Editorial

Impact factors

The so-called impact factor (IF) is based on the Science Citation Index (SCI) published by the Institute of Scientific Information (ISI). The impact factor is defined as how many times, on an average, during the study year the articles that appear in the 2 preceding years of the index journal received citations in other (SCI-indexed) journals. The impact factors for leading orthopedic journals are around 1–2 whereas those of surgery score somewhat higher, 2–4. Journals of internal medicine scores are still higher, 4–10. Journals of general medicine have high impact factors, for example, around 20 for the *New England Journal of Medicine* and *Lancet*. The leading journals, which focus on basic science, for example, *Cell, Nature* and *Science,* have the highest impact factors, 20–40.

In a Letter to the Editor in this issue (p. 222–223), Kannus and Järvinen from Finland report that articles in basic science seem to receive most citations within 2 years after publication while, in the clinical sciences, numerous articles are still cited many years after publication. Kannus and Järvinen suggest that ISI should also publish so-called cumulative impact factors which they believe should be more representative for clinical sciences "where the studies are often long-term and citation cycles slow".

I checked the references to 18 original articles published in the number 6 issue, 1997, of *Acta Orthopaedica Scandinavica.* Two thirds (213/333) of the references cited work published more than 5 years earlier (1991 and before). The percentage of "old" references was higher in clinical articles (68%) than in basic science articles (56%).

I sent the letter of Kannus and Järvinen to ISI for comments and learned that: "The potential value of using five-year impact factors in conjunction with the published impact factor or instead of it has been discussed and studied at ISI many times. The results of our studies, (showing similar relative rankings across the board for most journals), and the potential for confusion among our users when making statements about impact factors and journal ranks has always led us to stick with the status quo." (Personal communication, Janet Robertson).

Why all these discussions and interest in impact factors? One reason is that they are used to evaluate individual researchers by multiplying the number of articles they have published by the impact factors of the journals in which the articles were published. Kannus' and Järvinen's concern about impact factors is easy to understand after a recent report by Raivio (1997). In Finland, "Research performance is judged on the basis of publication, and publication performance on the basis of impact factors" which means "that the average cost, or value, of one impact factor point is about 80,000 FIM or USD 14,600".

The inventor of the impact factor, Eugene Garfield, has repeatedly warned against its use for this purpose. Several other authors, including Per Seglen, have repeatedly shown that bibliometric data, such as impact factors, are useless for the evaluation of individual researchers or for comparing research groups in different fields. In this issue of *Acta Orthopaedica Scandinavica* (p. 224–229), you will find a Review article by Per Seglen discussing the misuse of impact factors. After reading this you may find it surprising that impact factors are still used for research evaluation. However, the temptation to use simple bibliometric data for scoring research activities seems to be irresistible to grant-giving bodies and, probably, the warnings from Eugene Garfield, many other authors and Per Seglen must be repeated again and again.

Anders Rydholm

Raivio K. Quality in communication: the editor's role. ESE 1997; 23 (3): 80-1.