Profession-based manual therapy nomenclature: exploring history, limitations, and opportunities


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Profession-based manual therapy nomenclature: exploring history, limitations, and opportunities

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ABSTRACT

Objective: The International Consortium on Manual Therapies (ICMT) is a grassroots interprofessional association open to any formally trained practitioner of manual therapy (MT) and basic scientists promoting research related to the practice of MT. Currently, MT research is impeded by professions’ lack of communication with other MT professions, biases, and vernacular. Current ICMT goals are to minimize these barriers, compare MT techniques, and establish an interprofessional MT glossary.

Methods: Practitioners from all professions with training in manual therapies were encouraged by e-mail and website to participate (www.ICMTconference.org). Video conferences were conducted at least bimonthly for 2.5 years by profession-specific and interprofessional focus groups (FGs). Members summarized scopes of practice, technique descriptions, associated mechanisms of action (MOA), and glossary terms. Each profession presented their work to the interprofessional FG to promote dialogue, understanding and consensus. Outcomes were reported and refined at numerous public events.

Results: Focus groups with representatives from 5 MT professions, chiropractic, massage therapy, osteopathic, physical therapy and structural integration identified 17 targeting ossous structures and 49 targeting nonossus structures. Thirty-two techniques appeared distinct to a specific profession, and 13 were used by more than 1. Comparing descriptions identified additional commonalities. All professions agreed on 4 MOA categories for MT. A glossary of 280 terms and definitions was consolidated, representing key concepts in MT. Twenty-one terms were used by all MT professions and basic scientists. Five terms were used by MT professions exclusive of basic scientists.

Conclusion: Outcomes suggested a third to a half of techniques used in MT are similar across professions. Additional research is needed to better define the extent of similarity and how to consistently identify those approaches. Ongoing expansion and refinement of the glossary is necessary to promote descriptive clarity and facilitate communication between practitioners and basic scientists.

Introduction

Using hands to apply pressure to the body for therapeutic purposes is as old as human history \cite{1,2}. In the 19th century, modern professions incorporating hands-on skills as foundational services began to develop. As their education was formalized in the 20th century, some achieved regulatory support in several regions of the world. Other professions also began incorporating these skills into practice. However, disagreements about approaches and other ideological conflicts resulted in divisions among professions trying to develop distinctive ideologies of practice and establish their utility and value. Relationships between factions within a profession
were sometimes acrimonious about ideologies. Professions began isolating themselves and criticizing each other’s systems of practice.

Early publications characterized each profession’s unique identity, defended their reason for existence, or claimed a near 100% success rate for treatment approaches [3–16]. Few studies critically analyzed treatments, identified mechanisms for outcomes, or determined optimization or weaknesses to their approaches. In 1998, the National Institutes of Health established the National Center for Complementary and Alternative Medicine, now the National Center for Complementary and Integrative Health (NCCIH), to guide research for evaluating complementary healthcare fields, including those using hands-on treatment approaches, which they categorized as manual therapies (MT) [17]. Despite numerous programs to establish priorities and resources for research, the lack of communication and collaboration between basic science and MT professions were fundamental barriers to progress [18,19]. Successful communication occurs when shared information is understood by all parties, resulting in positive relationships and strong collaborations [20]. Poor communication occurs when shared information is vague or ambiguous or causes incorrect assumptions about clinical/scientific verbiage. During past interprofessional MT conferences, jargon, imprecise scientific terms, and nomenclature based on original conceptions of professional identity instead of current evidence has undermined progress in this field [19].

In 2018, a grassroots volunteer organization called the International Consortium on Manual Therapies (ICMT) was formed. Its self-selected volunteers came from several MT professions: chiropractic, massage therapy, osteopathic, physiotherapy, and structural integration professions, and basic scientists whose research is relevant to MT. The long-term goal of the ICMT is to improve the practice of MT through promotion of rigorous research within the field. The first step in achieving this goal is to overcome the previously stated hindrance of poor communication related to professional silos, associated jargon, and distrust among professions. Therefore, the ICMT formed 2 working groups. One group, primarily of clinician and basic scientists, was tasked with reviewing the literature and cataloging current evidence on known and postulated mechanisms of action (MOA) across MT professions. The other working group, primarily of clinicians and clinician academics, initiated a process to improve communication by creating focus groups (FGs) that promoted accurate understanding of each profession’s use of MT and their proposed MOA and established an ongoing system for maintaining a unified glossary to facilitate collaborative research. The current article reports the outcomes of these FGs.

Methods
Formation of the international consortium on manual therapies

Administration at the A.T. Still Research Institute, Kirksville, MO., led and coordinated the development and activities of the ICMT. Clinical, academic, and research experts from MT professions and basic scientists whose research focused on the neuromusculoskeletal system were solicited to join the ICMT. MT practitioners without formal training were excluded. The members were from the United States and Europe, representing basic science and 5 MT professions – chiropractic, massage therapy, osteopathic, physiotherapy, and structural integration.

To consolidate the ICMT’s interprofessional FG, bimonthly 90-min video conferences established constructive and respectful dialogue and clear, achievable objectives. Members then established profession-specific FGs to draft documents representing their profession. Documents were produced and shared using Google Drive and presented to the interprofessional FG through video conferences. Nominal group technique [21–23] was used to promote dialogue, critique, clarification, understanding, and consensus among professions. In all points of discussion but one, consensus was unanimous with participating members. In that case, one member of a profession with numerous participants expressed cordial disagreement.

On 30 October 2021, the ICMT hosted a 2-h webinar to report progress, receive feedback on profession-specific documents, and solicit participation in continuing ICMT activities. Any MT practitioner, regardless of participation in ICMT involvement, and interested members from the scientific community, could attend. Based on participant comments, interprofessional critique of profession similarities and differences and refinement of documents continued. From January to March 2022, profession-specific discussion forums were held, engaging a broader group of practitioners and researchers for feedback regarding scope and accuracy of content. The FGs further refined documents for dissemination at the Inaugural ICMT Conference (Figure 1).

During the conference, presentations summarized ICMT outcomes, and breakout sessions provided opportunities for intraprofessional and interprofessional discussion and vetting of outcomes [24]. Results from these discussions were collated during the following 6 months and informed outcomes presented in the current article.
Specifically, FG outcomes were to (1) summarize the scope of practice of different MT professions to address and overcome possible biases among ICMT members, (2) describe commonly used manual therapeutic techniques of different MT professions, (3) summarize clinician understanding of known and postulated MOA for MT techniques, and (4) generate an interprofessional glossary to improve communication. This qualitative process is illustrated and presented in Figure 2.

Scope of practice

When available, the legal scope of practice for each MT profession was based on the established practice act that governs the profession’s license and adopted rules pursuant to that act. The scopes of practice also vary within a profession, depending on location or local jurisdiction. Given the international scope of the ICMT, defined scopes of practice were not intended to reflect all possible nuances worldwide and instead focused on consistent language for generalizations and comparisons.

Terms for manual treatment techniques

Manual treatment techniques commonly used by each MT profession were cataloged and described by profession-specific FGs. Based on the intended site of action, techniques were subdivided into 2 biologic targets: osseous and nonosseous. Osseous techniques focus on bones, joints, and immediate surrounding tissue; nonosseous techniques focus
on myofascial and other connective tissues. We also distinguished between manually delivered and instrument-assisted techniques (i.e. using non-invasive, force-based devices as an extension of the hand). Eponym techniques (e.g. Sutherland, Maitland, Rolf) were avoided when possible in favor of descriptive terms. Terms were placed in a spreadsheet for comparisons. Techniques used by more than 1 MT profession were grouped based on agreement for nomenclature, biomechanical description, and technique performance.

For better visualization, profession-specific mind maps were created to represent techniques and associated proposed MOA. A unified mind map was created for the overall MT field. The paid version of the MindMup software (mindmup.com, United Kingdom) was used for the mind maps.

**Proposed mechanisms of action**

After unanimous consensus on technique terms was achieved within each profession, FGs described each technique. They also detailed how techniques are performed and provided a summary of known or postulated MOA underlying each technique. This content was incorporated into the mind maps.

**Interprofessional glossary**

Each profession specific FGs provided a list of terms describing the palpatory approaches, treatment techniques, physical mechanics of technique performance, and practitioners’ perceptions of associated tissue responses when performing the techniques. Basic scientists produced a list of scientific terms for characterization of MT and their influence on the body. Each term was referenced, usually from existing profession-based glossaries. Terms were then placed in a unified interprofessional glossary. The interprofessional FG analyzed terms and identified additional terms used by their professions that they had not originally submitted.

**Results**

Forty-three ICMT members participated during this 2.5-year project: 3 basic scientists, 7 chiropractors, 1 data manager, 2 librarians, 8 massage therapists, 7 osteopaths, 4 physiotherapists (orthopedic manual physical therapists), 2 staff assistants, and 9 structural integration practitioners. Members were manual therapy practitioners in private practice or contributors to academic programs. Approximately 200 nonmembers participated in the webinar, discussion forums, and conference.

**Scope of practice**

Key elements for scopes of practice for the 5 MT professions are presented in Table 1. Scope of practice for each profession includes legal form, main functional aims, and primary body focus. More complete scope of practice information is available in Supplement 1.

<table>
<thead>
<tr>
<th>MT Profession</th>
<th>Legal Form</th>
<th>Functional Goals</th>
<th>Primary Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiropractic</td>
<td>Primary care, direct contact with patients; The right and duty to diagnose, including taking or ordering skeletal imaging</td>
<td>Diagnosis, treatment, and prevention of mechanical disorders of the musculoskeletal system and the effects of these disorders on the function of the nervous system and general health</td>
<td>Emphasis on manual treatments, including spinal adjustment and other joint and soft tissue manipulations</td>
</tr>
<tr>
<td>Massage therapy</td>
<td>Licensed health profession (USA and Canada); Licensed, registered, certified, or unregulated (outside USA and Canada)</td>
<td>Maintain, rehabilitate, or augment physical function; relieve or prevent physical dysfunction and pain; and enhance the well-being of the client</td>
<td>Soft tissues</td>
</tr>
<tr>
<td>Osteopathic</td>
<td>(1) Osteopathic physicians: licensed to practice the full scope of medicine (trained in USA) (2) Osteopathic practitioners: a very heterogeneous group of primary healthcare practitioners with different practice rights (trained outside USA)</td>
<td>(1) Diagnose, treat, prescribe medications, perform surgery, and use osteopathic manipulative medicine (2) Patient-centered care using a whole person approach to all aspects of health and healthy development, principally by the practice of manual treatment</td>
<td>Whole person approach</td>
</tr>
<tr>
<td>Physiotherapy</td>
<td>Physical therapists/physiotherapists: licensed to practice physical therapy/physiotherapy, functioning as an allied health professional in some countries and as a primary care medical professional in others</td>
<td>Management of neuromusculoskeletal conditions based on clinical reasoning, using highly specific treatment approaches, such as manual techniques and therapeutic exercises</td>
<td>Joints, central and peripheral nervous system structures, myofascial structures, ligamentous/cartilaginous, and lymphatic tissues</td>
</tr>
<tr>
<td>Structural integration</td>
<td>Not licensed as a profession in most US states or in the European Union</td>
<td>Improve posture and efficiency of movement in the field of gravity</td>
<td>Fascia</td>
</tr>
</tbody>
</table>
Terms for manual treatment techniques

Sixty-six terms for manual treatment techniques were identified by the 5 MT professions: 17 were osseous and 49 nonosseous (Figure 3). Thirty-two were distinct to a profession, and 13 were used by more than 1 profession.

Osseous techniques

Eleven osseous techniques were recorded, ranging from 1 for massage therapy to 8 for osteopathic (Figure 3). Three manual techniques were commonly described by more than 1 profession: mobilizations; high-velocity, low-amplitude (HVLA); and muscle energy techniques. All MT professions, except structural integration, shared at least 1 osseous technique (chiropractic: 2, massage therapy: 1, osteopathic: 3, physiotherapy: 3) (Table 2). An example consensus process for osseous techniques is presented in Supplement 2.

Table 2. Osseous treatment techniques used by the 5 manual therapy (MT) professions.

<table>
<thead>
<tr>
<th>Osseous Technique*</th>
<th>Chiropractic</th>
<th>Massage Therapy</th>
<th>Osteopathic</th>
<th>Physiotherapy</th>
<th>Structural Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balanced ligamentous tension/ligamentous articular strain</td>
<td>Manual</td>
<td>Balanced ligamentous tension/ligamentous articular strain</td>
<td>Compress, hold, and release</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compress, hold, and release</td>
<td>Facilitated positional release</td>
<td>Facilitated positional release</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HVLA</td>
<td>HVLA/thrust</td>
<td>HVLA/thrust</td>
<td>HVLA/thrust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobilization</td>
<td>Low-force joint mobilization</td>
<td>Joint movement methods</td>
<td>Mobilization; articulatory; low-velocity, moderate-amplitude</td>
<td>Mobilization grade I-II and III-IV</td>
<td></td>
</tr>
<tr>
<td>Muscle energy</td>
<td></td>
<td></td>
<td>Muscle energy</td>
<td>Muscle energy</td>
<td></td>
</tr>
<tr>
<td>Osteopathic cranial manipulative medicine</td>
<td></td>
<td></td>
<td>Osteopathic cranial manipulative medicine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustained pressure directly into joint gap</td>
<td></td>
<td></td>
<td>Sustained pressure directly into joint gap</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobilization</td>
<td>Reflex protocol (activator, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percussion</td>
<td>Percussion hammer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Techniques in italics are used by more than 1 MT profession.
Abbreviation: HVLA, high-velocity, low-amplitude.
### Table 3. Non-osseous treatment techniques used by 5 manual therapy (MT) professions.

<table>
<thead>
<tr>
<th>Nonosseous Technique</th>
<th>Chiropractic</th>
<th>Massage Therapy</th>
<th>Osteopathic</th>
<th>Physiotherapy</th>
<th>Structural Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cranial/balanced membranous tension</td>
<td>Cranial/balanced membranous tension</td>
<td></td>
<td></td>
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<tr>
<td>End-of-session back</td>
<td></td>
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<tr>
<td>End-of-session cervical-cranial</td>
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<tr>
<td>End-of-session sacral-pelvic</td>
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<tr>
<td>Facilitated positional release</td>
<td>Facilitated positional release</td>
<td>Facilitated positional release</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Fascial distortion model</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Gliding, stroking, effleurage</td>
<td>Gliding, stroking, effleurage</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Kneading, twisting, pettrissage</td>
<td>Kneading, twisting, pettrissage</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Lifting myofascial sheet</td>
<td>Lifting myofascial sheet</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Lymphatic</td>
<td>Lymphatic drainage</td>
<td>Fluid/lymphatic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muscle energy</td>
<td>Muscle energy</td>
<td>Muscle energy</td>
<td>Muscle energy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myofascial</td>
<td>Myofascial</td>
<td>Myofascial/connective tissue</td>
<td>Myofascial release</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neural mobilization</td>
<td>Neural mobilization</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oscillation</td>
<td>Oscillation</td>
<td></td>
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<tr>
<td>Percussion</td>
<td>Percussion</td>
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<tr>
<td>Proprioceptive neuromuscular facilitation</td>
<td>Proprioceptive neuromuscular facilitation</td>
<td>Proprioceptive neuromuscular facilitation</td>
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<tr>
<td>Sacro-occipital</td>
<td>Sacro-occipital</td>
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<tr>
<td>Separating at inter/intramuscular septa</td>
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<tr>
<td>Shear stress/friction</td>
<td>Shear stress/friction</td>
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<tr>
<td>Shearing across collagenous fibers</td>
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<td>Shearing across collagenous fibers</td>
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<tr>
<td>Shearing parallel to collagenous fibers</td>
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<td></td>
<td></td>
<td>Shearing parallel to collagenous fibers</td>
<td></td>
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<tr>
<td>Soft tissue</td>
<td>Soft tissue techniques</td>
<td>Soft tissue method</td>
<td>Soft tissue mobilization</td>
<td></td>
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<tr>
<td>Spreading from a midline</td>
<td></td>
<td></td>
<td></td>
<td>Spreading from a midline</td>
<td></td>
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<tr>
<td>Static methods: resting/holding</td>
<td>Static methods: resting/holding</td>
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<tr>
<td>Strain counterstrain</td>
<td>Strain counterstrain</td>
<td>Strain counterstrain</td>
<td>Strain counterstrain</td>
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<tr>
<td>Sustained pressure at 1 location</td>
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<tr>
<td>Sustained pressure at bony attachments</td>
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<tr>
<td>Sustained pressure directly into joint gap</td>
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<tr>
<td>Trigger point therapy</td>
<td>Trigger point therapy</td>
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</tr>
<tr>
<td>Visceral manipulation</td>
<td>Visceral manipulation</td>
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</tbody>
</table>

(Continued)
Nonosseous techniques

Thirty-four nonosseous techniques were recorded, ranging from 5 for physiotherapy to 16 for massage therapy (Figure 3). Eight manual techniques were used by more than 1 profession. All MT professions, except structural integration, shared terms for at least 4 nonosseous techniques (chiropractic: 6, massage therapy: 7, osteopathic: 7, physiotherapy: 5) (Table 3). An example consensus process for non-osseous techniques is presented in Supplement 2.

Proposed mechanisms of action

The profession-specific FGs reported the most common MOA for all manual treatment techniques. These clinician-reported MOA, technique descriptions, and information on technique performance are available at the ICMT website (https://www.icmtconference.org/). During interprofessional FGs, all professions acknowledged that these MOA are intertwined, but most reported on the most likely MOAs; structural integration proposed the same cascade of MOA for all their techniques.

Based on similarities among proposed mechanisms, 4 hypothesized MOA categories – local biomechanical, neurophysiologic, fluid/circulatory, and biochemical – were identified and labeled in mind maps. Biomechanical mechanisms involve structural changes at the local tissue level. Neurophysiologic mechanisms involve spinal reflexes or changes in the central nervous system. Fluid/circulatory mechanisms indicate changes in tissue perfusion at an intercellular or circulatory level, and biochemical mechanisms involve changes in biomarkers or second messenger signaling within the cells and tissues. An example consensus process for proposed MOA is presented in Supplement 2.

Mind maps

Mind maps of treatment techniques and proposed MOA commonly accepted in the clinical community for each MT profession are presented in Supplements 3–7. An overview of mind map content is presented in Figure 4. Massage therapy and structural integration had a predominance for nonosseous treatment techniques; chiropractic, osteopathic, and physiotherapy had a more balanced technical profile with a slight predominance of nonosseous techniques (see Tables 2 and 3 and Figure 3). An integrated mind map of all MT professions is available at the ICMT website (https://www.icmtconference.org/).

Interprofessional glossary

The chiropractic [25,26], osteopathic [27], and physiotherapy [28] professions already had profession-sanctioned glossaries that were used as a starting point. Other sources included articles, textbooks, and website documents. The interprofessional glossary is presented in Supplement 8.
Table 4. Examples of interprofessional glossary definitions of manipulation and related terms with multiple descriptions as defined by the 5 manual therapy professions and basic scientists.

<table>
<thead>
<tr>
<th>Glossary Term and Description*</th>
<th>Basic Scientist</th>
<th>Chiropractic</th>
<th>Massage Therapy</th>
<th>Osteopathic</th>
<th>Physiotherapy</th>
<th>Structural Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adjustment</strong></td>
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</tr>
<tr>
<td>(1) A specific directional thrust maneuver or application of forces applied to a subluxated vertebra.</td>
<td>X</td>
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<tr>
<td>(2) This term refers to a wide variety of manual and mechanical interventions that may be high or low velocity, short or long lever, high or low amplitude, and with or without recall.</td>
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<tr>
<td><strong>Force-based manipulation</strong></td>
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</tr>
<tr>
<td>Force-based manipulations refer to the application of mechanical forces to the outside of the body with therapeutic intent.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>High-velocity, low-amplitude (HVLA)</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>An adjustment technique using high-speed and low displacement procedures to target a specific joint.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Also called a thrust treatment method.</td>
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</tr>
<tr>
<td>An osteopathic method in which the restrictive barrier is engaged in 1 or more planes of motion, and then a rapid, therapeutic force of brief duration traveling a short distance is applied within the anatomic range of motion.</td>
<td></td>
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<tr>
<td><strong>Manipulation</strong></td>
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<tr>
<td>Therapeutic application of manual force</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Skillful use of the hands in a therapeutic manner.</td>
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<tr>
<td>Massage manipulations focus on the soft tissues of the body and are not to be confused with joint manipulation using a high-velocity thrust.</td>
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<td>A passive, high-velocity, low-amplitude thrust applied to a joint complex within its anatomical limit with the intent to restore optimal motion and function and/or to reduce pain.</td>
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<td>(1) The therapeutic application of manual forces that move a joint quickly beyond its elastic barrier or resistance but not beyond its limit of anatomic integrity.</td>
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<td>(2) A manual procedure that involves a directed thrust to move a joint past the physiological range of motion without exceeding the anatomical limit.</td>
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<tr>
<td><strong>Thrust</strong></td>
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<tr>
<td>The rapid, controlled application of force used to effect an adjustment or manipulation</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>The word thrust is interchangeable with the word manipulation or manipulative. At times, it is expressed as a manipulative thrust, implying the skilled force (energy) imparted to the patient/client by the clinician during the act of a manipulative technique.</td>
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*Some professions had multipart descriptions of terms.

Chiropractic included 187 terms in the interprofessional glossary, massage therapy 171, osteopathic 134, physiotherapy 129, and structural integration 84. The basic science community provided 103. Twenty-one terms were used or mentioned by all MT professions and basic scientists. Another 5 were mentioned by all MT professions exclusive of basic scientists. Twenty-four terms have more than 1 description; manipulation has 4.

Table 4 presents examples of several related glossary terms of manipulation with multiple descriptions. The description of manipulation can be very general or more specific, referring to such terms as HVLA and thrust. It can also be specific to profession or technique. Basic scientists recently redefined manipulation to include the adjective force-based, which supports the general meaning. Thrust also has 2 descriptions, which physiotherapy combines with HVLA to define manipulation. Although thrust was in the osteopathic glossary [27], it was not included as a separate entry but as synonymous for HVLA and used as such by the profession. Osteopathic considers HVLA or thrust as a category of manipulation, whereas chiropractic and physiotherapy consider them synonymous. Chiropractic uses 3 meanings for adjustment, and one refers to thrust and another to HVLA.

**Discussion**

From a healthcare perspective, the goal of the scientific process is to identify effective and safe treatments, so practitioners with appropriate scopes of practice can cure disease and improve patient health. In the MT field, professional isolation and lack of clarity and consistency regarding terminology have hampered dissemination of new knowledge and reduced the impact of research on practice. Studies already have been conducted in which the terms and practices of MT professions have been compared [29–31], a common treatment package for a particular condition was offered [32] and common nomenclature for important anatomical structures across professions was promoted [33]. A model was also proposed for standardizing and more objectively characterizing technique terminology for the physiotherapy profession [34]. To our
knowledge, the ICMT’s goal to improve communication by promoting better communication and understanding of the nomenclature and performance of MT procedures is unprecedented. Ideally, this ongoing collaborative process will continue to advance individual and collective evidenced-based professional skills, unify clinician and basic scientist understanding of MOA for treatment techniques, and establish a living interprofessional MT glossary.

**Scope of practice**

Scope of practice evolves from educational standards within a profession and reflects its research, expert opinion, innovation, and collaborative process to meet societal needs. Educational standards are considered consistent with legal scopes of practice. However, changes in those standards can expand a profession’s legal scope of practice. As such, the scope of practice is often disputed among professions, and any modifications are typically viewed as encroachment on practice and economic security [3,35]. Given the worldwide diversity in licensure and scope of practice between and within healthcare professions, ICMT discussions were crucial in addressing ignorance, misinformation and fostering collaboration. Despite uncomfortable moments, increased knowledge of the scope of practice reduced previous biases and supported respectful relationships. Although there will always be challenges associated with economics, politics, and innovations among healthcare professions, patient-centered practitioners should be committed to overcoming obstacles that inhibit patient care.

**Terms for manual treatment techniques**

Technique descriptions and mind maps were created by profession-specific FGS and vetted during several online events. Thus, these outcomes should represent the categorization and description of each profession’s commonly used treatment techniques, highlighting commonalities and distinctiveness among professions. Because descriptions provide only a general description of actions performed with the hands during MT, they are not intended as a training guide or comprehensive report of technique nuances. Consequently, less commonly used techniques are not represented in the current article.

In 2010, Evans and Lucas [36] differentiated between definition and description while investigating a robust definition for manipulation. Their criteria [37] for new definitions overlapped with the framework our FGS struggled to hrough to describe techniques. Specifically, Evans and Lucas [37] listed 11 criteria commonly used for definitions for manipulation, but eliminated 6 for being inconsistent, imprecise, and speculative. Our FGS serendipitously excluded the same 6 criteria and did not use 2 additional criteria. The first, mechanical response, overlapped with MOA, and we deemed it inappropriate to include in technique descriptions since MOA for many techniques are unknown or poorly defined. The second, taxonomic consistency, is our eventual target. Currently, we are collaboratively identifying accepted terms with various taxonomic origins. Consequently, ICMT technique descriptions were based on three criteria: biological target (osseous or nonosseous), action (how the technique is performed), and universality (a technique that is sufficient for one tissue or structure (biological target) should be sufficient for any other).

Based on our outcomes, 3 of 12 osseous and 10 of 36 nonosseous techniques were reported by more than 1 MT profession, suggesting more technical differences than similarities among the professions. However, additional comparisons between terms and technique descriptions are necessary for more definitive conclusions.

Regarding osseous techniques, chiropractic, massage therapy, and physiotherapy had name and technique descriptions that were similar to 1–3 osteopathic techniques. The osteopathic profession listed 4 additional distinct techniques. The description of the compress, hold, and release technique of structural integration appeared similar to balanced ligamentous tension technique performed by osteopathic practitioners. The reported instrument-assisted techniques appeared unique to each profession.

Regarding nonosseous techniques, chiropractic, osteopathic, and physiotherapy described soft tissue techniques as soft tissue mobilization/method. Massage therapy classified at least 6 unique techniques commonly used, understood, and identified by chiropractic, osteopathic, and physiotherapy practitioners as soft tissue techniques. Of instrument-assisted techniques, 1 was shared by massage therapy and chiropractic.

Multiple unresolved issues identified by the interprofessional FGS involved myofascial release, soft tissue methods, all structural integration techniques, and the osteopathic fascial distortion model. These terms propose targeting specific components of soft tissue (fascial vs myofascial) promoting technique distinctiveness, yet the FG review identified that the technique descriptions appeared very similar, possibly indicating that these terms are more related to professional dogma than anatomical specificity. It seems obvious that forces applied to soft tissues can not be isolated to one specific type of tissue (muscle, fascia, adipose, etc). In the interprofessional glossary, the soft tissue method for the osteopathic profession was historically defined as a myofascial treatment, calling into question the distinctiveness of these terms. Another example of overlapping terms is muscle energy techniques and proprioceptive neuromuscular facilitation. Both
engage the patient in contracting their muscles against practitioner resistance [38]. However, forces and the point in the joint’s range of motion where contraction takes place may differ [39,40]. This brings into question what is necessary to make techniques distinct and is an important area for future research.

Collapsing similar techniques into consistently used descriptive terms across MT professions should facilitate communication by providing a quick and clear picture of universal characteristics of basic manual techniques. Conversely, collapsed terms may be inadequate for outlining specific nuances of techniques necessary for reproducibility in research modeling or clinical practice. Continued collaboration is needed to determine how to best modify current technique nomenclature to promote understanding and translation between research and clinical practice.

Comparing technique terms, a third or less appeared similar across professions for osseous and nonosseous techniques. Comparing technique descriptions, this similarity may increase to 50%-60%, indicating substantial overlap and distinctiveness in biomechanical characteristics of care provided by MT professions. Findings also indicated that current nomenclature hinders appreciation of comparable aspects of MT and that updating terminology to descriptive, consistently applied terms would improve formation, understanding, and translation of research in this field.

Proposed mechanisms of action

There was marked uniformity among MT professions and basic and clinical scientists when independently reporting known and proposed MOA associated with MT. The consistent outcome of 4 proposed MOA categories provides common ground for collaborative research by clinicians and scientists. When consistent nomenclature is used, there should be an improved understanding of clinical procedures and the strengths and limitations of research designs. Animal model and human research are necessary to advance the understanding of these MOA, and better communication between basic scientists and clinicians will improve the quality, efficiency, translation, and impact of this research.

Considering the 4 MOA categories, direct consequences of mechanical forces on circulatory/fluid mechanisms seem widely understood and accepted. For neurophysiologic mechanisms, underlying mechanisms are less clear; MOA could be related to mechanical forces or psychosocial factors [41,42]. Since body systems do not function in isolation, MT mechanisms may be a cascade of physical and psychological responses, as promoted by those in structural integration. Clarifying neurophysiologic MOA will be challenging and require a wide array of basic science expertise.

Interprofessional glossary

The interprofessional glossary collated by the ICMT contains extensive contributions from 5 MT professions and basic scientists. This unified interprofessional MT glossary is critical for ongoing evaluation of the efficacy and safety of MT approaches [43–45] and for improving translation of research questions and outcomes between practitioners and basic scientists. This tool impacts far beyond research. Because it is based on current evidence and input from the MT community, this glossary is a foundation for education in MT [46] and can minimize communication errors among healthcare providers [47], in medical records, and across MT professions [48,49]. However, individual professions need to continue addressing internal nomenclature inconsistencies and disagreements as they participate in the collaborative refinement of glossary content. Intraprofessional and interprofessional communication needs to be sustained, continuing to advance this interprofessional glossary. In short, the glossary needs ongoing, wide-ranging input, sustained collaboration and widespread acceptance for advancing clinical, educational and research activities.

Our living interprofessional glossary of MT terms is necessary because terms and practice are continuously evolving. For example, a common term-like manipulation should be easily understood by all practitioners. However, Evans and Lucas [36,37] reported major differences between professions regarding the use and understanding of manipulation, as is identified in the interprofessional glossary. The work of Evans and Lucas [36,37] and the work of the ICMT illustrate the necessity of sustaining an interprofessional glossary.

Some professions have modernized technique names to more descriptive terminology, i.e. effleurage and petrissage updated to gliding and kneading. The ICMT supports this trend and recommends every MT profession collaborate to modernize terms that describe technique mechanics, thereby eliminating inconsistent, imprecise, and speculative terms.

Strengths and limitations

The work of the ICMT represents the first systematic attempt to break down a century of MT professional isolation. Given the large number of interprofessional contributors, outcomes should be reasonably representative of each profession. The outcomes also provide a foundation for ongoing work to refine and standardize nomenclature in the MT field.

There are several limitations for reported outcomes. Because professions are at different stages of development, data from profession-specific FGs may have different levels of generalizability. Another limitation is potential bias related to the small number of self-selected ICMT contributors from the United States
and a few European countries. Primary contributors of
the ICMT review and consensus process were practi-
tioners and academics, so some views may have been
omitted through lack of awareness and representation.
Further, active engagement of the physiotherapy pro-
fession was limited to practitioners in the United
States. Another limitation may be related to our level
detail, which we intentionally restricted to common-
alties and general patterns of biomechanical prop-
ties of manual techniques to promote generalizability
and relevance of outcomes to mainstream practice.

Recommendations and roadmap for the future

The ICMT is only starting to reach its overall goal. To
succeed, the ICMT workforce should be expanded, and
additional interprofessional MT and basic science
groups must address identified issues that inhibit
advancement of the science and clinical practice of
MTs. For better consistency, transparency, and com-
munication, we need to continue unifying technique
terms and standardizing descriptions for MTs, espe-
cially for techniques that target soft tissues. Once gen-
eral categories for MT techniques are accepted,
objectively quantifying nuances of professional and
individual performance of techniques should be con-
sidered. We also support the development of repro-
ducible descriptive subcategories that highlight distinct
aspects of the consolidated terms. Subcategories are
necessary to identify variations in techniques per-
formed by different professions or providers and how
techniques are modified for different patients.

Mintken et al [34] proposed 6 parameters for
reporting MT: (1) rate of force application, (2) location
in range of available movement, (3) direction
of force, (4) target of force (anatomical structure),
(5) relative structural movement, and (6) patient
position. We recommend that MT professions
reconsider these parameters and consider adding the
dagnitude of force in research and clinical
practice. Adding magnitude of force applied during
a technique should enable the identification of gen-
eralizable and distinct technique characteristics and
MOA. For basic scientists, laboratory instrumenta-
tion can capture these parameters producing con-
tinuous data which will allow for unprecedented
rigorous research. Since access and use of most
instruments in clinical practice is currently unrealis-
tic, developing consistent biomechanical measures
using categorical standards should be developed,
such as those established for reporting grades of
mobilization. The challenge for the clinical and
scientific communities is to collaboratively establish
standardized and reliable parameters that are feasible
for clinical practice. Once established, these
standards can be used by clinician researchers to
define and calibrate the MT arm of a study.

Educational programs can use these standards to
advance the training and skills of practitioners.

Conclusions

The outcomes described in the current article reflect
the current status regarding treatment techniques in
the MT professions. When comparing technique
terms, up to one third of the described techniques
appear similar between at least 2 MT professions for
osseous and nonosseous techniques. When compar-
ing technique descriptions, there was an increase in
similarities. Overall, there is a notable lack of speci-
city associated with techniques directed to soft tis-
sues. The work of the ICMT provides the first steps
toward resolution of fundamental nomenclature
issues among MT professions. However, to advance
the field of MT, additional development and refine-
ment of nomenclature is necessary to reach descrip-
tive clarity and transparency for designing reproducible clinical and basic science research,
 improving translation of research findings, and pro-
moting meaningful discourse among students, ac-
demicians, researchers, and clinicians.

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