



The most important method – not only in biomechanics, but in science in general – is literature research. Here you can read what you should pay attention to and how to proceed best.

Literature research is done before any kind of scientific work. And that is a good thing! Imagine you want to write a thesis on a certain topic. Then you should be very familiar with the subject matter to avoid serious mistakes. This implies:

- The current state of scientific research...
 - What has already been researched on my subject area?
 - What is still unclear?
- Used methods
 - Which research designs were used?
 - What kind of data was collected?
 - How were they evaluated?
- Critical questioning
 - Do the methods used make sense?
 - Has the work been scientifically correct?

This is how you proceed

The best approach to literature research is to work your way from the basic to the specific. So, start with the basic literature. Most of the time these are handbooks or textbooks. You can either find these yourself in your university library or ask your professors/colleagues for the common literature. If you are already familiar with the basics of the subject area, you can of course skip this step.

Only then you should turn your attention to specific literature. With so many scientific articles, it is not always easy to find the relevant ones. Fortunately, there are databases and search engines! The two most relevant places for us as biomechanists are probably [Google Scholar](#) and [PubMed](#). Think about and write down keywords to narrow down your search query. To get an overview of the current study situation, it makes sense to limit your search to [review articles](#) for now. These are publications that present the state of research at a certain point in time. However, always check the publication date to make sure that the



information in the article is still up to date. This doesn't mean old publications are always outdated! They often build the foundation for many current studies and can be very helpful.

In addition to the overview that you obtain by reading the review, you can also use the references of any related paper as a support for your further literature research. To save time, you can read the abstract instead of the entire article. This is the first paragraph of a paper and it describes the content study in short sentences. If it fits to your subject area, you should then dive into the rest of the article.

Organize your literature - software can help

The longer your research takes, the more articles you will find. In order not to lose the overview, there are programs that help you to organize your literature and can even give you finished references in a chosen citation style for your own paper. The two best known programs are probably Citavi (for a fee - but you may get a license from your university) and Zotero (freeware). Both have many small features that can take a lot of work off your shoulders.

However, if you don't find any or only slightly relevant articles on your topic on the websites linked above, it sometimes helps to browse through the most popular journals one by one. A list of these is provided by the International Society of Biomechanics and you can find it [here](#).

Before you complete your literature search, you should make sure that your literature list contains all important articles. You can consult your professor again, who may point out further publications to you. Other ways to check whether your references contain papers that are well established in the scientific community are the article's absolute number of citations and the so called Impact Factor (IF) of the journal. This is a number calculated on the number of citations per year, which reflects the influence of a journal. To find out the IF of a journal, you can search for the corresponding name [here](#). But remember: The IF as well as the absolute number of citations says nothing about the real quality of the individual publication. You must evaluate this for yourself.