Musculoskeletal Biomechanics

BIOEN 520 | ME 527

Session 17B

Manuscript Writing

Session 17B Overview…

- Journal papers
- Personal preferences
- References from leading journals
- "How to Write a Scientific Article"

Title

- Problem or population
- Dependent variable or treatment
- Outcome
- Holds true for any type of writing
  - article, abstract, grant, etc.

General

- Use simple, concise language
- In each section, topics progress in order of decreasing importance – keep same order throughout
- Minimize use of names of scientists
- Avoid "we were first" – instead say "the important novel contribution of this research was…"
- Minimize use of acronyms/jargon
- Avoid weak verbs and qualifiers

Tense

- Introduction: present – facts are always true
- Definitions: present
- Methods: past
- Results: past
- Discussion: mixed – specific citation: past, current work: present
- Abstract: past

Active vs. passive voice

- Active: The executive committee approved the new policy.
- Passive: The new policy was approved by the executive committee.
- Nothing inherently wrong with passive, but if you can say same thing in active, do so.
  - http://grammar.ccc.commnet.edu/grammar/passive.htm

Active vs. passive voice

- Used to obfuscate and avoid responsibility
- "Cigarette ads were designed to appeal especially to children" places the burden on the ads.
- As opposed to "We designed the cigarette ads to appeal especially to children," in which "we" accepts responsibility.
  - http://grammar.ccc.commnet.edu/grammar/passive.htm

Active vs. passive voice

- The passive voice is especially helpful (and even regarded as mandatory) in scientific or technical writing or lab reports, where the actor is not really important but the process or principle being described is of ultimate importance.

- Instead of writing "I poured 20 cc of acid into the beaker," we would write "Twenty cc of acid is/was poured into the beaker."
  - http://grammar.ccc.commnet.edu/grammar/passive.htm

Introduction

- Funnel – start broad, build your case
- Systematic importance of project, add stats on incidence, prevalence, and cost
- What is known and unknown
- What will this study address – finish with clear statement of purpose or the research question or the hypothesis(es)

W

Methods

- Critical details
- Strong topic sentences
- Demographics and inclusion/exclusion criteria
- Tell what was done to cause a change (independent variable)
- And how the change was observed (dependent variables)
- Cite other methods if possible
- End with stat methods section

Results

- Each question with its own paragraph
- Strong topic sentences; read first sentence only and get the idea of the study
- No references, no methods
- No discussion, don't relate your work to others
- Do not repeat data from tables/figures – OK to use percentages

W

Results

- Figure and table references in (), do not say "Figure 1 shows…"
- P-values in ()
- Figures and tables should stand alone
- For bitmap formats, line drawing should be 1200 dpi
- Not a concern for vector drawings
- Do not use default Excel plots
- Submit figures in expected size (single or double column)

Discussion

- Restate introduction/motivation
- Major assumptions/limitations
- Compare and contrast results with the literature
- Synthesis – what does the study give us?
- J. Biomech – JOR differs slightly

Conflict of interest statement

- Funding from industry
- Ownership in a company
- Consulting fees from a company
- Off topic – COI as a reviewer:
  - Personal relationship with authors
  - Institutional relationship with authors

Acknowledgements

- Funding sources
- People who contributed to the study, but who did not rise to the level of an author
- For example, Danny Camacho who shared with me his thoughts on article writing in 1999.
- Or Evan Williams, who formalized the "How to Write Scientific Article" in 2013/14.

Abstract

- Write last
- Same structure as paper (Intro, Methods, Results, Discussion)
- State major issues/questions
- Describe critical techniques
- Include a few key results
- Express the answers to questions