

Information skills: Finding the evidence: Literature searching

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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.

1. 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.

2. 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](#).

3. 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 health databases like MEDLINE, CINAHL, AMED; and also PubMed and the Cochrane databases
Systematic reviews and meta-analyses	Try individual health 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 health 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.
- 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 may seem like the perfect search tool but how does it compare to WorldCat Discovery (our catalogues of eResources) or the specialist health databases (MEDLINE, CINAHL Plus with Full Text or Trip Pro) available via CSP eLKAS?

In this handout, we explain the positives and negatives when it comes to using Google and our databases when searching for research evidence to support your practice, research and studies. If used wisely, these tools can give you everything you need to succeed in your research.

Types of sources	
Google	Library databases
<ul style="list-style-type: none">• Google searches what is published on the internet, so a search in Google might come up with millions of results in different formats, which may or may not be relevant to your topic.• Sources that you may need will not be searchable in Google.• Ot, if you are able to find those sources in Google, you will not be able to read the full source: you will likely be asked to subscribe to read the entire source.	<ul style="list-style-type: none">• Library Databases search beyond the content that is published on the internet. They contain formally published work such as academic journals, newspapers, books, etc. that are often not available In Google.• Most academic journals are subscription based. Similarly, online books usually have to be paid for in order to view more than a preview of their content.• The library subscribes to this published content through our library databases.





- Searching the entire internet is **free, quick and easy**.
- You can ask Google a question, or you can **search by a full sentence**, and Google's search algorithm will find you results based on your search (although sometimes that might mean that Google is just guessing at what you are looking for).
- Google is useful for finding official and primary sources such as grey literature, governmental and institutional reports, statistics and company websites.



- Google's **search algorithm** ranks and displays your results depending on when, where and how you search, based on your previous search history, especially if you are signed into your Google account. If you always read/click on articles with the same subjects or viewpoints, Google will rank these sources higher, which can make it harder to find articles from other sources/viewpoints. This personalisation can lead to a potentially biased set of results.
- The number of search results can be **overwhelming**.
- Not all eJournals and eBooks are indexed in Google so it doesn't have access to everything.
- It can be **difficult to determine the credibility** and confirm the origin of sources.
- Google can be used as an additional tool but not the only source when you are conducting a systematic review.

Google Scholar

- Searching is **free, quick and easy**.
- You can search a **wide range** of scholarly literature.
- Additional research can be explored using the 'Cited by' function, and by setting up a Google Scholar search alert.
- Citations can be exported to reference management software, such as EndNote or Rayyan.



- Not all eJournals and eBooks are indexed in Google Scholar.
- Most eJournals are subscription based, and most eBooks have to be paid for in order to view more than a preview of their content. In Google Scholar the **full-text content is only available from open access sources**, which may not be final published versions, or are scanned copies of articles that break copyright laws.
- It is not easy to identify peer-reviewed articles.
- **Filter and sort functions are limited** so it is difficult to refine your results by subject area or material type.
- Google Scholar can be used as an additional tool but not the only source when you are conducting a systematic review.

Please log in to your account on the CSP website for authenticated single sign-on access.

- Discovery is the catalogue of our eResources, and it helps CSP members easily access publications available via eLKAS and over 10,000 libraries around the world.
- It searches **beyond the content of Google/Google Scholar**, because eLKAS subscribes to the published content of eJournals, eBooks and databases.
- It connects users to our specialist online collections through a single search.
- It ranks results by relevance or publication year.
- You can **refine your results** through options in the left-hand column by material type, publication date, author etc.
- Search techniques can be applied to focus and refine your search, allowing for highly relevant results.
- Where immediate full-text online access is not available, you can **request a copy** via this platform and we will email you the full text asap. This service is free to all CSP members.
- You can **save, cite and share** search results, save searches and create search alerts, copy or export citations, or create citation lists. Citations can be exported to reference management software such as Endnote or Rayyan.

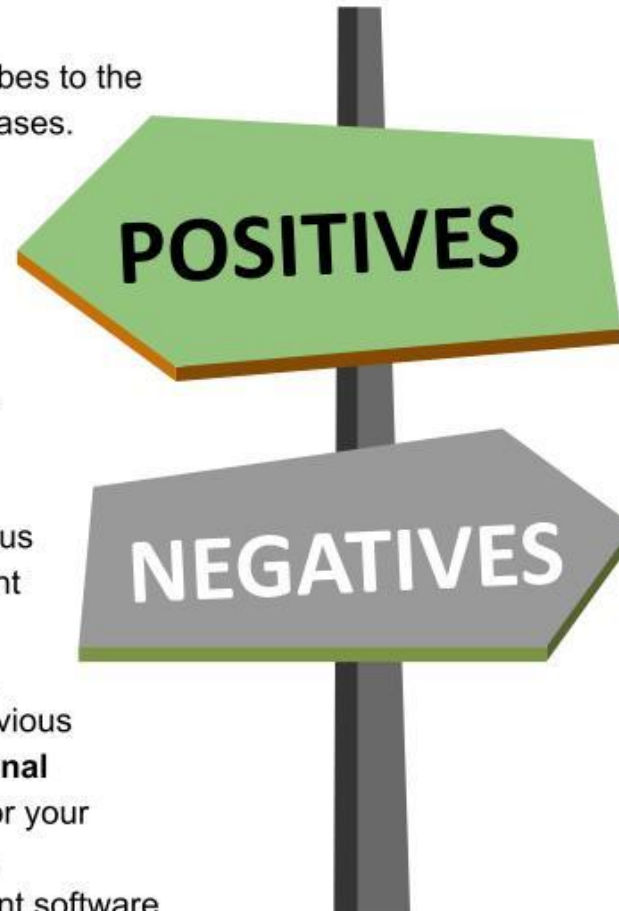


- The Advanced search has a unique interface and functions, which can sometimes make them difficult to navigate for new users.
- In a very few cases, Discovery might not link the record with the PDF, this might be because it's an online first article (with no issue or page details) or conference abstract in the supplement. In these cases, when clicking on 'View full text'/'View PDF', you will be directed to the authenticated journal page (so no additional login is needed), and as one extra step, when you paste the article title in the search box on the journal homepage, you will then be directed to the full text.
- You may find that a link is not working. In this case please report it by clicking '**Report a Broken Link**' and we will respond to you asap.

Library Databases: MEDLINE, CINAHL or AMED

access via csp.org.uk/library - log in to your account on the CSP website

- Library databases search **beyond the content of Google/Google Scholar**, because eLKAS subscribes to the published content of eJournals, eBooks and databases.
- Library databases rank results by the relevancy to your keywords.
- Database **content is organised** and maintained by experts.
- You can search across a range of databases for subject specific content, or specific material types. **Full-text articles** are available via CINAHL Plus with Full text.
- Search techniques and limits can be applied to focus and **refine your search**, allowing for highly relevant results.
- It is easy to identify peer-reviewed journal articles.
- Library databases do not store records of your previous searches, unless you save them. Setting up **personal accounts** allows you to save important searches or your favourite articles, and set up regular search alerts.
- Citations can be exported to reference management software such as EndNote or Rayyan.



- You need to select appropriate databases for your search, and search more than one database to find all relevant information e.g. to support a systematic review or guideline development.
- Databases have unique interfaces and functions, which can sometimes make them difficult to navigate for new users.

Trip Pro: Find evidence fast

access via csp.org.uk/library - log in to your account on the CSP website

- Trip is a clinical search engine designed to allow you to **quickly and easily** find high-quality research evidence.
- Via eLKAS, you can access the Pro version of Trip, which provides full access to national and international clinical guidelines, and allows you to export results to reference management software such as EndNote or Rayyan.
- Trip Pro is the **largest collection of clinical guidelines** from all over the globe. It's a good replacement for the withdrawn NICE Evidence Search.
- It makes use of the **hierarchy of evidence** (evidence pyramid), so you can go straight to the highest level of evidence.
- Systematic reviews include Cochrane, DARE or NHS EED.
- Evidence-based synopses include Bandolier, EBM and BestBETs.
- Content includes medical images, videos and patient information leaflets.
- It links you to **millions of full-text articles**.
- It ranks results by relevance or publication year.
- The interface is laid out as a **Google-like search box**, but you can use the advanced search function to apply search techniques and a variety of criteria to limit searches, allowing for highly relevant results.



None :)

4. 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.

5. 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', 'OR' or 'NOT'.

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

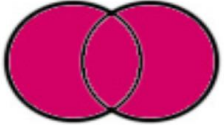


- Includes all of the selected search lines
- Used to combine different concepts together
- Reduces the number of results

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"	

6. 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.

Refine Results

Current Search ▼

Boolean/Phrase:
(MH "Pediatrics+")

Expanders

Apply related words

Apply equivalent subjects

Limit To ▼

Journals held in the CSP Library

Linked Full Text

Peer Reviewed

From: Publication Date To:

[Show More](#)

Source Types ▼

7. 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.

8. How to get the full text of articles

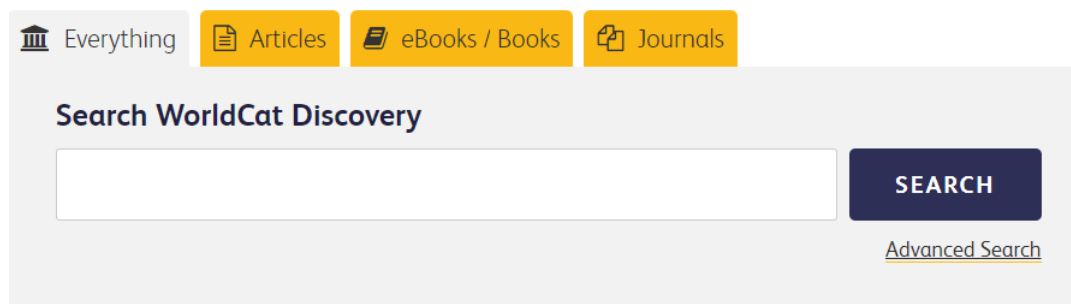
CSP eLKAS provides access to the database CINAHL Plus with Full Text, and in this database you will find the full text of the articles.

Our other 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.

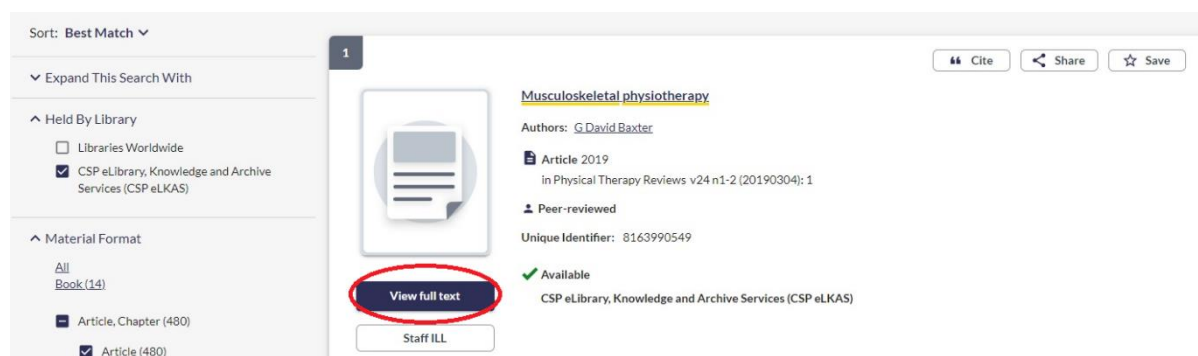
However, you can copy and paste the article details into WorldCat Discovery to see if you have full access via the CSP eLKAS.

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:



Sort: Best Match ▾

Expand This Search With

Held By Library

- Libraries Worldwide
- CSP eLibrary, Knowledge and Archive Services (CSP eLKAS)

Material Format

- All Book (14)
- Article, Chapter (480)
- Article (480)

1

View full text

Staff ILL

[Musculoskeletal physiotherapy](#)

Authors: [G David Baxter](#)

Article 2019
in Physical Therapy Reviews v24 n1-2 (20190304): 1

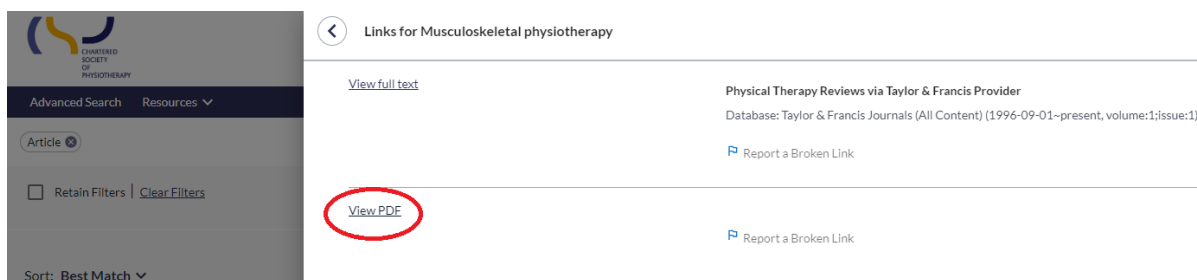
Peer-reviewed

Unique Identifier: 8163990549

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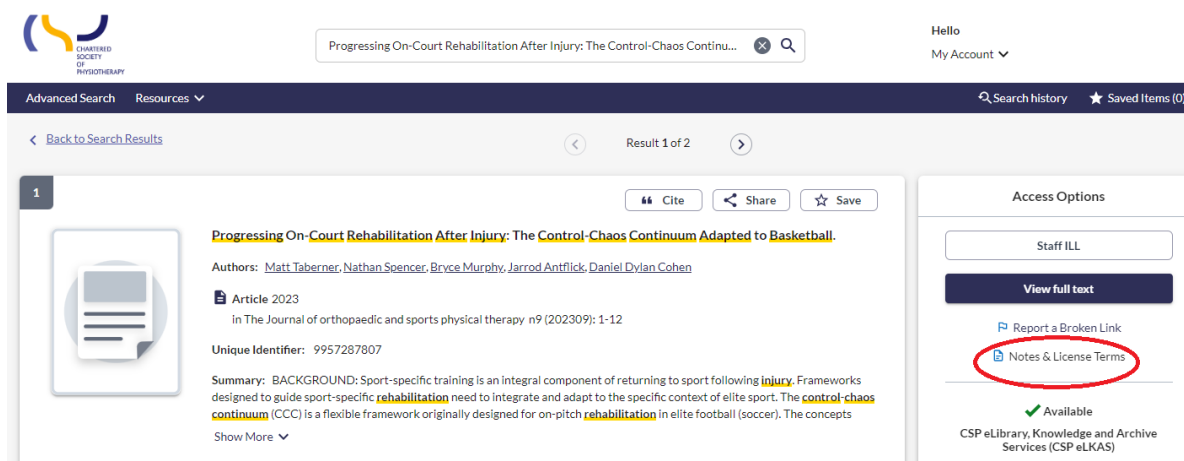
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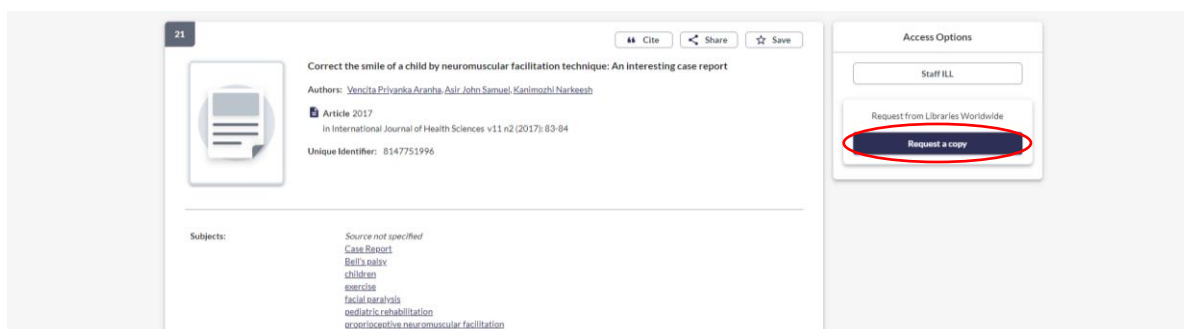
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How to request a copy

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: *

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

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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.

9. 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.

10. 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