

The Search Strategy Builder

How to turn your question into a search that is sensitive enough to find the evidence and transparent enough to reproduce, then translate it across databases. A working method from PhD methodologists.



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A search strategy is an argument that you did not miss anything

The search is the foundation a systematic review stands on. If it misses relevant studies, every later step inherits the gap. A good strategy is built from the structure of your question, balances finding everything against drowning in noise, and is written down so anyone can run it again and get the same result.

PRINCIPLE

Build the search from the concepts in your question, not from keywords you happen to think of. Each concept becomes a block of synonyms joined by OR, and the blocks are joined by AND. That structure is what makes a search both comprehensive and reproducible.

The method, in four moves

1 Break the question into concepts

Use the Population, Intervention, Comparator, Outcome framework, often shortened to its initials, to split your question into its core concepts. Most searches are built on the two or three concepts that are most specific, not all four.

2 Gather synonyms for each concept

For every concept, list the alternative words, spellings, and subject headings authors actually use. Missing a common synonym is the quietest way to miss studies.

3 Combine with Boolean logic

Join synonyms within a concept using OR, then join the concepts using AND. This finds records that mention at least one term from each concept.

4 Translate across databases

Each database has its own subject headings and syntax. The logic stays the same; the field tags and controlled vocabulary change. Translate deliberately rather than pasting the same string everywhere.

Lay your terms out before you write a single line

Build this grid first. Each column is a concept, each cell a synonym. The grid is the strategy; the search string is just the grid written in Boolean form.

Concept grid (one column per concept, joined by AND)

CONCEPT 1: [population]	CONCEPT 2: [intervention]	CONCEPT 3: [outcome]
[term a]	[term a]	[term a]
[synonym]	[synonym]	[synonym]
[alternative spelling]	[alternative spelling]	[alternative spelling]
[subject heading]	[subject heading]	[subject heading]

Within a column: join every term with OR

Across columns: join the three blocks with AND

Truncation: add the wildcard symbol to catch word endings, for example child*

WATCH OUT FOR

Resist the urge to add every concept of your question to the search. Searching on the one or two most specific concepts usually finds more relevant studies than a narrow search on all four, because outcomes are often reported inconsistently and searching on them can exclude relevant papers. Add concepts only when the result set is unmanageable.

The same logic, in each database

A strategy is run in several databases so that no single source biases the result. Each one needs its own version, built from the same grid.

WHAT CHANGES WHEN YOU MOVE DATABASES

Element	Stays the same	Must be adapted
Concept structure	The blocks joined by AND	Nothing
Synonyms	The free-text terms	Spelling conventions per database
Subject headings	The intent of each concept	The controlled vocabulary, which differs by database
Field tags	Searching title and abstract	The exact syntax for fields and truncation
Filters	The eligibility logic	Validated filters specific to each database

PRINCIPLE

Record the exact string you ran in each database, the date you ran it, and the number of records it returned. This log is what makes the search reproducible, and it is the first thing a careful peer reviewer asks to see.

The standards and operators that separate a real search from a keyword dump

Reviewers at strong journals now expect a search built and reported to recognised standards, peer-reviewed before it is run, and extended beyond bibliographic databases. These are the elements they check for.

WHAT A DEFENSIBLE SEARCH NOW INCLUDES

Element	What it is	Why a reviewer expects it
Information specialist	A librarian who co-designs or runs the search	Now an explicit recommendation in Cochrane and many journal guidelines
PRESS appraisal	Peer Review of Electronic Search Strategies, a structured check of the lead strategy	Catches missed synonyms, logic errors, and stray operators before they cost studies
PRISMA-S reporting	The search-specific PRISMA extension, 16 reporting items	Tells the reader every source and method, so the search is reproducible
Validated filters	Tested study-design hedges (for example the Cochrane Highly Sensitive Search Strategy for trials)	Off-the-cuff design filters trade away sensitivity invisibly
Supplementary methods	Reference and citation chasing, trial registries, grey literature, contacting authors	Database searching alone misses unindexed and unpublished evidence

WATCH OUT FOR

Two technical points that mark an expert search. Use proximity operators where the platform supports them (ADJn in Ovid, NEAR/n in EBSCO and Web of Science) to capture phrases that exact strings miss without the noise of a bare AND, and target fields deliberately (.ti,ab. for title and abstract rather than .mp., which silently searches many fields and inflates noise). And report the search's yield honestly: precision, the share of retrieved records that are eventually included, frames the screening burden, and a sensitive review will and should have low precision. Optimising for precision at the search stage is how relevant studies are lost.

Document the search so it can be reproduced

Keep a search log as you go. Filling it in afterwards from memory is how reproducibility quietly breaks.

Search log (one block per database)

Database: [name and platform]
Date searched: [date]
Years covered: [range]
Full search string as run:
[paste the exact string, including field tags and headings]
Records returned: [number]
Filters applied: [language, date, study design, or none]
Notes: [anything adapted for this database]

The search strategy checklist

If every box is ticked, your search is comprehensive, transparent, and reproducible.

- ☒ The question is broken into concepts using a recognised framework.
- ☒ Each concept has free-text synonyms, alternative spellings, and subject headings.
- ☒ Synonyms are joined with OR, and concepts are joined with AND.
- ☒ Truncation and wildcards are used to catch word variants.
- ☒ The search runs in more than one database, each with its own adapted version.
- ☒ The exact string, date, and record count are logged for every database.
- ☒ Any filters applied are validated and recorded, not silently assumed.
- ☒ A second person, ideally an information specialist, has reviewed the strategy.

WHEN THE SEARCH HAS TO BE DEFENSIBLE

Have a reproducible search built and run with you

If you want a comprehensive search strategy designed for your question, translated correctly across databases, and documented so it survives peer review, our PhD methodologists build and run it with you, then carry it through screening and synthesis. You stay the author and make every judgement call.

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