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Keep It Simple: Study Design Nomenclature in Research Article Abstracts

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For more than a decade, the *Journal of Athletic Training* has used the structured abstract format advocated in the *AMA Manual of Style*.[1] Although this format certainly has improved the consistency of the information contained in the abstracts of submitted articles, one area that has remained an enigma to authors is what to put in the "Design" section of the abstract. Some authors write a short phrase describing the type of clinical study design that aligns with widely used level-of-evidence taxonomies, such as those of the Centre for Evidence-Based Medicine[2] or the Strength of Recommendation Taxonomy,[3] whereas others describe the factorial design of their study, and a few submit a creative hybrid of these 2 formats. After thorough discussion of this issue, the NATA Journal Committee has endorsed the use of the clinical-study–design nomenclature advocated by the Centre for Evidence-Based Medicine.[2]

We have revised the *JAT* Authors' Guidelines to provide a finite list of acceptable nomenclature to use when describing study designs in the abstract. This simple format will have several advantages, including (1) offering consistency across manuscripts submitted to and published in *JAT*, (2) allowing readers of the abstracts in computer search engines to quickly align a study's results with its level of evidence, and (3) aligning the *JAT* guidelines with those of other leading sports medicine journals in this respect. In particular, we owe a sincere thank you to the Centre for Evidence-Based Medicine and the *American Journal of Sports Medicine*; both entities have granted us permission to borrow extensively from their descriptions of study designs.

Now when authors submit to *JAT*, they are required to select one of the study designs in the list below for their abstract. This list will address all types of clinical and educational studies submitted to *JAT*. Further details regarding the experimental design of the study should be described elsewhere in the abstract. Independent variables, including but not limited to factorial design details, should be described in the "Intervention(s)" section of the abstract. Dependent variables should be described in the "Main Outcome Measure(s)" section of the abstract.

An important delineation in the new guidelines for original research studies is whether the investigation is a clinical study of patients or athletes receiving interventions as part of the clinical delivery of athletic training services. If this is the case, the appropriate clinical study design should be chosen (eg, randomized controlled clinical trial, crossover study, cohort study, case control, case series, case report). If, however, the investigation is a laboratory study, a simple distinction is made between 2 choices: descriptive laboratory study or controlled laboratory study. For laboratory studies, further experimental design details should be described as appropriate in the "Main Outcome Measure(s)" and "Intervention(s)" sections of the abstract. The distinction between a clinical and a laboratory study is important in delineating the level of evidence of an individual investigation.

The following terms constitute acceptable terminology to be used in the "Design" heading of *JAT* abstracts:

Meta-analysis: A systematic overview of studies that pools results of 2 or more studies to obtain an overall answer to a question or interest. Summarizes quantitatively the evidence regarding a treatment, procedure, or association.

Systematic review: An article that examines published material on a clearly described subject in a systematic way. There must be a description of how the evidence on this topic was tracked down, from what sources, and with what inclusion and exclusion criteria.

Randomized controlled clinical trial: A group of patients is randomized into an experimental group and a control group. These groups are followed up for the variables/outcomes of interest.

Crossover study: The administration of 2 or more experimental therapies, 1 after the other in a specified or random order to the same group of patients.

Cohort study: Involves identification of 2 groups (cohorts) of patients, one that did receive the exposure of interest and one that did not, and follows these cohorts forward for the outcome of interest.

Case-control study: A study that involves identifying patients who have the outcome of interest (cases) and patients without the same outcome (controls) and looks back to see if they had the exposure of interest.

Cross-sectional study: The observation of a defined population at a single point in time or time interval. Exposure and outcome are determined simultaneously.

Case series: Describes characteristics of a group of patients with a particular disease or who have undergone a particular procedure. Design may be prospective or retrospective. No control group is used in the study, although the discussion may compare the results with others published in the literature.

Case report: Similar to the case series, except that only 1 case or a small group of cases is reported.

Descriptive epidemiology study: Observational study describing the injuries occurring in a particular sport.

Controlled laboratory study: An in vitro or in vivo investigation in which 1 group receiving an experimental treatment is compared with 1 or more groups receiving no treatment or an alternate treatment.

Descriptive laboratory study: An in vivo or in vitro study that describes characteristics such as anatomy, physiology, or kinesiology of a broad range of subjects or a specific group of interest.

Qualitative study: A study that uses qualitative methods such as grounded theory, phenomenology, ethnography, or the case-study approach to understand a phenomenon. Data collection methods may include participants describing their experiences orally or in writing or researcher observation of participants' behavior.

We are confident that the use of these guidelines will be helpful to both the authors and readers of *JAT*. However, it is important to also point out that these authors' guidelines refer only to the description of the study design in the abstract. For more information on the experimental design elements of a study within the body of a manuscript, see Knight's recent commentary on this issue.[4]

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4. Knight KL. Study/experimental/research design: much more than statistics. *J Athl Train*. 2010;45(1):98–100.

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