



Original article

How should we teach lumbar manipulation? A consensus study

Michael O'Donnell ^a, Jo Armour Smith ^{a, b, *}, Alex Abzug ^c, Kornelia Kulig ^a^a Division of Biokinesiology and Physical Therapy, University of Southern California, 1540 East Alcazar Street, CHP-155, Los Angeles, CA 90089, USA^b Department of Physical Therapy, Chapman University, Irvine, CA, USA^c Paulseth and Associates Physical Therapy, Los Angeles, CA, USA

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ABSTRACT

Background: Spinal manipulation is an effective intervention for low back pain, yet there is little consistency in how this skill is taught.

Objectives: The purpose of this study was to identify what educators and clinicians believe are important characteristics of the patient and operator position prior to side-lying lumbar manipulation and the patient position and operator motion during the manipulative thrust.

Design: A multi-disciplinary correspondence-based Delphi method.

Methods: Three rounds of questionnaires were sent to physical therapists, osteopaths and chiropractors. Consensus was established in Round 3 if at least 75% of respondents identified a characteristic as very important/extremely important on a 5-point Likert scale.

Results: 265 educators and clinicians completed the three rounds of questioning. There was consensus that localization to target segment, patient comfort, table height, and logrolling the patient towards the operator are important characteristics of patient position during the preparatory phase. During the manipulation phase, respondents agreed that it is important to maintain localization to the segment and rotate the patient's pelvis and lumbar spine. For the operator characteristics, consensus was reached for the following items; moving up and over the patient, maintaining contact using forearms, and close contact between the operator and patient (preparatory phase); generating force through the body and legs, dropping the body downwards, maintaining localization, and providing a high-velocity and low-amplitude thrust (manipulation phase).

Conclusions: This Delphi study successfully identified key characteristics of patient position and operator position and motion for effective delivery of side-lying lumbar spine manipulations.

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1. Introduction

Low back pain is a major healthcare problem in Western societies, with enormous costs in terms of healthcare expenditures and productivity as well individual pain and suffering. There are very few interventions that have demonstrated significant effectiveness beyond the natural resolution of symptoms that can be attributed to the passing of time (Chou et al., 2007). However, research suggests that spinal manipulative therapy (SMT) reduces pain and disability in individuals with back pain (Assendelft et al., 2003,

2004; Delitto et al., 2012). Manipulation is performed by clinicians in several disciplines, including physical therapists, osteopaths and chiropractors. Spinal manipulation can be defined as “the application of rapid movement to vertebral segments producing joint surface separation, transient sensory afferent input and reduction in perception of pain. Joint surface separation will commonly result in intra-articular cavitation that, in turn, is commonly accompanied with an audible pop” (McCarthy et al., 2015). Lumbar manipulation is often performed with the patient in side-lying (Fig. 1). The rotatory side-lying lumbar manipulation is a complex motor skill that requires substantial training and practice by the novice clinician to deliver proficiently and effectively.

Much of the current research investigating SMT focuses on what is happening at the patient–operator interface, without consideration of the operator's mechanics (Cohen et al., 1995; Triano et al.,

* Corresponding author. Department of Physical Therapy, Chapman University, Irvine, CA, USA.

E-mail address: josmith@chapman.edu (J.A. Smith).



Fig. 1. Patient and operator position for the side-lying lumbar manipulation.

2004; Descarreaux et al., 2005, 2006; Gibbons and Tehan, 2010; Descarreaux and Dugas, 2010; Harvey et al., 2011; Cambridge et al., 2012). Existing research has also quantified the differences in magnitude, duration and direction of force at the patient–operator interface between novice and expert clinicians performing SMT (Cohen et al., 1995; Triano et al., 2004, 2011; Cambridge et al., 2012). Additionally, studies focusing on skill acquisition have provided novice operators with different methods of instruction to determine which method results in the best learning of the skill (Descarreaux et al., 2005, 2006; Descarreaux and Dugas, 2010). However, much of the existing information that considers how the operator should perform manipulative techniques is based on individual expert opinion. There are multiple texts that describe how to perform SMT (Greenman, 1996; Hartman, 1997; Maitland, 2001; Manipulation Education Committee of the APTA Manipulation Task Force, 2004; Olson, 2009; Kaltenborn, 2009; Snodgrass et al., 2010). These texts elaborate on the specifics of patient positioning, how to achieve an adequate pre-manipulative barrier or “pre-load”, and the hand and body position of the practitioner. In short, they capture static positioning but do not describe how practitioners then move their body to generate the appropriate force at the patient–operator interface. Similarly, Sizer et al. (2007) conducted a Delphi study of physical therapy educators to determine the critical skill-sets required for competency in manual therapy. From the Delphi survey and factor analysis the authors distilled eight essential skill-sets. Only one of the eight skills addressed the issue of force generation and no specific description was provided of how the practitioners should position themselves, shift their weight or develop their body's momentum in order to generate the forces needed to produce an effective manipulation.

As a result of the substantial evidence for the effectiveness of manipulation for spinal conditions, the use of manipulation for lumbar spine conditions is recommended internationally in a number of clinical practice guidelines (American Physical Therapy Association, 2003; National Institute for Health and Care Excellence, 2009; Koes et al., 2010). Additionally, instruction in manipulation has been included in entry level physical therapy curricula in the United States since 2009 (Notebottom et al., 2015) and is now required for program accreditation in North America (Commission on Accreditation in Physical Therapy Education, 1998; Council of Canadian Physiotherapy University Programs, 2009). Therefore it is important that practitioners

are taught how to perform these techniques proficiently, and that educators understand how best to teach them. A first step towards this goal is to determine the essential components of patient positioning and operator positioning during rotatory side-lying lumbar manipulation. Therefore, the purpose of this study was to identify what educators and clinicians believe to be the important characteristics of the patient and operator position prior to the rotary side-lying lumbar manipulation and the patient position and operator motion during the manipulative thrust.

2. Methods

The classic Delphi method was chosen for this study because it is an established process for using informed opinion or expertise to develop a consensus where there is limited existing information. In this study design, three rounds of questioning or survey iterations are designed to develop a consensus of opinion concerning a specific topic. The first round is qualitative and designed to gather as wide a variety of opinions as possible whereas the second two rounds are quantitative (Keeney et al., 2005). This approach has advantages over other survey methods. Specifically, participants remain anonymous and cannot be influenced by group pressure or more dominant individuals (Dalkey, 1972). Additionally, multiple rounds of questioning allow respondents to add additional insights and more thoroughly clarify the information developed by previous iterations (Hsu and Sandford, 2007).

Round 1 of the survey included questions regarding the demographic information of the respondents. Additionally, there were four open-ended questions that asked the practitioners to identify the characteristics they believe to be important for teaching side-lying lumbar manipulation. They were: (1) patient position in the preparatory phase, (2) patient position in the manipulation phase, (2) operator position in the preparatory phase and (4) operator motion in the manipulation phase (see Appendix 1). This survey was sent via email to members of the American Academy of Orthopaedic Manual Physical Therapists (AAOMPT) and to individuals who were identified as teaching manual therapy or manipulative skills in entry-level DPT programs, chiropractic and osteopathy programs in the United States. The Institutional Review Body of XXXX approved the study.

Reponses from the open-ended questions in round 1 were manually compiled. A working group of three study investigators identified and codified themes from the qualitative responses. All three investigators have advanced training in manual therapy and are certified as Orthopaedic Clinical Specialists (OCS) by the American Board of Physical Therapy Specialties. The working group met on multiple occasions to review individual responses for each question. Initially, qualitative responses for each question containing similar word groupings or concepts were identified and the group defined an umbrella category for this concept (for example, individual responses regarding patient positioning such as “locked down to the proper level” or “positioning to isolated segment of interest” would be codified to the category “localization to target segment”). Each individual response was then codified to a category (or categories). The most highly represented categories in each question were then developed into descriptor statements that were further investigated in rounds 2 and 3.

Round 2 of the survey used Likert scales. The survey asked participants to quantify the relative importance of characteristics of patient position and operator position and motion that were identified in round one. Each characteristic was graded on a 5-point Likert scale anchored by the statements “Not at all important”, “Very unimportant”, “Neither important nor unimportant”, “Very important”, and “Extremely important” (Krossnick et al., 2010).

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