Reviewing a Paper: An Organized Approach

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This presentation will

- Begin with an overview of the review process
- Make step-by-step suggestions for analyzing each section of the paper
- Present ideas for writing the final review, with dos and don'ts

Along the way…

You may find these ideas useful for improving the quality of your own papers

And for judging the quality of studies that you are reading for your own benefit

Before you begin…

Preview the Paper by reading the Title and Abstract. This gives you an idea of what you will find in the text of the paper.

After you finish the paper, you will need to re-read these to verify that they accurately summarize the paper's content.

As you read…

Consider using a checklist

CONSORT (RCT)

STROBE (Observational)

MIBO (Biologics)

PRISMA (Sys. Reviews)

These will remind you of elements to check

As you read…

- **Mark in the manuscript possible points that will require queries or criticism in your review.**
  - **Making notes on the electronic PDF with Acrobat or similar application saves time**
- **These may be unclear portions of the text, weaknesses (or strengths) in the methodology, relevant references that come to mind, etc.**

OVERALL DESIGN

Look for the connecting thread:

- **Symphonies have a theme, scientific papers have a hypothesis or principal research question**

The hypothesis (or primary question) should organize and connect all parts of the paper together.

All parts tied to the hypothesis

INTRODUCTION

Explains why and how the hypothesis was developed. Ends in statement of hypothesis

MATERIALS AND METHODS

Explains how hypothesis was tested

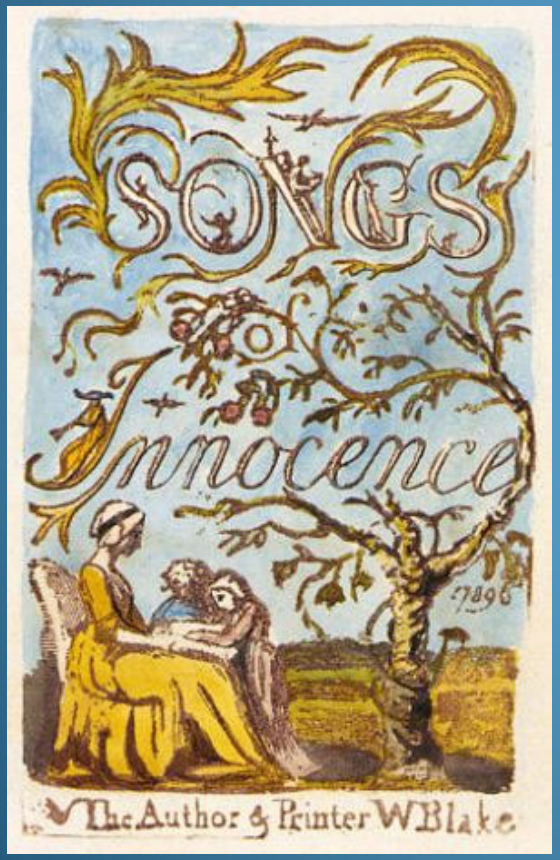
RESULTS

Reports results of the test of the hypothesis and

DISCUSSION

Discusses what the results say about the hypothesis and how this relates to the literature

TITLE



Should accurately reflect what was done or found in the study

Give specific suggestions for shortening overly long or rambling titles

ABSTRACT

A miniature paper.

Does it correctly and succinctly summarize the salient points of the study?

ABSTRACT

Abstract should tell you

- **why the study was done, (Background)**
- **what question was asked, (Hypothesis)**
- **how authors attempted to answer the question, (Study design & Methods)**
- **what the answer was, (Results) and**
- **the clinical conclusions ("take home points") that should be derived from the results (Conclusions)**

Expect detail in the Abstract

Not

Results: Group 1 was better than Group 2 ($p<0.05$)

But

Results: Mean IKDC SKF score of Group 1 (87.5 ± 3.2) was better than Group 2 (80.0 ± 4.7) ($p=0.008$).

Worry more about content than word count.

ABSTRACT

Does it contain any extraneous material or opinions?

Does it indicate the clinical relevance of a basic science study?

ABSTRACT

Remember: Many readers will only read the abstract, so it should include enough detail to be accurate and informative independent of the paper

INTRODUCTION

The Introduction should:

- **Logically lead up to the hypothesis or principal research question**
- **Explain why it is important to know the outcome of the research**
- **Omit any general or irrelevant information**
- **Make you want to read the paper**

INTRODUCTION

"No one has done _____ before"

is a weak rationale for a study.

Why would it be clinically meaningful or worthwhile to answer this question/prove this hypothesis?

INTRODUCTION

The key statements should be supported with reference numbers, but details left for the Discussion.

ASK YOURSELF:

Is the literature fairly summarized or selectively quoted to support the authors' point of view?

MATERIALS AND METHODS

Experimental Design

Ask yourself:

Is the experimental design capable of testing the hypothesis or answering the principal study question?

MATERIALS AND METHODS

STUDY POPULATION

What kind of patients (animals, specimens, cells) were in the study?

For a surgical study:

What were the indications (inclusion criteria)

and contra-indications (exclusion criteria)

MATERIALS AND METHODS

STUDY POPULATION

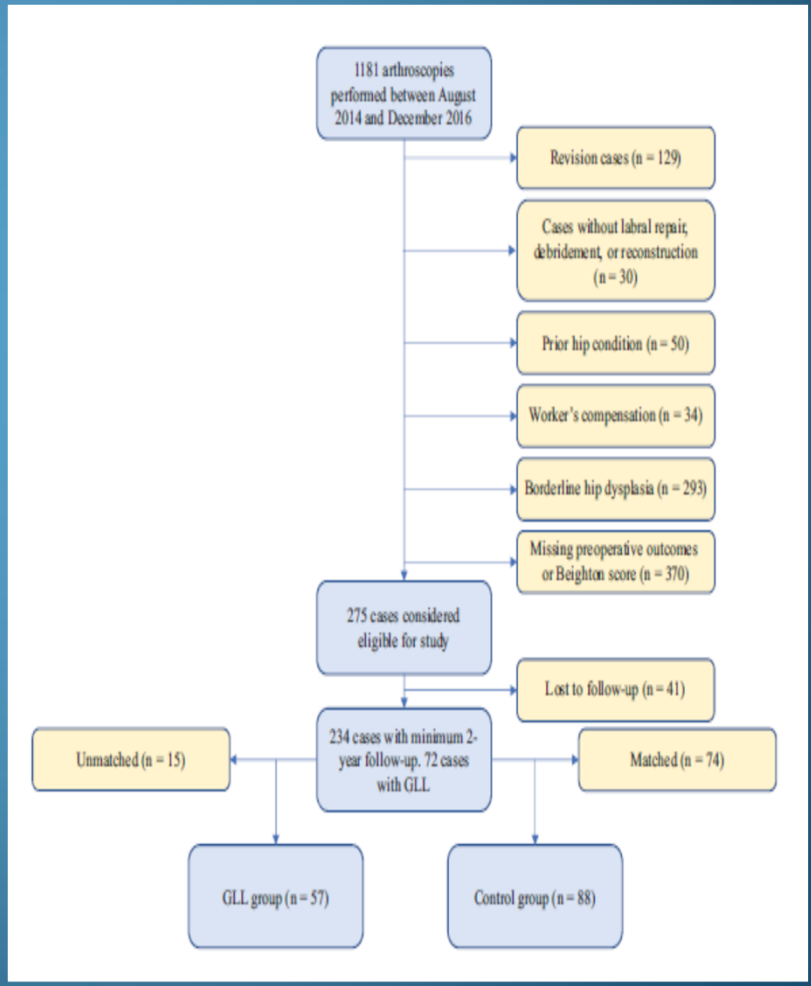
How many patients were in the study?

How were they selected?

How many were NOT studied?

MATERIALS AND METHODS

- RCTs require a CONSORT flow diagram
- Similar diagrams are valuable for other study designs
- They allow you to see how many patients were lost or excluded



MATERIALS AND METHODS

If subjects were randomized, what methods were used?

If not randomized, what steps were taken to make subjects and controls equivalent?

MATERIALS & METHODS

Allocation risks in non-randomized comparative studies:

- **If concurrent enrollment, allocation may be biased (different criteria for each treatment)**

- **If consecutive enrollment, treatment may also be biased (learning curve, changed technique after poor results, other change made)**

MATERIALS AND METHODS

Is the Therapeutic Intervention defined in adequate detail?

(e.g. tunnel placement in an ACL Reconstruction)

Consistent for all subjects?

MATERIALS AND METHODS

- Measurement Instrument or Method Clearly Described?
  - Validated for this use?
- How was the follow-up done?
  - Examination, telephone, chart review?
- Was it long enough for the outcome studied?

Materials and Methods

Who did the evaluation

Were they qualified?

Were they blinded or impartial?

MATERIALS AND METHODS

STATISTICS

Appropriate Test(s) Chosen?

- Parametric vs. Non-Parametric
- Paired vs. Unpaired Data
- Continuous vs. Categorical

Was there a sample size calculation/power analysis?

RESULTS

- Clearly stated using appropriate text and/or tables?
  - Graphs can sometimes obscure inconvenient details of results
- Reported in sufficient detail?
- Beware of any "differences" that are not significant

RESULTS

Do the Results in the

Abstract,

Text,

and Tables or Graphs

all match?

DISCUSSION

Should begin by briefly summarizing the most important findings

Was the hypothesis supported or refuted?

DISCUSSION

Does it point out strengths of the study?

Does it point out weaknesses of the study?

Are these limitations acceptable?

DISCUSSION

Does it point out the clinical significance of the findings?

Differences may be statistically significant but clinically unimportant

Useful measures of clinical importance: MCID, SCB, PASS, common sense)

DISCUSSION

Does it place the study in perspective with the existing literature?

Is literature review balanced or selected to support a point of view?

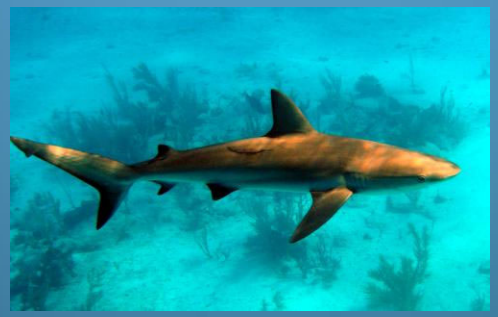
Is a reasonable attempt made to explain differences from other studies?

Conclusion

Normally one succinct paragraph.

Should just contain the most important findings of the study.

Beware of authors' opinions inserted in the Conclusions



FIGURES

Are current figures needed?

Would additional figures clarify the text?

REFERENCES

- Are important references missing?
- Are recent references missing?
- Do cited references actually say what they are alleged to say?

  Click on the hot links in the reference list.

WRITING YOUR REVIEW

Ask yourself:

Does this study add to the literature?

WRITING IT UP

What is your overall opinion?

- **Definitely will be acceptable after some minor corrections/clarifications**
  - **MINOR REVISION**
- **Promising, but clarifications needed; "wrong" answers could lead to rejection**
  - **MAJOR REVISION**

WRITING IT UP

- I hate to reject this, but there are deficiencies that will require major work.
  - Are needed revisions realistic?
  - MAJOR REVISION
  - Not realistic: REJECTION
- Revisions cannot make this acceptable
  - REJECTION

WRITING IT UP

START WRITING!

Introductory Paragraph

- Summarize the major strengths and weaknesses of the paper
- End in a clear statement of your overall recommendation

Subsequent Paragraphs

- Develop each of your major points
- You can add to these later if your margin notes remind you of something you forgot

WRITING IT UP

If you are recommending rejection:

1. **Write a review that you would like to receive if it were your paper being rejected.**
2. **Start by complimenting the positive aspects of the study.**
3. **Support your statements with citations from the text or references**
4. **Add detailed comments to help the authors**

Remember: Authors will focus on any misstatement

WRITING IT UP

If you are recommending revision:

Start with similar introductory paragraphs

Go through paper page by page using your marginal notes

Ask specific questions; make specific recommendations

WRITING IT UP

Avoid general statements

NOT "The discussion is too long."

BUT "Summarize lines 243-268 in two sentences, omitting the details of the individual studies…

If the authors knew how to write better they probably would have done so.

Be Specific

- Ask for the changes you want to see
- List major missing references needed
- Back up your assertions with references.
  - For example: This is not new information: See Studies X, Y and Z.

WRITING IT UP

Ask for changes explicitly:

NOT: The authors fail to discuss the weaknesses of the study.

BUT: The authors need to expand the discussion to address the following 4 limitations of their study:

WRITING IT UP

If you want a change, ask for it:

NOT: The 18 month follow-up is a weakness.

BUT: The follow-up needs to be increased to 24 months.

WRITING IT UP

Support your assertions:

NOT: The authors fail to cite several recent studies that diverge from their results

BUT: The authors fail to cite several recent studies that diverge from their results, including Helmholz et al (AJSM Sept 2009), Cabrera et al (JBJS March 2010) and Jones (AJSM May 2010).

WRITING IT UP

Be Fair

Judge scientifically, not emotionally

Resist letting your personal opinions affect your evaluation of the evidence

WRITING IT UP

Be Fair

- **Don't praise a poor study because you like its message**
- **Don't pan a good study because you don't like its message**

Language Problems

It's not necessary to correct language errors that don't interfere with comprehension

(unless that's your thing!)

Do point out text that may be misunderstood

Suggest alternative phrasing if possible

Now for a Few Examples

Original Text in Green

Softened Text in Yellow

Avoid Hyperbole

NOT: The discussion was impossible to follow…

BUT: The discussion was difficult to understand in several places…

NOT: A case series of one more MPFL reconstruction adds nothing to the literature…

BUT: A case series of one more MPFL reconstruction does not add much to the literature…

Be Diplomatic

Avoid displaying irritation or anger

NOT: There are many syntax errors throughout this manuscript that are too time consuming to point out - however examples are …

But: There are many syntax errors; some examples are …

Be Diplomatic

Avoid sarcasm, colorful language, or punctuation that could be interpreted as sarcasm.

NOT: The "statistical analysis" was a joke!

BUT : The statistical analysis was flawed.

Be Diplomatic

NOT: This adds nothing to my understanding of ankle sprains. The writing was substandard and I don't even think there was a conclusion. If there was, I missed it. This article is not worthy of publication in AJSM.

BUT: This paper did not add to my understanding of ankle sprains. The writing was irregular in quality. I did not feel that the authors arrived at a clear conclusion. I do not feel the article makes a large enough contribution to the literature for inclusion in AJSM.

A Stellar Example

"My comments should not take away from the fact that you should be applauded for your efforts to contribute to the literature. The only way we make progress in medicine is through people like you that work to advance our knowledge. I just do not think your paper is publishable as it currently is."

SUMMARY

THE BEST STUDIES

- Start with a clearly stated, relevant hypothesis or question,
- utilize scientific methods that are capable of answering the question,
- clearly state the results of the investigation,

SUMMARY

- acknowledge the strengths and weaknesses of the study,
- discuss the results in the context of the existing literature,
- and do not make any unwarranted conclusions.

SUMMARY

THE BEST REVIEWS

- Evaluate the study in an organized and thorough manner
- Evaluate the study fairly and objectively
- Give the authors very specific guidance for improving the manuscript

THANK YOU!