

SPECIAL REPORT

PUBLISHING IN PHYSICAL AND REHABILITATION MEDICINE*

Walter R. Frontera, MD, PhD¹, Gunnar Grimby, MD, PhD², Jeffrey Basford, MD, PhD³,
Dave Müller, Bed, PhD⁴ and Haim Ring, MD⁵

From the ¹Editor-in-Chief, American Journal of Physical Medicine and Rehabilitation and Dean and Professor of Physical Medicine and Rehabilitation and Physiology, University of Puerto Rico School of Medicine, San Juan, Puerto Rico, ²Editor-in-Chief, Journal of Rehabilitation Medicine and Professor emeritus, Rehabilitation Medicine, Institute of Neuroscience and Physiology, Sahlgrenska Academy at University of Gothenburg, Gothenburg, Sweden, ³Editor-in-Chief, Archives of Physical Medicine and Rehabilitation and Professor of Physical Medicine and Rehabilitation, Mayo Clinic, Rochester, MN, USA, ⁴Editor-in-Chief, Disability and Rehabilitation, Suffolk College, Ipswich, Suffolk, UK, and ⁵Associate Editor, International Journal Rehabilitation Research and Europa Medicophysica, Professor of Physical Medicine and Rehabilitation, Neurological Rehabilitation Department, Loewenstein Rehabilitation Center, Ranaana, Sackler Faculty of Medicine, Tel Aviv University, Ramat Aviv, Israel

This paper presents the panel discussion from the “Meet the Editor” symposium held at the 4th World Congress of the International Society of Physical and Rehabilitation Medicine in Seoul in June 2007. It includes contributions by four Editors of international journals in rehabilitation. Some of the topics discussed are of a general nature, but will provide useful guidance for the more junior scientific author. Some specific information about the four journals is also presented. Topics discussed include the reasons for publishing in peer review journals, important considerations in submitting a manuscript, the peer review process, the effect of electronic publishing, which leads to shorter publication times and the opportunity to preview papers, and the trend towards more open access to journals. The discussion concludes that the field of physical and rehabilitation medicine will continue to expand, with an audience with a broader range of scientific and clinical interests. The International Classification of Functioning, Disability and Health (ICF) may be increasingly used as a framework in reporting. New journals may be started, particularly in regions of the world other than Europe and the USA, despite the fact that journals currently published in these regions are distributed worldwide.

Key words: rehabilitation, scientific journals

J Rehabil Med 2008; 40: 161–165

Correspondence address: Walter R. Frontera, MD, PhD, Dean, University of Puerto Rico School of Medicine, Medical Sciences Campus, Office A-880, G. P.O. Box 365067, San Juan, Puerto Rico 00936-5067. E-mail: wfrontera@rcm.upr.edu

Submitted November 30, 2007; accepted December 19, 2007

INTRODUCTION

At least 27 journals are identified in the most recent Journal Citation Reports as publishing research in the field of physi-

cal medicine and rehabilitation. The Editors-in-Chief of four of the most prominent of these journals (American Journal of Physical Medicine and Rehabilitation, Archives of Physical Medicine and Rehabilitation, Disability and Rehabilitation, and Journal of Rehabilitation Medicine (listed in alphabetical order) (Table I) participated in a discussion panel during the Fourth World Congress of the International Society of Physical and Rehabilitation Medicine held in Seoul, Korea in June, 2007. This article is a brief report of the presentations and the panel discussion that followed with an emphasis on the main topics and issues relevant to the publication of research in the field, the peer review process, and the role of the specialty journals. It also represents a follow-up to a similar article published after the Second World Congress of the International Society of Physical and Rehabilitation Medicine held in Prague in 2003 (1).

THE ESSENCE AND PHILOSOPHY OF PUBLISHING IN PEER-REVIEWED JOURNALS – WHY PUBLISH IN PEER-REVIEWED JOURNALS?

The end result of a scientific investigation should be the objective reporting of the observations, conclusions and possible recommendations following the research study. Communicating original scientific results, supporting or rejecting the hypothesis of the study, should be considered one of the obligations of any and all investigators (2). Arguably, the mechanism to achieve that goal with the highest degree of recognition is the publication of an article in a peer-reviewed journal. In today’s academic world, publishing in peer-reviewed journals is not only desirable but also necessary and required to obtain recognition and gain academic promotion. The authors of peer-reviewed articles get personal and professional satisfaction as well as credit that will be used by external bodies or agencies, such as university promotion boards and funding sources, for making decisions about the researcher’s career.

Scientific journals should aim to select and disseminate the highest quality research. It should be noted that articles submitted for consideration may contain original research

*This article is being published simultaneously in the following journals: American Journal of Physical Medicine and Rehabilitation, Disability and Rehabilitation, and Journal of Rehabilitation Medicine.

This article has been fully handled by an Associate Editor, who has made the decision for acceptance, as the Editor-in-Chief is a coauthor.

Table I. A summary of journals in physical and rehabilitation medicine (in alphabetical order)

Journal, publishing house and year of initiation	n of issues per year	Scope	Target population	Peer review process	Instructions for reviewers	Tips for authors	Trends
<i>American Journal of Physical Medicine and Rehabilitation</i> , Lippincott Williams & Wilkins, 1922, www.ajpmr.com	12 + 1 suppl	Focuses on the practice, research and educational aspects of physical medicine and rehabilitation.	All interested in research, teaching, and clinical practice in physical medicine and rehabilitation	Blind review, Editor-in-Chief assigns an Associate Editor to evaluate the comments of the reviewers and make the final recommendation.	Available on web page and sent to reviewers with request for review. Training sessions in scientific meetings	Read instructions for authors carefully	Increase number of submissions of high quality research.
<i>Archives of Physical Medicine and Rehabilitation</i> , WB Saunders (Elsevier), 1920, www.archives-pmr.org,	12 + 2 suppl	Furthering the art and science of the practice of physical medicine and rehabilitation and interdisciplinary rehabilitation	All who practice in physical medicine and rehabilitation	Blind peer review	Available on web page and in printed form twice a year	Need to comply with the requirements	Archives aspires to remain a leading journal in rehabilitation sciences. Indexed on index medicus, medline, excerpta medicine/embase, current contents/clinical medicine, science citation index, citation alert, biosis, cinahl.
<i>Disability & Rehabilitation</i> , Taylor & Francis, 1979, www.tandf.co.uk/journals/titles/09638288.html	24	To encourage a better understanding of all aspects of disability, and to promote the rehabilitation process	Wide range of professional groups	Anonymous refereeing on request by the author.	Reviewers receive a standard letter but an open response form with one of 4 recommendations	Instructions available online	The aim is to continue to meet the needs of researchers and practitioners in rehabilitation and to broaden the coverage of the journal to achieve this goal.
<i>Journal of Rehabilitation Medicine</i> , Foundation for Rehabilitation Information (Non-profit organization), 1969, www.medicaljournals.se/jrm	10 + suppl	Wide forum for different areas of research in rehabilitation	World-wide. All professions within rehabilitation.	Two reviewers are used regularly, in addition when needed a statistical consultant	Reviewers receive instructions. Special forms for rating the quality of the article and guidelines for the reviewers are used	Follow the instructions to authors given in each issue of the journal. Further instructions are available online	A growing number of subscribers and submitted articles. As open access as feasible. The official journal of the UEMS European Board of PRM, the European Academy of Rehabilitation Medicine and the International Society of Physical and Rehabilitation Medicine.

UEMS: Union Européenne des Médecins Spécialistes; PRM: Physical and Rehabilitation Medicine

but may also be critical reviews of the published literature. Peer-reviewed journals take the advantage of a critical assessment, many times blinded to avoid conflicts of interests, and comments from expert reviewers to accept or reject submitted articles and to improve the quality of those accepted for publication. While the review process has its own problems, the expert reviewers can identify inconsistencies in the introduction and hypotheses, flaws in the study design, errors in the reporting of results, and mistakes and omissions in the discussion that may require significant re-writing of the article. At times deficiencies can be corrected before the article is published, at others they are so severe that they lead to a paper's rejection.

Reviewers are obliged to help the authors enhance the quality of the research and the article. Non-constructive feedback, sometimes found in critiques, is of little value to the author and does not enhance the quality of the science.

The pressure to publish in peer-reviewed and other journals may have negative consequences. Authors may try to publish articles with observations that are not novel but simply marginally different from those in other studies. This approach contributes to an increase in the number of articles submitted for review and ultimately the number of articles published. Although it may be important to confirm the findings of other investigators to strengthen a particular theory or hypothesis,

redundant publishing does not contribute to advance the field of study. Furthermore, the pressure to publish may also lead to more harmful consequences such as double publishing and the publication of fraudulent data. It has been recently suggested that such examples of scientific misconduct are increasing (3), a phenomenon that threatens to undermine the trust that society has on science and scientists. The desire and necessity to maintain this trust serves as an incentive to strengthen the peer-review process.

PEER REVIEW

Formalized peer-review is thought to be more than 200 years old (4). Although we assume that peer-review raises the quality of an article and contributes to making fair editorial decisions, very few scientific studies have been done to test this hypothesis. Recent studies have suggested that the effects of peer review are difficult to quantitate (5). At present, however, the absence of evidence on efficacy and effectiveness of the peer-review process cannot be interpreted as evidence of their absence (6). Although it is not certain that the peer review process can help the editor in selecting only the best and most appropriate articles to publish in all cases, this process is probably better than alternatives such as publishing without review or on-line publication with open access for review. The peer-review process is meant to give confidence to the readership and research community that published articles report the results of well designed studies using reliable and valid methods.

Effective peer-review is dependent on the interest and expertise of the reviewers. Finding good quality reviewers is not an easy task for the editor and many times journals contact several reviewers before 2 or 3 agree to participate. Sometimes, authors are asked to recommend reviewers and to identify those colleagues they believe to be in conflict and should not be invited. While the quality of the reviews does not differ between author- and editor-suggested reviewers, author-suggested reviewers are more likely to provide a favourable recommendation (7). The final outcome, the editor's decision to accept or reject an article, however, shows no preference suggesting that multiple levels of review contributes to a fair decision.

THE SUBMISSION AND REVIEW PROCESS

Authors should select the journal that best matches the nature and potential readership of their research. Authors should consider the mission statement of the journal, the author guidelines, the composition of the editorial board, and the journal's publishing history to establish that the scientific or clinical areas of interest of the journal reflect the desired target population. Most journals publish a variety of articles including editorials, basic and clinical research articles, comprehensive and focused reviews, case studies, clinical commentaries, correspondence, book reviews, and invited articles on topics of interest. The submitted article should belong to one of these categories. It

is acceptable and desirable for the author to write to an editor asking if a particular report is of interest to the journal.

Scientific articles must be written clearly and according to the instructions to the authors; not to do so will delay the review process. The journals have the obligation to make sure that instructions are as clear and concise as possible and regularly updated. Instructions to the authors are usually available in print as part of a regular journal issue and also online. In general, the authors should build on previously published results, when available, and the articles should be written so that they "tell a story". The authors should accompany a brief but explanatory introduction with a transparent description of the methodology, a systematic reporting of the results, and a logical discussion of the importance and limitations of the findings in the context of the existing knowledge. Conclusions should typically be brief and supported by the data but healthy and cautious speculation can be used to suggest future areas of study that could advance the field. Depending on the journal and the paper in hand, practical recommendations may be presented.

Many journals reserve the right to reject an article at the very beginning of the review process without proceeding to a full review process. This decision may be due to a mismatch between the topic of the article and the focus of the journal and may not necessarily be a reflection of the quality of the article. For example, a detailed discussion of the best surgical approach and technique to below-knee amputations may be important but not necessarily compatible with a rehabilitation journal's mission and the professional interest of its readership. Even well written and interesting articles (e.g., those involving young, healthy subjects) may have to be rejected due to the lack of space or because they are perceived as outside the scope of the journal. More importantly, an initial review by the editor may fail to show the novelty of the results in an article in that very similar observations have already appeared in the literature. Purely descriptive studies have become less attractive and many journals prefer mechanistic articles or clinical trials that impact directly the practice of physical and rehabilitation medicine. The study design may be flawed and the sample size too small to strongly support the hypothesis. In this regard, it is strongly recommended that authors pursue statistical advice prior to submitting an article for review. Finally, sometimes articles with a good idea but scant data are submitted for review. In these cases, the recommendation should be to continue the research until a more comprehensive piece of work can be submitted for review or to publish the work as a short communication. It is always appreciated if the Editor responding to the submission describes the reasons for the rejection of an article. This can help the author to decide what should be his/her next step. Rejection rate for the journals represented at the round-table ranges between from 30 to 65%.

An important initial step in the evaluation of the article prior to acceptance for review is the check for potential conflicts of interests. Articles based on studies supported by a company may not be acceptable to the editor of a journal. It may be difficult to ascertain the degree to which the source of the funding determines, consciously or unconsciously, the direction of the

results. Full disclosure is required but it may not eliminate the real or perceived bias of an author that depends on industry funding to conduct his/her research.

Reviewers, usually more than one per article, are selected based on their area of expertise and willingness to review the article. The interdisciplinary nature of the field of physical and rehabilitation medicine may lead to the selection of reviewers with different professional background. Availability of the selected reviewers is an important factor since good reviewers may be in high demand and may not have the time to respond quickly to all requests for opinions on particular articles. It is important to note that expertise in a topic does ensure an expert reviewer. Reviewers should follow the review guidelines of the journal and receive comments from the editors and other reviewers. Formal training for the reviewers, if feasible, may enhance the reviewer's knowledge and understanding of their role.

The review process may be slow and is not perfect. Reviewers are volunteers and have many other obligations in their institutions, decision-making involves several people so there is a need to coordinate their input, and sometimes limited resources may be available to support a more in-depth review including expert statistical evaluation. Authors must understand, and editors should acknowledge, that misunderstandings occur and mistakes can be made. Thus, every journal should have an appeal process in place and the policy should be published with the instructions for authors. It is extremely helpful for the authors to also become reviewers and experience the process from the other side of the argument.

THE GEOGRAPHY FACTOR

All participating journals in the round-table have an interest in international authorship as well as readership. Although some journals may publish more articles submitted by authors from a particular geographic region, many journals are receiving articles submitted for review from all over the world. For example, more than 50% of the articles submitted to the *American Journal of Physical Medicine and Rehabilitation* and to the *Archives of Physical and Rehabilitation Medicine*, both published in the US, come from other countries including many from non-English speaking countries. A similar situation is reported by *Journal of Rehabilitation Medicine and Disability and Rehabilitation* where around 35% and 55%, respectively, of the submissions come from outside of Europe. The acceptance criteria are identical for all authors and the acceptance rate is independent of the geographical region of origin of the authors. It is clear that scientific publishing in rehabilitation has become an international activity.

In this context, it is worth citing the policy statement of the World Association of Medical Editors (WAME) on geopolitical intrusion on editorial decisions (8). The WAME reads:

"Decisions to edit and publish manuscripts submitted to biomedical journals should be based on characteristics of the manuscripts themselves and how they relate to the journal's purposes and readers. Among these characteristics are importance of the topic, originality, scientific strength, clarity and

completeness of written expression, and potential interest to readers. Editors should also take into account whether studies are ethical and whether their publication might cause harm to readers or to the public interest. Editorial decisions should not be affected by the origins of the manuscript, including the nationality, ethnicity, political beliefs, race, or religion of the authors. Decisions to edit and publish should not be determined by the policies of governments or other agencies outside of the journal itself. Editors should defend this principle, as they do other principles of sound editorial practice, and enlist their colleagues' support in this effort if necessary."

It is worth noting that editors should have editorial independence when making decisions and professional organizations or publishing companies should not influence these decisions.

PUBLICATION AND THE ELECTRONIC AREA MEANS?

Technology has had a significant impact on scientific publishing. Electronic processing is now the norm and has already created efficiencies and reduced the time required for editorial office processing and communicating with reviewers. This procedure should become more user-friendly in the future with the most important consequence of this re-engineering of the process is a reduction in the total time from submission to final decision and from acceptance to publication when the article is accepted. The use of electronic communication may also reduce the publication costs.

All authors would like to see their articles published as soon as possible after the decision to accept them has been made. For many journals the amount of time from acceptance to printing and circulation is several months. An acceptable alternative to shorten this delay is the publication of articles ahead-of-print, a strategy implemented during the last few years by many journals in various fields of study. These articles have been peer-reviewed and edited, are in their final form, can be cited, and are available electronically to colleagues before the printed journal gets to them. In fact some journals are offering free and open access to their electronic content.

Another interesting trend is the publication of electronic-only journals. These journals can be accessed only online and no printed version is available. One financial advantage is the elimination of the costs associated with printing, circulation, and mailing of the journal.

CHALLENGES FACING JOURNALS

Editors and publishers are facing several challenging issues. The amount of research conducted in the field is increasing and the number of articles submitted for review is steadily increasing. Thus, the volume of work for the journal editors, reviewers, and staff has increased. We should all keep in mind that a higher volume may not correlate with better quality if the research is duplicative and not novel. A broader range of clinical and scientific interests is also reflected in the types of article being submitted for review. Traditional rehabilitation topics such as

spinal cord injury, stroke, and musculoskeletal rehabilitation are accompanied by a growing number of submissions in the areas of aging, quality of life, function and sports medicine. The standard for a high quality article is continually being raised and reflects the growing capabilities of our field as well as the demand for more sophisticated study designs and, statistical analysis, and the demand for randomized controlled clinical trials as the best type evidence to support clinical decisions. Likewise systematic reviews must now be critical and not merely a reflection of the author's opinion on the subject matter.

The impact factor has been receiving a lot of attention from authors. Ranking journals using an indicator of quality may be good for the field but the impact factor may be overemphasized and its limitations are not well understood. The limitations may be of special importance for relatively small journals, as the impact factor may vary with the material published in a specific year. It has also been shown that most citations of papers from clinical journals may not occur during the first 1 or 2 years after publication, as used for calculating the impact factor, but in subsequent years (9). Other measures of the impact of scientific publications, such as the cited half-life of an article and the number of hits on an article on the internet may be just as important indicators of the interest in what is published in a journal. Further, consideration is being given in some countries to evaluating the quality of papers by the number of citations not the impact factor. Editors do not serve the field well if the desire to have a higher impact factor is the sole determinant of their decision.

ARE MORE JOURNALS NEEDED?

As noted above, the amount of research conducted in the field is increasing and the number of articles submitted for review is growing at a faster rate than the number of pages available for publishing. This may suggest that more journals are needed. We must be careful, however, to equate volume with quality. More high quality journals are needed because there is an upper limit to the size of individual journals. But this depends on the quality of rehabilitation science generated around the world. Also, market conditions may be decisive because the survival of a new journal depends on the demand and its circulation as well as the ability of the editorial group to obtain commercial or private sponsorship. Another consideration is that more journals may be needed in other regions of the world outside Europe and USA. These journals may be more responsive to the needs of the rehabilitation professional working on problems that may be more relevant to a region *per se* (i.e., polio, amputations associated with landmines) and on management aspects of rehabilitation in such regions. Finally there will always be an interest in national journals published in native languages.

THE FUTURE

It is likely that research in the field of physical and rehabilitation medicine will continue to expand given the advances in acute care medicine, the survival of injured and ill patients, and the aging of the population. We would also expect to have in the future an audience with a broader range of scientific and clinical interests. There will hopefully be an expansion of evidence-based medicine as the prevailing clinical strategy. The International Classification of Functioning, Disability, and Health (ICF) may also be used more frequently as a framework for reporting scientific findings stressing participation, at different levels and types of activities, as a result of successful rehabilitation and environment modulation. The time to publication has to be reduced and different mechanisms should be used to decrease the time for the peer-review process and the time from acceptance to publication. This may be accomplished with the use of electronic tools. An increasing sophistication may be expected concerning design, statistics, and data analysis. Electronic means may allow for interactive versions and access to raw data. This will require good methodological descriptions, understandable for the general reader of the journal. The possibility for open access will increase and this may require new ideas about the funding of the journals. A redistribution of money from subscription fees to page charges paid by universities and other institutions may be necessary.

REFERENCES

1. Ring H, Aisen M, Di Benedetto P, Grabois M, Grimby G, Johnson D, et al. Publishing in peer-reviewed journals: time to review the peer review! In: Soroker N N, Ring H, editors. *Adv Phys Rehabil Med*. Bologna: Monduzzi Editore, 2003, p. 479–488.
2. Gross AG, Harmon JE, Reidy M, editors. *Communicating Science*. New York, Oxford University Press, 2002.
3. Couzin J. Breakdown of the year: scientific fraud. *Science* 2006; 314: 1853.
4. Kronick DA. Peer review in 18th century scientific journalism. *JAMA* 1990; 263: 1321–1322.
5. Jefferson T, Alderson P, Wager E, Davidoff F. Effects of editorial peer review: a systematic review. *JAMA* 2002; 287: 2784–2786.
6. Jefferson T, Rudin M, Brodney Folse S, Davidoff F. Editorial peer review for improving the quality of reports of biomedical studies. *Cochrane Database Syst Rev* 2007; Apr 18 (2): MR000016.
7. Schroter S, Tite L, Hutchings A, Black N. Differences in review quality and recommendations for publication between peer reviewers suggested by authors or by editors. *JAMA* 2006; 295: 314–317.
8. World Association of Medical Editors (WAME) Policy Statement on Geopolitical Intrusion on Editorial Decisions, <http://wame.org/wamestmt.htm>, posted on March 23, 2004.
9. Seglen PO. Why the impact factor of journals should not be used for evaluating research. *BMJ* 1997; 314: 498–502.