

The MARC ACSM annual meeting will be held November 1st and 2nd in Lancaster, PA, and with it we will enjoy nearly 200 presentations across a range of disciplines from undergraduates to seasoned professionals. With so many abstracts to review, the research committee has established specific and detailed instructions for abstract submissions. Failing to adhere to these instructions is the most common reason for abstract rejection. In the short article, we offer researchers tips for successful submission, as well as improved consideration for awards.

An abstract is a concise summary of a study or paper and is typically about 200 – 250 words long; MARC abstracts must be **no more than 2500 characters**. A well-written abstract not only provides readers with the most salient details of your work, but it is also often the deciding factor for whether your paper is read, or your presentation is viewed. Moreover, search engines and databases use abstracts, your title, and key terms for indexing your work. For these reasons, it is not surprising that abstracts are often the only thing read by some individuals, so make your brevity count!

As outlined in our Abstract Submission Guidelines, your MARC Abstract must adhere to these key aspects:

- Use Title Case for a Title with Only Fifteen Words
- A 3-space indent followed by the authors names, and then the institution, city and state.
- The abstract body must be single-spaced of just one paragraph and include the following headings: **PURPOSE, METHODS, RESULTS, CONCLUSION and SIGNIFANCE/NOVELTY**.
- The **SIGNIFANCE/NOVELTY** describes the scientific progress achieved or novelty on the study.
- Experimental studies must include experimental data that is both described AND supported statistically; *failure to include experimental data typically results in abstract rejection*.

Like a good paper, abstracts often benefit from an outline, particularly if you are not starting from a completed paper. The nature of the abstract requires you to hit only the most relevant and “sellable” aspects of your research. Trying to just condense everything all at once can be challenging. Identifying two to four key bullet points for each section is a place to start.

Make your opener count!

A good title states what the study specifically did or showed, while the opening of the abstract can provide a brief background of the topic. While the latter is not mandatory, a well-written background can give needed context and set the tone for the abstract, drawing a reader’s interest. The *purpose* should be succinct and to the point, while a hypothesis statement sets an expectation for the results.

Abstract methods and results often pose the most challenge because you may need to titrate many details into just a few sentences total. When it comes to *methods*, less is more. In most cases, you are going to target only the absolute most critical tests you performed, disregarding all the other detail, which can and should be read from the paper or learned in-person. You must identify what methodology simply cannot be left out. Similarly, describe the bare bones statistical analyses used.

Once you describe your concise methods, it’s time to highlight your *results*. Start by outlining up to your top five results, which must include the results that answered your hypothesis; this is another good reason to include a hypothesis statement. You should only report the results that you can present in a poster or 10-min slide presentation, which is not a lot! Excluding your hypothesis, the inevitable question might be, *what results are most important to report?* This can vary, but some common tips here include:

- Participant characteristics typically directly related to the purpose and outcomes, so readers should get some basics like height, weight, and age, but also fitness measures, like $\text{VO}_2 \text{Max}$, if it is relevant to the outcome.
- Unexpected or surprising results that perhaps change the context or conclusions.

In Conclusion...

The final pieces of the abstract include the *conclusion* and, unique to MARC, a *significance/novelty*. The conclusion is the one take home message you want the reader to know from the research. Where the

background can draw people in, the conclusion is often the determiner of whether they visit your session or read your paper. Conclusions need to nail your research down to perhaps single sentence or message. Once you write that, identify why your research results matter or what new insights they provide.

Submitting to MARC should be easy and we hope this article has furthered simplified the process. To further aid you, a brief mark-up with tips is provided below. You are also welcome to reach out to us for help. Upcoming articles will offer tips on creating your poster and preparing for slide presentation.

Making History in 1-hour: How Sex, Aging, Technology, and Elevation affects the Cycling Hour Record

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The World Cycling Hour Record (CHR) is one of cycling's most iconic and celebrated events, often representing the pinnacle of cycling performance. A comprehensive analysis of the CHR over the past fifteen decades could elucidate the differences between men and women, as well as age, altitude, and technology.

PURPOSE: The purposes of this research were to analyze more than a century of cycling hour records (CHR) to examine the effects of sex, age, track venue, and altitude. We hypothesized that men's performance (distance) would exceed those of women by more than 10% but would decline at similar rates with aging.

METHODS: Data were cultivated from the Facebook World Hour Record Discussion Group's crowd-sourced database of more than 600 known hour records and verified through extensive online research and/or personal communication. Regression and statistical modelling were produced using STATA v15.0. R² values were used to ascertain model quality with four distinct models being produced for comparisons. Alpha was set at 0.05 significance for all tests. **RESULTS:** R² values ranged from 65% - 74.9%. Women's distances were 10.8% shorter (p<0.001) than those of men, but narrower than either the historical elite women's difference of 14.2% or the current record difference of 13.3%. Age-related decline modeling indicates performance declines significantly past age 40 at a rate of 1.08% per year. Altitude had a significant (p<0.001) marginal improvement up to 1000 m before declining, which seems surprisingly small although it reaches a maximum at a moderate altitude with 'benefits' becoming ambiguous starting at ~1000m. Technological advancement was estimated to be a small, but significant (p<0.001) improvement of ~0.18% per year. **CONCLUSIONS:** Across decades of CHR data in well-trained endurance cyclists, men are only ~11% faster, and this difference remains stable until at least age 80. CHR attempts above 500 m likely offer at best a small advantage. Despite small year-on-year improvements, the CHR has likely improved more than 10-km due to technological advancements. **SIGNIFANCE/NOVELTY:** This is the first known comprehensive analysis of the CHR beyond just elite men and confirms earlier endurance sport data on both sex differences and age-related decline, as well as some understanding of the impact of elevation and technological advancement.

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2,376 characters

Methods highlight Most salient aspects used for the study. Stats are briefly Outlined.

Conclusions provide the main message you want to convey.

Was the research supported and are there any conflicts of interest?

Bold, Title Case.
11-pt Times New Roman Font.

One line space.
Indent 3-spaces.
Author names and Institutions.

Bold, all caps sections.
11-pt Times New Roman Font.

Results target the hypothesis then other major results.

Outline what sets your research apart from earlier work.