

IMPROVING MANUSCRIPT QUALITY VIA STRUCTURED REVIEWS, ENHANCED SCIENTIFIC CATEGORY TAXONOMY, AND OUTREACH

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Improving the quality of manuscripts is crucial to improving journal impact.

With this in mind, Medical Physics:

- Has implemented a structured template review form
- Has implemented a comprehensive scientific category taxonomy to identify reviewers who are best suited to an article
- Fostering outreach in important areas that are currently underrepresented in Medical Physics

WHY INSTITUTE A TEMPLATE FOR REVIEWS?

- Reviewer inexperience
- Even experienced reviewers miss important points
- Standardization of review elements

BACKGROUND: WHAT QUALITIES DISTINGUISH GOOD REVIEWS?

Journal of International Business Studies: Best reviews offer specific and constructive feedback to address problems, have a collegial tone (no harsh criticism).

Annals of Behavioral Medicine: Advocates that good reviews should be "respectful" and "offer corrective feedback" if the manuscript is eventually publishable.

Molecular Biology of the Cell: Be critical, but also provide constructive feedback. Be judicious about requiring extra work that is tangential to the manuscript's objective.

The Academy of Management Journal: Bad reviews are characterized by reviewers focusing on uncovering flaws and aggressively highlighting them (very little positive or constructive feedback).

AJR: Looked at reviewer quality scores based on level of sophistication, quality of feedback for improvement, amount of detail, and punctuality. Younger reviewers from academic institutions scored highest.

BACKGROUND: WHAT QUALITIES DISTINGUISH GOOD REVIEWS?

In general:

- Collegial reviews that do not aggressively highlight flaws
- Positive and constructive feedback for improvement
- Judicious requirement of additional work
- Attention to detail

BACKGROUND: HOW TO ACCOUNT FOR REVIEWER PERCEIVED IMPORTANCE/IMPACT OF THE MANUSCRIPT?

Dilemma:

- Incremental work: technically sound and hence may not be rejected by reviewers/associate editor.
- Promising but premature work: rejected from a technical perspective, but potentially high impact if given feedback for improvement.

Several journals use an importance scale with some acceptance threshold.

MEDICAL PHYSICS REVIEWER TEMPLATE

- Designed by WG1.
- Entered limiting testing approximately a year back. Rolled out several months back.
- Divided into 2 major sections:
 1. Overall assessment (mandatory): free form review, suggestions for improving manuscript, importance scale.
 2. Section-specific feedback (optional): alerts reviewer to key elements in each section of the manuscript.

MEDICAL PHYSICS REVIEWER TEMPLATE

- Show html review file

NEW TAXONOMY

- A more refined taxonomy for identifying appropriate AEs and reviewers.
- Rationale:
 - Reviewers assigned to broad categories may not have specific subtopic experience under these broad categories.
 - Identifying better AEs/reviewers -> better final article.
- Designed by WG1 .

NEW TAXONOMY

1. IM: CT

1. General (Most aspects)
2. Theory
3. CAD
4. Dual Energy and Spectral
5. Quantitative CT
6. Detector development & evaluation
7. Digital phantoms
8. Physical phantoms
9. Development (New technology and techniques)
10. Display Technology & Evaluation
11. Radiation dosimetry & risk
12. Drug uptake imaging
13. 4DCT
14. Image quality and analysis
15. Image analysis, Image Processing, registration, segmentation
16. Image Reconstruction
17. Machine learning, computer vision
18. Micro (including small animal imaging)
19. Monte Carlo, modeling
20. Motion management
21. Nanoparticle imaging
22. Perfusion imaging
23. Quality control
24. Radiation dose and risk
25. Virtual tools and phantom
26. Perfusion, CTA

Example of new taxonomy category →

Associate Editor Topics for Medical Physics Journal – New Taxonomy

Please check off appropriate subcategories of expertise under Imaging Medical Physics:

- IM X-ray
- IM CT
- IM Breast x-ray Imaging
- IM Particle (e.g., proton) CT
- IM Cone Beam CT
- IM MRI
- IM PET
- IM SPECT
- IM Nuclear Medicine General
- IM Ultrasound
- IM Other (General)
- IM Multi-modality imaging systems
- IM Dataset analysis/biomathematics
- IM Optical
- IM Other imaging modalities
- IM Radiation dose and risk

Associate Editor Topics for Medical Physics Journal – New Taxonomy

Please check off appropriate subcategories under Therapy Medical Physics:

- TH Brachytherapy
- TH Radiation dose measurement devices
- TH External beam: electrons
- TH Dataset analysis/biomathematics
- TH RT interfraction motion management
- TH External beam: photons
- TH External Beam: Particle therapy
- TH Radiobiology(RBio)/Biology(Bio)
- TH Response Assessment
- TH Small Animal RT
- TH Non-ionizing radiation therapies

NEW TAXONOMY

However, we are in the process of revising the taxonomy because our field consists of interaction between different areas, i.e., difficult to be captured by a "linear" taxonomy model.

OUTREACH TO RELATED COMMUNITIES

➤ WG4: Publicize journal to research communities (of interest to Medical Physics) who are not aware of the journal, with the intent of attracting either individual submissions or group conference submissions.

OUTREACH TO RELATED COMMUNITIES

- Special issue: submissions from "4th International Conference on Image Formation in X-ray Computed Tomography" (July 18 – 22, 2016, Bamberg, Germany), edited by Marc Kachelreiss and Frederic Noo, due for publication in September 2017.
- Future special issue: "Current Challenges and Prospects in Particle Therapy", edited by Jonathon Farr and Katia Parodi, due to appear in late fall 2017.
- Future special issue: Big data, consisting of papers with consensus recommendations arrived at during the Practical Big Data Workshop hosted in Ann Arbor, Michigan (May 2017), sponsored by AAPM Science Council. Four to five papers with consensus recommendations expected on: Key Data Element Standardizations and Nomenclatures; Templates in Radiation Oncology Information Systems and Electronic Health Records; Optimized Clinical Practices for Aggregation and Curation.


