



Craig Hospital

Redefining Possible for People with Spinal Cord and Brain Injuries

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Understanding Research: Medical & Research Articles

Ever have trouble making sense out of articles in medical, scientific, and research magazines? This brochure will give you some pointers as you try to wade through all the techno-jargon you find!

There's Hope in Consistency

You need some strategies to make reading medical and scientific journals easier. Luckily, scientific articles in magazines — like the *Journal of the American Medical Association*, *Spinal Cord*, or *Neurology* — tend to be divided into sections with headings like these:

- Abstract
- Introduction
- Methods
- Results/Findings
- Discussion/Conclusion
- References

This fairly predictable format will make your job a whole lot easier. Something else that will make your job a whole lot easier is a medical dictionary. If you're planning to do a lot of medical reading you may want to get one and keep it at your finger tips. You can find "Taber's" or "Steadman's" medical dictionaries either at a large bookstore or in the campus bookstore of a college that has a medical program.

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Abstract

First, at the very beginning of the article, you should see an **Abstract**. This is a brief review of the entire article. Ask yourself these questions as you read it:

- What was studied?
- Who participated in the study?
- How and where was the research done?
- What did the researchers find?

As you read through the **Abstract**, keep in mind that the author is giving you as much information as possible in a small number of words. Does what the researcher studied seem interesting or relevant to you? Do the people who participated in the research seem to be similar – or in a situation that is similar – to you? If the answer is “yes,” keep reading.

Introduction

Next, read the **Introduction**. Sometimes this section will be called “*Background*” or “*Literature Review*.” Normally, the authors will describe what they’re about to study and why it’s important. They’ll tell you what is already known – or not known – about this same general topic. They’ll use *citations* – reference markings, such as a small raised numeral, a number in parentheses at the end of a sentence, or a name and a date in parentheses that refer to another person’s research or article.

You should be able to trace all of these citation markings to the **References** list at the end of the article. There you’ll find a list of the articles, books, or chapters the author was referring to. If you’re really interested in the topic, these other references can be very important. You may find one or two authors listed over and over again. This tells you that they’ve done a lot of work in this particular area. It might be worth your while to try to find some of their publications, too.

Methods

The **Methods** section is designed to explain:

1. *Who* participated in the research
2. *How* they were chosen
3. The *design* of the research: what kind of research was done? How was it done? Did it involve interviews? Reviewing medical records? Measuring the effectiveness of a new drug or intervention? – and so on.
4. *How* the results were examined, analyzed and dealt with statistically.

Research: Understanding Those Medical & Research Articles

From these four areas you want to get two pieces of information:

1. *How similar are you to the people who were studied?*

Are they enough like you that what the researcher found is likely to apply to you? What if you want to know about a particular spasticity drug and you find an article that deals with traumatic brain injury (TBI) survivors who have used the drug? If you're interested in side effects and complications, it will be useful to know what those participants with TBI experienced. On the other hand, if you're only interested in the drug's effectiveness in spinal cord injury, you'll need to keep looking. Naturally, the *more* information that's available on a topic – the length of the **References** section will give you a hint – the *more* you can afford to be choosy!

2. *Did the authors pick their participants in such a way that their findings are likely to matter to anyone else?*

Generally, the more people who participated in the study, the *better*. And, the *more* that their participation in the study was determined by something *other than* their own volunteering or the researcher's picking and choosing, the *better*.

There are two concepts to look for when reading about how subjects were chosen:

Randomness

Were the participants selected pretty much by chance? For example, "10 subjects who the researcher knew" or "40 individuals who volunteered to participate" is *not* very random; it's *not* by chance. Think about this: suppose a researcher is trying to study the effect of diet weight gain. He just happens to be a heavy-duty exerciser, so most all of the people he knows and asks to be in his study are heavy-duty exercisers too. Even though he's studying food, this exercise thing is hanging out in the background and it's likely to have some affect on the research. Maybe heavy-duty exercisers are all incredibly thin to begin with. Maybe they exercise so much that it doesn't matter what they eat!

On the other hand, suppose this researcher had come up with his subjects randomly – some loved exercise, some hated it, some could take it or leave it. Not only will what he learns be *less* influenced by the exercise factor, but it's also likely to be meaningful to a wider range of people – not just jocks!

All-inclusiveness

"All SCI survivors with Gotham City addresses" or "all persons admitted to St. Elsewhere's Hospital with paraplegia between 1993 and 1998" are phrases that imply that the researcher tried to include a broad group of subjects. This isn't the same as randomness, but it does make sure that as wide a range of people as possible participated in the research. In general, the more the group of people who were studied resembles the larger population, the *more likely* the results are to be relevant to many people.

Results

After the **Methods** section comes the **Results**. This section tells you specifically what the authors found. You're likely to find tables and graphs. Terminology related to statistics will be used. Key words to look for are "statistically significant," "significant," or "not significant." These words tell you whether the researchers' findings may just be the result of chance, or whether they're likely to really mean something. For example, if a new headache drug is being tested, and the researcher tells you that those who took the drug had "significantly less pain than those who did not take it," that means there's fairly strong evidence that the drug really works.

Sometimes "not significant" is important, too. If you read an article that studied whether living near electrical lines increases your risks of developing cancer, and the authors' results tell you that there was "no significant difference between people who lived near the lines and those who did not," that's good news! Generally, you can count on the authors themselves to make some sense out of their findings for you. This they should do in the article's next section.

Discussion

A good research paper will end with a **Discussion** section. This section is often the most useful part of the article. It should interpret what the research findings mean and how they're relevant. The authors should also describe the *limitations* of their research. They should discuss what you *can* and *cannot* conclude, what the research *failed* to find, and things that may affect how *relevant* the findings are to other people – namely *you*. If you believe in "taking things with a grain of salt," this is the grain you're looking for! Don't tell anyone you read it here, but many times you can quickly skim over the entire article, focus only on the **Discussion**, and still get plenty of useful information.

Summing it all up

Start with a scientific article's **Abstract** and **Introduction** to decide if the article is interesting or relevant. Then, try to figure out how the researchers picked their participants. Did they attempt to be random or all-inclusive? Do the participants seem fairly similar to you? Finally, what did the researchers find, and what does the **Discussion** section tell you that they *concluded* from their findings? And, don't forget to use that **Reference** list to scope out other articles that might be of interest.

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