

## The Value of Systematic Reviews of Yoga Interventions

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### Introduction and Background

Although the physical and mental health benefits of yoga are becoming increasingly more evident, some health care providers or organizations may remain unaware or unconvinced that yoga is an effective and safe treatment for many conditions. [1-3] Determining which treatments are both safe and effective and should be offered can be challenging and may be influenced by factors including cultural setting, training, personal experience and economic incentives. One way to limit the impact of subjective factors is the adoption of “evidence-based practice” (EBP) as a systematic approach. This approach involves the identification and evaluation evidence supporting any given treatment with the goal of eliminating risky treatments and favouring treatments with more high-quality evidence of safety and effectiveness.

The EBP approach delineated in 1992,[4] with foundational work on methods for identifying and evaluating medical treatments having been done by Cochrane.[5] A primary feature of Cochrane’s work has been the “systematic review”, in which large amounts of research on a given health treatment are evaluated and summarized. Without such reviews, the comprehensive synthesis of treatment evidence is a daunting task. Using yoga as an example, a recent PubMed database search identified 4694 manuscripts when entering the term “yoga” and when adding the term “pain” to refine the search, 692 manuscripts were found. Although such searches can be refined further, reading and summarizing even 30-40 different studies is challenging given results and conclusions that often vary. Systematic reviews are a fairly common tool used by researchers, but healthcare providers and health care administrators may not be aware of their value, or may not fully understand their implications. Thus, the purpose of this manuscript is to provide an introduction to systematic reviews of yoga to those who are less familiar with this research tool.

Systematic reviews involve a number of specific steps [6-8] including:

- a) The specification of the purpose and criteria for including a study,
- b) Specification of search strategies,
- c) A rating of study bias and quality,
- d) Data extraction,
- e) Data analysis and synthesis including meta-analysis
- f) Rating the quality/strength of evidence; and
- g) Providing conclusions.

Each step is designed to improve the scientific rigor and value of these reviews. By following each step in accordance with guidelines, readers can be better assured that a given systematic review is complete

and does not reflect the biases of the authors. Readers can be confident that larger, higher quality studies are given more importance for scientific reasons and that financial conflicts of interest are not influencing results.

The steps listed above are typically performed in parallel by two or more researchers to maintain objectivity. Most systematic reviews focus only on randomized, controlled trials (RCTs) and RCTs with larger sample sizes are typically given more weight when effects sizes are combined across studies. However, some systematic reviews include non-RCTs if a limited number of high quality RCTs are identified. Despite the value of non-RCT studies in building scientific research evidence, RCTs are considered the most objective and conclusive way to demonstrate treatment efficacy in published taxonomies of research study designs.[9] Some systematic reviews may include yoga as one of multiple mind-body or non-pharmacological treatments, allowing for comparisons with other similar treatments. Most systematic reviews include a meta-analysis that combines the results of multiple similar RCTs. The results are averaged across studies based on the sample size for each outcomes and assessment point. The results of meta-analyses are typically presented as an effect size often reported separately for short-term (end of intervention) and long-term effects. The type of comparison group is another important distinction. Yoga may have an established benefit compared to care as usual, but when compared to other established treatments such as physical therapy or exercise, the conclusion that yoga has no additional advantage can be a very positive one.

Some of the conditions for which high quality systematic reviews of yoga have been conducted include hypertension [10], diabetes [11], heart failure [12], living with cancer [13], depression [14], anxiety [15], chronic low back pain [16,17], chronic neck pain [18], and osteoarthritis [19]. These studies suggest that the evidence for yoga as a treatment is strongest for chronic low back pain and depression, but most conditions would benefit from additional research. However, across this wide range of conditions, very few adverse events were reported and there were consistent findings suggesting yoga is beneficial.

In summary, understanding systematic review methods is important for researchers that plan to cite or extract information from them. Systematic reviews that follow published guidelines such as Cochrane, PRISMA and GRADE are highly valued.

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