

BJSM educational editorials: methods matter

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INTRODUCTION

Advancing the quality of research in the field of sports medicine is a *BJSM* aim. Therefore, *BJSM* publishes papers with a methodological focus, helping readers to better understand and interpret study outcomes (eg, refs 1–3). This has assisted our community translate study outcomes into practice. To further advance the field, the *BJSM* will publish a series of editorials addressing specific issues in research methodology that impact the conduct, presentation and interpretation of studies. Authorship is open, so please see this as a call for your submissions too.

METHODS UNDERPIN QUALITY AND TRUSTWORTHINESS: APPROPRIATE AND WITH METICULOUS EXECUTION

The state of the art in research methods is continuously evolving and methodological papers advance the field of epidemiology and biostatistics. Just as our community adapts to advances in physiotherapy, imaging and sports science, we must embrace statistical method advances to ensure that shared decisions with athletes are based on accurate information.

If a publication claims that an intervention is effective, but the analysis ignored confounding bias, then readers may be misled to implement something that is ineffective. If researchers do not use the highest quality methods to test

the reliability and validity of questionnaires, then we may be wasting people's time administering these questions. If we continue to blame a past injury to be the cause of a recurring injury when, in fact, there were unrecognised primary causes of both injuries, then we miss opportunities for injury prevention.

BJSM EDUCATIONAL SERIES: UNLOCKING COMPLEXITY AND TRASHING JARGON

The series leaders (names) will present core concepts in research methodology with a format that tries to balance fidelity to the new method with accessibility. Concepts will be presented in a non-technical manner, targeting athletes, coaches, clinicians and team staff members. We will use examples from our field. For example, consider the editorial on 'Misinterpretations of the p-value: A brief primer for academic sports medicine'.² The p value is an often cited yet frequently misinterpreted concept. Leading methodologists around the world have encouraged authors to try and present more than simply the p value when describing differences between study groups.⁴ The editorial presents the rationale as it relates to the field of sports medicine. Use it or disagree by posting your comments alongside the papers or via *BJSM*'s other channels (eg, correspondence, blog and social media).

YOU ARE NOT READING HARD FACTS

As a reader of any manuscript, you are not reading hard facts. At the core of proper research methods is a series of choices and assumptions made by the researchers. Each of those choices impact the value of the study's results, and you are reading the researchers' interpretations of those results.

Who formed the study population? Is the study population similar to the population where the intervention may be implemented? If not, then the effects of the intervention when implemented may not be the same as the study results (ie, *external validity*). What type of statistical analysis were used? If this analysis failed to account for covariates that affect the

intervention and also affect the outcome, then the results will likely suffer from systematic error, that is, bias. What did the researchers do with 'missing data', for example, from study participants who did not complete the study, that is, drop-outs? If those who did not finish the study may have had different outcomes from those who completed the study, ignoring the non-finishers would introduce bias. One approach is to impute the missing information based on completers with similar characteristics, assuming that people with similar characteristics will respond similarly. Of course, this only works if one has measured all important characteristics. Similar types of challenges arise when we want to know the effect of a treatment, and some participants do not take the assigned treatment or take another treatment than they were assigned to.⁵

TRANSLATE RESULTS TO YOUR OWN CONTEXT

These obvious examples show the threats to accurately interpreting sport and exercise medicine research findings. Such threat can obstruct advances and hamper clinical care and health literacy (what are the facts?). To further improve the quality (and thus trustworthiness) of the research, the editors for this section of *BJSM* will provide insight into established and evolving biostatistical and epidemiological methods. Our aim is to empower you, the reader, to be able to critically evaluate how methodological choices influence research results you read. Of course, as always, our compelling goals are to advance sports medicine/sports physiotherapy research and to improve clinical care.

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Editorial

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