

CHECKLIST FOR WRITING A BIOMEDICAL PAPER

- **The Title**
 - Is the title specific?
 - √ Does it reflect the topic of the paper, no more and no less?
 - √ Does it use specific terms?
 - Is the title concise?
 - √ Are there words that contribute nothing?
 - √ Is there wordiness?
 - Is the title clear?
 - √ Are the key terms used?
 - √ Is the relationship of items in the title clear?
 - √ Are there noun clusters (too many grouped nouns)?
 - √ Is the title grammatically correct?

- **The Introduction**
 - Who is the hypothetical reader of this paper?
 - Does the introduction use a funnel organization?
 - Does the introduction begin at an appropriate level for the hypothetical reader, not too general, not too specific?
 - Is the general problem (gap) presented, and presented early in the introduction?
 - Is all the background description relevant?
 - What is (are) the unique feature(s) of this study relative to previous work?
 - Is the hypothesis or research question presented in specific terms?
 - Will this introduction catch and keep the interest of the hypothetical reader?

- **Materials and Methods**
 - Does this section describe what was done?
 - √ Is the study design clear?
 - √ Are the materials/subjects/populations described adequately?
 - √ Are all methods described adequately or cited correctly?
 - Are the descriptions in logical order, e.g.
 - √ Study design
 - √ Materials/subjects/populations
 - √ Procedures
 - √ Analytical Methods
 - Are subheadings used?
 - Are figures or tables used?
 - Do you understand why the following aspects were selected for this study?
 - √ Study design
 - √ Materials/subjects/populations
 - √ Procedures
 - √ Analytical methods

- **Results**
 - Are the data presented in a sequence that logically answers the research question?
 - Are data presented in tables, graphs, photographs, or drawings?
 - Is the text used to supplement and highlight rather than repeat the data in the visual?
 - Does every result have a method and every method a result?
 - Have you included data from only this study?
 - Do the data agree when given more than once within this section (as in text and visuals) and with those data given in the Methods and Discussion sections?

- **Discussion**
 - Does this section discuss only this study?
 - Is the research question answered at the beginning of the discussion?
 - Is a conclusion presented?
 - Is the strongest result from the study discussed first?
 - Are points of discussion clearly related to findings in this study?
 - Is the cited information clearly related to points generated by this study?
 - Are minor points, if any, presented in the middle of the section and treated briefly?
 - Are any conflicting data (within this study or between this study and previous studies) presented objectively?
 - Are any speculations and opinions clearly distinguished from facts?
 - Does the conclusion repeat the answer to the research question?
 - Does the ending give a sense of completeness?

- **References**
 - Have you selected appropriate references?
 - Have you placed reference numbers appropriately (after names of investigators, after ideas)?
 - Have you followed the reference style preferred by the journal?
 - Have you checked the references against the original sources?

- **Review**
 - Keep one thought per sentence and one idea per paragraph.
 - Use active voice when possible.
 - Use simple words.
 - Eliminate unnecessary words.
 - Use transitions and key words.
 - Make an outline.
 - Consult a statistician.
 - Relate every sentence directly to the question asked in the introduction of the paper.
 - Be as brief as possible to make your point.

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Checklist for Editing Sentences

- Identify the message of the sentence, and make sure this message is clearly understood.
- Make sure the message of the sentence is in the subject, verb, and completer. (Check your sentence patterns.)
- Make sure the subject and verb make sense together.
- Make sure the important information in the sentence is found at the beginning and the end of the sentence (the stress positions). Generally, new information should come at the end of the sentence.
- Use strong, active verbs. State precisely the action in the verb.
- Eliminate "be" verbs when possible.
- Use passive voice (form of "be" + verb) sparingly.
- Make sure the subject agrees with the verb.
- Eliminate nominalizations (nouns created from verbs, e.g., selection, necessity, discussion, agreement, etc.).
- Keep strings of three or more nouns to a minimum.
- Eliminate prepositional phrases when possible.
- Convert sentence fragments into full sentences.
- Convert negatives (e.g., change *not uncommon* into *common*).
- Eliminate jargon and slang.
- Avoid dangling or misplaced modifiers. Modifiers should be placed near what they modify. Place adjectives immediately before the noun or pronoun they modify. Place adverbs after the object of the verb (*He plays the saxophone well.*). If the verb has no object, the adverb can be placed directly before or directly after the verb (*He went happily.*). If the adverb modifies a verb phrase, place it after the first word in the phrase (was extremely surprised) or, if it modifies only the participle, directly before the participle (had been justly accused).
- Check for parallel structure in items in a series, conjunctions (and, or, etc.), comparisons, etc.
- Check for spelling errors.
- Check for punctuation errors.

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