

## WRITING TIPS SERIES

# Effective writing and publishing scientific papers, part II: title and abstract

### 1. What you should know

The title and abstract are the most important parts of a paper. They are important for editors who will scan the title and abstract to decide if it should be sent out for external peer review; for reviewers, who will get a first impression of the paper; and for readers, as the title, abstract, and keywords are often the only parts of the paper that are freely accessible to everyone online, including readers in developing countries. Electronic search databases use words in the title and abstract to yield search results. In PubMed, the similarity between documents is measured by the words they have in common, and terms in the title are given more weight. It is therefore essential that the title and abstract contain all the important terms that potential readers may use in searching for relevant literature and “related articles.”

The author instructions of your chosen journal give information on requirements for titles. Some allow only single titles, whereas others allow subtitles, possibly with a colon. Informative titles are those that present the outcome of the study (e.g., Drug x is effective in reducing cholesterol), whereas some journals prefer a descriptive title stating the subject and design of the study (e.g., Drug x for treatment of hypercholesterolemia: a placebo-controlled randomized trial). Journals may require a short running title to be used at the top or bottom of each page, facilitating reader navigation through the journal.

Journals usually require a structured abstract with headings (such as background, methods, results, and discussion). The abstract must clearly highlight the issue addressed by the study and the key findings. An abstract should be a stand-alone one, without any reference to the main text or the

literature. Most journals have a strict word limit for the abstract (typically 200–300 words). While an abstract must be pleasant to read on its own, the narrative tone and style must be more telegraphic than that of the main text.

### 2. What you should do

Take time to write the title and abstract. Enjoy their uniqueness. Take a quiet moment to re-read your paper and write down the keywords of the different sections. Determine if you need an informative or descriptive title. Use the keywords and active verbs to formulate several potential titles (e.g., Variable x *predicts* fracture risk). Try to write the most important keywords at the beginning of the title, as readers’ attention is focused on the beginning. Although running titles may often contain abbreviations, avoid them in the title and abstract. Determine what factor makes your paper unique and try to stress that in the title. Make the title stand out from other literature in the field.

Use the keywords of each section of the paper to construct the abstract. Always state the objective of your study at the beginning. Follow the journal’s format for abstracts strictly but creatively. Limit your statements on each section to two or three sentences. Try to use short phrases, simple language, and common word combinations, and avoid the passive voice as much as possible. Describe the important concepts using language fully consistent with the main text. Sentences may require a slightly different syntax if there are no headings because the journal requires an unstructured abstract.

The results section is the most important part of the abstract. Start by clearly and honestly stating the answer to the research question, including the primary outcome, and be self-critical when pondering how many secondary outcomes to include. If you report percentages, provide details of sample size. Never present only *P*-values but give effect sizes (with 95% confidence intervals).

Once the abstract is completed, it helps to ask yourself four questions, each relating to one section: “What is known and why is this study needed?” (Background), “What did we do?” (Methods), “What did we find?” (Results), and “What does it mean?” (Discussion). Also ask yourself “So what?”; this is what editors and reviewers often ask themselves when reviewing papers. Have three draft titles and the abstract ready before sending the paper to co-authors for comments. Critically revise them every time the main text undergoes revisions.

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#### Checklist for title and abstract

- Construct title and abstract from keywords from all sections of the main text.
- Use important keywords at the beginning of the title.
- Avoid abbreviations and passive voice (title and abstract).
- Always state the objective and start the results section with the answer to the research question (abstract).
- Give sample size if you report percentages (abstract).
- Present effect sizes with confidence intervals (abstract).
- Check if the abstract covers the 4 Ws:
  - Background: What is known and why is this study needed?
  - Methods: What did you do?
  - Results: What did you find?
  - Discussion: What does it mean?
- Check that the abstract can be read independently from the main text.
- Revise every time the main text is revised (title and abstract).