

Time Well Spent



Few of us have the time to read all of the journals that flood our mailboxes and computer screens. And no matter how committed we are to staying abreast of the biomedical literature, keeping up is a daunting task. Even if you subscribe to just 2 journals, that means reading at least 20 articles every 2 months. If you are a slow reader, like I am, it could take 20 to 30 minutes, or longer, to read a single report of original research. And if, on average, there were 20 articles per issue, it would take 6 to 10 hours to read all of the articles in each issue. That's an artificially low estimate, of course. How many of us, whether we're at the office or (more likely) at home, get through a single article without at least 3 interruptions?

Out of necessity, I've come to appreciate an approach that enables me to rapidly review a published article and decide whether it's worth spending 20 or 30 minutes, or more, to read in its entirety. I have taught this approach to my residents, and I'd like to share it with you now. At first it may feel like jumping to the middle of a story, but if you stick with it, I think you will find that it works.

First, read the title of the paper, and decide if the topic is something that interests you. Then, look at who wrote the paper, including their institutional affiliations and their financial and conflict of interest disclosures.

Next, if you're interested in reading further, go straight to the last sentence (or paragraph) of the introduction. This is where, by convention, the authors should state their hypothesis and aims, and summarize their methodology. Typical statements include "We undertook a retrospective cohort study to..." or "We undertook a randomized controlled trial to compare...."

Then, move on to the figures and tables. If properly designed, these should convey *all* of the information required for you to determine for yourself the results of the investigation. And, based on these results, you should be able to come to your own conclusions about the investigation, without ever reading the abstract or final paragraph of the discussion section, where the authors usually state their conclusions. This step will be more time consuming, perhaps 2 to 3 full minutes, if there are a lot of figures and tables. But it will be worth every second.

Now, if things make sense, and important clinical variables are not missing (as depicted in the tables), read the methodology section and identify any flaw that could threaten the validity of the authors' conclusions. If a cohort study or case series was undertaken, for example, were the patients enrolled consecutively? If a comparison of therapies was undertaken, was treatment allocation done in a random fashion? Was the patient population adequately defined, and were the patients similar to those that you evaluate and treat on a daily basis? Was a valid

Table 1
Some questions to ask about methodology and data analysis

Element of the Investigation	Question
Aims	Was the primary aim of the investigation stated? Were any secondary aims stated?
Patients/participants	For a cohort study or case series, were the patients enrolled consecutively? Were inclusion and exclusion criteria defined? Was the source of the patients/participants defined? Was the month and year of the start and finish of the observation period defined?
Intervention	For a randomized controlled trial, was the method of randomization described? Was treatment administered equally to all patients/participants?
Outcomes	Were all reasonably important clinical variables considered? Was the outcome of interest clearly defined? Were valid health measurements used, in particular subjective foot-related outcomes?
Exposures	Were all reasonably important demographic and risk factor variables considered?
Assessors	Were outcome assessors blind to the intervention? For subjective outcomes, were the patients/participants blind to the intervention?
Statistical analyses	Were the data analyzed for distribution (normal curve or skewed) and independence? Were appropriate methods used for continuous numeric and categorical data?
Figures and tables	For randomized controlled trials, is a flow diagram of the study included? Is there a table depicting the descriptive results? Is there a table depicting comparisons between treatment or outcome groups (such as the results of null hypothesis tests)? Is there a table depicting the associations between independent variables and the outcomes (such as the results of univariate and multiple variable regression analyses)?

foot-related health measurement used? Were the statistical analyses consistent with the type and distribution of the data? These and other details about the study's design should be identified (Table 1).

Finally, read the paragraph in the discussion section that describes the authors' awareness of the limitations of the study, usually the penultimate paragraph. By this time, you will have already formed your own opinions as to the limitations of the study. If the authors (and peer reviewers and editors) have failed to identify overt threats to the validity of the investigation, then it could be difficult to justify reading further.

At this point you have enough information to satisfactorily understand most of the information conveyed in the article, and can even use the information in your decision making related to patient care. If you have an even greater interest in the topic, you

may decide to spend another 10 to 15 minutes reading the entire article. This would be required if some element of the investigation remains unclear to you, or if you plan to cite the work in a subsequent publication, or discuss the article in journal club, or ask a specific question of the authors or the editor.

Using this approach, I estimate that even a long report of original research could be satisfactorily understood in less than 3 to 5 minutes. At the very least, you should know whether the article is worth reading in its entirety. The method that I have described is just one way to approach the matter, and each user of the medical literature is encouraged to find a way that works best on an individual basis.

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