

# OMT

# TREATMENT

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# OMT treatment

- Mobilization is one part of the greater scope of OMT practice,
  - **generally most effective when supplemented with other procedures and modalities.**
- ❖ The sequencing of these adjunctive procedures can influence the outcome of mobilization techniques.  
For example, a stretch mobilization preceded by
  - **heat** application often produces greater mobility gains,
  - **ice** application and specific home exercise following a stretch mobilization can better preserve mobility gains.

# Elements of OMT *Treatment*

## **A. To relieve symptoms**

- **1. *Immobilization***
- **2. *Thermo-Hydro-Electro (T-H-E) therapy***
- **3. *Pain relief mobilization (Grade I - IISZ)***
- **4. *Special procedures***

## **B. To increase mobility**

### **1. *Soft tissue mobilization***

- a. **Passive soft tissue mobilization**
- b. **Active-facilitated soft tissue mobilization**

### **2. *Joint mobilization***

- a. **Relaxation mobilization (Grade I - II)**
- b. **Stretch mobilization (Grade III)**
- c. **Translatory manipulation**

### **3. *Neural tissue mobilization***

### **4. *Specialized exercise***



## **C. To limit movement**

- *1. Supportive devices*
- *2. Specialized exercises*
- *3. Increasing movement in adjacent joints*

## **D. To Inform, instruct, and train**

# Treating related areas of impairment

In addition to treating the primary joint lesion,

- the manual therapist also evaluates and treats related areas of impaired function.
- For example,
  - **with a somatic dysfunction at C2,**
  - it may be necessary to relax and stretch the scaleni (which are "facilitated" and shortened by local irritation of the C3 nerve root),
  - to mobilize the first rib (which is elevated by the shortened scaleni),
  - ❖ instruct the patient in effective and safe ways
  - to use and maintain newly acquired mobility.

# Reassessment

There is continuous improvisation in OMT treatment,

- as the practitioner tests their diagnostic hypotheses
- and adjusts the sequence and dosage of their treatments.
- The OMT practitioner must be able to simultaneously perceive and interpret multiple
  - physical,
  - psychological
  - and social patient cues


then adjust their treatment and responses to the evolving treatment session.

- ❖ The patient is an active participant in this process, as their "pain experience" and expectations can affect treatment outcomes.

## Reassessment is important

- at the beginning
- end of each treatment session
- as well as during the treatment session.
- If retesting reveals
  - increased range of motion
  - or decreased pain,
- ❖ then treatment may continue as before.
- If retesting reveals a
  - *marked improvement in range of motion,*
- ❖ *advise novice practitioners to stop treatment for that day and continue the treatment on a subsequent day.*



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- ❖ we make this recommendation because
  - novice practitioners all too often over treat the patient in the mistaken belief that "more is better."

# A-Treatment to relieve symptoms


**Treatment to relieve symptoms** indicated for both hypermobile and hypomobile joint conditions when

» **severe pain or other symptoms**

for example, an empty end feel, interfere with biomechanical assessment of the joint

» **end-range-of-movement is contraindicated or cannot be tolerated**

e.g., in certain stages of disc pathology



» inflammatory processes, disc pathology, or increased muscle reactivity

around a symptomatic joint decrease gliding movement and restrict functional movement without structural soft tissue shortening

e.g., in the presence of normal muscle length or a normal or even a lax joint capsule



In cases where

- ✓ nerve root irritation

- ✓ or the status of the intervertebral disc

interferes with assessment of the biomechanical status of the joint (for example, due to severe pain or spasm),

- ✓ or when the nature of the condition does not allow for biomechanically based treatment,

- ***direct treatment toward symptom relief***

- ***decompression of neural structures.***

# 1-Immobilization

With some clinical conditions,

immobilization is appropriate and necessary for a prescribed time.

□ Selecting the correct

➤ general

➤ or specific immobilization method

➤ as well as *timing*

❖ ***when and how long to immobilize is important to the success of treatment.***

# Immobilization

## general or specific

immobilization method as well as *timing*

*when and how long* to immobilize is important to the success of treatment.

- Acutely severe,
- painful
- inflammatory conditions,
- instabilities,
- recent post-surgeries

may benefit from a prescribed duration of immobilization.

# General

**General** bed rest may be the only alternative with certain

- painful,
  - inflammatory conditions,
- especially in the weight-bearing joints.

# Specific

**Specific** immobilization methods such as the use of

- casts,
- splints,
- braces,
- taping

can be used to protect a joint while the patient continues to function.



- **cervical collar,**
- **lumbar corset,**
- **back belt,**
- **tape application**

can limit movement of the affected spinal region (i.e., local immobilization) and may even provide pain-relieving decompression at the same time.

## **Crutches**

can also limit movement and provide symptom-relieving decompression.

➤ **If a short period of bed rest**

i.e., general immobilization is indicated,  
educate the patient to find a position of comfort  
(the actual resting position) and to learn

**auto traction techniques**

- e.g., pulling with the arms at the headpiece of the bed,
- pushing caudally at the iliac crests while lying,
- pushing down on armrests while sitting.

# 2-Thermo-Hydro-Electro (T-H-E) therapy

- **cold,**
- **heat,**
- **water,**
- **electrotherapy**

can be an effective means to

- modulate pain,
- Enhance relaxation
- reduce swelling

□ **Integrated with manual therapy, modalities are used preparation for mobilization and afterwards to prevent or limit treatment-related soreness.**

❖ **As with all treatments, selecting the correct technique, and determining when and how long to use it, is critical.**

# 3-Pain-relief mobilization (Grade I-II SZ)

Gentle, short-amplitude passive joint movements, including

- intermittent manual traction in the Grade I range
- Grade II Slack Zone,
- mechanical vibration,
- manual oscillation techniques

are often used for the treatment of pain.

- These techniques can be effective whether the underlying joint pathology is hypomobile or hypermobile,
- can effectively prepare a patient to progress toward more specific treatments.

# 4-Special procedures for pain relief

- Acupuncture,
  - acupressure,
  - various forms of soft tissue mobilization
- have long been used for pain relief through
- ✓ reflex pain modification
  - ✓ inhibition of muscle spasm
  - ✓ the reduction of swelling

# B-Treatment to increase mobility


## 1-Soft tissue mobilization

can facilitate Grade III stretch mobilization by loosening tight soft tissues that limit joint movement.

In practice, treatment often begins with

- soft tissue treatments
- muscle stretching

to increase soft tissue mobility.



In some cases, particularly with chronic disorders, both **periarticular tissues and muscles** are restricted near the same point in the range.

In such cases it is necessary to

**alternate Grade III stretch joint mobilization with**

➤ **soft tissue mobilization or muscle stretching**


take care not to move joints beyond their natural or actual range of movement during the soft tissue procedures.

# 2-Soft tissue mobilization

Soft tissue treatments can affect many structures including

- joints
  - nerves
  - blood vessels
- What distinguishes the soft tissue treatment from other forms of treatment is that the clinician uses **soft tissue assessment** to monitor change.
- assessment is made by monitoring soft tissues.
- ❖ **The clinician continuously monitors tissue response and instantaneously modifies treatment.**






Just as joint movements are classified as either translations (i.e., joint play accessory movements) or rotations (i.e. physiological bone movements), so are soft tissue movements.

□ **Accessory soft tissue movements or "muscle play" cannot be performed actively.**

- deep frictions,
  - passive lateral movement of muscle
- are example of muscle play.

## **Physiological soft tissue movements can be performed actively or passively.**

- Traditional muscle stretching
  - lengthening and shortening movements
- that occur with muscle contraction and relaxation, are examples of physiological soft tissue movements.

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- Treatment using physiological soft tissue movements generally utilize limb movement (bone rotations) to alter soft tissue tension.
  - Soft tissue mobilization techniques can be broadly classified according to the amount of patient participation as either  
**“passive” or “active-facilitated.”**

# Passive soft tissue mobilization

**During passive soft tissue mobilization (STM) the patient does nothing but relax while the practitioner provides all the movement and force.**

- This method is especially useful for soft tissue shortening and is also appropriate for treatment of certain **acute soft tissue injuries**
- where the objective is early movement with minimal tissue elongation or stretching.
- ❖ *However, this approach may not be effective if the patient has difficulty relaxing while they are passively moved.*

# Active-facilitated soft tissue mobilization

## **Contract-relax followed by passive physiological lengthening of soft tissues (muscle stretching).**

- Following a muscle contraction there is a brief period of relaxation when the muscle can be more easily stretched.
- During the relaxation phase, the practitioner stretches the soft tissues by moving muscle attachments maximally apart and holding them there.
- ❖ **This kind of passive stretching can be uncomfortable and even painful in the stretched tissues, but should not increase the patient's primary symptoms.**

# Contract-relax followed by passive accessory mobilization of soft tissues.

- Following a muscle contraction there is a brief period of relaxation when the muscle can be more easily mobilized.
- During the relaxation phase, the muscle can be passively moved in a variety of ways depending on how the muscle responds.
- The practitioner times the soft tissue mobilization to take full advantage of the relaxation period.
- ❖ **This technique is useful for passive manipulation of a muscle in cases where the muscle will not easily relax.**


# Contract with simultaneous mobilization of soft tissues.

**The practitioner uses resistance to guide the patient's movement in order to actively elongate specific muscles, simultaneously, the practitioner passively manipulates the antagonistic muscle.**

➤ An example

manipulation of the hamstring muscles while simultaneously resisting knee extension (quadriceps activation).

❖ **This technique takes advantage of the neurological phenomena called "reciprocal inhibition" and can be quite strong.**

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- This is useful when patients have difficulty relaxing while they are passively moved.
  - It is also useful for more forceful or vigorous stretching.
  - Patients seem to tolerate this technique well, perhaps because they control much of the force.



# *Muscle stretching principles*

Integrate passive stretching with active-facilitated soft tissue relaxation techniques whenever possible.


Before stretching,

- test muscle length,
- end-feel,
- underlying joints

to make sure stretching is indicated.


» To test muscle length, position muscle attachments maximally apart,

- taking into consideration both primary and secondary muscle functions.

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- » Determine that shortened muscles, and not a joint stop, is limiting movement.
  - » Examine underlying joints to ensure they can withstand the stresses imposed on them during stretching .

Stretching muscles over joints that are

- unstable,
  - inflamed,
  - have decreased joint play
- can result in their injury.

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- » Examine associated structures,
    - including nerves and blood vessels,  
to rule out contraindications to muscle stretching.

For example,

- check for vertebral artery patency before stretching the scaleni muscles;
- check for sciatic nerve mobility before stretching the hamstring muscles.

## When stretching muscles, observe the following principles:

- » **Warm** the muscle prior to stretching ,
  - with exercise or passive heat applications, to facilitate relaxation.
- » Precede stretching with an **isometric contraction** of the muscle to be stretched to obtain maximal relaxation.
- » If the muscle crosses more than one joint,
  - apply the stretch movement through the least painful , most stable, and largest joint.



» It is generally more effective and comfortable for the patient,

**to stretch using a lower force sustained for a longer time (60 seconds or more) than greater force for shorter time.**

❖ Applying stretching force for a longer time is more likely to result in

➤ **plastic deformation** of soft tissues rather than the more temporary elastic changes.

# Neural tissue mobilization

- In cases where an overt or suspected nerve root condition is accompanied by severe symptoms, treatment often begins before the physical evaluation is complete.
- Defer less critical biomechanical joint assessments and physical examination maneuvers that could risk further injury until the patient can tolerate them safely.
- Intermittent traction is the safest and often the most effective treatment for nerve root lesions.
- Grade I and II traction mobilization can reduce nerve root irritation by improving metabolic exchange via the vascular system and by improving drainage of waste products from the inflamed nerve tissue.

□ Apply a trial treatment with intermittent traction as for the patient with severe symptoms, first within the Grade I and II range, but with more

**frequent reassessment of neurological status**

e.g.,

- key muscle strength
- reflexes
- tension signs
- nerve mobility

during and between traction maneuvers.

# Specialized exercise to increase mobility

- The therapeutic application of **exercises is the cornerstone of physical therapy.**
- Almost all physical therapy patients should have **exercise as part of their treatment program.**
- **Exercise should begin as early as possible** and each patient should have a **home exercise program.**
- **No uniform regimen of exercise** is applicable to all patients with hypomobility.



➤ Just like mobilization, **exercise should be specifically tailored for the individual**, and should be based on examination findings.

➤ We do not recommend the routine issue of preprinted exercise protocols based exclusively on a medical diagnosis.

➤ For **exercise** to effectively complement mobilization, it **must be administered by the same clinician providing the mobilization treatment**

# Automobilization (self-mobilization)

useful for all patients with joint Hypomobility to maintain or increase mobility.

- Automobilization exercises should be tailored to each **individual's needs.**

For example,

while some patients with restricted lumbar lordosis may benefit from spinal extension exercise,

there are many patients whose symptoms worsen with spinal extension exercises, including those with

- spondylolisthesis,
- kissing spines,
- stenosis of the spinal canal,
- with pain from working in prolonged extension postures.

# Treatment to limit movement

The management of hypermobility limits or minimizes joint movement in the excessively mobile directions.

This is accomplished in four ways, often concurrently, by:

- 1) specialized exercises,
  - 2) increasing movement in kinetically related (i.e., adjacent) stiff joints,
  - 3) taping, orthoses, and other supportive and controlling applications, and
  - 4) instruction in body mechanics and ergonomics.
- ❖ **Hypermobility treatment is a long-term process and requires persistence and patience from both patient and therapist.**

# Supportive devices


- lumbosacral belts
- cervical collars
  - can help to protect involved joints during an acute stage.
- They are only used if needed and are always supplemented with strengthening exercises.

In more serious and chronic cases,

- a rigid support may be necessary
- e.g., body jacket, leather corset
- ❖ **In these cases, a strengthening program (usually isometric) is essential to counteract the deconditioning that accompanies rigid immobilization.**

# Specialized exercises for hypermobility

- Specialized muscle training is necessary to limit and control excessive movements.
- It is common for the small one- and two joint spinal muscles (i.e., *multifidus*, *rotators*) to be atrophied from disuse at a hypermobile segment.
- Controlled contractions of these muscles, first facilitated by the manual therapist and later continued with autostabilization exercises by the patient, can be an important first treatment step.



➤ Patients with hypermobility must also change any habitual motor behaviors that stretch a vertebral segment in a hypermobile direction.

➤ This usually involves a **long-term movement reeducation program** emphasizing coordination and kinesthetic retraining in a variety of functional postures (including lying, sitting, standing)

➤ until the patient can demonstrate safe behaviors in timing, recruitment, and intensity of muscle activity around the hypermobile segment.

# Increasing movement in adjacent joints


Increasing movement in adjacent joints will decrease movement forces through the hypermobile joint during functional activities

and will increase the opportunity for a hypermobile segment to heal and stabilize.

For example, a hypermobile lumbar segment

will be stretched less often and less forcefully during daily activities

- if the adjacent thoracic and lumbar spinal segments and the hip joints can contribute their full range of movement to a given activity.

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- Movement in joints proximal and distal to the hypermobile segment can be enhanced
  - with joint and soft tissue mobilization, automobilization, and other specialized exercises.
  - Mobilize adjacent hypomobile joints as soon as possible, even if they are asymptomatic .



# To inform, instruct, and train

Patient education takes time, but often saves time in the end as it leads to active participation by the patient and clearer communication between patient and health care provider.

➤ Many disturbances of the locomotor system are chronic, recurrent conditions which require self management by the patient both at home and at work.

❖ Our manual therapy system stresses the role of the patient in reestablishing and maintaining

✓ normal mobility,

✓ in preventing recurrence,

✓ in improving musculoskeletal health



In addition to home exercises, we instruct patients in


- activities of daily living (ADL),
- body mechanics,
- ergonomics

❖ Instruction should be given not only in home exercise, but in methods for

- pain relief,

for example

- ✓ Traction
- ✓ ice
- ✓ heat
- ✓ taping



***Home instruction*** is especially important if the patient's activities exacerbate neurological symptoms.

➤ Patients can be taught how to monitor their neurological signs and use them as a guide to determine safe activity levels.

➤ Patients need instruction in what postures and movements to avoid and in developing new and more healthful ways of moving and working.

## Training programs emphasize

- coordination
- kinesthetic retraining
- strength
- endurance


until the patient can demonstrate **consistent and safe behaviors** in

- ✓ timing
- ✓ recruitment
- ✓ intensity of muscle activity during a variety of functional activities.

# Research

The **validity** of clinical trials is complicated by the many variables which confound accurate determinations of

- cause and effect in musculoskeletal disorders,
- and by the difficulties in developing valid measurement tools for manual interventions.
- ❖ Work is ongoing in the areas of inter- and intrarater reliability studies for manual techniques

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- however, all too often a manual therapy novice performs the manual techniques in a research study, rather than a master practitioner.
  - This will, of course, impact the research results.  
There is also much work to be done in the development of accurate and meaningful functional diagnoses and assessment measures for monitoring changes in patient response.
  - ❖ For researchers with a pioneering spirit, creativity, and determination, this is indeed an exciting new arena for study.