How to Write a Literature Review in the Sciences

What is a literature review?

A literature review does not present an original argument. A literature review is not simply a list of everything published on the topic. A literature review is analytic writing that proceeds to a conclusion by reason or argument (rather than intuition). Its purpose is to convey what is known about the topic, to critically evaluate the strength and weaknesses of this evidence, and identify any areas of controversy.

A literature review may be done as a stand-alone paper or as an introduction in a broader research paper or essay on the subject. Your review should have a guiding concept (for example, your thesis or research question, or the problem or issue you are exploring).

Literature on the topic may come from books, articles, or other formats. Sources may even contradict each other. A review of the literature helps discover what research has been done, identifies what needs further study, and demonstrates how your research fits into the larger field of study.

What are you reviewing?

A literature review will assess the current status of the knowledge or research about a topic, question, or field. You may look at the theoretical framework used to study the topic, or at the data collection tools and procedures used and their implications for the knowledge. You may want to look at the future direction(s) on the topic in terms of theory, methodology, policy, and questions for further study.

Step 1: Choose Your Topic

Choose a topic that you find interesting. This will make the process more enjoyable and rewarding. Do a “pre-search.” Make sure the topic you choose has already been researched by others so that you’ll be able to find relevant sources to review. Having the most interesting topic in the world won’t help you write a literature review if no one else has written about the topic previously. It might even be a good idea to come up with a few different ideas and do a pre-search on each. That way if you find that your first choice topic hasn’t been explored much you’ll have something to fall back on.

You may want to pose a question that will help guide your research, such as: “What is the impact of regular self-weighing on weight management?” before beginning your search.

Step 2: Identify Databases and Information Sources

Now search literature databases to find research that addresses your question. You can always reassess and revise your question if necessary based on the information you find.

- **General** - Web of Science, PubMed/MEDLINE, ScienceDirect, Academic Search Complete
- **Biology** - Biological Abstracts and SciFinder (Atlanta campus only)
- **Chemistry** - SciFinder (Atlanta campus only) and Reaxys
- **Geosciences** - GeoRef
- **Neuroscience and Psychology** - PsycINFO
- **Physics/Astronomy** - ArXiv, Astrophysics Data System
- **Health sciences research** - the best place to search will be MEDLINE/PubMed and CINAHL, but be sure to check other relevant subject-specific databases such as Ageline, PsycINFO, and Global Health.
Step 3: Search the Literature

Come up with initial keywords for the concepts of your question. Using the question in Step 1, “What is the impact of regular self-weighing on weight management?” the main keywords might be:

1. body weight
2. measurements
3. outcomes

Determine your scope - Add filters/limits to your search (demographics, language, year range, study type, geographic region) to reduce the number of sources you need to review.

Repeat the search in other relevant databases. Remember to evaluate as you search - simply gathering isn’t the goal, you want to find sources you can use. Assess whether you have enough literature or if you need to choose another topic.

Step 4: Read, Evaluate and Organize the Literature

Before deciding whether or not to incorporate what you have found into your literature review, evaluate the resources to make sure they contain information that is authoritative, reliable, and relevant. Read, summarize or describe each article noting your findings and impressions. Take thorough notes on each source to be included to help ensure that you don’t have to go through them over and over again.

- Examine each source for strengths and weaknesses and validity of findings.
- Does the author seem objective? Is the information presented in an unbiased manner?
- Look for unique concepts and points of difference between the articles.
- Find what methods were used (for example, quantitative vs. qualitative studies).
- Try starting with a draft outline of your review and build on it as you read the literature.

Step 5: Start Writing!

A good literature review shows signs of synthesis and understanding of the topic. There should be strong evidence of analytical thinking shown through the connections you make between the sources. Place each work in the context of its contribution to the understanding of the topic. For example, is it a seminal article? Is it a controversial one? Describe the relationship of each work to the others under consideration, noting contradictory studies. Identify areas of prior scholarship and describe gaps that need further research.

There are different ways to organize your paper, but most reviews contain some basic elements:

- Background/Introduction – Give an overview of your topic and why it is important.
- Objective – Briefly describe the purpose of the paper.
- Methods - Briefly describe how you performed your search for, and evaluation of, the literature.
- Discussion/Body - The body contains the summary of the literature. This is where you’ll discuss and compare common themes and gaps in the literature.
- Conclusion –Analyze and evaluate the reviewed works and how they are related to the discipline.
- Bibliography - A list of the sources you discussed or consulted.

Also consider how you want to organize the sources you’re reviewing. You may want to order them chronologically to show changes over time, or group them by topic or theme.