Presentation and Publication Skills: How to review a paper

Nicolaas E Deutz, MD, PhD[1,2]

Nathalie Delzenne, PhD[3]

Nathan A Davies, PhD[4]

Dileep N Lobo, DM, FRCS, FACS, FRCPE[5,6,7]

[1]Editor-in-Chief, Clinical Nutrition

[2]Center for Translational Research in Aging & Longevity, Texas A&M University, College Station, Texas 77843-4253, U.S.A. Email: nep.deutz@ctral.org

[3]Université catholique de Louvain UCLouvain, Avenue Mounier , 73 B-1200 Brussels, Belgium. Email: Nathalie.delzenne@ulcouvain.be

[4]Division of Medicine, University College London, Rayne Institute, 5 University Street, London. UK WC1E 6JF Email:nathan.davies@ucl.ac.uk

[5]Gastrointestinal Surgery, Nottingham Digestive Diseases Centre, Division of Translational Medical Sciences, School of Medicine, University of Nottingham, Queen's Medical Centre, Nottingham, UK

[6]MRC Versus Arthritis Centre for Musculoskeletal Ageing Research, School of Life Sciences, University of Nottingham, Queen's Medical Centre, Nottingham, UK

[7]Division of Surgery, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA, USA Email: dileep.lobo@nottingham.ac.uk

Corresponding author: Nicolaas E.P. Deutz, MD, PhD, Center for Translational Research in Aging & Longevity. Texas A&M University, College Station, TX. E-mail: nep.deutz@ctral.org

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Orcid IDs

NEP Deutz: https://orcid.org/0000-0001-5845-6447

N Delzenne: https://orcid.org/0000-0003-2115-6082

NA Davies: https://orcid.org/0000-0003-1625-9204

DN Lobo: https://orcid.org/0000-0003-1187-5796

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ABSTRACT

We provide comprehensive insights into the peer review process and guide potential reviewers through the steps of reviewing scientific manuscripts. We discuss essential aspects such as the reviewer's responsibility in responding to invitations and maintaining confidentiality throughout the process, the criteria for accepting or rejecting papers, and efficient review of resubmissions.

We emphasize the importance of prioritizing the review responsibility within other commitments, communication using professional and courteous language, and adherence to deadlines. We also offer practical tips on evaluating the abstract, introduction, materials and methods, results, and discussion section and summarizing the critiques in the review report.

Learning Objectives

After reading this paper, you should know how to complete the following items:

1. decide to accept review
2. review all sections of a paper
3. write the review report
4. handle review of resubmissions

Key Messages

This paper teaches potential reviewers of scientific manuscripts how to review and to write the review report.

Introduction

The way the scientific community keeps up with the quality of research is to review the research output by peers. The peers are usually researchers who work in the same field, using comparable methods and are equivalent or are more established. This system has been used for a long time and albeit not perfect, has worked well.

Research outputs need to be distributed among scientists, clinicians, health care professionals and others who are interested in the work. Scientific journals were created for this reason, and in most cases are managed by a group of researchers and professional staff (The Editorial Board). The final publication of the research output is managed by either a for-profit company or non-profit organization (The Publisher) and these companies or organizations also help the editors with the administrative part of the work.

The peer review system is therefore predominantly managed by the editorial board and, therefore, potential reviewers work mainly with the editorial board. The work of the researchers in the editorial board and the effort to review papers is viewed as service to the community and, therefore, this effort is largely unpaid and has not been sponsored by the publisher or society.

It has also become clear that the peer review process is under pressure and that the whole peer review process needs to become more efficient. Therefore, to educate potential reviewers helping the journals of the European Society for Clinical Nutrition and Metabolism (ESPEN), we will discuss the different aspects of the peer review process. This information can also help potential authors to improve the structure and writing of their own manuscripts.

Who are the reviewers of a paper?

Reviewers of scientific papers are your peers, which means that they also are doing or have done research in your research area. The reviewers are usually anonymous for the authors, while the reviewers are of course aware of who authors are, this single blinded process was instituted for the purpose of obtaining an objective review. It is important for reviewers to maintain confidentiality throughout the process. To maintain the blinded process direct communication between authors and reviewers should be avoided.

Our experience is that peers that have a very busy schedule with a large workload are usually not able or willing to review papers. This situation is not ideal as then the most experienced researchers are not able to help authors in improving their manuscript. We also feel that retirement of scientists usually is only in terms of being an active researcher, but not for being a reviewer. Early, mid-career and retired scientists are, therefore, in most cases reviewers of manuscripts. In addition, manuscripts are often also read by members of the editorial board like the editor-in-chief and associate editors.

The invitation that asks you to review a paper

We are aware that researchers receive many invitations to review scientific papers and that it is not possible to accept all these invitations.

The editorial board usually has a list of potential reviewers and their fields of expertise and also keeps track of the number of reviews done, the speed and quality of the review. So new invitations are then only sent to those that potentially have sufficient expertise and capability to review.

So how does a potential reviewer decide which invitation to accept? The invitation email includes the abstract of the manuscript, which helps to decide if the topic is within their field of expertise. If so, then consider the next points.

In our opinion, the most important point in deciding which invitation to accept is whether you are a member of ESPEN and if you received the invitation to review for one of the Society's journals (e.g. CLINICAL NUTRITION (CN), CLINICAL NUTRITION ESPEN (CNE) and CLINICAL NUTRITION OPEN SCIENCE (CNOS)). Helping those journals to improve their quality by reviewing is viewed as an important contribution to the success of the society.

Another point to consider is the standing and ownership of the scientific journal. Our opinion is that when the scientific journal is managed by a well-respected scientific society, it has a higher standing than when journals founded and run by for-profit organizations. In recent years, there has been a surge in the creation of predatory online journal titles looking to generate revenue for the publishers. However, many of these undertake only cursory peer review and consequently are viewed as being scientifically limited.

Before accepting the invitation, it is important to understand that the review of the manuscript needs to be done promptly (usually within 2 weeks). So accepting an invitation while going on vacation and not having enough time to review, is not a good idea. Also, it is important to anticipate how much time is needed to review a scientific paper. It is impossible to give general estimations here as some scientists can take 8 hours to review a paper, while others can do the task in 30 min. It all depends on experience from previous reviews and knowledge of the field. We think that the more experience you have in reviewing a manuscript, the faster it can be completed to a high standard.

The peer review process

The electronic systems that are now used by almost all journals have many tools to make the review process easier. Therefore, the whole reviewing process is effectively managed by these online systems.

How to review a paper

After accepting the invitation to review the manuscript, the first task is to download the complete manuscript and related documents, including supplementary material, if any. We suggest immediately reading the abstract again in more detail and start thinking about the research question and consider the approach of the researchers. Is there a clear primary endpoint defined and are there interesting secondary endpoints?

If there is enough time to immediately continue with the comprehensive reviewing process, we suggest doing that. In our experience, waiting until the deadline nears before completing the review process will negatively affect the quality of the review. Reviewing papers should be part of workday planning and not be viewed as something on top of the regular workload.

Some observational studies use Mendelian randomization to better balance the groups though balancing the genetic distribution of important genes. Also, statistical analysis can be done by testing a hypothesis, using the distribution of the population or Bayesian statistics that are based on results of previous experiments or belief of probability. These approaches can be complicated to understand and often only a statistical trained reviewer is able to understand the

merits of the chosen approaches. We believe it is better not to include these approaches in the title of the paper.

Initial scan of the paper

The quality of scientific papers is related to the research question asked, the way the design can help to answer this research question, and the methods used. The last paragraph of the introduction section can often help with this.

Abstract

Reading the abstract should give a good summary of the why, what and how. Thus, if the abstract is not well written, it usually is followed by a not so well written publication.

Introduction

The introduction should be concise (1-2 pages max) and really focus on what is the reason for conducting the study and the hypothesis being tested. It is not a good idea to write a review of all existing literature here, but it is important to quickly educate the reviewer (and reader) about the existing knowledge and the perceived gaps. The introduction typically ends by contextualizing the hypothesis for the study performed and the aims.

Materials and Methods

All the material used and the methods applied need to be described in sufficient detail to enable other researchers to repeat the experiments. Reviewers should always look for the statistics section to see if the analytical methods used make sense. Scrutiny of the sample size calculation is essential. Sometimes reviewers have a statistical background and are specifically asked to review the manuscript for that purpose.

For randomized clinical trials, it is important to check whether the CONSORT guidelines are followed, for meta-analysis and systematic reviews the PRISMA guidelines, for cohort studies the STROBE guidelines and for animal studies the ARRIVE guidelines. All relevant guidelines can be found at the Enhancing the QUAlity and Transparency Of health Research (EQUATOR) network (https://www.equator-network.org/). Systematic reviews should be prospectively registered in the PROSPERO or similar database and clinical trials in databases like clinicaltrials.gov. To understand whether the authors have reported the study as registered, it is important to check those central databases and ensure there are no deviations from the registered protocols.

If you feel that the statistics are too complex, advise the editor to request an expert review by a statistician.

Results

The result section should be easy to read and understandable. We suggest having the tables and figures available in a different screen window (or as printouts) as the text of this section should follow the results that are presented in the tables/figures. Duplication of the data in text and tables/figures is unnecessary and should be avoided.

Discussion

The first paragraph should be a short summary of the main results and some initial conclusions. It will help the reviewer, authors, and readers very much when the discussion section has subheaders. The discussion should be 4 pages or less and very focused only on discussing the results that were presented. Context for the findings from the published literature is expected, though the emphasis should remain on the results of the study presented. A section on the strengths and weaknesses of the study should be included. The last paragraph usually contains an overall conclusion.

Tables

The tables should be easy to read and the legend should contain all information, so the reviewer can go over the data easily. Every table should stand by itself. Any abbreviations, symbols, super/subscripts used should be clearly defined in the legend along with descriptors of statistical significance.

Figures

Figures are very important for reviewers to understand the message of the results. High quality figures that are a good summary of the results are very much appreciated. Often the most important findings of the study are presented as figures to maximize their import to the reader. Figures should be of sufficient resolution and font size should be large enough to be read in the printed version of the paper.

Writing the review report for the authors

We advise not to write the review immediately when reading the paper. It is more important to first come up with a general perspective of the impact, quality, and approach of the described research.

The first paragraph of the report is usually a short summary of what was done and what the main results were (in the words of the reviewer) and what the main strengths are of the research. This will help the author(s) to see if the reviewer understood the paper and the interpretation of the findings.

The second paragraph usually points to the main weaknesses of the manuscript and the results as they have been presented. This mainly factors into the score of the reviewer for the manuscript and whether their opinion is favorable or not. Should it be decided that the current paper is not suitable for publication, as a reviewer, it is very important to estimate whether the authors could improve the manuscript, or the research described to a level that would make the paper ultimately be acceptable by the journal.

The electronic system will also ask a series of questions related to the content of the manuscript and will ask for a final recommendation to be made by the reviewer (**Table 1**).

What will happen after the review has been submitted?

The Editors usually need 2 or more independent reviews to help decide what the next steps should be (**Table 2**).

Reviewing resubmissions

When the authors are given the option to revise their manuscript and within a certain time period have resubmitted their manuscript, the editors usually ask the same reviewers for their recommendation. It is important in this phase that the reviewers first go over the responses from the authors to the comments from the initial review. At this point the comments from all reviewers will be available, allowing everyone to see the perceived strengths and weaknesses of the first manuscript. It is important that the authors list all remarks and questions from the reviewers, so that nothing is missed in their response.

The response of the authors should be very thorough and precise and should relate to all comments made. Authors who did not spend sufficient time to respond to the reviewers are usually not viewed favorably. Reviewers should view the response from the authors as a scientific discussion in which points need to be weighed and scientifically discussed. The reviewer's points should feel recognized and balanced. If the authors disagree with a reviewer's comment, their answer should sufficiently justify their reasoning, with support from the literature, if required.

It is important to check whether the authors have updated the manuscript in relation to the response they gave to the reviewers.

We also suggest checking the comments made by the other reviewers of the manuscript to see how the authors responded to those comments.

The response of the reviewer to the authors has the same structure as with the initial submission.

It is not uncommon that reviewers are not satisfied with the responses of the authors and that the recommendation (**Table 1**) to the editors asks for another revision.

Summary

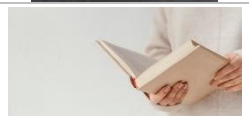
To maintain confidentiality, all manuscript files should be deleted or destroyed upon completion of the review. The salient features of the peer review process are summarized in **Figure 1** and will help both authors and reviewers navigate the peer review process.

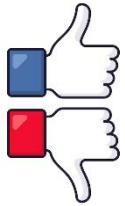
Tables

Table 1: Possible recommendation, made by the reviewer
Accept without revision
Accept with minor revision as described
Possibly accept after major revision and re-review
Not acceptable on grounds described

Table 2: Possible decision that can be suggested by the editors
Accept
Accept with minor revision
Revise
Transfer pre-review
Transfer post-review
Reject without peer-review
Reject

Figure 1: Summary of the reviewer's role in the review process

	**Respond** to an invitation timeously (preferably within 48 h). If you are not in a position to review, please decline – reasons can include leave, too many other commitments, not in area of expertise, conflict of interest, etc.
	Respect **deadlines**. Once you have agreed to review, try and submit before the journal deadline – usually 2-3 weeks. Think of what you would want if someone was reviewing your paper.
	**Read** the paper, including the tables, figures and supplementary document. Be familiar with the recent literature and interpret the context of the paper. The title should accurately reflect the subject of the paper. Originality and topicality are important.
	**Verify** that the authors have followed the registered/published protocol. This is particularly important for randomized clinical trials and systematic reviews/meta-analyses. Go through the checklist authors should have submitted as a supplementary document. Look for factual, numerical and statistical errors.
	The **abstract** should be written according to journal style and should be an accurate reflection of the paper. It should not contain information that is not mentioned in the main manuscript and the conclusions should reflect the results.
	The **introduction** should briefly summarize what is known in the literature along with gaps in knowledge and how this led to the hypothesis of the paper. The aims should be clearly stated and should be achieved in the results. The premise of the paper should be interesting and important for the readership of the journal.
	The **methods** should be appropriate and robust to achieve the aims of the study. They should include sufficient detail to help other researchers reproduce the work. The experimental or clinical model chosen should be appropriate to study the hypothesis.
	Check that the **statistical methods** employed are appropriate. This also applies to sample size, graphs and tables. If you feel that the statistics are too complex, advise the editor to request an expert review by a statistician.

	The **results** should be clear and reflect all the aims and endpoints set out in the Introduction and Methods. Duplication of results should be avoided between the text and tables or figures.
	The **discussion** should summarize the main findings of the study and interpret the work in context of the published literature. It should be factual and succinct but not be discursive. Strengths and weaknesses of the study should be discussed accurately. The results should support the conclusions.
	The **bibliography** should be accurate and citations should support the statements made. Selective citations to support the authors' bias and excessive self-citations are best avoided. Suggest adding references of relevance but avoid coercion.
	Be **polite** and **considerate**. The authors have put in a great deal of work to get the paper ready for submission. Start your review by summarizing the aims and results of the paper. Try and highlight the positive aspects of the paper before highlighting flaws and limitations. If the quality of writing needs to be improved, say so. English is not the first language of many authors.
	You should provide **constructive criticism** to help improve the paper. These comments are helpful because even if the journal rejects the paper, the authors can revise it and submit elsewhere. Comments should be listed in a systematic way, starting with major comments and then minor or ones. Single sentence comments such as "This paper is excellent and must be published" are unhelpful. Do not mention your recommendation in the comments to the authors.
	Your **recommendation** to the editor is important but not binding and should reflect the comments that you have provided the authors with. It is appropriate to recommend rejection if there are major uncorrectable flaws in the paper. Very few papers are perfect enough to be accepted without revision. If there are minor correctable flaws, minor revision should be recommended. Major revision is necessary for papers that need substantial reworking. Also indicate if you are prepared to review a revised version of the manuscript.
	As a reviewer, you are in a privileged position to view a paper before publication. Please maintain **confidentiality** all through and avoid direct communication with the authors. Delete or destroy all manuscript files on completion of the review.
The pictures are downloaded from www.freepik.com	