This hands-on workshop will present an efficient yet effective option for application of OMT for pediatric or adolescent patients who have select sports injuries. Participants will learn how to quickly transition from osteopathic diagnosis into performing osteopathic treatment. This workshop welcomes participants of all skill levels and expertise.

**Objectives**

- Physicians will recall the indications, contraindications and known safety profile for performing OMT on pediatric and adolescent patients who have sports injuries.
- Physicians will create a comprehensive treatment plan for selected pediatric and adolescent sports injuries that includes OMT.
  - Minor head and neck trauma, including cervical sprain/strain and concussion
  - Back pain (including thoracic and lumbar sprain/strain)
- Physicians will learn how to combine somatic dysfunction diagnosis with osteopathic manipulative technique application and gain confidence and proficiency in performing the following osteopathic manipulative techniques:
  - Myofascial Release- Thoracoabdominal diaphragm
  - Articulatory with Muscle Activation-Sacral “shotgun” technique
  - Facilitated Positional Release- Cervical, Thoracic, Lumbar
  - Cranial- Decompression of the Occipital Condyles
  - Direct Cranial- Balanced Membranous Tension for Injury Pattern- (time permitting)

**Questions**

1. HVLA is generally safe to perform in:
   - a. Any athlete who has reached puberty
   - b. Infants
   - c. The ankle of adolescents with grade 2-3 ankle sprains
   - d. The spine of teenagers with suspected vertebral fracture

2. This osteopathic technique is performed as adjunct to reduce edema on acute pediatric and adolescent ankle or wrist injuries which are not life or limb threatening:
   - a. Myofascial release of the thoracoabdominal diaphragm
   - b. Occipital condylar decompression
   - c. Facilitate positional release to the lumbar spine
   - d. Sacral articulatory technique

**Background (Needs Assessment)**

- The application of osteopathic principles and practices to pediatric and adolescent patient care is very similar to that of adults, and the only significant adjustment to be made is to take into account normal growth and development. Ossification and myelination are not considered to be fully completed until mid-late 20’s.
- According to the National Center for Health Statistics and NIH National Center for Complementary and Alternative Medicine 2007 study: 2.8% of children <18 years old received OMM/Chiropractic care in the past 12 months. Approximately 5.7% of parents use some type of complementary and alternative medicine. (Barnes - Natl Health Stat Report - 2008;10(12):1-23)
- Data of the incidence and effects of concussions is being collected and analyzed to reduce/prevent their occurrence. According to a study by Guskiewicz et al, in Epidemiology of Concussion in Collegiate and High School Football Players, Of the 17,549 football players represented, 888 (5.1%) sustained at least one concussion, and 131 (14.7% of the 888) sustained a second injury during the same season. The greatest incidence of concussion was found at the high school (5.6%) and collegiate division III (5.5%) levels
- A study performed by Lund, et. al., Characteristics of Pediatric Patients Seen in Medical School–Based Osteopathic Manipulative Medicine Clinics (JAOA - 2010;110(7): 376-80), collected data on 407 patients for a total of 1500 visits. They collected the types of diagnoses. Note the numbers of patient’s older than 12 years who have musculoskeletal diagnoses.
Safety of OMT in Pediatric and Adolescents
  - Results: No treatment-associated complications were documented.
  - Conclusions: Osteopathic manipulative treatment appears to be a safe treatment modality in the pediatric population
  - Design: Retrospective review of medical records of patients seen more than twice at osteopathic manipulative medicine offices in Pennsylvania and Virginia.
  - Treatment-associated aggravations were: Worsening of symptoms or complaints after treatment
  - Treatment complications were: Cerebrovascular accidents, dislocation, fracture, pneumothorax, sprains and strains, or death as a treatment outcome

Indications and Contraindications for performing OMT on Pediatric and Adolescent Patients
- The only indication for performing OMT is the identification of somatic dysfunction.
  - Somatic Dysfunction: Impaired or altered function of related components of the somatic (body framework) system: skeletal, artrodial and myofascial structures, and their related vascular, lymphatic and neural elements. Somatic dysfunction is treatable using osteopathic manipulative treatment (OMT)

The table below can be used as a general guideline for applying OMT to pediatric and adolescent patients which also highlights both indications and contraindications.

<table>
<thead>
<tr>
<th>Osteopathic Technique</th>
<th>Pediatric/Adolescent Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myofascial Release</td>
<td>Used for acute or chronic injuries, preferred for acute injuries.</td>
</tr>
<tr>
<td>Indirect</td>
<td></td>
</tr>
<tr>
<td>Balanced Ligamentous Tension</td>
<td></td>
</tr>
<tr>
<td>Ligamentous Articular Strain</td>
<td></td>
</tr>
<tr>
<td>Facilitated Positional Release</td>
<td></td>
</tr>
<tr>
<td>Muscle Energy</td>
<td>Used for acute or chronic injuries. Muscle Energy can be very helpful in cases of scoliosis.</td>
</tr>
<tr>
<td>Still Technique</td>
<td></td>
</tr>
<tr>
<td>Counterstrain</td>
<td>Used for muscle spasms, muscle tightness, muscular tenderness.</td>
</tr>
<tr>
<td>High Velocity, Low Amplitude</td>
<td>HVL should not be performed if there is no firm end-feel or no joint to thrust on (such as the wrist of a 2 year/old). A general rule is that HVLA is safe once the child has reached puberty and joints are more mature. Used for acute or chronic injuries.</td>
</tr>
<tr>
<td>Lymphatic techniques</td>
<td>Used as an adjunct for reduction of edema and lymphatic drainage at site of injury.</td>
</tr>
<tr>
<td>Osteopathy in the Cranial Field</td>
<td>Used as primary or adjunct for head injury/concussion. Contraindicated in cases of actual or suspected intracranial hemorrhage or actual or suspected skull fracture.</td>
</tr>
</tbody>
</table>
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Workshop Techniques

- Suggestions for documentation are listed in each technique. Certainly there are numerous ways to indicate somatic dysfunction (S/D), from specific to more general. Be consistent with the nomenclature that you choose to use.
- Documentation for S/D is a prerequisite for performing OMT, and justifies the procedure. Both S/D and OMT can be placed in one document and called a procedure note or can be incorporated into the master “document”. If separate from a master document, be sure to indicate where it can be found in your EMR system.
- Coding follows documentation. OMT is coded as a procedure and has CPT codes. If an E&M visit and OMT are performed during the same patient encounter, the modifier -25 should be used to indicate such.
- Performing OMT without an OMT table is difficult. These techniques are written for use on an appropriate table.

Myofascial Release- Thoracoabdominal Diaphragm (TAD)
Goal: release TAD to improve breathing mechanics, help resolve and remove trauma and shock. The TAD becomes restricted as a result of or response to moderate-severe trauma “. Therefore, it is recommended that most patients with acute injuries can benefit from this technique, regardless of the injury. Swift return to optimal breathing mechanics makes a difference for all athletes for oxygenation, endurance, metabolism, etc. and TAD motion is part of the extrinsic lymphatic pump.

Contact/Diagnosis
- Patient is supine, legs can be flexed for more ease in the abdominal muscles.
- Stand on one side of the table leaning over to approximate midline of the patient.
- Locate the xyphoid process and place thumbs 1-2 inches from it and spread hands so a “W” shape is formed by your thumbs and index fingers. Fingers should be contacting and wrapping around the lateral edges of the lower costal margins.
- Palpate lightly and appreciate diaphragmatic excursion with breath cycles. Note restrictions during breathing.
- Layer palpate: skin→superficial fascia→bone→diaphragmatic muscle underneath costal margins/ribs

Technique
- Test fascial planes for ease and hold in all 3 positions.
  o Rotation (move one hand anteriorly while other hand moves posteriorly)
  o Side bending (move one hand superiorly while other hand move inferiorly)
  o Flexion/Extension (move thumbs superiorly while fingers move inferiorly and vice-versa)
- Patient can breathe normally or respiratory activation can be used.
Release and retest fascial planes for ease.

Documentation
PE: ABD or Osteo MSK: Diaphragm restriction (name inhalation/exhalation, R or L or B/L)
A: Somatic Dysfunction, Abdomen

Articulatory Technique with Muscle Activation- Sacral “Shotgun” technique
Goal: Restore sacral and innominate position, especially after a fall. Corrects all sacral diagnoses and may also work for innominate dysfunction.

Contact/Diagnosis
- Perform seated flexion test (SFT) first.
- Patient is prone with head turned to one side
- Stand at the level of the sacrum.
- Assess the sacral sulcus on the side of the SFT- determine if deep or shallow
- Assess both inferior lateral angles (ILA)- determine which one is posterior: this is the one you will contact with heel of hand that is closest to pt’s head

Documentation
PE: ABD or Osteo MSK: Sacral restriction (name left or right)
A: Somatic Dysfunction, Abdomen
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- Make sacral diagnosis:
  - If deep sulcus and posterior ILA are on the same side = shear
  - If deep sulcus and posterior ILA are on opposite sides = torsion

**Technique**
- Ask patient to flex her knees
- Place caudad arm so that your olecranon is inside the knee joint closest to you and your wrist or closed fist is in the knee joint farthest from you (much like a pubic compression/decompression).
- Contact the posterior ILA with heel of hand that is nearest patient’s head.
- Simultaneously:
  - Ask patient to gently squeeze their knees together while you apply gently but effective repetitive, anterior force on the posterior/inferior ILA (springing technique).
  - Pt may take a break after 3-5 seconds and technique can be repeated as necessary. For stubborn sacral dysfunctions, diagnose and treat L5 or the innominates.

**Documentation**
- **PE:** Osteo MSK: Sacral torsion/shear/restriction
- **A:** Somatic dysfunction, sacrum

**Alternative:**
- **S:** Sacroiliac joint dysfunction (R,L, B/L)
- **A:** Somatic dysfunction, pelvis

**Thoracic (T4/5-12) and Lumbar (L1-5) Facilitated Positional Release**
Goal: Restore spinal alignment, reduce muscle tension. Useful for minor sprains/strains, scoliosis, and as adjunct for other chronic spinal conditions such as spondylolisthesis and congenital anomalies.

**Contact/Diagnosis**
- Patient is seated, physician stands behind patient
- Layer palpate to locate a posterior transverse process.
- Contact posterior transverse process with one thumb or finger, appreciate position and related tissue texture changes (TTC). This is the side of vertebral rotation.
- Ask patient to cross arms. Wrap free arm around patient’s crossed arms so that hand is contacting one shoulder and forearm is contacting the patient’s other shoulder. Alternatively, use the “osteopathic salute”, or any other hold that is done for muscle energy.

**Technique**
- Position the patient so that the spine is neutral by asking patient to “sit up straight” for the thoracics and to “slouch in lower back” for lumbers.
- Rotate toward the side of the vertebral rotation until some ease is felt in the tissues around the rotated transverse process.
- Side bend the patient toward the side of the vertebral rotation, and then away from the side of rotation feeling for loosening of the tissues. The side which produces the most ease in the tissues is the side of side bending. The flexion and extension planes are not tested or treated in this approach.
- Hold the patient in the rotation and side bending positions which produced the most ease and add a compressive force downward to the vertebrae from both of your hands on the shoulders to the affected vertebrae and hold for 3–5 seconds.
- Release and retest.

**Documentation**
- **PE:** Osteo MSK: Thoracic or Lumbar: NSxRy, NNSyRx
- **A:** Somatic dysfunction, Thoracic or Lumbar
Cervical Facilitated Positional Release
Goal: Restore cervical spine alignment, reduce muscle tension after minor injury/sprain/strain.

Contact/Diagnosis
- Patient supine
- Physician sits at head of table
- Identify one area of muscle hypertonicity/tenderness or a posterior articular pillar
- Place the hand opposite of the treatment side under neck so that one fingertip touches the affected area.
- Ex. If treating the left side, place the right hand under the neck so that fingertip wraps around to touch the area to be treated.
- Use other hand to hold the head, about at the vertex

Technique
- Flex head to neutral position.
- Side bend and/or extend neck around fingertip.
- Add compression from the hand on the head to the affected tissues/vertebrae on the neck and maintain compression for 3-5 seconds.
- Release and recheck.

Documentation
PE: Osteo Msk: Cervical N/F/E RxSx
A: Somatic dysfunction, cervical

Cranial- Decompression of the Occipital Condyles
Goal: restore the position of the head on the neck, especially after head or neck injury (sprain/strain)
Caution: Be sure to stay off of occipitomastoid sutures. If patient experiences vertigo immediately after treatment, recheck patient’s cranium and C1-2 and balance as necessary.

Contact/Diagnosis
- Patient is supine
- Physician sits at head of table so that elbows are bent to 90° and forearms are resting on table
- Palpate inion with middle fingers so that middle fingers are pointed toward each other making a 90° angle.
- Move middle fingers inferiorly to occipital shelf then laterally about an inch, near the occipital condyles. Stay firmly on the occiput but being as inferior as possible, keeping angle of fingers/wrist.

Technique
- Keep wrists and fingers firm, press anteriorly with fingers slightly and then use more force by pushing down on forearms, using the table as a fulcrum. Enough force should be applied to disengage the condyles from the atlas.
- Add lateral distraction by keeping fingers straight while abducting wrists. This produces the decompression.
- Continue applying anterior and lateral pressure until release is felt.
- Diagnosis can be made during the technique, noting which condyle is more restricted.
- Retest

Documentation
PE: R,L,B/L occipital condyle restriction
A: Somatic dysfunction, head and face (cranium)
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Pediatric OMT References/Resources

9) King H, Tettambel MA, Lockwood MD, Johnson KH, Arsenault DA, Quist, R. Osteopathic Manipulative Treatment in Prenatal Care: A Retrospective Case Control Design StudyA • Vol 103 • No 12 • December 2003

Sports Medicine and OMT/Manual Treatment References