

Information skills: Finding the evidence: Literature searching – June 2024

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Literature searching is an important element of evidence-based practice (EBP).

EBP is a decision-making process comprising 5 steps, focusing on developing a skill set to search, interpret and apply the evidence base:

1. Establishing a need to improve clinical practices/procedures and formulating a detailed and clearly worded question that is answerable - to do this, you may use the PICO tool. (This step is covered in this guide.)
2. Searching for the evidence. (This step is covered in this guide.)
3. Critical appraisal of the search results.
4. Decide what action to take from the findings.
5. Assessing steps 1-4 and evaluating your new or amended practice/procedure.

The purpose of your search

It is important to be clear about why you are searching. If you only want to use a few references, then you will be able to use more specific terms and it won't matter if you miss some useful references. However, if you want to try and be comprehensive, either because you want to find as much as possible or because you think there won't be a lot of references on your topic, then you will need to use broader terms and fewer

concepts. This will likely mean that you will find things that are not relevant, but you will reduce the chance of missing important references.

Defining your search as a question

The first step of evidence-based medicine is asking an answerable clinical question, i.e. formulating a question into a format whereby you can interrogate the literature and hopefully find an answer.

For example, you would like to know *what preventative interventions can be used with older residents of care homes who are at risk of falling*.

This may need adjusting when you see the results. If the question is very broad, you will get too many hits, if it is too narrow you will get only a few hits (a 'hit' is a result that fulfils the search criteria).

Break down your search question into concepts:

Concepts are the key areas or elements in your question, for example a condition, an intervention, a patient group, a professional group, etc. Well-formulated search questions can narrow the focus of your search to find the most relevant evidence on your topic. Frameworks, like **PICO**, can help with this. **PICO** stands for:

P = population/patient
I = intervention
C = comparison/comparator
O = outcomes

So if you want to see the latest evidence on *what preventative interventions can be used with older residents of care homes who are at risk of falling*, you could use the PICO framework to break down the topic into:

P (patients): older residents of care homes
I (intervention): preventative interventions
C (comparison): any (e.g. no interventions)
O (outcomes): benefits (e.g. fewer falls)

While PICO is the most well-known tool of this type, it doesn't always fit the search topic. Other such tools are available, so there are alternative ways to break down a question into concepts:

SPICE

Setting: Where? What context? e.g. hospital, community
Perspective: Who? e.g. physiotherapists, managers
Intervention: What? e.g. education programme, support group
Comparison: What else? e.g. same people before intervention, different intervention
Evaluation: Results? How effective? e.g. change in attitude or understanding

SPIDER

Sample: Who is being looked at? e.g. young adults

Phenomenon of Interest: Reasons for behaviour or decisions. e.g. education

Design: What data collection method(s)? e.g. questionnaire, survey, focus group

Evaluation: What is the being evaluated? e.g. views, experience, attitudes, feelings

Research type: What research type is being used? e.g. qualitative, quantitative or mixed methods research.

If you want to explore other frameworks, Cummings Graduate Institute explains [further alternatives](#).

Choosing the right resource(s)

Once you have a search plan, you can then start to search for information on your topic. Different resources will allow you to find different types of information.

Where to look for different types of information:

I need...	Where to find...
Primary research (incl. cohort studies, case-control studies, cross-sectional studies and case studies)	Try individual healthcare databases like MEDLINE, CINAHL, AMED; and also PubMed and the Cochrane Library
Systematic reviews and meta-analyses	Try individual healthcare databases and resources that allow you to filter by publication type, like Trip Pro.
Guidelines	Try Trip Pro, a curated collection of national and international guidelines and research. Other places to try are your local trust guideline libraries, professional organisational websites, NICE , SIGN , or Google.
Evidence summaries	Try PEDro (BMJ Best Practice, UpToDate or DynaMed are not available via the CSP)
Grey literature (guidelines, policies, reports, patient information leaflets, standard operating procedures)	Try organisational websites, Google, or Google Scholar.

Individual healthcare databases available via CSP eLibrary, Knowledge and Archive Services (eLKAS):

CSP eLKAS provide access to several databases. You can access them via <https://www.csp.org.uk/professional-clinical/clinical-evidence/online-library-services/bibliographic-databases>

You will be asked to select a database, and we suggest that you search each one individually. You will do a better search by searching one at a time.

- CINAHL Plus with Full Text is a collection of full text for nursing & allied health journals, providing full text for more than 770 journals Full text coverage dates back to 1937.
- MEDLINE provides authoritative medical information on medicine, nursing, dentistry, veterinary medicine, the health care system, pre-clinical sciences, and much more. Created by the US National Library of Medicine, in MEDLINE you can search citations from over 5,400 current biomedical journals from 1949 to present day.
- AMED (The Allied and Complementary Medicine Database) provides an alternative medicine database for physicians, therapists, medical researchers and clinicians looking to learn more about alternative treatments. It contains basic bibliographic records for relevant articles from over 500 journals. AMED is produced by the Health Care Information Service of the British Library.
- SPORTDiscus is provided by the Sport Information Resource Centre, and offers comprehensive, bibliographic coverage of sport, fitness and related disciplines. This database contains well over 1.7 million records with journal and monograph coverage going back to 1800; over 22,000 dissertations and theses and reference to articles in 60 different languages.
- Trip Pro (Turning Research Into Practice) is a clinical search engine designed to allow users to quickly and easily find and use high-quality research evidence to support their practice and/or care.

Some useful freely available databases:

- Cochrane Database of Systematic Reviews contains Cochrane Systematic Reviews, Review Protocols, editorials, and supplements.
- Cochrane CENTRAL contains records of controlled trials published on PubMed, Embase.com, CINAHL, ClinicalTrials.gov, and the WHO's International Clinical Trials Registry Platform.
- PubMed is provided by the US National Library of Medicine. It includes 35 million references to journal articles in life sciences with a concentration on biomedicine. The broad coverage of the database includes basic biomedical research and the

clinical sciences since 1951 including nursing, dentistry, veterinary medicine, pharmacy, allied health, and pre-clinical sciences.

- PEDro is the Physiotherapy Evidence Database that has been developed to give rapid access to bibliographic details and abstracts of randomised controlled trials, systematic reviews and evidence-based clinical practice guidelines in physiotherapy.

What's the difference between PubMed and MEDLINE?

- They are related, but different, both PubMed and MEDLINE are maintained by the US National Library of Medicine.
- PubMed includes a broader range of resources than journal articles, such as books and dissertations.
- MEDLINE contains indexed abstracts. This means that they are labelled with MeSH (Medical Subject Headings) with tree, tree hierarchy, subheadings and explosion capabilities.

How are databases different to Google?

Google is different to health databases in several ways. To illustrate the differences, imagine that you want to find answers to our question *what preventative interventions can be used with older residents of care homes who are at risk of falling?*

You can ask Google a question - this isn't possible with a database. Google recognises which words are important, but a database treats all words equally. To a database, 'what' and 'can' have the same importance as 'interventions'. This is why you need to figure out which keywords are important before you search a database.

Google can figure out related words and terms, while bibliographic databases aren't able to do this. You need to identify other words for the topics you're interested in, before searching a database.

Google can often recognise when you've misspelled something, while databases can't. Databases also can't recognise when a word is spelled more than one way. That's why double-checking the spelling of your keywords is so important. And why it's important to consider alternative spellings.

Google can search billions of public web pages for your keywords in seconds, but they cannot access proprietary data. Databases containing scholarly resources cannot be found using search engines. Also, it is not possible to search Google systematically.

Building a search strategy

It is good practice to create a search strategy before searching. A search strategy is a structured organisation of terms used to search a database. The search strategy shows how these terms combine to retrieve the best results.

Basic keyword search

Simply put a word or phrase in the search box and click on the search button. This will make the database look for the word(s) in the article records. It may default to searching the title and abstract, which is usually the most appropriate way to search but you will be able to change the fields that are searched.

In this example in EBSCO's version of MEDLINE, we find that there are 23,235 articles in the database where 'fall' appears in the title field:

Search ID#*	Search Terms	Search Options	Actions
S1	T1 fall	Expanders - Apply related words; Apply equivalent subjects Search modes - Boolean/Phrase	View Results (23,235) View Details Edit

Phrase keyword searching

If you want to specifically search for a phrase (two or more words together and in the specified order) then you can enter the words within quotation marks " " to instruct the database to do this. See line 2 below for an example:

Search ID#*	Search Terms	Search Options	Actions
S1	T1 care home	Expanders - Apply related words; Apply equivalent subjects Search modes - Boolean/Phrase	View Results (12,428) View Details Edit
S2	T1 "care home"	Expanders - Apply related words; Apply equivalent subjects Search modes - Boolean/Phrase	View Results (96) View Details Edit

This will find fewer results than basic keyword searching because it is a more specific way of searching. In this example, all of the results in line number 2 will also be in line number 1 as well. If the number of results was the same in both lines, it would mean that the search without quotation marks was defaulting to phrase searching.

Truncation keyword searching and wildcards

An asterisk (*) symbol represents any number of characters following the root of the word. E.g. physio* will pick up physio, physiotherapy, physiotherapist BUT you will also get physiology, physiological etc.

A question (?) mark in the middle of a word represents a single character. E.g. wom?n will retrieve woman and women.

Look out for variation between English spellings. For example, in words like pediatric (American) vs paediatric (British) - to pick up both spellings, use the wildcard symbol '?' to get 'p?ediatric'.

Proximity searching

- **Near Operator (N)**

N5 finds the words if they are within 5 words of one another regardless of the order in which they appear, in this case it is set to 5 words but you can decide on the number, it can be any up to 8.

E.g. shoulder N5 impingement will retrieve 'shoulder impingement' and 'impingement in the shoulder'.

Multiple terms in brackets or phrases can be used on each side the operator e.g. (physiotherapy OR rehabilitation OR "physical therapy") N3 (dementia OR Alzheimer*)

- **Within Operator (W)**

W8 finds the words if they are within 8 words of one another and in the order in which you entered them. Again, you can specify the number.

E.g. health W8 policy will find 'health in law and policy' BUT will not find 'policy supporting worksite health promotion programs.'

Different terms/spellings for each concept

In our example, we would like to know *what preventative interventions can be used with older residents of care homes who are at risk of falling.*

We will need to think of synonyms for each term, what we call it, what authors might call it, different spellings etc. To be more comprehensive in searching, it is essential to include as many alternative terms for each concept as possible.

Concepts	Falls	Prevention	Older People	Residential Care
OR	Fall*	Prevent*	"Older people"	"residential care"
	Trip	Reduc*	"Older person"	"nursing home*"
	Stumble		"Older adult*"	"care home*"
	Slip		"Older wom?n"	"assisted living"
	Stagger		"Older m?n"	"care facilities"
	Balance		Elderly	"long-term care"
	Drop			
AND				

Where can I find alternative keywords and subject headings?

There are a few ways to look for alternative keywords. It can be useful to use Google to see what other terms come up when you search one keyword.

Reading articles on the topic and look at articles that have cited them can also be helpful. You can do this by searching the title of the article in PubMed or Google Scholar.

Subject heading searching

If the concept that you are searching for has a lot of alternative terms or synonyms, it can be difficult to think of all the keywords that should be used. To help with this problem, most databases use an indexing system. This means that if you search using subject headings or thesaurus terms. You can find articles related to those subjects even if the authors use different ways to talk about the same concept.

For example, if you want to search for articles to do with children, there are a large number of words that could describe that concept: young people, adolescents, children, neonates, newborns, teenagers, child health, paediatrics and so on. If a database uses the American spelling of paediatrics as its subject heading for the concept of children, then it will be added to the record of the article. Even if it was written by British authors, set in Britain, published in a British journal, and never even mentions the word paediatrics of any spelling, they will still assign the 'Pediatrics' subject heading to it.

S3 (MH) "Pediatrics+") Expanders - Apply related words; Apply equivalent subjects View Results (63,545) View Details Edit
Search modes - Boolean/Phrase

To search using subject headings, enter a term in the search box and then look for an option to use subject headings/terms or the thesaurus.

Most databases will have a directory of subject headings that you can use. The National Library of Medicine maintains a [specific directory for MeSH](#) which you can search. PubMed can also be useful - if abstracts have been indexed with MeSH, they will be listed underneath the abstract itself.

It is good practice to combine the keyword search lines and thesaurus terms with 'OR' to maximise the number of relevant results retrieved, so that if an article hasn't been indexed yet or doesn't use the exact subject headings you might expect, you will still pick it up with your keywords.

Combining search lines with Boolean operators

Each search line will be a standalone search. There will be no relationships put in between them automatically. You need to decide how they relate to each other. The relationships are created mainly using the options 'AND' and 'OR'.

OR

- Includes one or other of the selected search lines but not all
- Used to combine alternative terms or synonyms
- Increases the number of results

AND


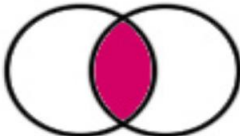

- Includes all of the selected search lines
- Used to combine different concepts together
- Reduces the number of results

NOT

Use with caution, using the NOT operator may remove relevant hits.

AND normally takes precedence over OR, however, this can be circumvented by 'nesting'. You can enclose search terms and their operators in round brackets to specify the order the operators are acted on. Information within the brackets is acted on first, then information outside the brackets is acted on next.

E.g. (falls OR trips) AND (prevention) - here the OR is done first and then the AND

fall OR trip	items containing either fall or trip	
fall AND "older person"	items containing both fall and "older person"	
fall NOT home	items containing fall but not at home – <i>caution</i> , it may exclude relevant items e.g. "care home"	

Limiting search results

You can usually limit your searches in various ways, including language, publication year or article type. Most databases give pre-set options for limiting your search results in such ways. Look for options to limit your search or refine your results.



Evaluating the information found

Not everything you read is true. Just because an article may have been peer-reviewed and published, it doesn't make it good quality. A systematic review is high-quality evidence...if it has followed a good methodology and has been done carefully.

It is important to evaluate and appraise the information that you find especially if you are going to use it to change your clinical practice. [Find out more about critical appraisal](#) and how you can make it an essential part of your skill set.

How to get the full text of articles

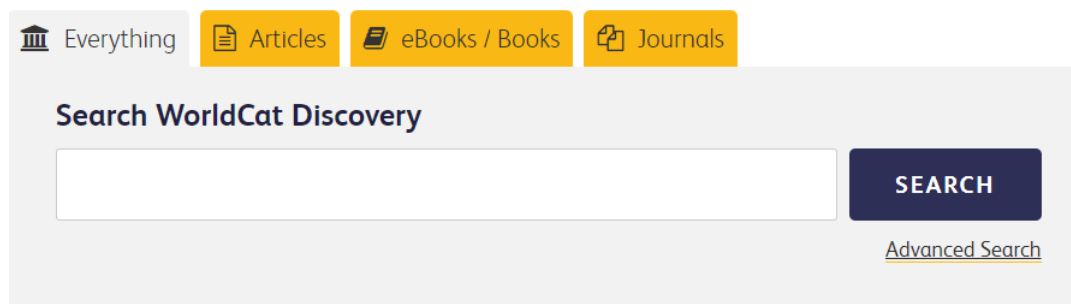
The CSP eLKAS provide access to the database CINAHL Plus with Full Text, and in this database you will find the full text of the articles.

Bibliographic databases like MEDLINE and AMED list the details of a huge number of articles from a large number of journals but they cannot provide the full text of the articles that they list.

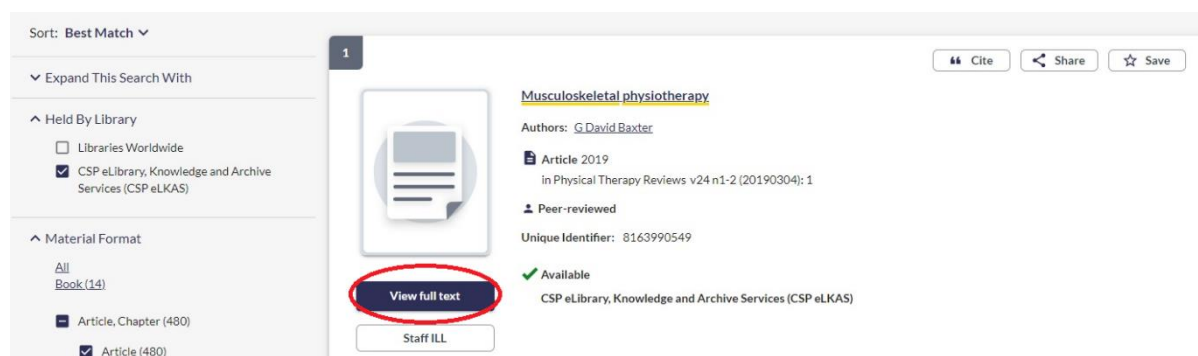
However, you can copy and paste the article details into WorldCat Discovery to see if you have full access via the CSP eLKAS.

WorldCat Discovery is the library catalogue of the CSP eLKAS.

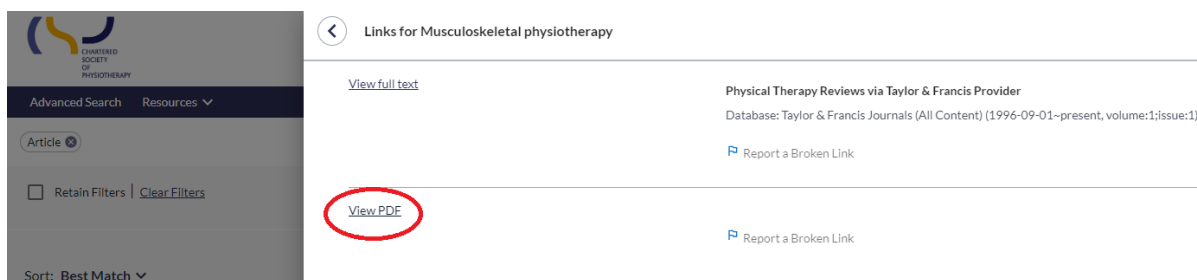
[Click here to access WorldCat Discovery](#), or use the search box at <https://www.csp.org.uk/professional-clinical/clinical-evidence/library-services>



When an article is available in full text, you will see the **'View full text'** or **'View PDF'** button in the brief result records:

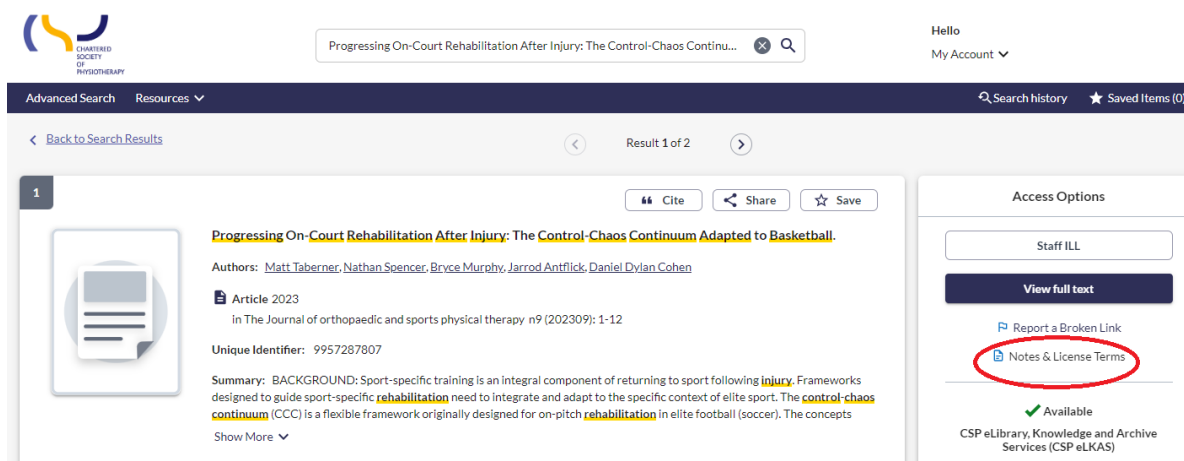


Click **'View full text'** to see the full article:



You will either be directed straight to the PDF to view the full text article, or to the article details page on the publisher's platform, from where you can open the PDF.

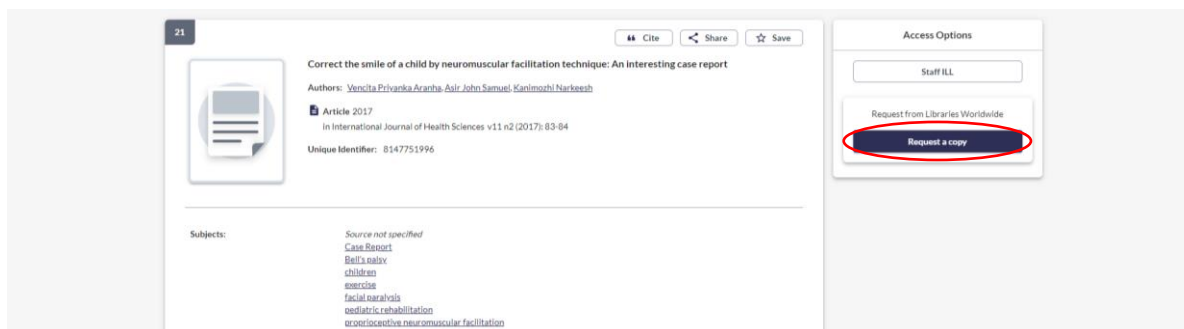
Note: In some cases, certain publishers don't make it possible to direct users straight to the PDF. If you see a **'Notes & Licence Terms'** button, please click for further notes on access:



How to request a copy

If there is no **'View full text'** or **'View PDF'** button in the brief result records, that means that the article is not available freely or via the CSP eLKAS's subscription.

You can request the full text of these articles by **clicking on the title (hyperlinked) of the record**. This will take you to a page where more details can be viewed about the record. On the right-hand side, you will see the **'Request a copy'** button:



Once you click **'Request a copy'**, you will be directed to the request form.

Most of the article details will already be added, but please double-check that they are correct. Fields with * are necessary to complete.

You will need to add the following details:

- the date you need the article by,
- your first and last name,
- your CSP membership number,
- your email address.

You will also need to acknowledge the copyright declaration before you hit the **'Submit request'** button.

About my request

Needed before: * 0/500

Comments: 0/500

My address and contact information

First Name: * 0/100

Last Name: * 0/100

CSP membership number: * 0/100

E-mail Address: * 0/100

Mobile Phone: 0/100

Copyright declaration - I declare that:

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3) To the best of my knowledge, no other person with whom I work or study, has made, or intends to make, at, or about the same time as this request, a request for substantially the same material for substantially the same purpose.

I understand that if the declaration is false in a material particular, the copy supplied to me by you will be an infringing copy, and that I shall be liable for infringement of copyright as if I had made the copy myself.

Copyright Acknowledged *

Request confirmation

Thank you for your request. Please allow 5 working days for us to get back to you.

We will email you the full text article you requested as soon as possible.

Literature searching top tips

- **Search each database separately**
You will be able to use subject headings and therefore do a better quality search.
- **Search for each concept separately**
It is easier to start with your most important concept, searching for all the terms you can for this concept, before moving on to the next concept.
- **Keep each term on a separate line**
This will allow the most flexibility. If you have another term for the same

concept, keep them on separate search lines and combine them together later.

- **Search in an appropriate way for what you want to find**

If you want your search to be comprehensive, perhaps because you are doing a systematic review and cannot miss anything or because what you're searching for is new or rare, you should use broader terms and fewer concepts. This will reduce the chance of missing references.

- **You can save searches**

The way to do this will be different in each interface, so check the search help/tips or our corresponding guide, but typically you will need to create and login with a personal account for that site.

- **You can also export your results**

If you want to keep a copy of your results in a separate file or reference manager software, you can export them. Again, the exact details on how to do this will depend upon the database, so check the instructions in the search help for that interface.

Videos

- **Searching CINAHL - Basic Level Searching**

[This 55-minute video](#) introduces basic searching concepts on CINAHL, incl. keyword searching, refining search results, viewing, printing & emailing results.

- **Searching CINAHL Databases – Advanced level searching**

[This 60-minute video](#) will introduce more advanced search concepts on CINAHL, incl. Subject Searching, combining search results, saving and re-running saved searches, creating and sharing custom folders.

- **My Folder**

[This short video](#) demonstrates the features of the MyEBSCO folder to create an account, save searches, create search alerts, or export search results.

- **Creating Alerts in CINAHL and MEDLINE**

[This 35-minute video](#) demonstrates how to keep current with the evidence, using search and publications alerts on the EBSCOhost interface.

If you have any questions on anything contained in this guide, specific queries on the individual databases, or anything else on searching for information or using the CSP eLKAS resources, please don't hesitate to get it touch at library@csp.org.uk