Osteopathic Manual Medicine in the Field of Athletic Training

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History of Osteopathy

• **Osteopathic medicine** is a diagnostic and therapeutic system based on the premise that the primary role of the physician is to facilitate the body's inherent ability to heal itself.

• In addition to the **Hippocratic oath**, Osteopathic medical students take an oath to maintain and uphold the "core principles" of osteopathic medical philosophy.
Andrew Taylor Still, M.D., D.O., founded the American School of Osteopathy (now Kirkville College of Osteopathic Medicine of A.T. Still University of Health Sciences) in Kirkville, MO, in 1892 as a radical protest against the turn-of-the-century medical system.

Dr. Still stated, “An osteopath reasons from his knowledge of anatomy. He compares the work of the abnormal body with the work of the normal body.”
A.T. Still believed that the conventional medical system lacked credible efficacy, was morally corrupt, and treated effects rather than causes of disease. (Anything NEW Since 1892?)
He founded osteopathic medicine in rural Missouri at a time when medications, surgery, and other traditional therapeutic regimens often caused more harm than good. Some of the medicines commonly given to patients during this time were arsenic, castor oil, whiskey, and opium. In addition, unsanitary surgery often resulted in more deaths than cures.
Osteopathic and chiropractic techniques overlap, but they are not identical. As a general rule, chiropractors focus most of their attention on the spine, while osteopathic practitioners devote more of their efforts to the manipulation of soft tissues and joints outside the spine.
Another general difference is that chiropractic spinal manipulation tends to make use of rapid short movements (spinal manipulation, which is a high-velocity, low-amplitude technique), while OM typically concentrates on gentle, larger movements (mobilization, which is a low-velocity, high-amplitude technique). But neither of these distinctions is absolute, and many chiropractic and osteopathic methods do not fit neatly into these categories.
Status of OMM within Osteopathic medicine

- Within the osteopathic medical curriculum, manipulative treatment is taught as an adjunctive measure to other biomedical interventions for a number of disorders and diseases.
- However, a 2001 survey of osteopathic physicians found that more than 50% of the respondents used OMT on less than 5% of their patients.
On examination note:
- Midgravitational line
- Lateral body line
- Position of feet
  - Pronation
  - Supination
- Levelness of tibial tuberosities
- Levelness of patellae
- Anterior superior iliac spines
  - Level?
  - Anteroposterior: rotational prominence
- Prominence of hips
- Iliac crests, levelness
- Fullness over iliac crest
- Relation of forearms to iliac crests
  - One longer
  - Anteroposterior relation
  - Nearteness to body
- Prominence of costal arches
- Thoracic symmetry or asymmetry
- Prominence of sternal angle
- Position of shoulders
  - Level or unlevel
  - Anteroposterior relations
- Prominence of sternal end of clavicle
- Prominence of sternoclavomastoid muscles
- Direction of symphysis menti
- Symmetry of face (any scoliosis capitis)
- Nasal deviation
- Angles of mouth
- Level of eyes
- Level of supraciliary arches (eyebrows)
- Head position relative to shoulders and body

On examination note:
- Achilles tendon: straight, curved?
- Position of feet
- Relation of spine to midline (curves, etc.)
- Prominence of sacrospinous muscle mass
- Symmetry of calves
- Symmetry of thighs (including any folds)
- Symmetry of buttocks
- Lateral body lines
- Levelness of greater trochanters
- Prominence of posterior superior iliac spines
- Levelness of posterior superior iliac spines
- Levelness of iliac crests (supine, prone, sitting, standing)
- Fullness over iliac crests
- Prominence of scapula
- Position of scapula and its parts
- Levelness and relation of fingertips to body
- Arms (relations)
- Levelness of shoulder
- Neck-shoulder angles
- Level earlobes
- Level of mastoid processes
- Position of body relative to a straight vertical line through the midspinal line
- Posterior cervical muscle mass (more prominent, equal, etc.)
- Head position: lateral inclination
On examination note:

- Lateral midgravitational line
  - a External auditory canal
  - b Lateral head of the humerus
  - c Third lumbar vertebra
  - d Anterior third of the sacrum
  - e Greater trochanter of the femur
  - f Lateral condyle of the knee
  - g Lateral malleolus
- Anterior and posterior body line
- Feet: degree of arching or flatness
- Knees: degree of flexion or extension
- Spinal curves: increase, decreased, or normal
  - Cervical lordosis: posterior concavity
  - Thoracic kyphosis: posterior convexity
  - Lumbar lordosis: posterior concavity
  - Sacrum, lumbosacral angle
- Arms: position relative to body
- Abdomen: prominence or flatness
- Sternal angle
- Thorax: prominence or flatness
- Head: relation to shoulder and body
Principles of Osteopathic Manipulative Techniques

Ab: anatomic barrier
Pb: physiologic barrier
Rb: restrictive barrier
Ankle Sprains

Lateral View of the Ankle

- Fibula
- Tibia
- Anterior inferior tibiofibular ligament
- Anterior talofibular ligament
- Talus
- Posterior tibiofibular ligament
- Calcaneofibular ligament
- Achilles Tendon
- Posterior inferior tibiofibular ligament

Interosseous ligament of tibia fibular syndesmosis

- Medial malleolus
- Deltoid ligament
- Tibialis posterior
- Calcaneofibular ligament
- Interosseous talocalcaneal ligament
- Flexor digitorum longus
- Flexor hallucis longus
- Med. plantar nerve and vessels
- Quadratus plantae
- Abductor hallucis
- Lat. plantar nerve and vessels
- Flexor digitorum brevis
- Peronaeus brevis
- Peronaeus longus
- Peronaeus brevis
- Abductor digiti quinti
Diagnosis

- Drawer test: Loss of anterior glide (free play motion) with decreased posterior drawer test

Technique

- The patient lies supine, and the physician stands at the foot of the table.
- The physician's one hand cups the calcaneus anchoring the foot (slight traction may be applied).
- The physician places the other hand on the anterior tibia proximal to the ankle mortise (Fig. 11.146).
- A thrust is delivered with the hand on the tibia straight down toward the table (white arrow, Fig. 11.147).
- Effectiveness of the technique is determined by reassessing ankle range of motion
Ankle Sprains

Diagnosis
- Drawer test: Loss of posterior glide (free play motion) with decreased anterior drawer test

Technique
- The patient lies supine, and the physician stands at the foot of the table.
- The physician's hands are wrapped around the foot with the fingers interlaced on the dorsum.
- The foot is dorsiflexed to the motion barrier using pressure from the physician's thumbs on the ball of the foot (Fig. 11.148).
- Traction is placed on the leg at the same time dorsiflexion of the foot is increased (white arrows, Fig. 11.149).
- The physician delivers a tractional thrust foot while increasing the degree of dorsiflexion (white arrows, Fig. 11.150).
- Effectiveness of the technique is determined by reassessing ankle range of motion.
Ankle Sprains
Ankle Sprains
Fifth Metatarsal Dysfunction, Plantar Styloid

Diagnosis
History: Common following inversion sprain of the ankle.

Technique
- The patient lies supine.
- The physician sits at the foot of the table.
- The physician places the thumb over the distal end of the fifth metatarsal.
- The physician places the MCP of the index finger beneath the styloid process (Fig. 11.153).
Fifth Metatarsal Dysfunction, Plantar Styloid
Fifth Metatarsal Dysfunction, Plantar Styloid

- A thrust is delivered by both fingers simultaneously. The thumb exerts pressure toward the sole, and the index finger exerts a force toward the dorsum of the foot (white arrows, Fig. 11.154).
- Effectiveness of the technique is determined by reassessing position and tenderness of the styloid process of the fifth metatarsal.
Fifth Metatarsal Dysfunction, Plantar Styloid
Anterior Medial Meniscus Dysfunction

**Diagnosis**
Symptoms: Medial knee discomfort, locking of the knee short of full extension
Physical findings: Palpable bulging of the meniscus just medial to the patellar tendon, positive MacMurray's test, positive Apley's compression test

**Technique**
- The patient lies supine with hip and knee flexed.
- The physician stands at the side of the table on the side of the dysfunction.
- The physician places the ankle of the dysfunctional leg under the physician's axilla and against the lateral rib cage (Fig. 11.142).
Anterior Medial Meniscus Dysfunction
Anterior Medial Meniscus Dysfunction

- The physician places the thumb of the medial hand over the bulging meniscus. The fingers of the lateral hand lie over the thumb of the medial hand reinforcing it. The physician may use the palmar aspect of the fingers to reinforce thumbs but they must be distal to patella (Fig. 11.143).

- The physician places a valgus stress on the knee and externally rotates the foot (white arrows, Fig. 11.144).
Anterior Medial Meniscus Dysfunction
Anterior Medial Meniscus Dysfunction
Anterior Medial Meniscus Dysfunction

- This position is maintained and moderate to heavy pressure is exerted with the thumbs over the medial meniscus. This pressure is maintained as the knee is carried into full extension (Fig. 11.145).
- Effectiveness of the technique is determined by reassessment of knee range of motion.
Anterior Medial Meniscus Dysfunction
Illipsoas Dysfunctions
Illipsoas Dysfunctions

- The patient lies prone and the physician stands beside the table.
- The physician flexes the patient's knee on the side to be treated 90 degrees and then grasps the patient's thigh just above the knee.
- The physician's cephalad hand is placed over the patient's sacrum to stabilize the pelvis (Fig. 10.196).
Illipsoas Dysfunctions
Illipsoas Dysfunctions

- The physician's caudad hand gently lifts the patient's thigh upward (*white arrow, Fig. 10.197*) until the psoas muscle begins to stretch, engaging the edge of the restrictive barrier.
- The patient pulls the thigh and knee down (*black arrow, Fig. 10.198*) into the physician's caudad hand, which applies an unyielding counterforce (*white arrow*).
Illipsoas Dysfunctions
Illipsoas Dysfunctions
Illipsoas Dysfunctions

- This isometric contraction is held for 3 to 5 seconds, and then the patient is instructed to stop and relax.
- Once the patient has completely relaxed, the physician extends the patient's hip to the edge of the new restrictive barrier (*white arrow, Fig. 10.199*).
Illipsoas Dysfunctions
Piriformis Syndrome

- Indication for Treatment
  This procedure is appropriate for somatic dysfunction of the piriformis muscle.

Tender Point Location
The tender point lies anywhere in the piriformis muscle, classically 7 to 10 cm medial to and slightly cephalad to the greater trochanter on the side of the dysfunction (Fig. 9.120). This is near the sciatic notch, and therefore, to avoid sciatic irritation, we commonly use the tender points proximal to either the sacrum or the trochanter. If they can be simultaneously reduced effectively, the treatment can be extremely successful.
Piriformis Syndrome

- The patient lies prone, and the physician stands or sits on the side of the tender point.
- The patient's leg on the side of the tender point hangs off the edge of the table; the hip is flexed approximately 135 degrees and markedly abducted and externally rotated. The patient's leg rests on the physician's thigh or knee (Fig. 9.121).
Piriformis Syndrome
Innominate Dysfunction: Diagnosing

- The patient lies supine on the treatment table.
- The physician stands at the side of the table at the patient's hip.
- The physician palpates the patient's anterior superior iliac spines (ASISs) and medial malleoli and notes the relation of the pair (cephalad or caudal, symmetric or asymmetric pattern)
Innominate Dysfunction: Diagnosing
Innominate Dysfunction: Diagnosing

- The patient stands erect with the feet a shoulder-width apart.
- The physician stands or kneels behind the patient with the eyes at the level of the patient's posterior superior iliac spines (PSISs).
- The physician's thumbs are placed on the inferior aspect of the patient's PSIS. Maintain firm pressure on the PSISs, not skin or fascial drag, to follow bony landmark motion.
- The patient is instructed to actively forward bend and try to touch the toes within a pain-free range.
- The test is positive on the side where the thumb (PSIS) moves more cephalad at the end range.
Innominate Dysfunction: Diagnosing
Innominate Dysfunction: Diagnosing
Innominate Dysfunction: Diagnosing
Innominate Dysfunction: Diagnosing

- The patient is seated on a stool or treatment table with both feet flat on the floor a shoulder-width apart.
- The physician stands or kneels behind the patient with the eyes at the level of the patient's PSISs.
- The physician's thumbs are placed on the inferior aspect of the patient's PSISs and a firm pressure is directed on the PSISs, *not* skin or fascial drag, to follow bony landmark motion.
- The patient is instructed to forward-bend as far as possible within a pain-free range.
Innominate Dysfunction: Diagnosing
Innominate Dysfunction: Diagnosing
Right Posterior Innominate Dysfunction

• **Diagnosis**
  
  Standing flexion test: Positive (right PSIS rises)
  Loss of passively induced right sacroiliac motion
  ASIS: Cephalad (slightly lateral) on the right
  PSIS: Caudal (slightly medial) on the right
  Sacral sulcus: Anterior, deep on the right
Right Posterior Innominate Dysfunction
Right Posterior Innominate Dysfunction

- **Technique**
  - The patient lies supine, and the physician is seated on the table facing the patient.
  - The physician places the patient's right heel on the right shoulder and passively flexes the patient's right hip and knee (*white arrow*, Fig. 10.149) until the edge of the restrictive barrier is reached.
  - An acceptable modification is to have the patient's right knee locked in full extension and the leg flexed at the hip with the patient's right leg on the physician's right shoulder (*Fig. 10.150*).
Right Posterior Innominate Dysfunction
Right Posterior Innominate Dysfunction
Right Posterior Innominate Dysfunction

- The patient pushes the knee into the physician's hands, extending the right hip (*black arrow*, Fig. 10.151), while the physician applies an equal counterforce (*white arrow*).
- This isometric contraction is maintained for 3 to 5 seconds, and then the patient is instructed to **stop and relax**.
- Once the patient has completely relaxed, the physician flexes the patient's right hip (*white arrow*, Fig. 10.152) to the edge of the new restrictive barrier.
Right Posterior Innominate Dysfunction
Right Posterior Innominate Dysfunction
Right Anterior Innominate Dysfunction

- **Diagnosis**
  - Standing flexion test: Positive (right PSIS rises)
  - Loss of passively induced right sacroiliac motion
  - PSIS: Cephalad (slightly lateral) on the right
  - ASIS: Caudal (slightly medial) on the right
  - Sacral sulcus: Posterior on the right
Right Anterior Innominate Dysfunction
Right Anterior Innominate Dysfunction

- The patient lies supine, and the physician stands at the foot of the table.
- The physician grasps the patient's right ankle and raises the patient's right leg to 45 degrees or more and applies traction on the shaft of the leg (white arrow, Fig. 17.62).
- This traction is maintained, and the patient is asked to take three to five slow, deep breaths. At the end of each exhalation, traction is increased.
Right Anterior Innominate Dysfunction
Right Anterior Innominate Dysfunction

- At the end of the last breath, the physician delivers an impulse thrust in the direction of the traction (arrow, Fig. 17.63).
- The physician reassesses the components of the dysfunction (TART).
Right Anterior Innominate Dysfunction
Shoulder Girdle: Spencer Technique

- The physician stands facing the patient.
- The physician's cephalad hand bridges the shoulder to lock out any acromioclavicular and scapulothoracic motion. The fingers are on the spine of the scapula, the thumb on the anterior surface of the clavicle.
- The physician's caudad hand grasps the patient's elbow.
- The patient's shoulder is moved into extension in the horizontal plane to the edge of the restrictive barrier.
- A slow, gentle springing (articulatory, make and break) motion (arrows, Fig. 17.1) is applied at the end range of motion.
- **Muscle energy activation**: The patient is instructed to attempt to flex the shoulder (black arrow, Fig. 17.2) against the physician's resistance (white arrow). This contraction is held for 3 to 5 seconds.
• After a second of relaxation, the shoulder is extended to the new restrictive barrier (Fig. 17.3).

• Steps 6 and 7 are repeated three to five times and extension is reassessed.

• Resistance against attempted extension (white arrow, Fig. 17.4) (reciprocal inhibition) has been found to be helpful in augmenting the effect.
Shoulder Girdle: Spencer Technique

• The physician’s hands reverse shoulder and arm contact positions. The caudad hand reaches over and behind the patient and bridges the shoulder to lock out acromioclavicular and scapulothoracic motion. The fingers are on the anterior surface of the clavicle, the heel of the hand on the spine of the scapula.

• Using the other hand, the physician takes the patient's shoulder into its flexion motion in the horizontal plane to the edge of its restrictive barrier.

• A slow, springing (*articulatory, make and break*) motion (*arrows, Fig. 17.5*) is applied at the end range of motion.

• *Muscle energy activation*: The patient is instructed to extend the shoulder (*black arrow, Fig. 17.6*) against the physician's resistance (*white arrow*). This contraction is maintained for 3 to 5 seconds.
Shoulder Girdle: Spencer Technique

• After a second of relaxation, the shoulder is flexed further until a new restrictive barrier is engaged (Fig. 17.7).
• Steps 4 and 5 are repeated three to five times and flexion is reassessed.
• Resistance against attempted flexion (reciprocal inhibition) has been found to be helpful in augmenting the effect (Fig. 17.8).
Shoulder Girdle: Spencer Technique

- The original starting position is resumed with the cephalad hand.
- The patient's shoulder is abducted to the edge of the restrictive barrier (Fig. 17.9).
- The patient's arm is moved through full clockwise circumduction (small diameter) with slight compression. Larger and larger concentric circles are made, increasing the range of motion (Fig. 17.10).
- Circumduction may be tuned to a particular barrier. The same maneuver is repeated counterclockwise (Fig. 17.11).
- There is no specific muscle energy activation for this step; however, during fine-tuning of the circumduction, it may be feasible to implement it in a portion of the restricted arc.
- This is repeated for approximately 15 to 30 seconds in each direction, and circumduction is reassessed.
Shoulder Girdle: Spencer Technique

• The patient’s shoulder is abducted to the edge of the restrictive barrier with the elbow extended.

• The physician's caudad hand grasps the patient's wrist and exerts vertical traction. The physician's cephalad hand braces the shoulder as in stage 1 (Fig. 17.12).

• The patient's arm is moved through full clockwise circumduction with synchronous traction. Larger and larger concentric circles are made, increasing the range of motion (Fig. 17.13).

• The same maneuver is repeated counterclockwise (Fig. 17.14).

• There is no specific muscle energy activation for this step; however, during fine-tuning of the circumduction, it may be feasible to implement it in a portion of the restricted arc.

• This is repeated for approximately 15 to 30 seconds in each direction, and circumduction is reassessed.
Shoulder Girdle: Spencer Technique

- The patient's shoulder is abducted to the edge of the restrictive barrier.
- The physician's cephalad arm is positioned parallel to the surface of the table.
- The patient is instructed to grasp the physician's forearm with the hand of the arm being treated (Fig. 17.15).
- The patient's elbow is moved toward the head, abducting the shoulder, until a motion barrier is engaged. Slight internal rotation may be added.
Shoulder Girdle: Spencer Technique

• **Muscle energy activation**: The patient is instructed to adduct the shoulder (*black arrow*, Fig. 17.17) against the physician’s resistance (*white arrow*). This contraction is held for 3 to 5 seconds.

• After a second of relaxation, the shoulder is further abducted to a new restrictive barrier (*Fig. 17.18*).
Shoulder Girdle: Spencer Technique

- The patient's arm is flexed sufficiently to allow the elbow to pass in front of the chest wall.
- The physician's forearm is still parallel to the table with the patient's wrist resting against the forearm.
- The patient's shoulder is adducted to the edge of the restrictive barrier (Fig. 17.20).
- A slow, gentle (articulatory, make and break) motion (arrow, Fig. 17.21) is applied at the end range of motion.
Shoulder Girdle: Spencer Technique

• **Muscle energy activation:** The patient lifts the elbow (*black arrow, Fig. 17.22*) against the physician's resistance (*white arrow*). This contraction is held for 3 to 5 seconds.

• After a second of relaxation, the patient's shoulder is further adducted until a new restrictive barrier is engaged (*Fig. 17.23*).

• Steps 5 and 6 are repeated three to five times, and adduction is reassessed
Shoulder Girdle: Spencer Technique

- The patient's shoulder is abducted 45 degrees and internally rotated approximately 90 degrees. The dorsum of the patient's hand is placed in the small of the back.
- The physician's cephalad hand reinforces the anterior portion of the patient's shoulder.
- The patient's elbow is very gently pulled forward (internal rotation) to the edge of the restrictive barrier (Fig. 17.25). Do not push the elbow backward, as this can dislocate an unstable shoulder.
Shoulder Girdle: Spencer Technique

• A slow, gentle (articulatory, make and break) motion (arrows, Fig. 17.26) is applied at the end range of motion.

• Muscle energy activation: The patient is instructed to pull the elbow backward (black arrow, Fig. 17.27) against the physician's resistance (white arrow). This contraction is held for 3 to 5 seconds.
• After a second of relaxation, the elbow is carried further forward (arrow, Fig. 17.28) to the new restrictive barrier.

• Steps 5 and 6 are repeated three to five times, and internal rotation is reassessed.

• Resistance against attempted internal rotation (arrows) (reciprocal inhibition) has been found to be helpful in augmenting the effect (Fig. 17.29).
Shoulder Girdle: Spencer Technique

- The physician turns and faces the head of the table.
- The patient's shoulder is abducted, and the patient's hand and forearm are placed on the physician's shoulder closest to the patient.
- With fingers interlaced, the physician's hands are positioned just distal to the acromion process (Fig. 17.30).
- The patient's shoulder is scooped inferiorly (arrow, Fig. 17.31) creating a translatory motion across the inferior edge of the glenoid fossa. This is done repeatedly in an articulatory fashion.
Shoulder Girdle: Spencer Technique

- Alternatively, the arm may be pushed straight down into the glenoid fossa and pulled straight out again (arrows, Fig. 17.32) with a pumping motion.

- Muscle energy activation: Scooping traction is placed on the shoulder and maintained. While the traction is maintained (curved arrow), the patient is instructed to push the hand straight down on the physician's resisting shoulder (straight arrows). This contraction is held for 3 to 5 seconds. After a second of relaxation, further caudad traction is placed on the shoulder until a new restrictive barrier is engaged (Fig. 17.33).

- Step 6 is repeated three to five times.
Upper Extremity Myofascial Release
Upper Extremity Myofascial Release
Cervical Spine
Brachial Plexus

- musculo-cutaneous n.
- axillary n.
- median n.
- radial n.
- ulnar n.
- lateral pectoral n.
- suprascapular n.
- subclavius n.
- phrenic n.
- dorsal scapular n.
- from C4
- C5
- C6
- C7
- C8
- T1

- lower subscapular n.
- thoracodorsal n.
- upper subscapular n.
- medial antebrachial cutaneous n.
- medial brachial cutaneous n.
- medial pectoral n.
- 1st intercostal n.
- long thoracic n.
What is a "burner"?

A "burner," also called a "stinger," is an injury to 1 or more nerves between your neck and shoulder. It's not a serious neck injury. Burners are not uncommon among people who play contact sports such as football.
Cervical Region: C2—C7

The patient lies supine, and the physician is seated at the head of the table on the side of the rotational component.

• The first metacarpal phalangeal joint of the physician's right hand is placed at the articular pillar of the segment being treated. The heel of the physician's hand closes in against the occiput.

• The physician cradles the patient's head between the hands (may cup the chin with the left hand). The occiput, C1, C2, and C3 are flexed until the dysfunctional C3 engages C4;

• the segments are then extended slightly to meet the extension barrier. C3 is then rotated and side-bent to the left until the edge of the restrictive barriers are reached in all three planes.
Cervical Region: C2—C7

The patient rotates the head (*black arrow*), to the right while the physician applies an equal counterforce (*white arrow*). Note: In acute, painful dysfunctions the patient very gently rotates or looks to the left while the physician applies an equal counterforce (*reciprocal inhibition, oculocervical*).
Cervical Region: C2—C7

- This isometric contraction is maintained for 3 to 5 seconds, and then the patient is instructed to **stop and relax**.

- Once the patient has completely relaxed, the physician repositions the dysfunctional segment by rotating and side-bending left (**white arrow**) and then extending until the edge of the new restrictive barrier is reached.
“It’s a Great Day to be a Hound”

Rocco Calvo