Commentary: Shifting Our Thinking About Ankle Instability

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The March-April 2012 issue of the *Journal of Athletic Training* provides an interesting cross-section of the state of the art in ankle instability, as well as a foreshadowing of things to come. Ericksen and Gribble (“Sex Differences, Hormone Fluctuations, Ankle Stability, and Dynamic Postural Control”) present a study of the association between sex hormone changes and ankle stability. This type of work is important but challenging. Ankle instability and an associated loss of function is multifactorial, and we must be mindful that measures of association do not establish cause and effect and have the potential to mislead investigators and clinicians.

For example, strength is a factor that has been studied repeatedly, and a review of the individual studies (most of which are cross-sectional) would suggest that strength is not associated with ankle stability. However, a meta-analysis1 of these studies suggests that strength is associated with ankle stability. The discrepancy between the results of the meta-analysis and the original studies seems to be primarily due to the insufficient statistical power of individual studies to detect differences. Each study adds to what we know but may not reveal all we are seeking.

Ankle instability must be considered for what it really is: a construct. Constructs are important components of science in that they represent the key conceptual framework under which we do research and connect science to clinicians.2 However, constructs are not directly observable. For example, balance is a construct. As clinicians, we know that balance is important, and we know that generally the more of it we have, the better. At the same time, we do not agree on how to measure it: statically, dynamically, or functionally? We understand it conceptually, but we cannot measure it directly. Therefore, we invent measures to estimate it.

The fact that ankle instability is a construct is illustrated by Wikstrom et al (“Discriminating Between Copers and People With Chronic Ankle Instability”). They found that the measures that best identified stable and unstable ankles (in this case, copers rather than uninjured individuals) were those of perceived instability (ie, Foot and Ankle Disability Index [FADI] and FADI-Sport). The worst measure was mechanical instability (ie, anterior drawer), with laboratory sensorimotor measures in the middle. The fact that the best predictors were perceptual rather than physiologic suggests that ankle instability is not something we can measure directly but is a more complex construct. This is even suggested by the authors, who used another word: multifactorial.

For many of us, the notion that a paper-and-pencil test identifies instability better than laboratory tests is uncomfortable, but it emphasizes the importance of another shift in our thinking. As researchers and clinicians, we should spend more time thinking about what the patient needs. It may be that our patients are the best measurement tools. Listening to them rather than focusing on our laboratory and clinical measures may lead us to a more robust solution to the causes of and treatments for ankle instability.

Hamlyn et al (“Orthotic Intervention and Postural Stability in Participants with Functional Ankle Instability After an Accommodation Period”) investigated a response to treatment. They conducted a randomized control trial (RCT) to evaluate the response to orthotics in patients with ankle instability. The RCT provides the highest level of evidence from a single study and establishes cause and effect. Obviously, we cannot directly study the cause of ankle instability. To do that, we would have to experimentally cause the injury and subsequent instability. In contrast, we can study treatments for their effectiveness. From the treatment results, we can infer the possible mechanisms. In the study of Hamlyn et al, orthotics improved balance in individuals with instability. Directly, this indicates that orthotics are efficacious in improving balance in ankle instability, but indirectly, it suggests that balance impairments play a role in instability.

Hamlyn et al did not include self-report measures such as the FADI and FADI-S. Therefore, from this study, we know that balance improved, but we do not know if the patients had a perceived benefit from the treatment. Hence, another question arises and a research opportunity emerges. Self-report measures add patient-oriented evidence that matters (POEM), a concept that has just recently begun to enter our literature. As ankle instability research moves forward, including these types of measures in RCTs will be essential if we are to understand whether our treatments have positive effects for our patients.

An important strength of the Hamlyn et al study is the use of a single treatment. Many of the current RCTs in the literature have used a multimodal approach to therapy and rehabilitation (eg, strength plus balance plus agility). This approach is not surprising considering that this is the typical clinical method. However, the multimodal approach only tells us whether the total treatment package was efficacious. It does nothing to identify what the essential components of the treatment were. In my view, we need RCTs that systematically study single treatments. By doing this, we will be able to identify those treatments that are most effective as well as those that are not effective or are redundant. Our ultimate goal should be to develop treatment plans that are both effective and efficient for the patient.

In a world that demands increased accountability, evidence-based practice has become an important component of health care. Furthermore, we are expected to focus in particular on evidence that matters to our patients. I don’t anticipate that this emphasis will ever go away. As such, we need to be mindful of the evidence and how the different levels of evidence should be used to inform our practice. The papers by Ericksen and Gribble, Wikstrom et al, and Hamlyn et al span a spectrum of research to inform our practice. They are also reminders of the gaps that still exist in our science and provide direction for the next steps.

References

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2. Construct validity and external validity. In: Shadish WR, Cook TD, Campbell DT. *Experimental and Quasi-Experimental Designs for Generalized Causal Inference.* Boston, MA: Houghton Mifflin; 2002:65.