

Referencing Exercise

You work for a biomedical engineering startup company, developing a new implantable rotary total artificial heart. You have been asked by your supervisor to compile some information about FDA-approved total artificial hearts, as well as any new total artificial hearts currently under development, in order for your supervisor to write a scientific report. To help meet this goal, you will learn how to search for accurate sources of information.

Searching the internet is something that we all do every day, yet there is so much more than simply typing a question into Google and using the first search result. This activity will encourage you identify the quality of sources for reference material, and provide some efficient tools for information gathering.

For more information, refer to:

UNSW Skills for Current Students <https://student.unsw.edu.au/skills>

UNSW Library Website <http://library.unsw.edu.au/>

Part 1 – Locating References

1. Read the description of Primary, Secondary and Tertiary Sources at this website (<https://www.lib.vt.edu/help/research/primary-secondary-tertiary.html>). Give three examples of each source. Which type of reference do you think you should cite when writing a scientific or engineering report?
2. Perform a quick search on Google using the terms “total artificial hearts” (no quotation marks), and take note of the first page of the results. Compare your results with your fellow students—did you get the exact same results as them? Why/Why not? Do you think a Google search of just the keywords will return enough useful and factually correct information for a research report?
3. Go to Wikipedia and search for Total Artificial Hearts. What do you think about the reputability of this article? Do you think you should cite a Wikipedia article as a reference in a research paper? Why/why not?
4. Head to the library website (<http://www.library.unsw.edu.au/>) and try searching using the same keywords as in Step 2. What types of sources are returned by the library search? How many? Are they all the same type of source? Leave the first page of results open in your browser – we’ll come back to this later.
5. Read about intelligent search techniques, which are located here (<http://www.library.illinois.edu/bix/pdf/genguide/searchtips.pdf>). Then try searching the UNSW library website using the following search expression (keep the quotations and brackets): (“artificial heart” OR Syncardia) AND (“FDA” OR “FDA Approved”). Note the use of Boolean expressions, and the synonyms – all of which were obtained after some prior reading into

artificial hearts from tertiary sources (such as Wikipedia). Compare your results to those obtained from Step 4 – are your search results more refined?

6. Clearly secondary and tertiary sources can be useful in obtaining key words for searching for primary sources. Refer to your results from Part 1 and Part 2 to obtain some more key words related to artificial hearts, then try to search for some journal articles related to new or emerging artificial heart technologies.
7. What is a database, and how is it different to a direct search from UNSW library? What are some examples of databases for biomedical engineering?
8. Repeat the above search (Step 5) again using Google Scholar. Did you find the same articles?

Part 2: Importing to Bibliographic software

Once you have found some scientific articles, it's time to import them into EndNote, so that you can reference them easily in a report. EndNote can be downloaded free from UNSW (<https://www.it.unsw.edu.au/students/software/endnote.html>). It can interface with Microsoft word, making referencing much easier.

1. For one article you have found in Part 1 of the referencing tutorial, download the citation information. This can found on the journal homepage for the article. You will be prompted to select the data format - EndNote should be an option. Otherwise, Reference Manager or RIS formats should work.



Figure 1: Example of location of citation information.

2. Import this file into EndNote. This can be done by double clicking on the .enw file downloaded from the journal webpage, importing the RIS through EndNote or entering the bibliographical details manually.
3. Double-check the bibliographical details. Never assume that the citation information is complete or correct! Check that the authors, title, journal, volume and page information is entered correctly. Also note that pagination is not consistent between journals - some journals list the full page numbers (e.g. 560-568) whilst others abbreviate the pages (560-8).

Part 3 - In-text referencing and bibliography

Now comes the time to incorporate the references into some text. Write a one sentence summary of the paper you found, summarising the key finding. Then include an in-text reference, and a bibliography at the end.

First try using the Harvard referencing style. Then try exploring the different style outputs in EndNote - note how easily you can switch between styles.

BUT please keep in mind - using EndNote (or any other reference manager) is not a set-and-forget method - always double check spelling, formats and pagination.

See the following example

Harvard

“Intra-aortic balloon pumps are one of the most commonly used cardiac assist devices in the world (Kantrowitz 1990). These devices unload the LV, increase cardiac output and improve coronary flow in patients with acute HF. However, these devices are not suitable for patients with chronic end-stage HF (Krishna & Zacharowski 2009). Furthermore, these devices are associated with an average complication rate of 20-30%, making them suitable for short term use only (Parissis et al. 2011).”

References

Kantrowitz, A., 1990. Origins of intraaortic balloon pumping. *The Annals of Thoracic Surgery*, 50(4), pp.672–674.

Krishna, M. & Zacharowski, K., 2009. Principles of intra-aortic balloon pump counterpulsation. *Continuing Education in Anaesthesia, Critical Care & Pain*, 9(1), pp.24–28.

Parissis, H., Soo, A. & Al-Alao, B., 2011. Intra aortic balloon pump: literature review of risk factors related to complications of the intraaortic balloon pump. *Journal of cardiothoracic surgery*, 6(1), pp.147–53.

IEEE

“Intra-aortic balloon pumps are one of the most commonly used cardiac assist devices in the world [1]. These devices unload the LV, increase cardiac output and improve coronary flow in patients with acute HF. However, these devices are not suitable for patients with chronic end-stage HF [2]. Furthermore, these devices are associated with an average complication rate of 20-30%, making them suitable for short term use only [3].”

References

[1] A. Kantrowitz, “Origins of intraaortic balloon pumping,” *Ann. Thorac. Surg.*, vol. 50, no. 4, pp. 672–674, Oct. 1990.

[2] M. Krishna and K. Zacharowski, “Principles of intra-aortic balloon pump counterpulsation,” *Contin. Educ. Anaesthesia, Crit. Care Pain*, vol. 9, no. 1, pp. 24–28, Feb. 2009.

[3] H. Parissis, A. Soo, and B. Al-Alao, “Intra aortic balloon pump: literature review of risk factors related to complications of the intraaortic balloon pump,” *J. Cardiothorac. Surg.*, vol. 6, no. 1, pp. 147–53, Jan. 2011.

Critiquing Literature Exercise

The purpose of this exercise is to learn how to critically evaluate the quality of a piece of literature.

You have been asked by your research supervisor to do a literature review on total artificial hearts. They have given you a review article as a starting point (The review article will be available on Moodle).

Review articles are a good place to start when doing a literature review, as they summarise most of the key papers. However, they still need to be critically evaluated.

You know your supervisor is busy and probably hasn't read the article. Your goal is to determine whether this article is a reliable piece of scientific literature from which you can build your literature review. You should write a paragraph detailing why this article is or isn't a credible and useful piece of literature.

Some Tips:

- Read the article first. Is it well written? Is the writing scientific? Anything stand out that makes you wonder about its credibility?
- Search for information about the journal. What journal metrics can you use to assess whether a journal is "good"? (Hint: Trying using Scimagor)
- Check some of the references. Are the in-text citations appropriate? Does the paper cite articles that are cited by others?
- How often has this paper been cited? What about the author's track record? (Track records can be discovered using Scopus or Google Scholar). Do you think the author is an experienced researcher in the artificial heart field? Why/Why not?

(Article can also be accessed here <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4571828/>)