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PRINCIPLES OF MANUAL THERAPY



3RD EDITION

DEEPAK SEBASTIAN

JAYPEE

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CHAPTER

3

Manipulation: Definition and Types

The discrepancy in terminology in manual therapy literature may be secondary to the need for philosophies to be original. So this chapter aims to simplify the types for easier understanding, especially for the novice practitioner. 'Manual Therapy' is a broad term and comprises terms such as articulation, mobilization and manipulation. Some of the manual therapy gurus have a preference to one more than the other. For example, Kaltenborn uses the term mobilization while Paris uses the word manipulation in his courses. Some describe manipulation only for high velocity thrust techniques that results in a 'pop' or a 'crack,'[1] while mobilization[2] is a term used for non-thrust techniques. The reason why manipulation is a term often avoided is because of the apprehension of the medical community towards chiropractors and the possible adverse effects of a manipulation, (as it was considered a forceful movement) especially on the spine. Thus physical therapists used less controversial terms such as mobilization. But how often have we heard the term soft tissue manipulation for massage, which is almost never very forceful or manipulation under anesthesia done by physicians, which is not always a high velocity thrust type of a procedure. So manipulation by definition is:

A skilled passive movement to a joint.[3]

A skilled passive movement with a therapeutic intent (2004)

The passive movement thus executed may be of different types, it may be a sustained stretch or range of motion or an oscillation or a high velocity procedure. It may be over the joint or on a soft tissue. So for purpose of simplification since all skilled passive movements are considered manipulations, it can be broadly classified as Non-thrust (which comprises mobilization and articulation) and thrust (which comprises high velocity procedures).

Whether the type of manipulation is thrust or non-thrust, the area where it is applied is of relevance. It can be applied to a very specific area like an individual vertebra or a specific soft tissue, or a general area like several vertebra or a wider area of soft tissue. Hence, the next differentiation to make is between a general *(regional*) and a specific *(localized*) manipulation (Table 3.1).

TABLE 3.1: Manipulation.

Thrust	*(General or Specific)*	*Non-thrust*
High velocity		• Mobilization/Articulation comprising • Graded oscillations • Progressive or sustained stretch or loading • Soft tissue mobilization Myofascial release • Neuromuscular therapies – Neural mobilization – PNF – MET – SCS

(PNF: Proprioceptive neuromuscular facilitation; MET: Muscle energy technique; SCS: Strain counter strain)

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MANIPULATION

The skilled passive movement to a joint.

Thrust

When a sudden, high velocity short amplitude motion is delivered at the restricted physiological limit of a joint's range of motion.[1]

Non-thrust

When a joint or soft tissue is taken within or to the limit of the available active or passive range (within physiological limits), and stretched or oscillated. Neuromuscular therapies also comprise non-thrust manipulation.

Graded Oscillation

Graded oscillation is a form of cyclic loading whereby alternative pressure, on and off, are delivered at different parts of the available range. Graded oscillation techniques have been widely promoted by Maitland[4] and he describes four grades.

Grade 1: Small amplitude movement performed at the beginning of the range.

Grade 2: Large amplitude movement performed within the range but not reaching the limit of range.

Grade 3: Large amplitude movement performed up to the limit of the range.

Grade 4: Small amplitude movement performed at the limit of the range.

Progressive Loading/Stretch

Progressive loading mobilization involves a successive series of short amplitude, spring type pressures. The pressure is imparted at progressive increments of the range and is defined on a 1-4 scale as in a graded oscillation. Progressive loading is utilized for mechanical, joint and soft tissue restrictions. Brian Mulligan has incorporated this principle with movements in the direction of physiological joint motion. He has termed it mobilization with movement (MWM).[5]

Sustained Loading/Stretch

Sustained loading is continuous, uninterrupted pressure or force which may remain the same in intensity, increase or decrease depending on the patient reaction. The viscoelastic properties of adaptively shortened soft tissues can be influenced by the use of sustained loading. Sustained loading mobilization, however, may not be sufficient to mobilize a joint that possesses an intra-articular restriction.

Soft Tissue Mobilization

The manual manipulation of soft tissues done for producing effects on the nervous, muscular, lymph and circulatory systems. Massage, rolfing are examples. The characteristics influenced are tone or tension status and extensibility or the ability to elongate.

Myofascial Release

It is a form of soft tissue therapy which is based on neuroreflexive responses that reduce tissue tension. The key is location of the best point of entry into the musculoskeletal system, application of the most suitable type of stress to induce inhibition, and sensitivity in palpation to react properly to tissue response. The result is a relaxation of tissue tension and decrease in myofascial tightness, leading to improved tissue extensibility and reduction of pain.

Neuromuscular Therapies

Neural Mobilization

Elvey and Butler revitalized Dr. Alf Breig's work into developing a new method of testing adverse neural tension in the peripheral nerves and subsequently treatment methods for the same. The concept being that a nerve moves like any other structure and their inability to move creates dysfunction. The key to diagnosis is identifying their inability to move, which is termed adverse neural tension which is a compensation for the lack of mobility. Subsequent restoration of movement is the treatment.[6]

Proprioceptive Neuromuscular Facilitation

Proprioceptive neuromuscular facilitation (PNF) is developed by Herman Kabat MD, and

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Margarett Knott PT. It is a method of promoting the response of the neuromuscular mechanism through stimulation of proprioceptors. It describes that all movements in the body occur in diagonal patterns and the application of manual stimulus specific in direction, timing and resistance helps to elicit the desired neuromuscular response.[7]

Muscle Energy Technique

Muscle energy technique (MET) is developed by Fred Mitchell Sr DO (Doctor of Osteopathy). It is a form of manipulative treatment where an active muscle contraction (usually isometric) is used to induce movement in a bony element by virtue of its insertion, and subsequently mobilize joint restrictions. The key is to localize the contraction to the desired area. While avulsion fractures occur by displacement of bony elements due to violent contractions of the inserting tendon, a similar concept may be applied beneficially to move bony elements by moderate contractions of the tendon.[8]

Strain Counterstrain

Strain counterstrain (SCS) is developed by Lawrence Jones DO. The underlying basis is that, the activity that causes a muscle to strain places it in a contracted position. According to Irvin Korr's muscle spindle theory, the gamma motor neuron activity to the spindle of the shortened muscle is increased and remains contracted. There hence is a distinctly palpable tender area in the contracted muscle.

By the passive placement of the strained muscle in a shortened or contracted position for 90 seconds (which can be further confirmed by a marked decrease in local muscle tenderness) the aberrant gamma motor activity in the muscle spindle is decreased restoring the muscle to its normal length and decreasing pain.[9]

This simplified classification may help the novice practitioner to be able to interpret the existing discrepancies in classification, when he or she pursues further reading. The treatment techniques described in this book is a combination of the components of this classification. However, the neuromuscular therapies are not elaborated on as they are beyond the scope of this book and the reader is suggested alternate reading.[10]

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PRINCIPLES OF MANUAL THERAPY

Salient Features

- Valuable book for the novice clinicians to have a good overview on the principles underlying manual therapy
- An ideal reference for the hands on musculoskeletal clinicians
- Specialty of neural mobilization has been revisited, reevaluated and refined
- An insight into what the hands on interventions aim to do for the primary musculoskeletal diagnosis
- An overview as to how the musculoskeletal system functions as chains and links and the need for manual intervention of the complete and relevant chain.

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