

**WRITING TIPS SERIES**

**Effective writing and publishing scientific papers, part VII:  
tables and figures**

**1. What you should know**

Tables and figures are an efficient way of presenting findings from a study. If they are designed well, they provide more information than an author could possibly put into words. A paper's key findings should be presented in tables and figures, as readers will look at them to get an overview of the study results. Importantly, they must be self-explanatory; a reader should be able to fully understand the information without having to read the text. Most journals allow only a limited number of tables and figures to be part of the print version of a paper (often around 5–6). However, additional illustrations can usually be submitted as supplementary material for readers to download from the journal's Web site.

It is highly recommended to design the layout of tables and figures carefully; a clear and suitable layout emphasizes the credibility of the study results, which is essential for the peer-reviewing process. Chaotic illustrations, on the other hand, will irritate and frustrate editors and reviewers, thereby reducing the chances of acceptance. Using special software to prepare figures may improve their quality. Journals usually adapt the layout of tables to their own style during the copy editing process, but often not that of figures. It is therefore important for authors to ensure that the contents of figures are correct and readable. Note that permission is needed if you want to use a figure created by somebody else.

Both tables and figures should have a clear relation with the text of the paper. They should be referred to in the text in a chronological order starting with 1 (e.g., "Table 1 shows ...;" "We observed ... (Figure 1)"). In clinical research papers, Table 1 usually shows the baseline characteristics of the study sample, and Figure 1 the flowchart of participants, from recruitment to final follow-up.

When assembling a paper for submission, it is usual to insert each table and figure on a new page after the reference list. The title of a table is usually presented at the top, whereas that of a figure is usually placed at the bottom. Check early whether the target journal requires submitting tables or figures as separate files and whether figures must have a specific file format (e.g., TIFF, JPEG, or PNG) to avoid unnecessary work.

**2. What you should do**

Make a deliberate choice early in the writing process on which data to present in tables and figures. Follow the target journal's instructions to the authors for drafting tables

meticulously. Do not use them for what can easily be put into words. Create an informative title describing the content of the table, ensure a clear and attractive presentation of data, and explain all abbreviations in the legend. The legend is also useful for presenting the minimum/maximum values of measurement scales (making it easier for the reader to interpret values), or the level of statistical significance of the tests (usually marked with asterisks:  $*P < 0.05$ ,  $**P < 0.01$ ,  $***P < 0.001$ ). Ask a colleague without knowledge of the study to explain the table to you to check its self-explanatory nature.

Avoid repeating all the information from the tables in the text, but stress the most important findings that support your hypothesis and those findings that are unexpected or otherwise remarkable. Keep the headings of table columns short (maximum of two lines) and place comparisons (e.g., between intervention and control groups) from left to right. Put your row headings into a meaningful order from top to bottom and indent subheadings for categories within a variable. For example, present results from the total sample above those of any subsamples. Present numbers in cells but their units of measurement in the column or row headings. Be consistent: use the same terms for important aspects (such as names of groups) in both text and tables.

Journals usually charge for colored illustrations, so unless you do not mind spending money on this, prepare black-and-white or gray-scale figures and check whether the scales are distinguishable after printing. When designing tables, use horizontal lines to mark the top and bottom and to separate the column headings from the body, but no vertical lines. Use landscape page format for wide tables. If you think of a table as a bookshelf, you do not want anything interrupting your eye movement from left to right.

**Checklist for tables and figures**

- Make a deliberate choice early in the writing process on which key findings to present in tables/figures.
- The title should reflect what is shown.
- Ensure that tables/figures are self-explanatory.
- Do not repeat information from tables/figures in the text but emphasize the important findings.
- Design tables/figures to make them clear and easy to read.
- Start each table/figure on a new page, after the reference list.

Daniel Kotz  
Jochen W.L. Cals

*E-mail address:* [d.kotz@maastrichtuniversity.nl](mailto:d.kotz@maastrichtuniversity.nl) (D. Kotz)