# How to write a paper?

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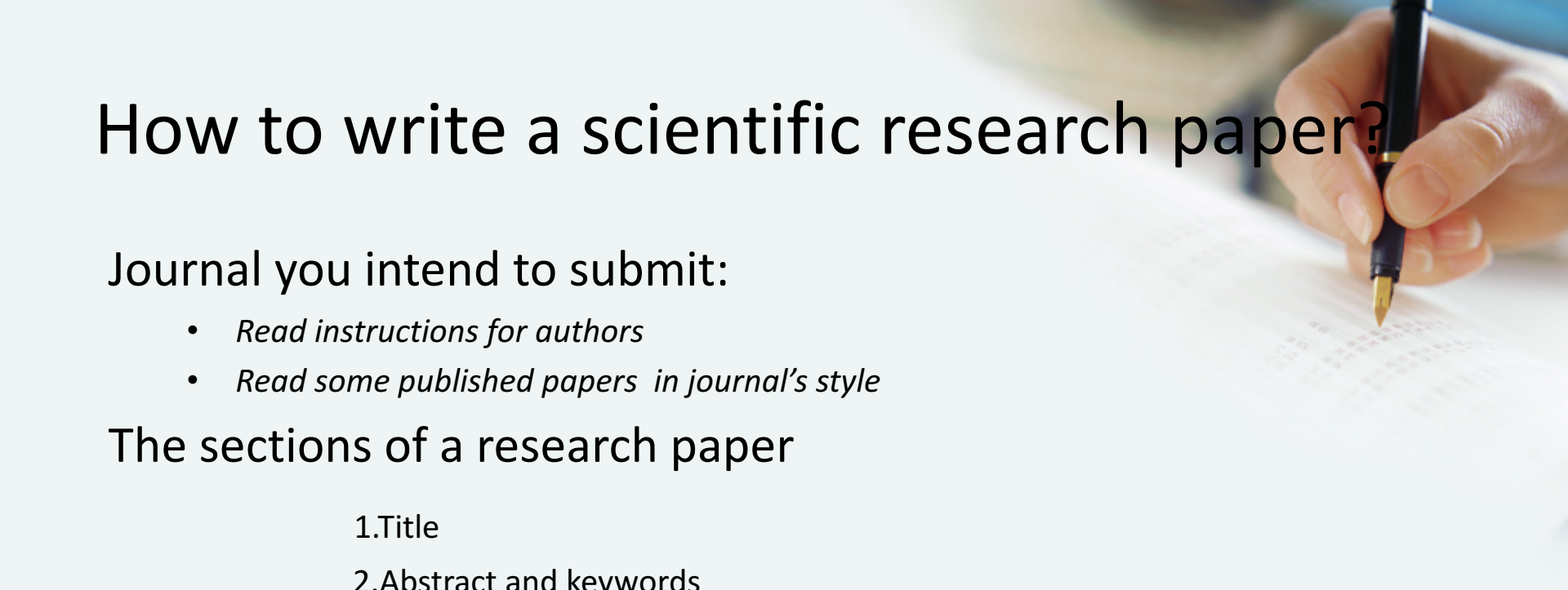
# Types of scientific papers

- Original article
- Review article
- Case report, series
- Editorial
- Short communication / brief report
- Letter to editors

# Review articles

- Invited review articles
  - Non-systematic or systematic
  - 3-5 articles of self citation
- Systematic review
  - Search engine and database :
    - EMBASE, Medline, PubMed, Scopus
    - Year limitation
- Meta-analysis

# How to write a scientific research paper?



## Journal you intend to submit:

- *Read instructions for authors*
- *Read some published papers  in journal's style*

## The sections of a research paper

1.Title

2.Abstract and keywords

3.Authors

4.Introduction

5.Methods

6.Results

7.Discussion

8.Conclusion

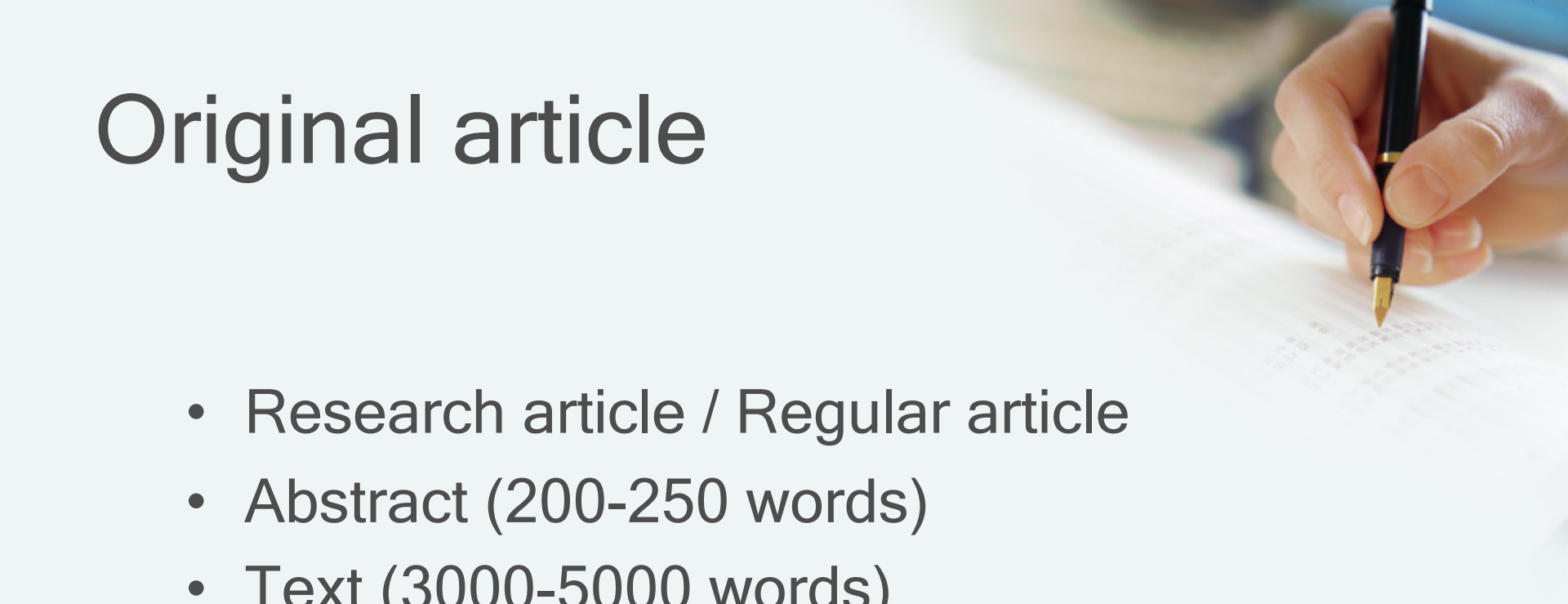
9.Acknowledgements

10.References

11.Tables

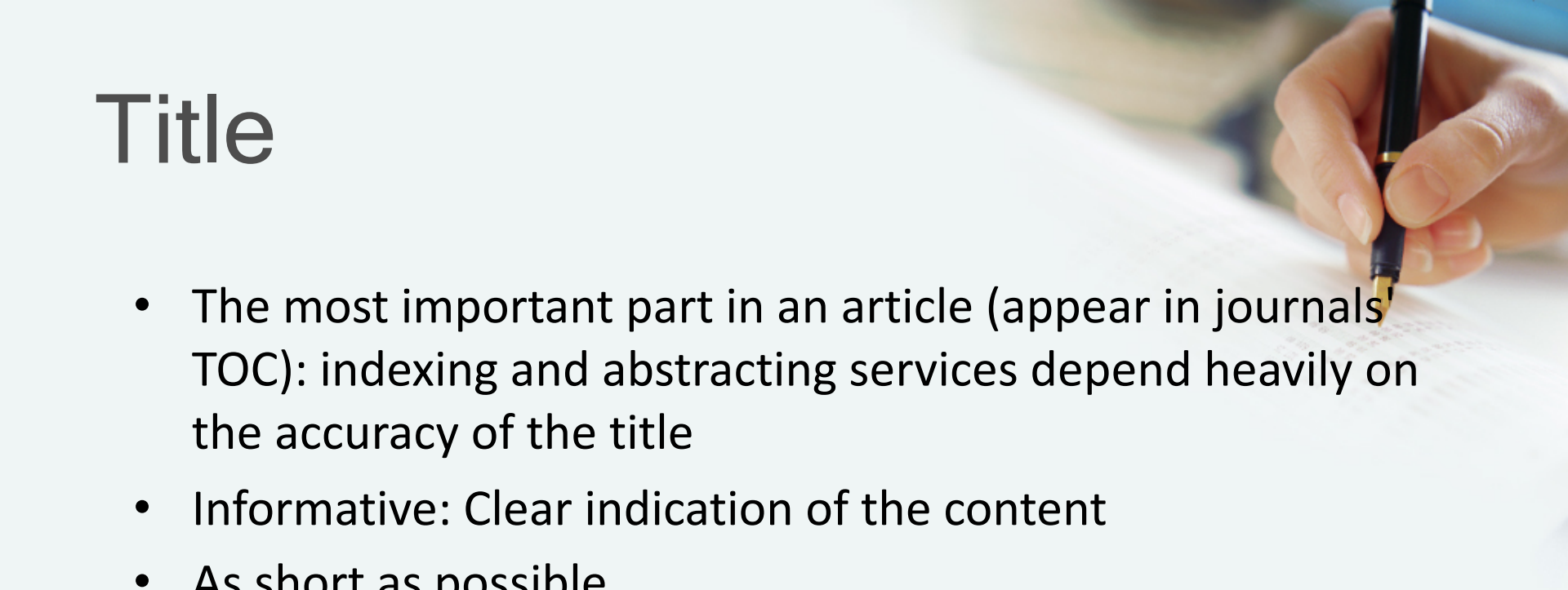
12.Figure Legends

# Original article



- Research article / Regular article
- Abstract (200-250 words)
- Text (3000-5000 words)
- References (less than 40)
- Figures and tables (7-8)
- IMRAD format

# Title



- The most important part in an article (appear in journals' TOC): indexing and abstracting services depend heavily on the accuracy of the title
- Informative: Clear indication of the content
- As short as possible
- Need to specify
- Accurately: Example
  - Study of mutations in cleft lip and palate
  - TGF- GENE mutation in cleft lip and palate
- Not exaggerated or question form
- No time and location unless..
- No abbreviations

# How many words in title ?

- Very few good titles can be expressed in fewer than 5 to 8 words.
- Try to keep the total number < 20
- Not longer that 2 lines

**Waste words (useless for indexing purposes)**

- Studies on
- Investigation on
- Observation on

**Title page:**

- Authors affiliations and Corresponding author
- Running title or short title (4-5 words)

armacology

doi: 10.1111/fcp.12198

ORIGINAL ARTICLE

# Comparison between IV immune globulin (IVIG) and anti-D globulin for treatment of immune thrombocytopenia: a randomized open-label study

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کومش- جلد ۲۲، شماره ۳ (پیاپی ۷۹)، تابستان ۱۳۹۹

# اثرات تمرین استقامتی روی محافظت نورونی در رت‌های پارکینسونی مدل ۶–هیدروکسی دوپامین

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## چکیده

**هدف:** بیماری پارکینسون ناشی از کاهش پیشرونده نورونهای دوپامینرژیک در استریاتوم است که منجر به اختلالات میتوکندریایی و حرکتی می‌شود. در این مطالعه، اثر تمرین استقامتی متوسط بر نقص حرکتی و بیان mRNA برای PPAR-γ، PGC-1α ( فاکتورهای میتوکندریایی) و BDNF در رت‌های پارکینسونی مدل ۶–هیدروکسی دوپامین (۶–OHDA) بررسی شد.

**مواد و روش‌ها:** ۳۲ موش نر بالغ به چهار گروه مساوی ۱. حامل (شم)، ۲. حامل+ تمرین استقامتی ۳. پارکینسون و ۴. پارکینسون+تمرین استقامتی تقسیم شدند. مدل پارکینسون با تزریق یک طرفه –هیدروکسی دوپامین به داخل دسته میانی مغز جلویی (Medial forbrain bundle) تزریق شد. گروه شم فقط حامل ۶–هیدروکسی دوپامین را دریافت کرد. ۲ هفته پس از جراحی، گروههای تمرینی روزانه به مدت ۳۰ دقیقه و برای ۳۰ روز متوالی روی نوارگردان دویدند. ۶ هفته پس از جراحی، چرخش ناشی از آپومورفین و بیان mRNA برای PPAR-γ، PGC-1α و BDNF از طریق روش Real Time-PCR در هیپوکمپ موش ها ارزیابی شد.

**یافته‌ها:** نتایج نشان داد که تزریق ۶–OHDA سبب افزایش معنادار تعداد چرخش‌ها ($P\leq ۰/۰۰۱$)، کاهش معنادار در بیان PPAR-γ و BDNF و افزایش جبرانی در بیان mRN PGC-1α می‌شود. تمرین استقامتی تا حدودی توانست این اختلالات را اصلاح نماید.

**نتیجه‌گیری:** به نظر می‌رسد تمرین استقامتی می‌تواند اختلال حرکتی و نقص در بیان فاکتورهای میتوکندریایی را در بیماران

# Abstract

- 200-250 words (max: 250 words)
- Usually: the First part read by editors and reviewers
- Sometimes: the Only part read by scientists and clinicians
- Polish it as much as possible
- Write it last ( after completing the article)
- Should reflect the content of the paper
- Should answer the following questions:
  - Why did you start this research project?
  - What did you do?
  - What answer did you get?
  - What does it mean?

# Abstract (continued)

- Write it as one paragraph unless structured abstract is required.
  - Abstract in research paper: objective, design, patients, primary outcome measure, results, conclusion
  - Abstract in review paper: the topic, the scope, the sources reviewed, the conclusions
- Objective should always be stated +/- background (1,2 sentences)
- No details of methods
- Two rules in abstract results:
  - If you give percentages, give the sample size too
  - If you report the p value, state the actual data too
- Main conclusion
- No non-standard abbreviation, no References
- Past tense

# Introduction

- Good first impression on readers
- Convince the readers: your research is the next logical scientific step to fill the knowledge gap
- Select references carefully, the most relevant and recent ones
- Present and past tenses are correct
- Equilibrium between introduction and discussion
  - Time to write (Devote half the writing time to introduction and conclusion)
  - References (years/ quality of references: original articles)
  - content
- Some prefer to do it first , some last!

# Introduction(continued)

## The rule of inverted triangle (logical flow)

- Start by general considerations, what is known
- Then , slowly focus on what is unknown, and then raise a question directly relevant to your specific work.
- State the question in new paragraph with a highlighting signaling words:
  - To determine whether
  - To determine which
  - The purpose of this study,
  - Therefore we tested the hypothesis that
- You can first write it in reverse and then invert everything.

# Introduction (continued)

## Last paragraph:

- The best place for statement of purpose. It is the place for the merits of the new technique or methodology (if applied to your article) : express what is new and important about your study.

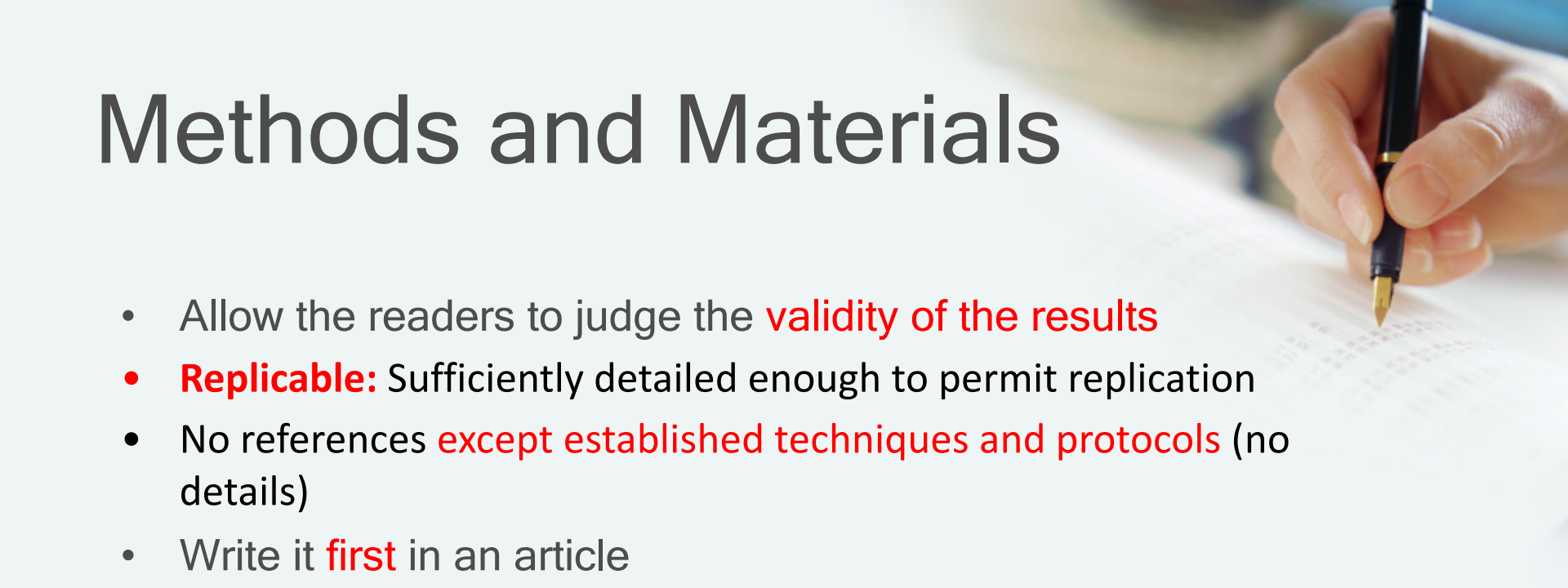
## Last sentence:

- You can explain the study's design briefly , but not the conclusion.

## Length:

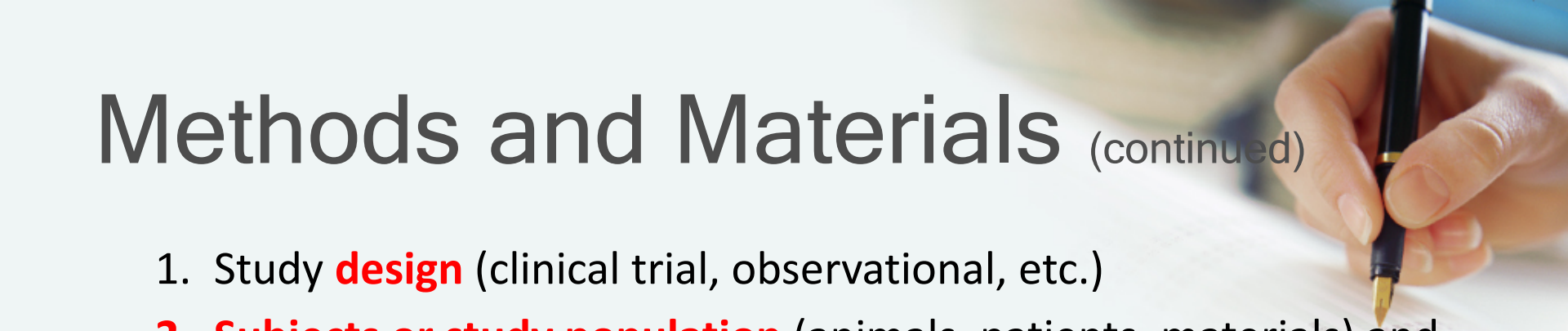
- Short (you are not writing a review paper); depends on the journal type
- General (15-20%) and specialized (10-15%)
- Long introduction: most common mistake in Iran
- It should be max. 2 pages or about 400-500 words

# Methods and Materials



- Allow the readers to judge the validity of the results
- **Replicable:** Sufficiently detailed enough to permit replication
- No references except established techniques and protocols (no details)
- Write it first in an article
  - Easiest
  - Can be started when the research is unfinished
  - Simple past tense
- Summarize if it is repeated by another study
- Pilot study in expensive materials except methodological references with high citations
- Novelty vs. methodology

# Methods and Materials (continued)



1. Study **design** (clinical trial, observational, etc.)
2. **Subjects or study population** (animals, patients, materials) and their demographic data (age, gender, ethnics,..)
3. Location of the study, time of the study and duration
4. Patients recruitment, **Inclusion and exclusion**, criteria for diagnosis
5. Sample size, groups, types of blinding, **randomization**
6. Reasons for withdraws or lost
7. Questionnaire
8. Observational or experimental methods
   - Intervention, treatment (drug dosage)
   - Instruments (name of the company)

# Materials and methods (continued)

8. Measurements of outcome (units)

9. Ethical regulations:

informed consent, ethical committee confirmation, Helsinki's Declaration

10. Statistical method

- Inter or intra observers agreements; kappa coefficients, percentage of agreements
- In Clinical Trials: baseline demographic data at Results not Methods and materials
- Do not use vague terms like evaluated; use **precise** verbs like **calculated, estimated, measured**

# Results



- Results section forms the backbone of the discussion
- Overall description of major findings (primary outcomes)
- Open the Results section by presenting the "**big picture**" or overview of the experiments: general statement and then specific ones.
- You can use subheadings which match the methods
- Important first, positive first **(positive bias)**
- Report negative results ! They are important !
- **in the past tense**
- As simple as possible, No irrelevant data
- statistical tests , but no discussion (no interpretation)

# Results (continued)

- Tables
- Figures/chart
- Photos
- Text

- Avoid redundancy of results like thesis

# Results (continued)

Tables:

- When exact amount of number or percentage is important
- Check given data at table with text
- Table title: short but descriptive
- Tables should be referred in text
- Use meaningful decimals ! And be consistent with decimals
- Carefully use percentages
- Indicate significance with p value in each table
- Check ‘’ journals instruction to authors”

# Results (continued)

Figures:

- Overall trend or comparison between groups
- Different types based on data:
  - Graphs (Line, Scatter)
  - Charts (Bar, Pie)
  - Photographs (B&W, Colour)
  - Micrographs (Electron micrographs)
  - Polygraphs (ECG, EEG)
- Be selective and do not repeat tables in figures
- Not too much information in 1 figure

# Results (continued)

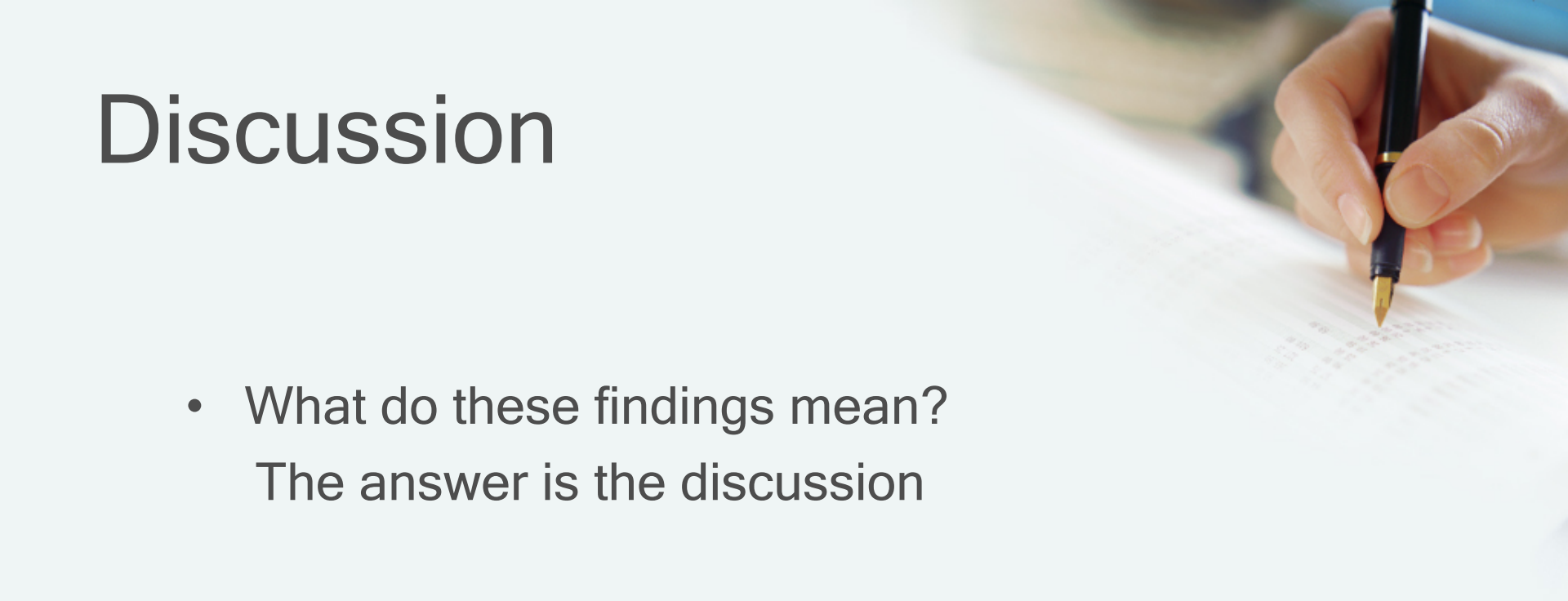
Figures :

- Do not extend axis too far
- Indicate significant differences by *
- Define abbreviations in legends of first figure
- Legends: instruction to authors; at the end of the references or in its real place or ..

Photos:

- Written informed consent for photographs: remove the name
- Refer the figures in text

# Discussion



- What do these findings mean?
  The answer is the discussion

- Discuss-no repeat- the results

Do not repeat or reformulate or recapitulate results

# Discussion (continued)

**Answer research question**

**Support and defend answers with result**

**EXPLAIN**
**Conflicting results you got**
**-Unexpected findings**
**-Discrepancies with otehr research**

**State limitation of the study**

**Establish newnes**

**Announce further research**

# Discussion

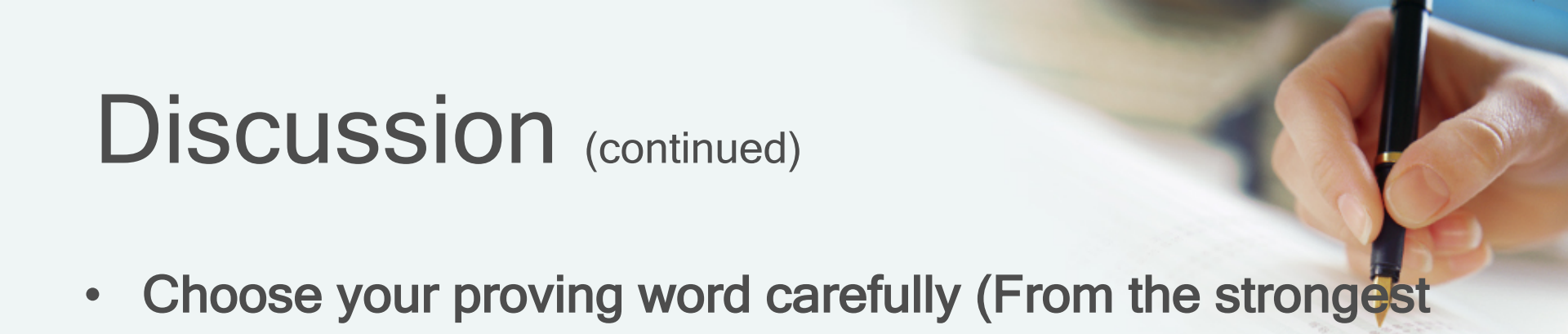
- Do not ignore inconvenient results
- The reviewer may assume that you have not noticed the problem!
- Scientifically, it is acceptable, if you can offer no reasonable explanation for an inconsistent result.
- What about the opposite results for the same research question as yours?

  1. Different Population
  2. Different Design
  3. Different Definition
  4. Different Statistical methods
  5. Possible Bias or confounding

# Discussion

- Do not go beyond the data
- **Past tense** : your current results , other studies that are preliminary or cast into doubt by your studies
- **Present tense :** results of previous studies that are well-known and confirmed , interpretation of your results

# Discussion (continued)

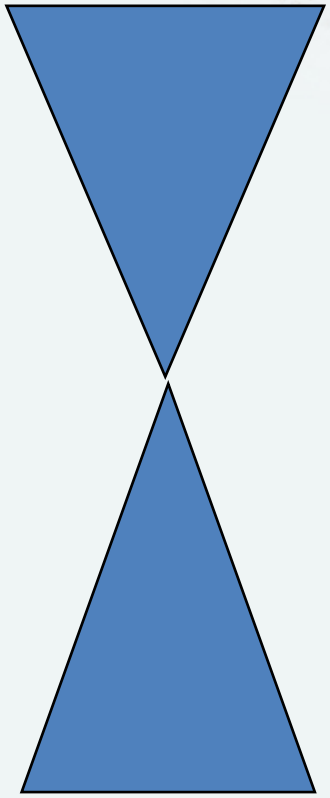


- **Choose your proving word carefully (From the strongest to the weakest word).** Words like "supported", "indicated", and "suggested" are more acceptable ways to evaluate your hypothesis.
  - Prove
  - Show
  - Demonstrate
  - Indicate
  - Suggest
- **There are always controversies in sciences, therefore, be cautious. You can easily use words like;**
  - May be
  - Might be
  - Could be
  - Probably
  - Possibly

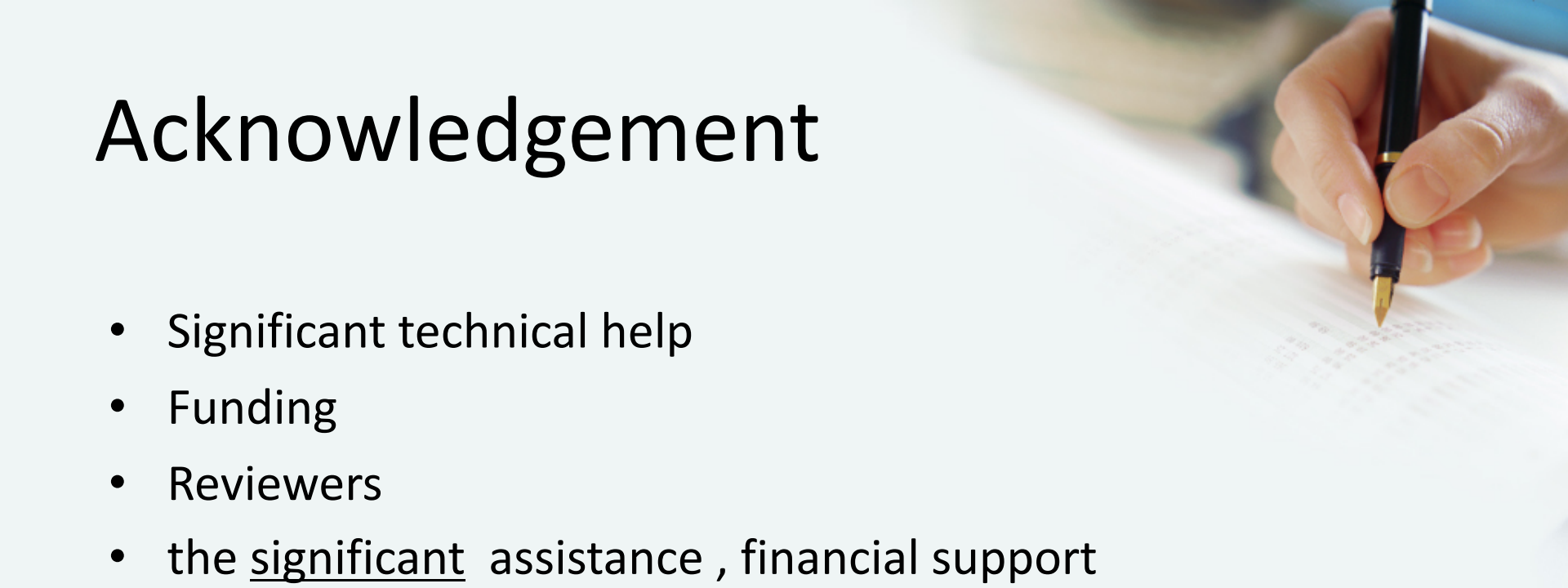
# Discussion(continued)

Inverted triangle : Introduction

Not inverted triangle : Discussion

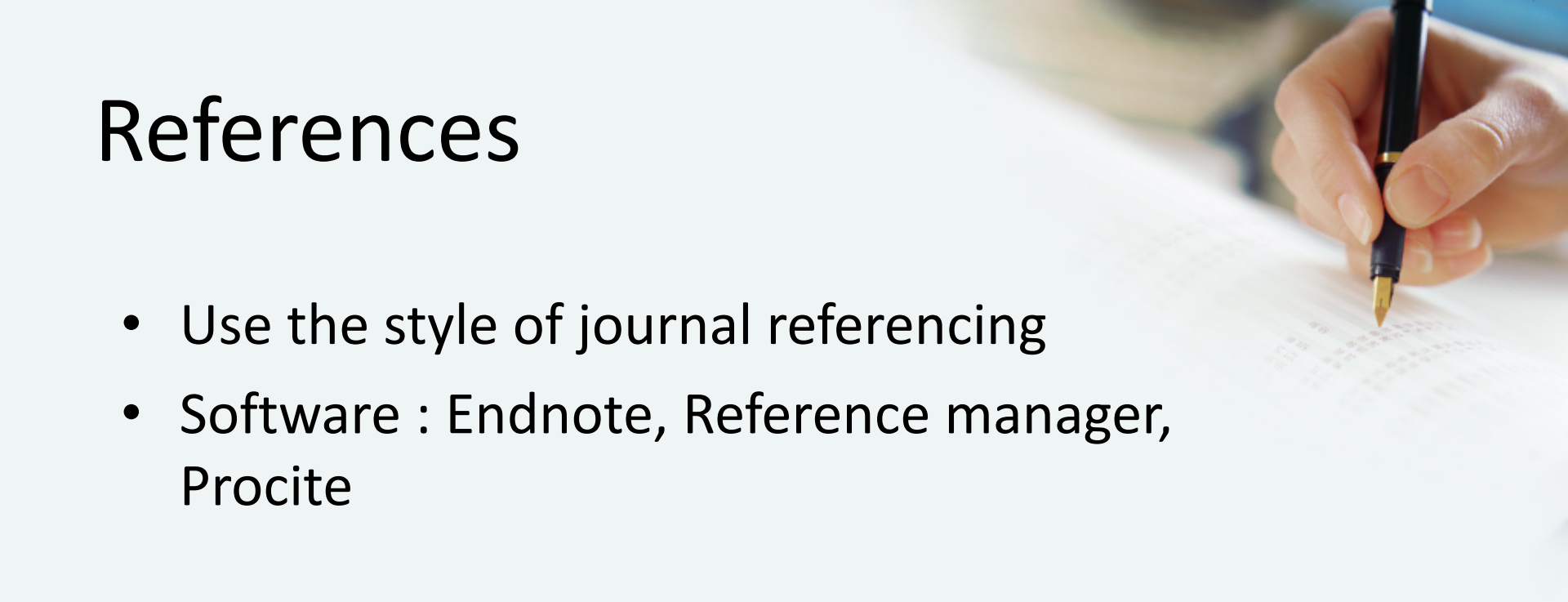


# Acknowledgement




- Significant technical help
- Funding
- Reviewers
- the significant assistance , financial support

# References



- Use the style of journal referencing
- Software : Endnote, Reference manager, Procite