="checkbox"/> parasitology | <input type="checkbox"/> ultrasonography |
| <input type="checkbox"/> drug effects | <input type="checkbox"/> pathology | <input type="checkbox"/> ultrastructure |
| <input type="checkbox"/> embryology | <input type="checkbox"/> physiology | <input type="checkbox"/> virology |
| <input type="checkbox"/> etiology | <input type="checkbox"/> physiopathology | |

Restrict to MeSH Major Topic.

Do not include MeSH terms found below this term in the MeSH hierarchy.

Tree Number(s): A01.378.800.750

MeSH Unique ID: D012782

Entry Terms:

- Shoulders

[All MeSH Categories](#)

[Anatomy Category](#)

[Body Regions](#)

[Extremities](#)

[Upper Extremity](#)

Shoulder

Shoulder Joint

The articulation between the head of the HUMERUS and the glenoid cavity of the SCAPULA.

Year introduced: 1965

PubMed search builder options

[Subheadings:](#)

abnormalities

analysis

anatomy and histology

blood supply

chemistry

cytology

diagnosis

drug effects

embryology

enzymology

etiology

growth and development

immunology

injuries

innervation

metabolism

microbiology

parasitology

pathology

physiology

physiopathology

radiation effects

radiography

radionuclide imaging

surgery

therapy

transplantation

ultrasonography

ultrastructure

virology

Restrict to MeSH Major Topic.

Do not include MeSH terms found below this term in the MeSH hierarchy.

Tree Number(s): A02.835.583.748

MeSH Unique ID: D012785

Entry Terms:

- Joint, Shoulder
- Joints, Shoulder
- Shoulder Joints
- Glenohumeral Joint
- Glenohumeral Joints
- Joint, Glenohumeral
- Joints, Glenohumeral

[All MeSH Categories](#)

[Anatomy Category](#)

Identifying free text words

Optimal sensitivity only by additionally searching in title / abstract:

- Relevant, non-inverted terms from synonyms / entry terms

Shoulder: glenohumeral joint- humeroscapular joint- scapulo humeral joint- scapulohumeral joint- articulatio humeri

- Relevant words / phrases from narrower terms

Tree Number(s): C04.588.274.476.411.307, C06.301.371.411.307, C06.405.249.411.307, C06.405.469.158.35
C06.405.469.860.180

MeSH Unique ID: D015179

Entry Terms:

- Neoplasms, Colorectal
- Colorectal Neoplasm
- Neoplasm, Colorectal
- Colorectal Tumors
- Colorectal Tumor
- Tumor, Colorectal
- Tumors, Colorectal
- Colorectal Carcinoma
- Carcinoma, Colorectal
- Carcinomas, Colorectal
- Colorectal Carcinomas
- Colorectal Cancer
- Cancer, Colorectal
- Cancers, Colorectal
- Colorectal Cancers

Previous Indexing:

- [Colonic Neoplasms \(1966-1988\)](#)
- [Rectal Neoplasms \(1966-1988\)](#)

See Also:

Neoplasms by Site

Digestive System Neoplasms

Gastrointestinal Neoplasms

Intestinal Neoplasms

Colorectal Neoplasms

Adenomatous Polyposis Coli

Gardner Syndrome

Colonic Neoplasms

Adenomatous Polyposis Coli +

Sigmoid Neoplasms

Colorectal Neoplasms, Hereditary Nonpolyposis

Rectal Neoplasms

Anus Neoplasms +

System Diseases

Digestive System Neoplasms

Identifying free text words

Optimal sensitivity only by additionally searching in title / abstract:

- Relevant, non-inverted terms from synonyms / entry terms

Shoulder: glenohumeral joint- humeroscapular joint- scapulo humeral joint- scapulohumeral joint- articulatio humeri

- Relevant words / phrases from narrower terms

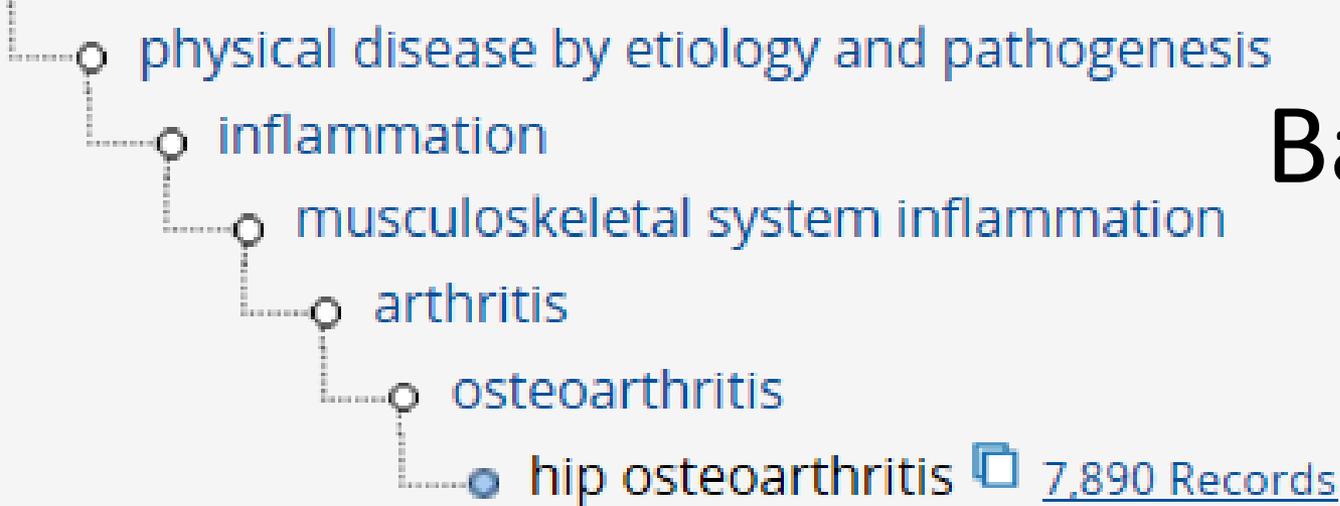
Colorectal Neoplasms: Colonic cancer- Cancer of Sigmoid- Rectum tumor- Anal Neoplasms...etc...

Standard syntax

(considered familiar)

	Embase.com	OvidSP	PubMed
Boolean	AND, OR, NOT		
Thesaurus	/exp	exp .../	[mh]
---- Unexploded	/de	.../	[mh:noexp]
Title / abstract	():ab,ti	().ab,ti.	[tiab]
Phrases	'single quotes'	No quotes needed	"Double quotes" or *
Proximity	NEAR/n	ADJn	Not possible: use AND

Basic Query



Synonyms

arthrosis, hip; arthrosis, hip joint; cox arthrosis; coxarthrosis; coxarthroses; coxarthrosis; hip arthrosis; hip joint arthrosis; hip osteo-arthritis; hip osteo-arthrosis; hip osteoarthrosis; malum coxae senilis; osteoarthritis, hip

```
('hip osteoarthritis'/exp OR (coxarth*  
OR ((hip OR cox) NEAR/3 (arthros* OR  
arthrit* OR osteoarth*)) OR 'malum  
coxae senilis'):ab,ti)
```

Ovid (Medline) syntax

()

(exp ""/)

(exp "osteoarthritis, hip")

(exp "osteoarthritis, hip"/ OR ().ab,ti.)

(exp "osteoarthritis, hip"/ OR (coxarth*).ab,ti.)

(exp "osteoarthritis, hip"/ OR (coxarth* OR () ADJ3
()))).ab,ti.)

(exp "osteoarthritis, hip"/ OR (coxarth* OR (hip OR cox)
ADJ3 (arthrit* OR arthros* OR osteoarth*))).ab,ti.)

PubMed syntax (not optimal)

()

(""[mh])

("osteoarthritis, hip"[mh])

(exp "osteoarthritis, hip"/ OR coxarth*[tiab])

(exp "osteoarthritis,
hip"/ OR coxarth*[tiab]

OR ((hip[tiab] OR

cox[tiab]) AND

(arthrit*[tiab] OR

arthros*[tiab] OR ...)))

(exp "osteoarthritis, hip"/ OR

coxarth*[tiab] OR hip arthrit*[tiab]

OR cox arthrit*[tiab]

OR hip arthros*[tiab]

OR cox arthros*[tiab]

OR hip osteoarthritis*[tiab] OR ...)

Basic Query – 461 hits

('hip osteoarthritis'/exp OR (Coxarthros* OR
'malum coxae sinilis' OR ((hip OR cox)
NEAR/3 (arthrit* OR arthros* OR
osteoarthr*))) :ab,ti) AND
('kinesiotherapy'/exp OR (kinesiotherap* OR
kinesitherap* OR ((exercise) NEAR/3
(technique* OR treat* OR therap*))) :ab,ti)

Optimization

('hip osteoarthritis'/exp OR (Coxarthros* OR
'malum coxae sinilis' OR ((hip OR cox)
NEAR/3 (arthrit* OR arthros* OR
osteoarthr*))) :ab,ti) AND
('kinesiotherapy'/exp **NOT** (kinesiotherap*
OR kinesitherap* OR ((exercise) NEAR/3
(technique* OR treat* OR therap*))) :ab,ti)

#1 'hip osteoarthritis'/exp OR coxarthros*:ab,ti OR 'malum coxae sinilis':ab,ti OR ((hip OR cox) NEAR/3 (arthrit* OR arthros* OR osteoarthr*)):ab,ti AND 'kinesiotherapy'/(kinesiotherap*:ab,ti OR kinesitherap*:ab,ti OR (exercise NEAR/3 (technique* OR treat* OR therap*)):ab,ti)

11 results for search #1

Sort by: Relevance Publication Year Entry Date

Selected: 0 (clear), or

1 [Osteoarthritis of the hip](#)

Lequesne M.

Revue du Praticien 2002 **52:6** (605-610) [Cited by: 2](#)

Embase MEDLINE [Abstract](#) [Index Terms](#)

2 [Long-term follow-up study of conservative therapy for coxarthrosis: Two case studies](#)

Nakajima M., Nagashima T.

Physiotherapy 2001 **87:10** (530-535) [Cited by: 0](#)

Embase [Abstract](#) [Index Terms](#) [View Full Text](#) ↗

3 [Coxarthrosis and physical work load](#)

Vingard E., Hogstedt C., Alfredsson L., Fellenius E., Goldie I., Koster M.

Scandinavian Journal of Work, Environment and Health 1991 **17:2** (104-109) [Cited by: 62](#)

Embase MEDLINE [Abstract](#) [Index Terms](#)

4 [Physical and physiotherapeutic measures to restore function in coxarthrosis](#)

Neff G.

Munchener Medizinische Wochenschrift 1978 **120:25** (869-873) [Cited by: 0](#)

Embase MEDLINE [Abstract](#) [Index Terms](#)

5 [Immediate efficacy of neuromuscular exercise in patients with severe osteoarthritis of the hip or knee: A secondary analysis from a randomized controlled trial](#)

Villadsen A., Overgaard S., Hoisgaard-Larsen A., Christensen R., Roos E.M.

Journal of Rheumatology 2014 **41:7** (1385-1394)

Embase MEDLINE [Abstract](#) [Index Terms](#) [View Full Text](#) ↗

6 [Ipsilateral total hip arthroplasty in a dysvascular below-knee amputee for advanced hip osteoarthritis: A case report and review of the literature](#)

Mak J., Solomon M., Faux S.

Prosthetics and Orthotics International 2008 **32:2** (155-159) [Cited by: 4](#)

Embase MEDLINE [Abstract](#) [Index Terms](#) [View Full Text](#) ↗

7 [Questions and answers on the care of the motor system. Early release of a patient following surgery of coxarthrosis](#)

Suzuki M., Megumi H.

[Kango gijyutsu] : [Nursing technique] 1989 **35:4** (434-435) [Cited by: 0](#)

MEDLINE [No abstract available] [Index Terms](#)

683 hits

('hip osteoarthritis'/exp OR (Coxarthros* OR
'malum coxae sinilis' OR ((hip OR cox)
NEAR/3 (arthrit* OR arthros* OR
osteoarthr*))) :ab,ti) AND

('kinesiotherapy'/exp OR (kinesiotherap* OR
kinesitherap* OR ((exercise) NEAR/3
(technique* OR treat* OR therap* **OR**
neuromusc*)) **OR (conservativ* NEAR/3**
therap*) OR physiotherap*):ab,ti)

Optimization

('hip osteoarthritis'/exp OR (Coxarthros* OR 'malum coxae sinilis' OR ((hip OR cox) NEAR/3 (arthrit* OR arthros* OR osteoarthr*))) :ab,ti) AND ((kinesiotherap* OR kinesitherap* OR ((exercise) NEAR/3 (technique* OR treat* OR therap* OR neuromusc*)) OR (conservativ* NEAR/3 therap*) OR physiotherap*) :ab,ti) **NOT 'kinesiotherapy'/exp**

Results View | Print | Export | Email | Order | Add to Clipboard

Sort by: Relevance Publication Year Entry Date

Selected: 0 (clear)

 1 [Osteoarthritis of the hip and/or knee in dutch general practice and physiotherapy practice](#)Barten D.-J., Swinkels I.C., Dorsman S.A., Veenhof C.
Osteoarthritis and Cartilage 2012 **20** SUPPL. 1 (S187-S188)Embase [View Full Text](#)

Drug Terms

analgesic agent, nonsteroid antiinflammatory agent

Disease Terms

osteoarthritis, hip osteoarthritis

Other Terms

society, physiotherapy practice, general practice, knee, hip, human, patient, physiotherapist, registration, general practitioner, prevalence, female, demography, physiotherapy, chi square test, health, gender, incidence, male

 2 [Out-patient physiotherapy for people with bilateral coxarthrosis](#)Bolach E., Bolach B., Trzonkowski J.
 Fizjoterapia 2007 **15:2** (9-16) [Cited by: 2](#)Embase 3 [Efficacy of a multimodal physiotherapy treatment program for hip osteoarthritis: A randomised placebo-controlled trial protocol](#)Bennell K.L., Egerton T., Pua Y.-H., Abbott J.H., Sims K., Metcalf B., McManus F., Wrigley T.V., Forbes A., Harris A., Buchbinder R.
BMC Musculoskeletal Disorders 2010 **11** Article Number 238 [Cited by: 7](#)Embase MEDLINE [View Full Text](#)

Drug Terms

placebo

Disease Terms

hip osteoarthritis, hip pain

Other Terms

article, Australia, clinical effectiveness, clinical trial, controlled clinical trial, controlled study, double blind procedure, echography, exercise, follow-up, clinical study, manipulative medicine, pain assessment, patient education, physical activity, physiotherapist, physiotherapy, radiodiagnosis, randomised controlled trial, reproducibility, treatment outcome, visual analog scale

 4 [A randomized controlled trial comparing hydrotherapy and conventional physiotherapy to patients with hip osteoarthritis \(HOA\)](#)Patru S., Marcu I.R., Bighea A.C., Caimac D., Popescu R.S., Matei D.
Osteoporosis International 2014 **25** SUPPL. 2 (S255-)Embase [View Full Text](#) 5 [Physiotherapy in osteoarthritis--a review of literature on conservative therapy of knee and hip osteoarthritis](#)

Hoffmann S., Theiler R.

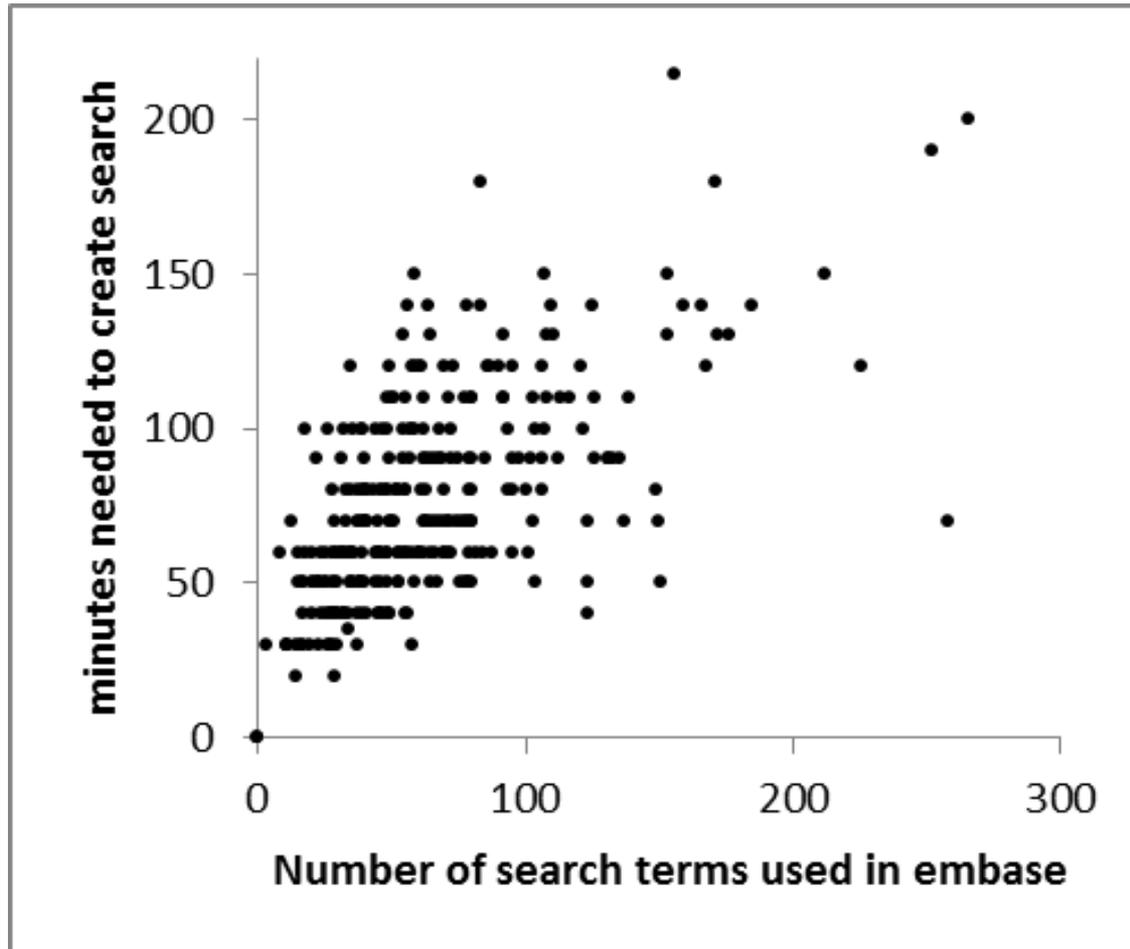
2362 hits

('hip osteoarthritis'/exp OR (Coxarthros* OR 'malum coxae sinilis' OR ((hip OR cox) NEAR/3 (arthrit* OR arthros* OR osteoarthr*)))):ab,ti) AND ('kinesiotherapy'/exp OR **physiotherapy/exp OR physiotherapist/exp OR 'physiotherapy practice'/exp OR exercise/exp OR 'manipulative medicine'/exp OR 'physical activity'/exp** OR (kinesiotherap* OR kinesitherap* OR ((exercise) NEAR/3 (technique* OR treat* OR therap* OR neuromusc*)) OR (conservativ* NEAR/3 therap*) OR physiotherap*):ab,ti)

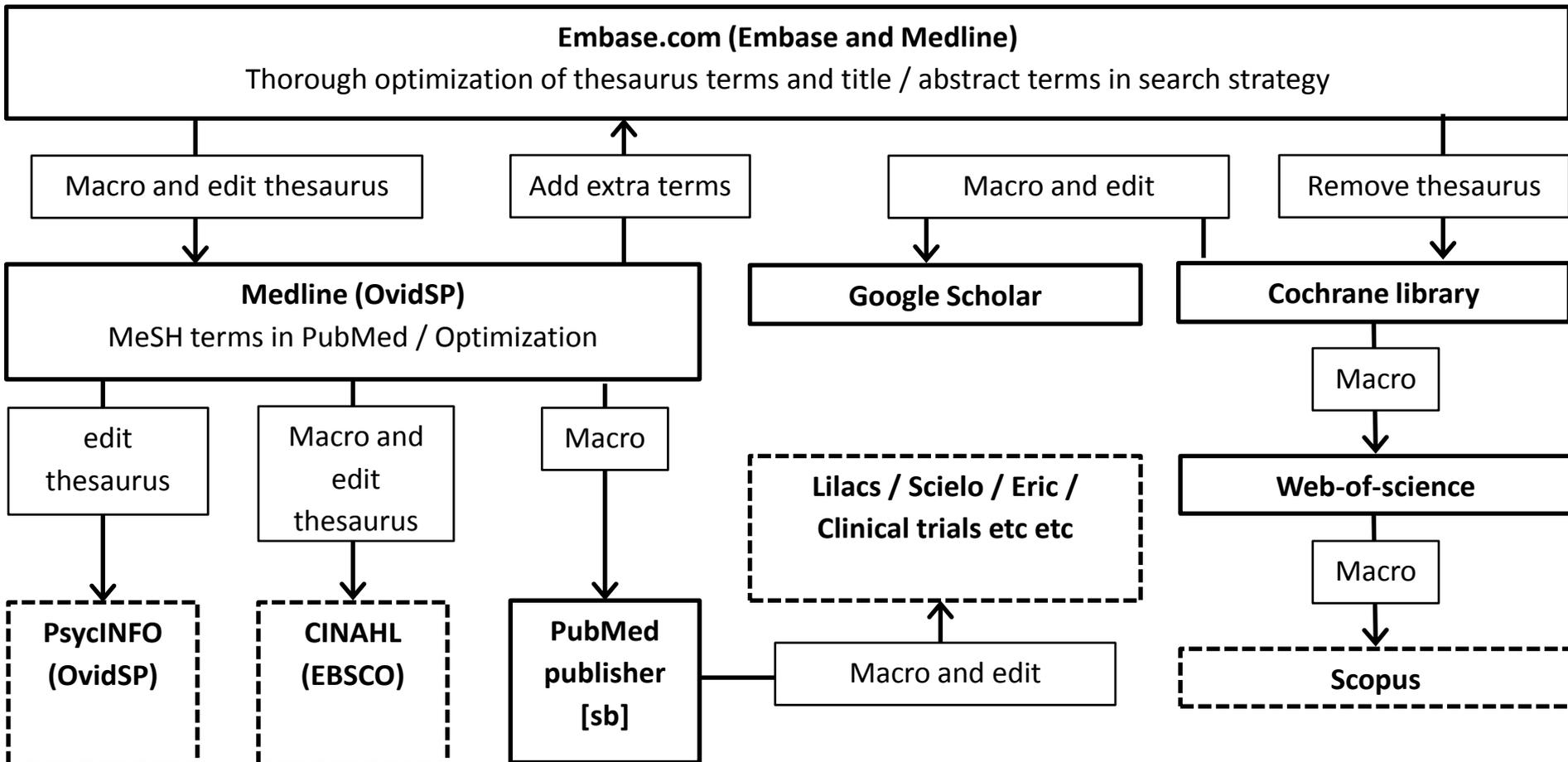
Optimized for sensitivity – 3571 hits

('hip osteoarthritis'/exp OR (Coxarthros* OR 'malum coxae sinilis' OR ((hip OR cox) NEAR/4 (arthrit* OR arthros* OR osteoarthr* OR oa))):ab,ti) AND ('kinesiotherapy'/exp OR Kinesiology/exp OR walking/exp OR physiotherapy/exp OR 'conservative treatment'/exp OR physiotherapist/exp OR 'manipulative medicine'/exp OR exercise/exp OR 'movement (physiology)'/exp OR 'physiotherapy practice'/exp OR 'physical activity'/exp OR (kinesiotherap* OR kinesitherap* OR exercis* OR ((motion OR conservative OR manual OR manipulat*) NEAR/3 (technique* OR treat* OR therap*)) OR Chiropract* OR physiotherap* OR (phys* NEAR/3 (therap* OR activ*))) :ab,ti)

Minutes per term



Translating the strategy between databases



Acl reconstruction vascular complication

Embase.com	328	327
Medline (ovidSP)	211	70
Web of science	166	77
Cinahl	38	16
Cochrane	16	2
PubMed publisher	20	19
Google scholar	100	58
Total	879	569

Embase.com 328

('anterior cruciate ligament reconstruction'/exp OR 'anterior cruciate ligament injury'/exp/dm_su OR 'anterior cruciate ligament'/exp/dm_su OR 'anterior cruciate ligament rupture'/exp/dm_su OR ('anterior cruciate ligament'/exp AND ('ligament injury'/exp/dm_su OR 'ligament surgery'/exp OR 'knee ligament surgery'/de OR 'knee arthroscopy'/exp)) OR ((anterior NEAR/6 ligament* NEAR/6 (reconstruct* OR surg* OR repair*)) OR (acl NEAR/3 (reconstruct* OR surg* OR repair*)):ab,ti) AND ('blood vessel injury'/exp OR 'vascular disease'/exp OR hemarthrosis/exp OR 'anterior tibial syndrome'/exp OR (((vessel* OR arter* OR vein* OR vascul*) NEAR/3 (damage* OR injur* OR complication* OR trauma OR accident* OR lesion* OR disease*)) OR embolism OR thrombo* OR claudicat* OR aneurism* OR ischem* OR ischaem* OR extravasat* OR reperfusion* OR hemarthros* OR haemarthros* OR phlebothrombo* OR ((compartment* OR 'anterior tibial') NEAR/3 syndrome*)):ab,ti)

Medline (ovidSP) 211

(exp anterior cruciate ligament reconstruction/ OR anterior cruciate ligament/su OR (anterior cruciate ligament/ AND (arthroscopy/)) OR ((anterior ADJ6 ligament* ADJ6 (reconstruct* OR surg* OR repair*)) OR (acl ADJ3 (reconstruct* OR surg* OR repair*)):ab,ti.) AND (exp vascular diseases/ OR exp Blood Vessels/in OR hemarthrosis/ OR Anterior Compartment Syndrome/ OR (((vessel* OR arter* OR vein* OR vascul*) ADJ3 (damage* OR injur* OR complication* OR trauma OR accident* OR lesion* OR disease*)) OR embolism OR thrombo* OR claudicat* OR aneurism* OR ischem* OR ischaem* OR extravasat* OR reperfusion* OR hemarthros* OR haemarthros* OR phlebothrombo* OR ((compartment* OR anterior tibial) ADJ3 syndrome*)):ab,ti.)

Cochrane 16

((anterior NEAR/6 ligament* NEAR/6 (reconstruct* OR surg* OR repair*)) OR (acl NEAR/3 (reconstruct* OR surg* OR repair*)):ab,ti) AND (((vessel* OR arter* OR vein* OR vascul*) NEAR/3 (damage* OR injur* OR complication* OR trauma OR accident* OR lesion* OR disease*)) OR embolism OR thrombo* OR claudicat* OR aneurism* OR ischem* OR ischaem* OR extravasat* OR reperfusion* OR

hemarthros* OR haemarthros* OR phlebothrombo* OR ((compartment* OR 'anterior tibial') NEAR/3 syndrome*)):ab,ti)

Web of science 166

TS=(((anterior NEAR/6 ligament* NEAR/6 (reconstruct* OR surg* OR repair*)) OR (acl NEAR/3 (reconstruct* OR surg* OR repair*))) AND (((vessel* OR arter* OR vein* OR vascul*) NEAR/3 (damage* OR injur* OR complication* OR trauma OR accident* OR lesion* OR disease*)) OR embolism OR thrombo* OR claudicat* OR aneurism* OR ischem* OR ischaem* OR extravasat* OR reperfusion* OR hemarthros* OR haemarthros* OR phlebothrombo* OR ((compartment* OR "anterior tibial") NEAR/3 syndrome*))))

Cinahl 38

(MH "anterior cruciate ligament reconstruction+" OR MH "anterior cruciate ligament+"/su OR (MH "anterior cruciate ligament+" AND (MH arthroscopy+)) OR ((anterior N6 ligament* N6 (reconstruct* OR surg* OR repair*)) OR (acl N3 (reconstruct* OR surg* OR repair*))) AND (MH "vascular diseases+" OR MH "Blood Vessels+"/in OR MH hemarthrosis+ OR MH "Anterior Compartment Syndrome+" OR (((vessel* OR arter* OR vein* OR vascul*) N3 (damage* OR injur* OR complication* OR trauma OR accident* OR lesion* OR disease*)) OR embolism OR thrombo* OR claudicat* OR aneurism* OR ischem* OR ischaem* OR extravasat* OR reperfusion* OR hemarthros* OR haemarthros* OR phlebothrombo* OR ((compartment* OR anterior tibial) N3 syndrome*)))

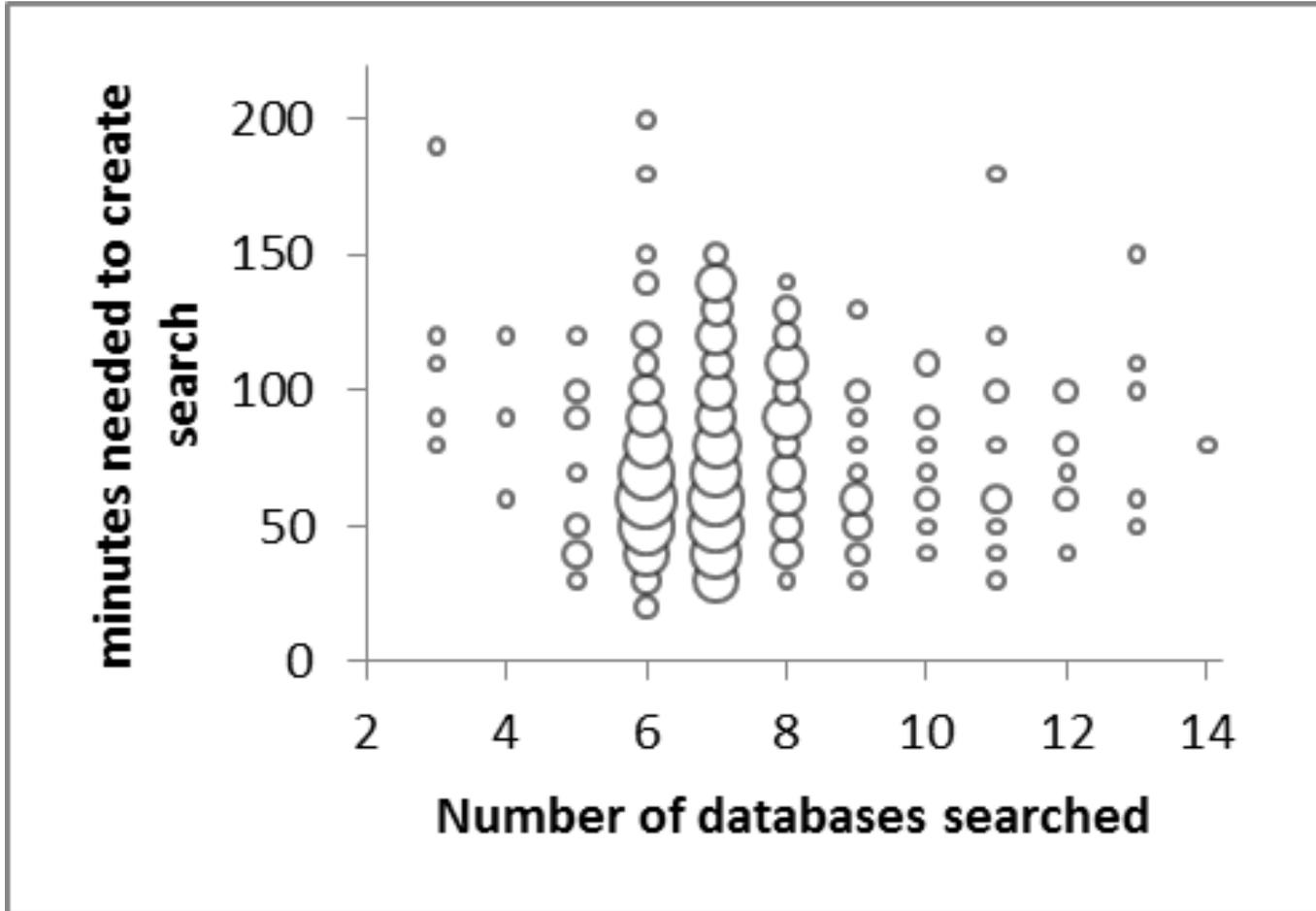
PubMed publisher 20

(anterior cruciate ligament reconstruction[mh] OR anterior cruciate ligament[mh]su OR (anterior cruciate ligament[mh] AND (arthroscopy[mh])) OR ((anterior AND ligament*[tiab] AND (reconstruct*[tiab] OR surg*[tiab] OR repair*[tiab])) OR (acl AND (reconstruct*[tiab] OR surg*[tiab] OR repair*[tiab])))) AND (vascular diseases[mh] OR Blood Vessels[mh]in OR hemarthrosis[mh] OR Anterior Compartment Syndrome[mh] OR (((vessel*[tiab] OR artery[tiab] OR arterial*[tiab] OR arteries*[tiab] OR vein*[tiab] OR vascul*[tiab]) AND (damage*[tiab] OR injur*[tiab] OR complication*[tiab] OR trauma OR accident*[tiab] OR lesion*[tiab] OR disease*[tiab])) OR embolism OR thrombos*[tiab] OR thromboem*[tiab] OR thrombot*[tiab] OR thrombo[tiab] OR claudicat*[tiab] OR aneurism*[tiab] OR ischem*[tiab] OR ischaem*[tiab] OR extravasat*[tiab] OR reperfusion*[tiab] OR hemarthros*[tiab] OR haemarthros*[tiab] OR phlebothrombo*[tiab] OR ((compartment*[tiab] OR anterior tibial) AND syndrome*[tiab]))) AND publisher[sb]

Google scholar

"anterior * ligament reconstruction|surgery|repair" | "acl reconstruction|surgery|repair" "vessel|artery|arterial|arteries|veins|vascular damage|injury|complications" | embolism|thrombosis|aneurism|ischemia|ischaemia|hemarthrosis|"compartment syndrome"

Minutes per database



Success factors / Time savers

- Single-line search strategies
- Create query in Word and paste in databases
(watch out for spelling check and smart quotes)
- Database order and interface choice
- Optimization techniques
- Direct feedback by researcher
- Macros for syntax translation
- More variation in PICO
- Experience (be pro-active)
- Computer literacy

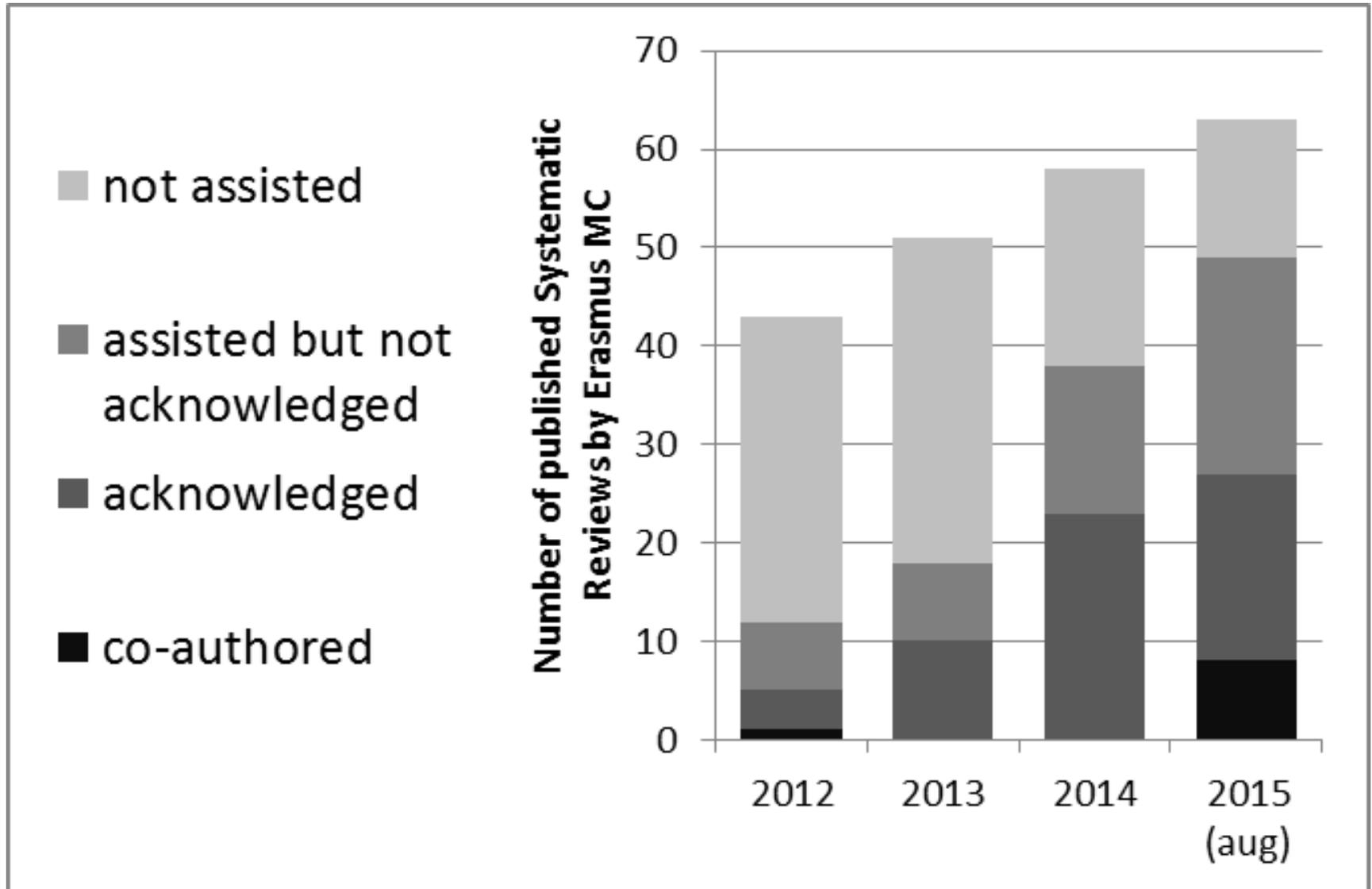
Quality is the norm, not speed!

Not a blueprint for speed but for
confidence by standardization

Speed can only be a result of experience

By gaining speed more customers can be helped
and overall review quality will improve

The effect for our organization



More information:

Treffpunkt 4 (15:20-16:15 / 17:05-18:00)

Efficient searching methods demonstrated –

Live searches on participants' research questions

Send research questions to:

w.bramer@erasmusmc.nl

@wichor



Contact details

E-mail: w.bramer@erasmusmc.nl

Twitter: [@wichor](https://twitter.com/wichor)

LinkedIn: nl.linkedin.com/in/wichor

Slideshare: www.slideshare.net/wichor

ResearchGate:
researchgate.net/profile/Wichor_Bramer

Further reading:

- Bramer WM, Giustini D, Kramer BM, Anderson PF. [The comparative recall of Google Scholar versus PubMed in identical searches for biomedical systematic reviews: a review of searches used in systematic reviews.](#) Syst Rev. 2013 Dec 23;2:115.
- Bramer WM, Holland L, Mollema J, Hannon T, Bekhuis T. [Removing duplicates in retrieval sets from electronic databases: comparing the efficiency and accuracy of the Bramer-method with other methods and software packages](#) (Eahil conference, Rome)
- Embase webinar (25 feb 2015) : [Systematic searching with Wichor Bramer](#)
- Bramer WM, Pols DHJ, Bindels PJE, Bohnen AM. **A fast, reliable and objective method for creating thematic search filters in bibliographic databases** [in process]
- Work in progress on coverage, retrieval and relevance ranking of the major databases for systematic reviews (>520 exhaustive searches; >115 reviews finished; >5000 included references)
- Two articles in progress about this methodology (how to, and how well)

References

1. Hausner E, Guddat C, Hermanns T, Lampert U, Waffenschmidt S. Development of search strategies for systematic reviews: Validation showed the noninferiority of the objective approach. *Journal of clinical epidemiology*. 2015;68(2):191-9.
2. Saleh AA, Ratajeski MA, Bertolet M. Grey Literature Searching for Health Sciences Systematic Reviews: A Prospective Study of Time Spent and Resources Utilized. *Evid Based Libr Inf Pract*. 2014;9(3):28-50.
3. Allen IE, Olkin I. Estimating time to conduct a meta-analysis from number of citations retrieved. *JAMA*. 1999 Aug 18;282(7):634-5.
4. Gann LB, Pratt GF. Using library search service metrics to demonstrate library value and manage workload. *J Med Libr Assoc*. 2013 Jul;101(3):227-9.
5. Lyon JA, Garcia-Milian R, Norton HF, Tennant MR. The Use of Research Electronic Data Capture (REDCap) Software to Create a Database of Librarian-Mediated Literature Searches. *Medical reference services quarterly*. 2014;33(3):241-52.

Single line approach or set numbers?

Well structured?

#1 brassica[mh]
#2 brassica*[tiab]
#3 broccoli[tiab]
#4 #1 OR #2 OR #3
#5 neoplasm[mh]
#6 neoplas*[tiab]
#7 cancer*[tiab]
#8 tumor*[tiab]
#9 #5 OR #6 OR #7 OR #8
#10 #4 AND #9
#11 animals[mh]
#12 humans[mh]
#13 #11 AND #12
#14 #11 NOT #13
#15 #10 NOT #14

Unstructured?

(brassica[mh] OR brassica*[tiab]
OR broccoli[tiab]) AND
(neoplasm[mh] OR neoplas*[tiab]
OR cancer*[tiab] OR tumor*[tiab]))
NOT (animals[mh] NOT
humans[mh])

Single line approach or set numbers?

Well structured?

#1 brassica[mh]
#2 brassica*[tiab]
#3 broccoli[tiab]
#4 #1 OR #2 OR #3
#5 neoplasm[mh]
#6 neoplas*[tiab]
#7 cancer*[tiab]
#8 tumor*[tiab]
#9 #5 OR #6 OR #7 OR #8
#10 #4 AND #9
#11 animals[mh]
#12 humans[mh]
#13 #11 AND #12
#14 #11 NOT #13
#15 #10 NOT #14
#16 **cauliflower*[tiab]**
#17 **#1 OR #2 OR #3 OR #16**
#18 **#17 AND #9**
#19 **#18 NOT #14**

Unstructured?

(brassica[mh] OR brassica*[tiab]
OR broccoli[tiab] **OR**
cauliflower*[tiab]) AND
(neoplasm[mh] OR neoplas*[tiab]
OR cancer*[tiab] OR tumor*[tiab]))
NOT (animals[mh] NOT
humans[mh])

What to do with subheadings

Separate element

(brassica[mh] OR broccoli*[tiab] OR brassica*[tiab]) AND (neoplasms[mh] OR cancer*[tiab] OR neoplas*[tiab]) AND ("prevention and control"[sh] OR prevent*[tiab])

Combined element

(brassica[mh] OR broccoli*[tiab] OR brassica*[tiab]) AND ("neoplasms/prevention and control"[mh] OR cancer prevent*[tiab] OR neoplasm prevent*[tiab] OR ...)

Sensitive

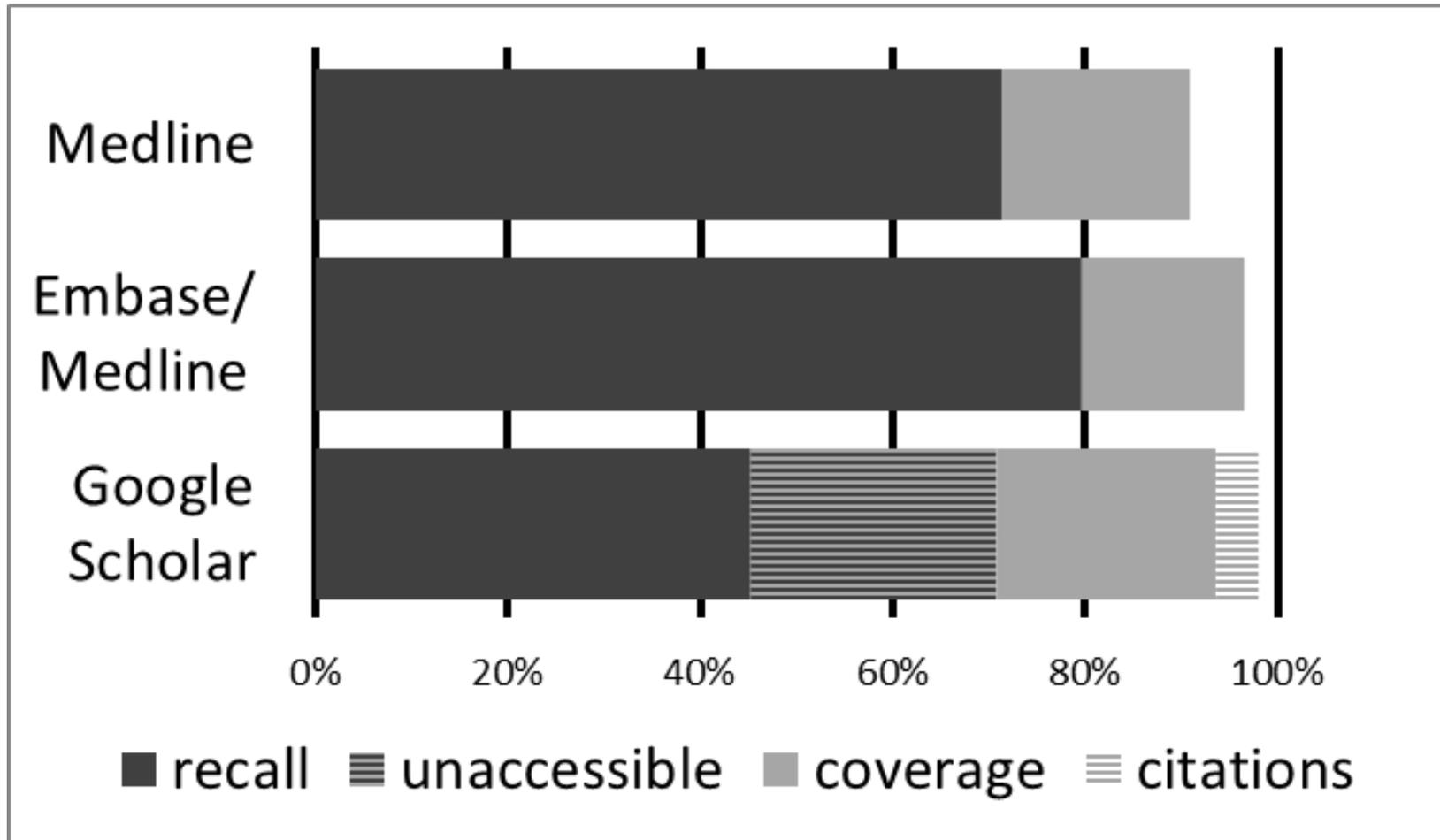
- More hits : 353
- Less chance of missing relevant articles
- Recommended for start
- For SRs highly recommended

Specific

- Less hits : 268
- Higher chance of missing relevant articles
- To reduce the number of hits
- Sensitive with proximity specific with phrases

Why start in embase?

Source: Unpublished research Bramer (5182 included references from 118 reviews)



What databases do we need?

	# includes	sensitivity	minimum sensitivity	percentage 100% sens
medline	1009	78%	53%	5%
embase	1126	87%	67%	13%
web-of-science	911	71%	24%	5%
google scholar	392	30%	8%	5%
em-ml	1203	93%	76%	20%
em-wos	1195	93%	69%	25%
em-gs	1165	90%	73%	23%
em-wos-ml	1253	97%	86%	38%
em-wos-gs	1226	95%	76%	48%
em-wos-ml-gs	1277	99%	94%	78%
total	1290			

The databases I use:

Database	Used in % of SRs
Embase.com	100%
Medline (Ovid)	99%
<i>(PubMed</i>	<i>the other 1%)</i>
Cochrane library (central)	98%
Web-of-Science	95%
Google Scholar	92%
PubMed (publisher)	91%
Scopus	39%
Cinahl	31%
PsycINFO	22%
Others (proquest, sportdiscus, lilacs, scielo, eric, amed etc)	15%

Interface choice for embase

Embase.com

Pros

- Very good relevance ranking

Cons

- Translating between embase and medline more complicated
- No wildcard (?) in truncation
- Special characters not normalized (VO₂max)

OvidSP

Pros

- Equal syntax to medline (Ovid)

Cons

- No relevance ranking on complicated queries
- Complex thesaurus interface

My advice: relevance ranking is very helpful during optimization. Problems are only minor. Using embase.com and translate with macros

Embase.com syntax

()
(''/exp)
('hip osteoarthritis'/exp)
('hip osteoarthritis'/exp OR ()):ab,ti)
('hip osteoarthritis'/exp OR (coxarth*):ab,ti)
('hip osteoarthritis'/exp OR (coxarth* OR ((NEAR/3
()))):ab,ti)
('hip osteoarthritis'/exp OR (coxarth* OR ((hip OR cox
NEAR/3 (arthrit* OR arthros* OR osteoarth*)))):ab,ti)

Ovid (Medline) syntax

()

(exp ""/)

(exp "osteoarthritis, hip")

(exp "osteoarthritis, hip"/ OR ().ab,ti.)

(exp "osteoarthritis, hip"/ OR (coxarth*).ab,ti.)

(exp "osteoarthritis, hip"/ OR (coxarth* OR () ADJ3
()))).ab,ti.)

(exp "osteoarthritis, hip"/ OR (coxarth* OR (hip OR cox)
ADJ3 (arthrit* OR arthros* OR osteoarth*))).ab,ti.)

EBSCO (Medline) syntax

()

(MH "+")

(MH "osteoarthritis, hip+")

(MH "osteoarthritis, hip+" OR AB ())

(MH "osteoarthritis, hip+" OR AB (coxarth*))

(MH "osteoarthritis, hip+" OR AB (coxarth* OR (() N3 ())))

(MH "osteoarthritis, hip+" OR AB (coxarth* (((hip OR cox) N3 (arthrit* OR arthros* OR osteoarth*)))))

→(MH "osteoarthritis, hip+" OR SU (coxarth* ((hip OR cox) N3 (arthrit* OR arthros* OR osteoarth*))))

PubMed syntax (not optimal)

()

(""[mh])

("osteoarthritis, hip"[mh])

(exp "osteoarthritis, hip"/ OR coxarth*[tiab])

(exp "osteoarthritis,
hip"/ OR coxarth*[tiab]

OR ((hip[tiab] OR

cox[tiab]) AND

(arthrit*[tiab] OR

arthros*[tiab] OR ...)))

(exp "osteoarthritis, hip"/ OR

coxarth*[tiab] OR hip arthrit*[tiab]

OR cox arthrit*[tiab]

OR hip arthros*[tiab]

OR cox arthros*[tiab]

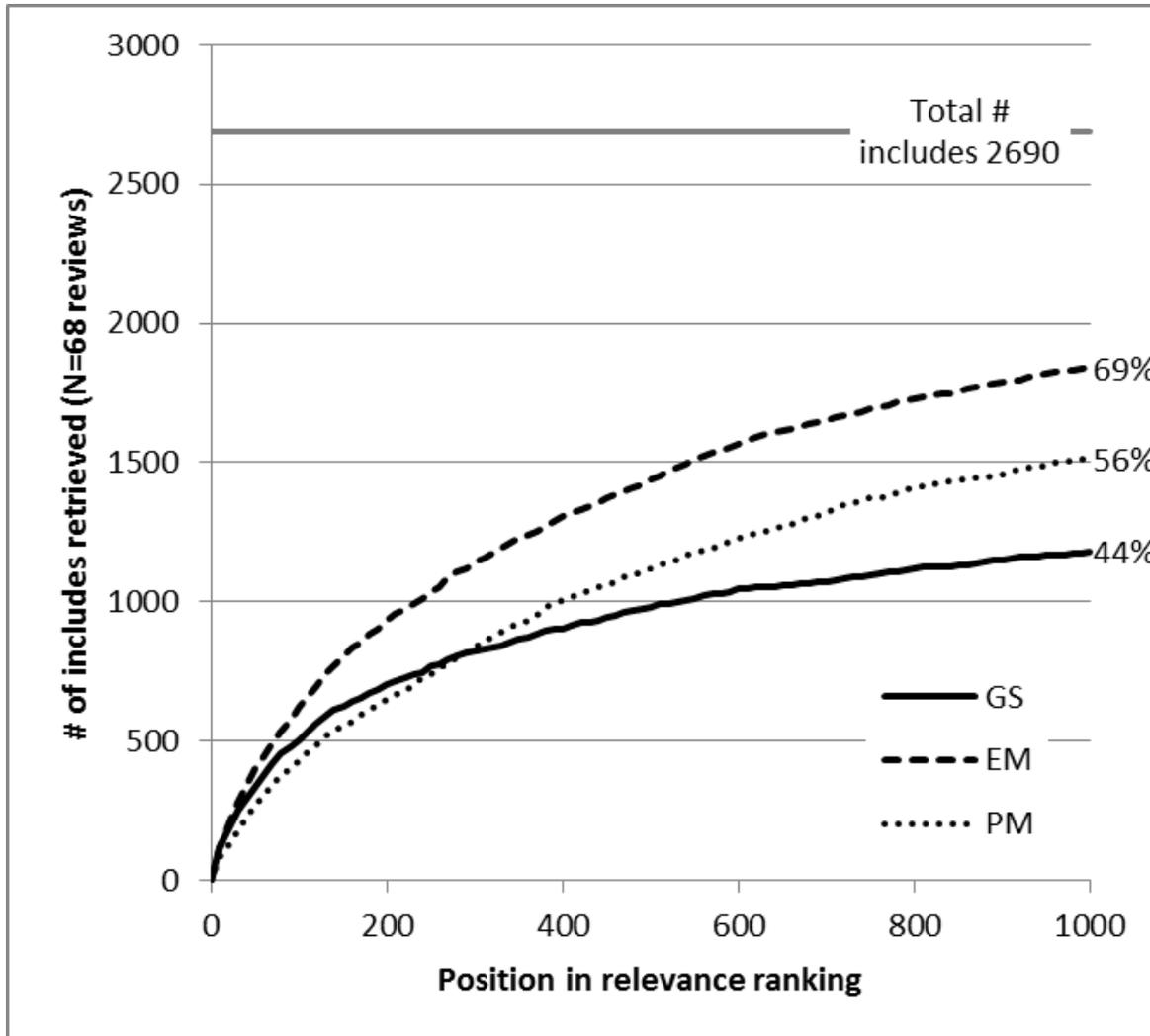
OR hip osteoarthritis*[tiab] OR ...)

Do you need to fully understand the research question?

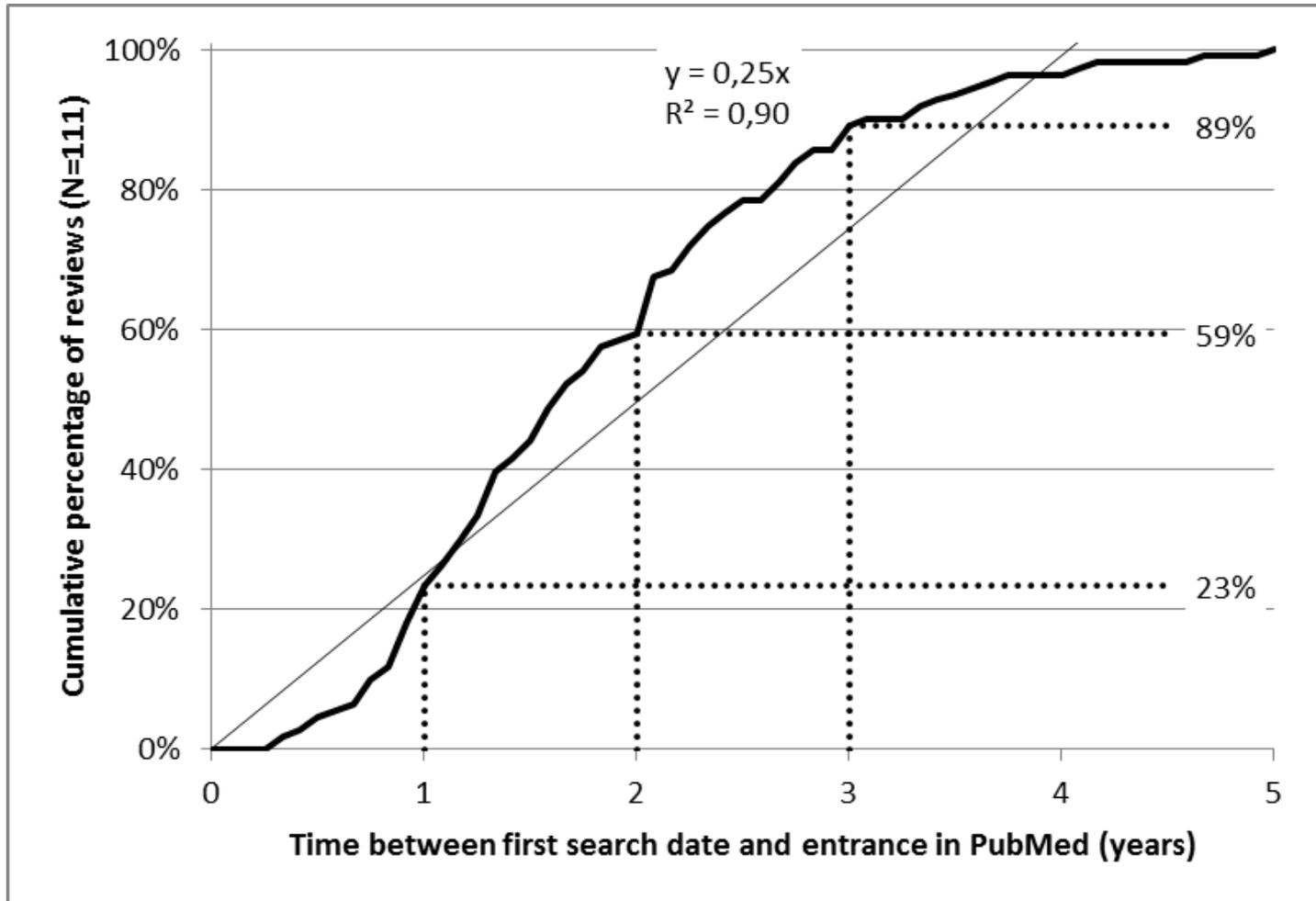
What is the Cell contribution to chondroid / endochondreal / intramembranous bone formation

((('bone development'/de OR 'bone mineralization'/de OR 'bone maturation'/de OR ossification/de OR 'bone conduction'/de OR 'bone transplantation'/exp OR 'bone matrix'/exp OR 'bone growth'/exp OR 'bone remodeling'/de OR ((bone* NEAR/6 (minerali* OR develop* OR format* OR synthesis* OR growth* OR graft* OR transplant* OR engineer* OR defect* OR matri* OR remodel* OR conduct* OR maturat*)) OR osteogen* OR ossificat*):ab,ti) AND (chondroid* OR transchondroid* OR enchondr* OR endochondr* OR intermembran* OR cartilagin* OR (inter NEXT/1 membran*)):ab,ti) OR 'enchondral ossification'/de) AND ('cell death'/de OR 'cell survival'/de OR apoptosis/de OR 'cell differentiation'/de OR 'cell fate'/de OR 'host cell'/de OR 'cell lineage'/de OR (((cell* OR msc OR osteoblast* OR osteocyte* OR osteoclast* OR preosteoblast*) NEAR/3 (death OR senescen* OR contribut* OR differentiat* OR fate OR plasticit* OR reprogram* OR donor* OR host* OR recruit* OR surviv* OR viabilit* OR lineage*)) OR apoptosis):ab,ti)

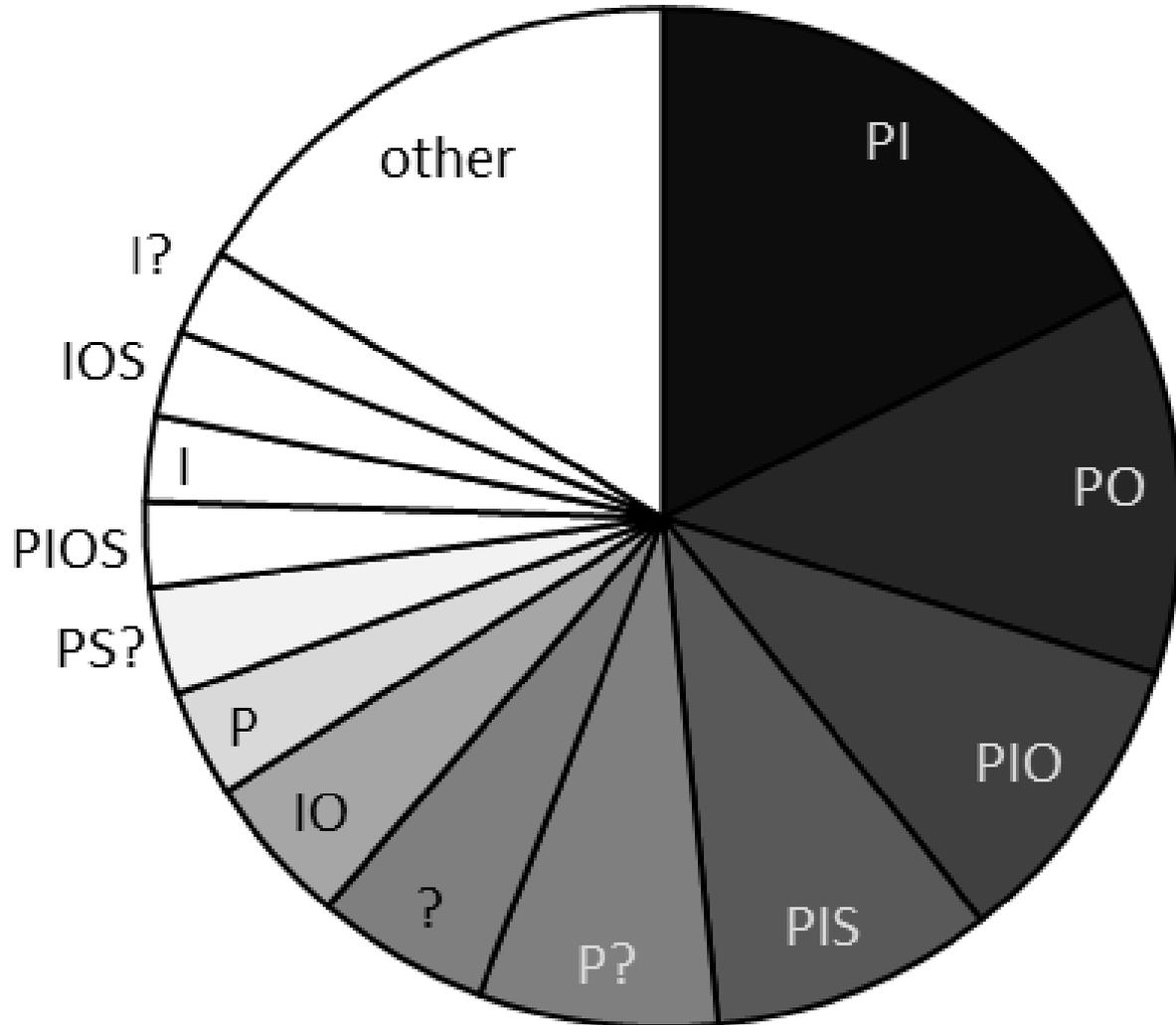
Relevance ranking



How long to publication?

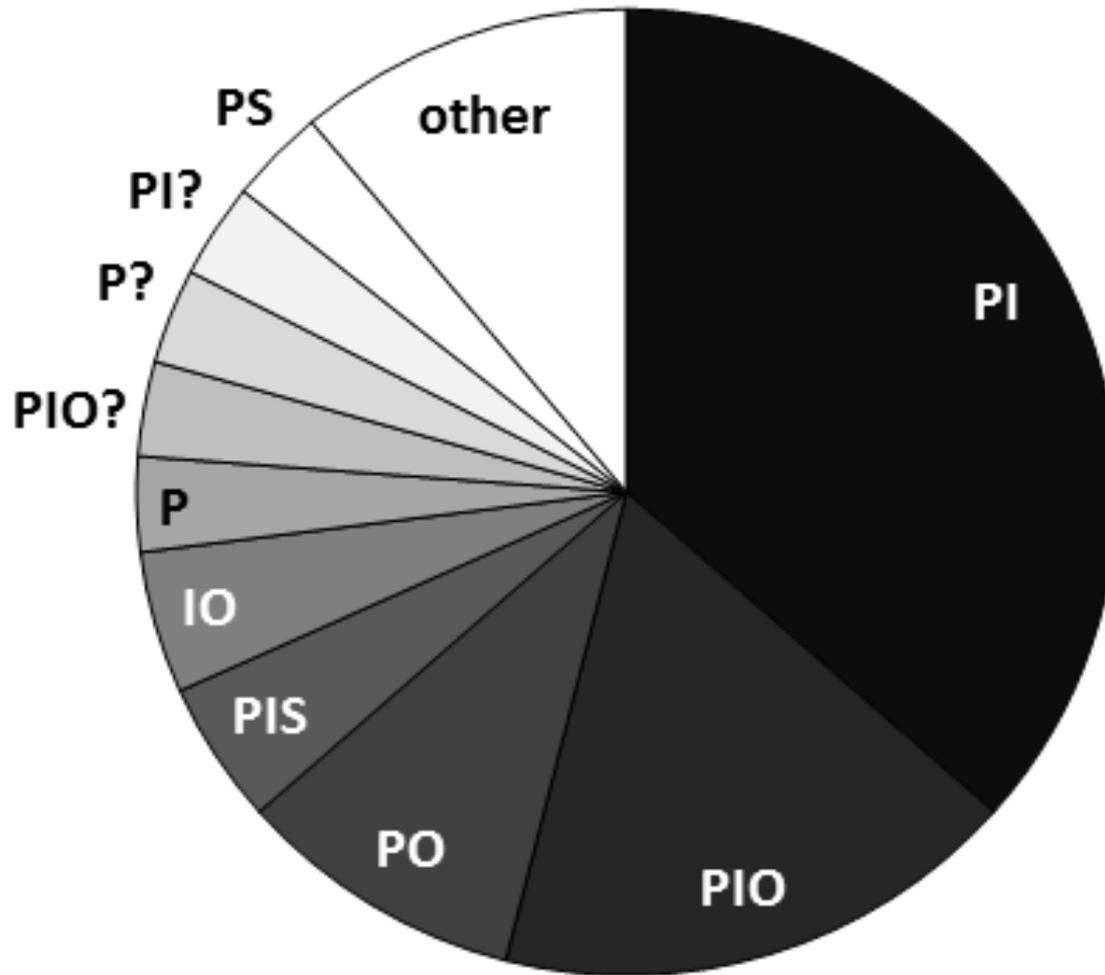


PICO?



P	76%
I	56%
C	2%
O	39%
S	26%
?	28%

PICO in Benchmark



p	94%
i	78%
c	3%
o	38%
s	14%
?	14%