



Time to turn the hierarchy of evidence on its head?

Dr Kiara Lewis FBASES and Prof Kim Burton OBE acknowledge that review articles are an important source of knowledge to guide practice but ask, "Which to believe?"

The contestants

If asked, probably you will say "systematic reviews" are superior to other reviews because they are more scientific and less likely to be biased. While that is understandable, reliance on the systematic review approach actually limits our ability to answer certain types of question. In any scientific quest, the choice of methodology depends on the question.

The high ranking of systematic reviews is widely taught on sport and exercise courses across the UK, with Cochrane Reviews held up as an exemplar of the highest quality. Indeed, in response to a recent narrative review we recently submitted for publication, one of the reviewers asked, "Why not just wait for the next Cochrane review?" This was despite explaining why we specifically used a wider evidence base than permitted by the Cochrane approach.

The emphasis of systematic reviews is methodological reproducibility, with the implication that a different review team would produce the same findings. The classical definition of Evidence Based Medicine, however, is the..."conscientious, explicit, and judicious use of current best evidence," (Sackett *et al.*, 1996), which suggests the selection and interpretation of evidence entails a judgment call. Yet reviews that incorporate such expert opinion and understanding are often judged untrustworthy.

Greenhalgh *et al.* (2018), in their recent seminal paper, argue that the "systematic review format has been erroneously defined as the universal gold standard and the term 'narrative' review is frequently misunderstood, misapplied and unfairly dismissed." This view has relevance to BASES members, who often need to distinguish between problems needing evidence of effectiveness and those requiring clarification and insight. Greenhalgh *et al.* kindly permitted us to paraphrase their thoughts and align them to sport and exercise sciences.

In the red corner: systematic reviews

A systematic review has a pre-determined method to search, screen, select, appraise and summarise study findings in order to answer a focused research question, which often will need a focus on quantitative data. The process involves an exhaustive search methodology, followed by application of explicit inclusion and exclusion criteria (based on content and methodological quality). Typically, a search of literature databases can yield thousands of

studies, which are then reduced to a few relevant studies, from which the findings are aggregated. This sequence is considered superior due to the rigorous documented (thus replicable) method of data collection, selection and quantification.

However, the inclusion and exclusion criteria are created by the review authors as to what, in their opinion, should and should not be included. The process does not consider assumptions on which the primary studies base their data, or the content of their discussion sections. For instance, if a systematic reviewer decides to include only aerobic exercise in the inclusion criteria, all other types of exercise being omitted, this may lead us to presuppose that aerobic exercise is superior. However, what does "aerobic exercise" mean? What about the FITT (frequency, Intensity, time, type), what about the initial fitness levels (confounding factors)?

If we even have details of the exercise intervention available in the primary studies, we are unlikely to find many (if any) studies that replicate the exact FITT with exactly the same initial fitness levels and never with the same instructor (another confounding factor), so we end up with no conclusive evidence - the usual final conclusion of a systematic review, "more research is needed."

In reviews of randomised trials of effectiveness, it is much easier to benefit from narrower methodological criteria to provide clear answers to essentially dichotomous questions, for example, "Is a drug effective or not?" Yet, that may not be the best question for practitioners (or, indeed, policy makers) who require a more nuanced research question.

"Systematic reviews" will often rely on randomised controlled trials as the highest available evidence category, and this may be appropriate when a very specific question is asked. However, when listening to athletes, coaches or exercise professionals, the questions that they want answered are complex and diverse. Whether working with elite athletes or sedentary individuals you will be confronted by a range of biological, cultural, psychological and social issues that also have economic, political and resource implications. Physical activity, by its nature, is complex and the dose response relationship will be individual (Herold, 2019). While it is acknowledged that the Cochrane approach, and others, is evolving to include a wider range of evidence, it remains suited to a narrow question with the emphasis on data extraction and summation, not synthesis.

In the blue corner: narrative reviews

Narrative reviews generally include a range of evidence sources, provide interpretation and critique, and deepen rather than summarise data. Whilst the methods differ from systematic reviews they are not “unsystematic” in that they use *ad hoc* methods - quite the contrary, good narrative reviews need the appropriate methodology for the particular research question. Under the generic term, narrative review, there are numerous different approaches to synthesis and presentations of findings.

A best-evidence synthesis is a way of summarising the available literature and drawing conclusions about the balance of evidence, based on its quality, quantity and consistency (Slavin, 1995). It helps to make sense of, and impose some order on, complex issues and is especially suited to informing policy makers. A hermeneutic review involves the process of creating an interpretative understanding. This process involves the continual deepening of insight obtained by critical reflection of a dataset. It may or may not define its reference body of studies using systematic methods, but its primary focus is the induction and interpretation of the sample to advance theoretical understanding. A realist review considers which mechanisms (for example, social support) produce particular outcomes (for example, attendance at an exercise class) in some circumstances but not others (for example, whether exercise is viewed as culturally inappropriate). A meta-narrative review maps the storyline of a research tradition, reflecting how scholarly opinion has waxed and waned within different time points in the development of thinking (for example, women’s football).

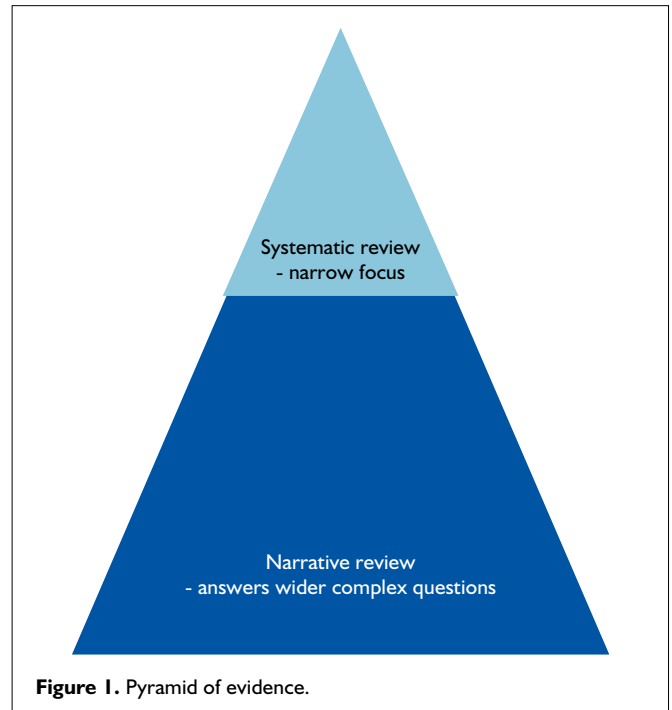
Who wins?

The evidence hierarchy that is typically taught unchallenged in sport and exercise science has systematic reviews at the top of the pyramid (see Figure 1). This elevates the mechanistic processes of exhaustive search, wide exclusion and mathematical averaging over the thoughtful, in-depth, critically reflective process of engagement with ideas. This suggests systematic is of superior quality to narrative.

Training in systematic reviews has led to a generation of researchers who are skilled in the technical tasks of searching, sorting, checking, tabulating and generating means. But, “we risk losing sight of the marvellous diversity and variations that ought to intrigue us.” (Greenhalgh *et al.*, 2018, p3). Excluding “wider understanding” can skew our knowledge. It previously was advised that we needed to do at least 10-minute blocks of exercise to achieve health benefits - now it is acknowledged that less than 10 minutes may be beneficial (it is just harder to measure, categorise and standardise).

But aren't systematic reviews less biased? Not necessarily. There is growing evidence that systematic reviews may fail to answer important questions and, despite ticking all the quality checklist boxes, can be partisan. But, surely narrative reviews “cherry pick” evidence to present a particular argument? Actually, a good narrative reviewer picks evidence purposively to answer the key questions. Of course, narrative reviews can be performed well or badly (as can most things!) but to dismiss them all as inferior is wrong. If we abandon interpretative overview that highlights the state of knowledge while accepting uncertainties, we will fail fully to answer important questions.

In our recent review of exercise and dementia we found that a Cochrane review concluded that while there is low quality evidence that exercise can improve activities of daily living, there is no evidence of benefit on cognition, psychological symptoms or depression. However, a narrative review, which included additional information from a survey of stakeholders and interviews with those delivering exercise sessions, concluded that being active appears to help people with dementia to maintain a higher level of functioning for longer. In keeping with a realist review, they used differing outcomes from studies of a lesser quality to provide useful insights and found that positive emotions



such as joy and amusement are important, and that socialisation may be the key. In developing fields of study, the quantitative answers may not be there, yet practitioners seek evidence-informed guidance. This can be offered (with appropriate caveats) from wider consideration of the literature, avoiding narrow definitions of outcomes and their measurement, allowing those involved in delivery to be able to see more holistic impacts of interventions. So, the realist approach can be seen as having an important place in not only deciding if exercise works, but how might it be working.

Summary

Narrative reviews are not inferior to systematic reviews; they are a different complementary way to collate knowledge. It depends on the research question: we caution overemphasising the value of systematic reviews and underutilising the benefits from narrative reviews. Policy makers, scientists, and commissioners, who seek to ensure decisions are evidence-based but have been seduced by a spurious hierarchy, might usefully re-evaluate the low status currently afforded to narrative reviews. ■



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