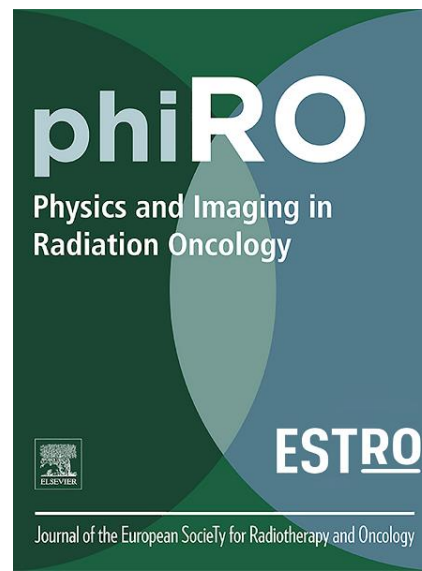


Editor advice and requirements for Physics and Imaging in Radiation Oncology (phiRO)

Ludvig P Muren

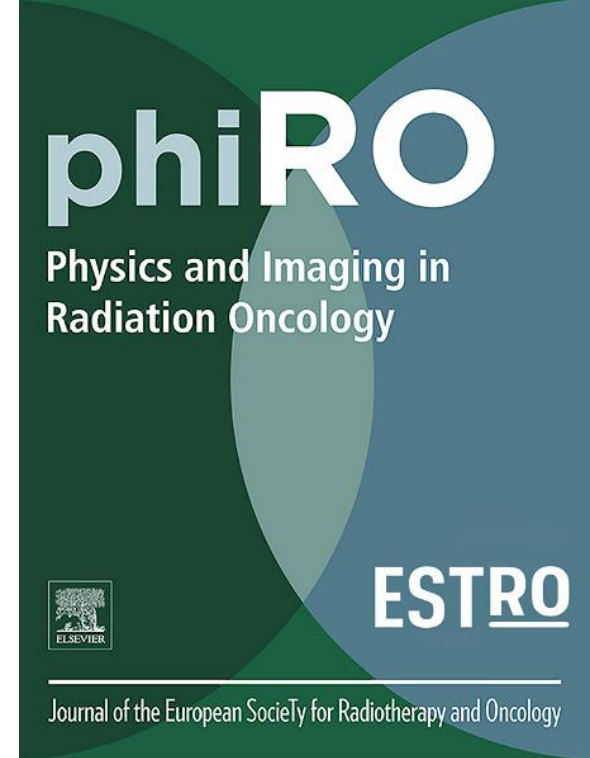
Editor-in-Chief, phiRO

ESTRO



Contents

- Author responsibilities and information sources
- Issues to consider when writing the different parts of a manuscript
- Frequently encountered problems in submitted papers that prevent them from being accepted



**What you *have* to do/know
when writing a paper...**

Your *responsibilities* as author

- Publication is the final stage of research
- Publications form the basis of new research, and the application of the research findings
- Publications influence researchers in their views and choices, and also the society as a whole
- Researchers therefore have a responsibility to ensure that their publications are **honest, clear, accurate, complete and balanced, and should avoid misleading, selective or ambiguous reporting**



From COPE International standards for authors
www.publicationethics.org

COPE International standards for authors (summary) – www.publicationethics.org



- The research being reported should have been conducted in an **ethical and responsible manner** and should comply with all relevant legislation (The Singapore statement – www.singaporestatement.org)
- Researchers should present their results **clearly, honestly**, and without fabrication, falsification or inappropriate data manipulation
- Researchers should strive to describe their methods **clearly** and unambiguously **so that their findings can be confirmed by others**
- Researchers should adhere to publication requirements that submitted work is **original, is not plagiarised**, and has **not been published elsewhere**
- Authors should take **collective responsibility** for submitted and published work
- The **authorship** of research publications **should accurately reflect individuals' contributions** to the work and its reporting
- Funding sources and relevant conflicts of interest should be disclosed

Singapore Statement on Research Integrity



Preamble. The value and benefits of research are vitally dependent on the integrity of research. While there can be and are national and disciplinary differences in the way research is organized and conducted, there are also principles and professional responsibilities that are fundamental to the integrity of research wherever it is undertaken.

PRINCIPLES

Honesty in all aspects of research

Accountability in the conduct of research

Professional courtesy and fairness in working with others

Good stewardship of research on behalf of others

RESPONSIBILITIES

1. Integrity: Researchers should take responsibility for the trustworthiness of their research.

2. Adherence to Regulations: Researchers should be aware of and adhere to regulations and policies related to research.

3. Research Methods: Researchers should employ appropriate research methods, base conclusions on critical analysis of the evidence and report findings and interpretations fully and objectively.

4. Research Records: Researchers should keep clear, accurate records of all research and ensure the integrity and replication of the research.

5. Research Findings: Researchers should share data and findings openly and promptly, as soon as they have had an

10. Public Communication: Researchers should limit professional comments to their recognized expertise when engaged in public discussions about the application and importance of research findings and clearly distinguish professional comments from opinions based on personal views.

11. Reporting Irresponsible Research Practices: Researchers should report to the appropriate authorities any suspected research misconduct, including fabrication, falsification or plagiarism, and other practices that undermine the integrity of research, compromise the objectivity, fairness, or transparency of the research process, or the use of misleading analytical methods.

www.singaporestatement.org

ICMJE (International Committee of Medical Journal Editors) – www.icjme.org



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Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals*

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Issues to consider when writing...

Issues to consider when writing



Manuscript title

- Ideally the title should accurately reflect the aim, design and findings of the study
- Make sure the language of the title is perfect
 - Do not repeat words; no unnecessary words
 - No abbreviations (spell out also terms like CT and MRI)
 - Include the 'setting' of the study (e.g. disease, imaging/treatment modality)

Abstract

- Does the abstract provide a clear aim, the **key numerical results** and a clear conclusion?
- Does the abstract comply with journal instructions? (e.g. section headings; background and purpose vs. background only)

Issues to consider when writing



Introduction

- Explain why your research is important
 - Is your study answering a physical or clinical question? This has implications for the choice of journal and your targeted readership
- Review and describe the literature in an accurate/fair way. E.g., are the main findings from previous studies stated, incl. their limitations?
- The introduction should give the reader a clear impression of how the current study adds to the specific field
- Previous studies in the area should be linked together to establish the current hypothesis
- End the Introduction with a clear research question / aim
- There should NOT be any commercial names

Issues to consider when writing



Materials

- Consider the size of the material relative to your research question
 - Explorative studies (new concepts/methods) may require few patients
 - Studies to establish or confirm clinical effect needs many patients (consider the statistical power).
- Presentation of individual patient data only if used in your analysis or if needed to understand your study/results
 - Often sufficient in Suppl. material of a physics paper
- Informed consent and IRB approval

Issues to consider when writing



Methods

- In general, methods and analysis should be described in sufficient detail (or adequately referenced) for others to repeat the study
 - Consider the **level of detail needed for the general, interested reader of your chosen journal**
 - Full details in supplementary material (for the very few readers that are going to use your method or relate to it in their own studies)
 - If submitting to an interdisciplinary journal, consider the need for maths
 - Do not use space on explicitly defining well-known measures (e.g. EUD in RT) – cite the key references instead
- Motivate why the experimental design is applicable for the hypothesis to be tested
- Motivate your choice of each measured endpoint

Issues to consider when writing



Statistics

- If using statistical analysis, are the approaches and tests used appropriate?
- Consider the **critical assumptions of the statistical techniques** (e.g., independence, normality)
- Correct for multiple testing (e.g. Bonferroni), or at least discuss the issue
- The precision of / no. of decimals on p-values (are the p-values of 0.6 vs 0.4 really different?; what does $p = 1 \times 10^{-8}$ mean?)

Issues to consider when writing



Results

- **Present** your data in a clear and concise way, in the same sequence as described in the M&M section – and do not explain/discuss the results
- Results section should be independent (citations not needed)
- Where appropriate, report uncertainties. Be careful with the no. of decimals used on numerical results – remember the uncertainties
- **Remember physical quantities and units (e.g. on diagrams)**
- You should not present data on any measurement/procedure that was not properly described in the Methods
- Use tables, figures and text effectively (all figs/tables needed?)
- Do not present any data more than once (figures/tables/text)
- Make sure figures/diagrams are of good quality

Issues to consider when writing



Discussion

- Begin with a brief paragraph summarising the idea and findings of the study
- Make sure your **methodological approaches as well as your findings are compared and contrasted to those of key previous studies**
- The discussion should give a deeper understanding of the results – you should not repeat them (and rarely mention new results)
- The **strengths and limitations** of the study (e.g. methods, material)
- The significance and implications of the results
- Discuss alternative interpretations of the data
- Make suggestions for further research
- Make sure conclusions are supported by the data

Issues to consider when writing



General

- Is the manuscript concise? Can sections / passages be shortened or omitted? (be specific!)
 - Short text generally improves clarity
 - Use supplementary material – it is your task as author to select the material for the readers (M&M details, Results i.e. tables and figures)
- Is the paper written in good English, is it properly organised and easy to follow?
- Have you acknowledged any conflict of interest? (e.g. industry relations, company support)
- **References** should be carefully selected, should show connection to the journal, and should be **formatted according to guidelines**

Most frequent problems in submitted manuscripts

The Achilles heel



- The Achilles heel of any paper is the passage just before the 'aims statement'
- Describe with appropriate level of detail what **all previous key studies in the field** have addressed
- Implicitly – or explicitly – also identify what they have NOT done
- This is the gap in the literature you aim to fill
- Focus on the logic in this reasoning
 - Mor lille in the comedy “Erasmus Montanus” of Ludvig Holberg (1723)
- Revisit these key studies in the Discussion

Scientific basis of study



- Focus on general, scientific problems
 - “Recently our institution implemented...”
 - The dosimetry equipment xxxx..
- Maximize the generalizability of your work
 - Do not base your study on local conditions, or on a specific (commercial) imaging/delivery/planning/measurement system
 - Commercial vendor/product names should not be used outside of the M&M section, and not in the abstract

Data/statistical analysis



- Use of decimals – understand the nature and uncertainties of your data
- When to report mean/median and SD/range values for a population – is your data normally distributed?
- What statistical tests to use

Presentation of results

- The results are what you describe in the Results text – figures and tables are **supplementing** the text
- Figures and tables are usually included at the end of the manuscript. Maybe unpractical, but shows you whether you can follow and understand the results independent from the figures and tables
- Text in Results should NOT explain the details of figures/tables (this belongs in the legends)
- No **explanations** of the ‘setting’ of the Results (this belongs in the M&M section)
- No **interpretation** of Results (this belongs in the Discussion)

The Discussion and the Conclusion



- Compare and contrast both your methods and your results to previous work in the field, in particular those closest to and most relevant for your work
- What new knowledge has your study brought?
- What are the limitations (in materials, methods) of your study?
- What are the implications? Where do you go next?
- Conclude on what you have done and shown. Nothing else. Not what you would have liked to do.