

So Close and Yet so Far—Growth and Progress in the Accessory Motion Testing Literature

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You know you're getting older when you get asked to write a perspective based on a paper you wrote many years earlier. Back somewhere between the stone-age and the bronze age in manual therapy years (almost two decades ago), I wrote a paper that reviewed the accessory motion testing (AMT) literature¹. I reviewed sources of error and construct validity of manual therapy tests, and the literature that examined psychometric properties of accessory motion testing assessments for the spine and the extremities.

I found only one paper that examined the validity of spinal AMT measures and two that examined reliability of spinal AMT measures in the physical therapy literature. Only two papers were found that examined reliability for AMT assessments conducted on the extremity joints.

My, have we come a long way! The literature on AMT has expanded in all directions and by leaps and bounds. Not only do we have many primary studies of AMTs, we also have summary research in the form of systematic reviews. For example, in 2005 van Trijffel and colleagues conducted a systematic review of AMT procedures of the lumbar and cervical spines². Using a rigorous set of inclusionary criteria, the authors included 19 studies and eliminated an additional 10 that also examined relevant elements of AMT. Seffinger and colleagues reviewed an extensive literature on the psychometric properties of a variety of AMT and other manual therapy procedures for the lumbar spine³. These authors found 36 studies that examined psychometric proper-

ties of spinal AMTs. Clinically important AMT research also abounds for the extremity joints. Brandt and colleagues found 30 relevant papers that examined studies of Kaltenborn's concave convex rule as applied to the glenohumeral joint⁴. These are few examples of many that indicate the AMT literature has grown substantially in the past two decades.

We now have an impressive library of research that will help to move the science of AMT forward and this literature is ever growing. The papers mentioned earlier do not address the formidable literature published since 2005. A simple PubMed search using key terms [(lumbar OR cervical OR thoracic OR shoulder OR knee OR patella OR hip OR ankle) AND (motion) AND (reliability OR validity)] and published since 2005 yielded an additional 415 studies. After a cursory check of the titles, approximately half of these papers seemed to be directly or indirectly related to accessory motion testing. There appears to be no let-up in AMT research!

In that review paper from 1992, I identified several research priorities that I believed were essential to moving the AMT literature forward. First, I suggested that the literature was in need of case reports that describe the processes used to arrive at clinical decisions. I argued that case reports were needed to provide the types of information necessary to design generalizable effectiveness studies. The number of case reports in our literature has grown rather dramatically in the past two decades and many of these describe the clinical decision making processes of patients who received

manual therapy. One important role for case reports is to provide detailed descriptions that assist researchers in designing clinical trials of complex interventions like manual therapy. We are now seeing greater numbers of trials with more sophisticated methods of diagnosis and treatment implementation that account for the complex processes associated with manual therapy provision^{5,6}.

I also argued for studies that examined the clinical meaningfulness of combinations of tests rather than single tests in isolation. We have recently benefited from a proliferation of work that has examined the predictive or prognostic utility of combinations of tests in patients with a variety of musculoskeletal disorders⁷⁻⁹. It remains to be seen whether these preliminary studies will lead to randomized trials that demonstrate that patients who fit homogeneous categories respond best to well-defined interventions. However, this work is important, in my view, because it has brought the issue of classification and subgroup identification to the forefront. I believe this work, has motivated researchers to develop research approaches within the context of clinical trials to identify subgroups of patients who respond best to well-defined interventions.

I also encouraged work that examined the criterion related validity of manual therapy examination procedures. Finally, I encouraged research designed to examine the anatomical and mechanical bases for accessory motion testing. We have seen a tremendous amount of work performed on the construct validity of AMT procedures. For

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example, Sizer and colleagues conducted a systematic review of the literature that has examined coupling behavior of the thoracic spine¹⁰. In addition, the *National Institute of Health's National Center for Complimentary and Alternative Medicine* has provided substantial research funding for mechanistic research related to AMT and manual therapy¹¹.

We have experienced substantial success with the work that has been done over the past two decades. But admittedly, we have a long way to go particularly in the area of effectiveness research in manual therapy. Our randomized trial research has made an important contribution to our understanding of the potential benefits of manual therapy but there remains a tremendous amount of work to be done.

I'm not going to make any predictions this time around. I'll leave that to other prognosticators. Instead I'm going to relish in the fact that several of my predictions of future research needs have been met with substantial success. We all have reason to be proud of the research discoveries made over the past two decades and I know I speak for all of

us in saying that I look toward the future for even greater accomplishments.

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