OMT for Obstetrics

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Photos courtesy of UW Madison DFMCH Osteopathic Physicians
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Objectives

- ❑ Discuss physiological changes of pregnancy
- ❑ Review evidence related to pregnancy and OMT
- ❑ Review common presentations and chief complaints of prenatal issues
- ❑ Introduce and review common OMT techniques used for prenatal patients

Physiologic Changes of Pregnancy

- Progesterone causes smooth muscle relaxation
- CO increased 30-50% by 6 wks and peaks around 24 wks and slight decrease after 30 wks
- HR and SV increase
- BP drops as SVR decreases in 2nd trimester →BP returns to normal during 3rd trimester
- Progesterone signals brain to lower CO2 by increasing tidal & minute volume and RR.
- O2 consumption increases by 20% to meet increased metabolic needs

Brown, Haywood, MD, FRCPC. "Physiology of Pregnancy." *Approach to the Pregnant Woman and Prenatal Care*. Merck Manuals, Oct. 2013.

Physiologic Changes of Pregnancy

Musculoskeletal Changes

- Increased lordosis of the lower back
- Forward flexion of the neck
- Joint laxity in the longitudinal ligaments of the lumbar spine and other joints: correlated to maternal cortisol, increased estradiol and progesterone levels
- Widening and increased motion of sacroiliac joints and pubic symphysis
- Increase in the anterior tilt of the pelvis
- Increased use of hip extensor, abductor, and ankle plantar flexor muscles
- Relaxin: relaxes myometrium & pubis symphysis and softens the cervix

Katie, OB Case #1

- 30 year old G1P0 at 38w5d here for prenatal visit, pregnancy uncomplicated except BMI 37
- Complains of worsening low back pain
    - Onset- 4 weeks
    - Location- lumbar region
    - Description- constant achy feeling and soreness
    - Severity- hasn’t slept in four days, constant pain, 7/10
    - Radiation- to bilateral hips, left > right
    - Aggravating features- prolonged sitting and standing, twisting or bending
    - Relieving features- none
    - Treatments- pelvic support belt, heat, ice, Tylenol, walking, stretches (cat/cow stretch)

MSK related pregnancy issues

Low back pain and pelvic pain are common

- **>2/3rd** of pregnant women will have **low back pain** in their pregnancy
- **20%** of pregnant women have **pelvic** pain

Pain often progresses throughout pregnancy with high relapse rates in subsequent pregnancies

- Affects daily activities, ability to work, causes sleep problems
- **Half of pregnant women** with back pain do not get any treatment

Marnach ML, Ramin KD, Ramsey PS, Song SW, Stensland JJ, An KN. Characterization of the relationship between joint laxity and maternal hormones in pregnancy. Obstet Gynecol. 2003;101(2):331

Katie’s Osteopathic Findings

- Increased lumbar lordosis
- Lumbar and thoracic hypertonicity
- Lumbar-sacral junction compression
- Innominate rotation
- Psoas hypertonicity
- OA and cervical somatic dysfunction

Literature Review

Cochrane review concludes:

- “Low-quality evidence from single trials suggested that OMT significantly reduced pain and improved function.”
- “ Low-quality evidence from single trials suggested no significant difference in pain or function between two types of pelvic support belt, between osteopathic manipulation (OMT) and usual care or sham ultrasound (sham US)”.

Liddle, SD, Pennick V.Interventions for preventing and treating low-back and pelvic pain during pregnancy (Review). Cochrane Database of Systematic Reviews 2015, Issue 9. Art. No. CD001139. 2015

So what can we do to help Katie?

OMT for low back pain

- ❑ Seated Forward-Leaning T-Spine Articulator
- ❑ Lateral Recumbent Lumbosacral Soft Tissue
- ❑ Cervical Soft Tissue

Lavelle, JM. (2012). Osteopathic Manipulative Treatment in Pregnant Women. *Journal of the American Osteopathic Association*. Vol 112. 343-346

Seated Forward-Leaning T-Spine Articulator

- Patient is sitting
- Physician is standing in front of patient, using their knees to stabilize the patient on the table
- Patient crosses arms and leans forward against physician
- Physician wraps arms around patient and places hands at the transverse process or costotransverse junction of the thoracic spine
- Patient drawn forward to restrictive barrier
- LVMA springing is applied until release is felt
- May add sidebending and/or rotation

Seated Forward-Leaning T-Spine Articulator

Lateral Recumbent Lumbosacral Soft Tissue

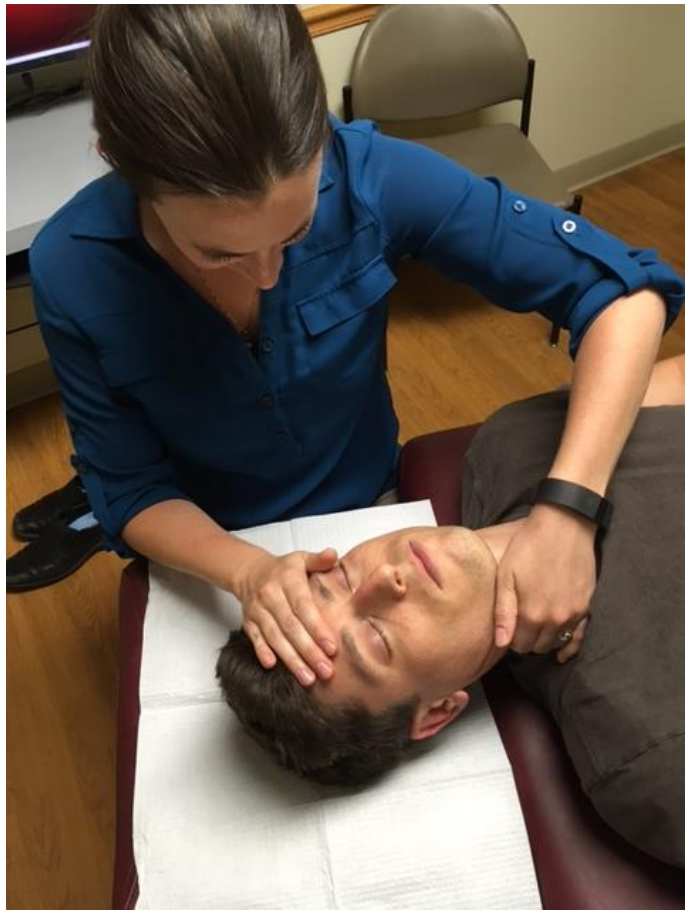
- Patient is laying on lateral recumbent position with top knee and elbow bent to 90 degrees
- Physician stands near patient's abdomen with arms braced on patient's axilla and iliac crest
- Physician's hands are placed on the medial aspect of the paraspinal muscles
- Physician applies following three motions with their arms along the thoracic and lumbar spine
  - Pull arms laterally to stretch the ilia from the patient's arm, causing lumbar area to sidebend
  - Twist arms apart, pushing patient's shoulder posteriorly and ilia anteriorly
  - Push the fingertips in a lateral motion along the paraspinal muscles

Lateral Recumbent Lumbosacral Soft Tissue

Cervical Soft Tissue

- Patient is supine
- Sit at head of bed next to patient’s head
- Stabilize forehead with one hand
- Place fingers of other hand at the medial aspect of cervical paraspinal muscles
- Draw fingers anteriorly in a kneading fashion
- Continue this motion until you feel relaxation of the tissues

Cervical Soft Tissue



OMT in OB

We know our patients feel better with OMT…is there further evidence to support this?

PROMOTE Study: Pregnancy Research on Osteopathic Manipulation Optimizing Treatment Effects

- RCT: 400 women in third trimester
- Assigned to one of 3 groups:
  1. Usual care only (UCO)
  2. Usual care plus OMT (OMT)
  3. Usual care plus placebo ultrasound treatment (PUT)
- Standardized OMT protocol
  - cervical, thoracic, lumbar, sacrum, pelvis body regions
  - 20 minutes in 7 sessions

PROMOTE Study

Primary outcomes measured using two questionnaires:

- Low back **pain** was measured with Quadruple Visual Analog Scale (QVAS)
- Back related **functioning** was evaluated with Roland-Morris Low Back Pain and Disability Questionnaire (RMDQ)

Hensel KL et al. (2015). Pregnancy Research on Osteopathic Manipulation Optimizing Treatment Effects: The PROMOTE study. *American Journal of Obstetrics and Gynecology.* Vol 212.
Hensel KL et al. (2015). PROMOTE Study: Safety of Osteopathic Manipulative Treatment During the Third Trimester by Labor and Delivery Outcomes. *J Am Osteopath Assoc* 2016;116(11):698–703

PROMOTE Study Results

Pain scores

- Improved in OMT and PUT groups
- Worse in the UCO group
- OMT group demonstrated improved pain scores compared to the UCO group
- OMT group not significantly different compared to the PUT group

Back-related **functioning**

- OMT group demonstrated improved scores compared to UCO group
- OMT group not significantly different compared to PUT group

Margo, Case # 2

- 24 year old G2PO at 26w3d here for prenatal visit, pregnancy uncomplicated except BMI 35 and recurrent UTIs
- complains of left hip pain and left sided groin pain
    - Onset- 6 weeks
    - Location- left posterior and lateral hip and left inguinal region
    - Description- Constant ache in the left hip, menstrual like cramps in groin region
    - Severity- constant 2/10, may be 6-7/10 with movement
    - Radiation- into pubic and vaginal regions
    - Aggravating features- laying flat for too long, getting up too quickly, twisting
    - Relieving features- support belt
    - Treatments- Tylenol, stretching, antibiotics for UTI

Case #2 Osteopathic Findings for Margo

- Innominate rotation
- Inflare/Outflare
- Pubic Shear
- Lumbar lordosis
- SI Joint dysfunction
- Psoas hypertonicity
- Pelvic tender points for lumbar spine, sacrum, pelvis or associated musculature

OMT for Hip and Pelvic Pain

- ❑ Posterior and Anterior Innominate Muscle Energy
- ❑ Pubic Decompression
- ❑ Frog Leg Sacral Articulation
- ❑ AP Pelvic Diaphragm MFR

Cummings Mabry, Myra DO. *OMM in Pregnancy*. [PowerPoint slides]. Retried from www.**nysoms**.org/library/event-media/**omm_in_pregnancy_mabrydo**.pdf
Kimberly PE. (2000). *The Kimberly Manual. Millennium edition.Marceline, Missouri:* Walsworth Publishing Co

Posterior Innominate Muscle Energy

- Patient is supine
- Physician stands on side of dysfunction
- Leg on side of dysfunction is extended off the side of the table
- Physician places one hand on the patient’s opposite ASIS to stabilize and the other hand on the ipsilateral thigh
- Extend the thigh to restrictive barrier
- Patient pushes knee to ceiling to 3-5 seconds
- During relaxation, take the innominate to a new barrier by extending the thigh further
- Repeat 3-5 times

Posterior Innominate Muscle Energy

Anterior Innominate Muscle Energy

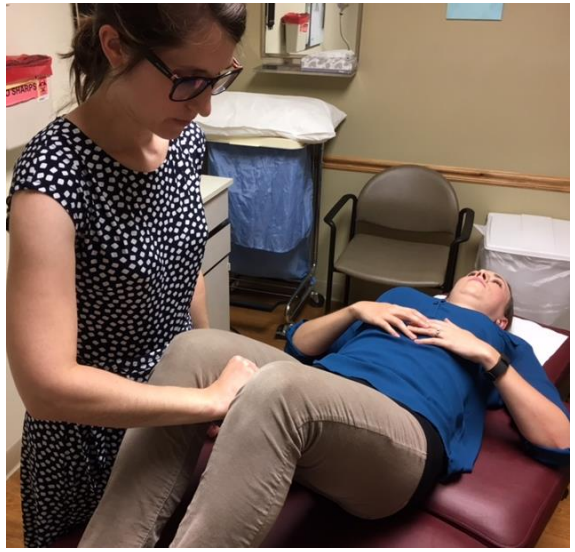
- Patient is supine
- Physician stands on side of dysfunction
- Leg on side of dysfunction is flexed at knee and hip
- Physician places one hand on knee and one hand on IT
- Leg is flexed to restrictive barrier of innominate
- Patient pushes thigh against physician's chest for 3-5 seconds
- During relaxation, take the innominate to a new barrier by further flexing the hip
- Repeat 3-5 times

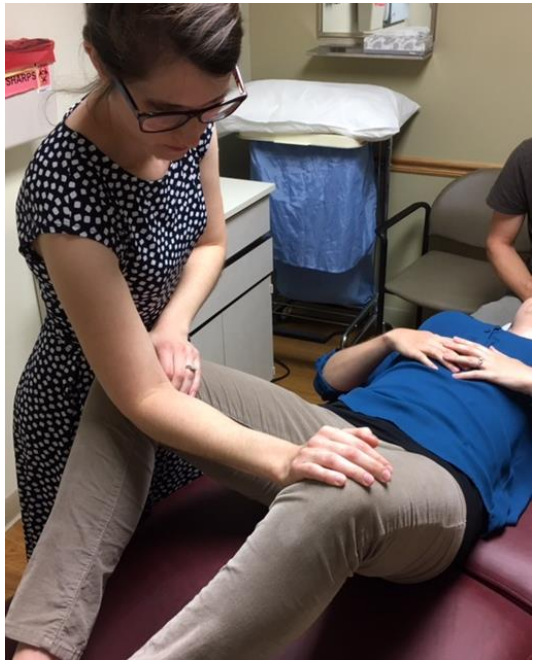
Anterior Innominate Muscle Energy

Pubic Decompression

- Patient is supine
- Physician stands next to patient
- Patients hips and knees are flexed with feet together
- Patient attempts to separate knees while physician resists, providing an isometric counterforce for 3-5 seconds
- Patient relaxes. Knees are rocked side to side 3 times
- Patient's knees are spread apart to fist-width. Physician provides counterforces as patient attempts to bring knees together for 3-5 seconds.
- Patient relaxes. Knees are rocked side to side 3 times
- Knees are spread to two-fist width and steps repeated
- Knee are spread to forearm width and steps repeated

Pubic Decompression





Frogleg Sacral Articulation

- Patient is supine
- Physician is standing near patient’s pelvis
- Patient places hips into external rotation and knees are flexed with feet touching each other
- Caudad hand is placed on the sacrum with fingers at the base and palm at the apex
- Instruct patient to inhale and then slowly exhale
- During exhalation, patient extends legs and physician pulls caudally on the sacral base
- Repeat three times

Frogleg Sacral Articulation

AP Pelvic Diaphragm MFR

- Patient is supine on table
- Physician is sitting next to patient’s pelvis
- Physician places hand posteriorly on the inferior aspect of the sacrum and coccyx with fingers towards contralateral ischial tuberosity
- Physician places other hand across and slightly above the pubic symphysis
- Assess plans of motion with rotation, side bending, and flexion/extension
- Take into direct or indirect barrier
- Hold until release is felt

AP Pelvic Diaphragm MFR

After Delivery

The body does not “snap back into place” after delivery!

Somatic dysfunctions may persist

New somatic dysfunctions may arise

* Focus on the maternal and newborn dyad- this is the art of family medicine and what sets us apart from all specialties- we take care of the entire maternal child health unit*

Is OMT effective during Labor?

- Pilot prospective observational study June -September 2017
- 50 Patients who received OMT in labor management
  - Carried out by DO obstetricians
  - OMT protocol involved once-daily administration of suboccipital decompression, thoracic inlet release, rib raising, paraspinal inhibition, and sacral inhibition
- 50 control patients who did not receive OMT
  - Carried out by allopathic obstetricians
- The mean (SD) labor duration for patients receiving OMT was significantly shorter than the labor duration for controls
  - OMT: (11.34 [6.62] hours [range, 1.1-27.0 hours] vs
  - Control: 16.57 [4.39] [range, 1.0-58.8 hours], respectively; *P*=.03)
  - All other measures studied did not achieve statistical significance

Martingano D et al (2019). Effect of Osteopathic Obstetrical Management on the Duration of Labor in the Inpatient Setting: A Prospective Study and Literature Review. *J Am Osteopath Assoc* . Vol 119 (6), 371-378

Stella, Case #3

- 29 year old G2P2002 6 weeks postpartum here for post-partum visit. Stella delivered a healthy newborn male weighing 8lb 5 oz.
- She is breastfeeding and endorsing right sided rib pain
    - Onset- 3 days
    - Location- right anterior ribs 10-12
    - Description- sharp pain with deep inspiration
    - Severity- 9/10 during inspiration, 3/10 at rest
    - Radiation- around right side rib cage to the mid thoracic back
    - Aggravating features- deep inspiration, fetal movement, twisting
    - Relieving features- shallow breath
    - Treatments- Tylenol, stretching

Osteopathic Findings for Stella

- Exhalation somatic dysfunction (inhalation restriction)
- Anterior or posterior rib tender points
- Rib cage lateral shifts
- Diaphragmatic restriction
- Thoracic inlet dysfunction
- Thoracic spine dysfunction

OMT for Rib Pain

- ❑ Supine Diaphragm Myofascial Release
- ❑ Thoracic Inlet Myofascial Release
- ❑ Lateral Recumbent Scapulothoracic Myofascial Release

Supine Diaphragm Myofascial Release

- Patient lays supine on the table
- Physician stands at patients side near abdomen
- Spread fingers over the lower ribs laterally or place hands in the AP position just under the xiphoid anteriorly and TL junction posteriorly
- Assess rotation, sidebending, and flexion/extension of diaphragm
- Move fascia into either direct or indirect barrier
- Add respiratory component to assist in release of tissue
- Hold 20-60 seconds until release is felt

Supine Diaphragm Myofascial Release

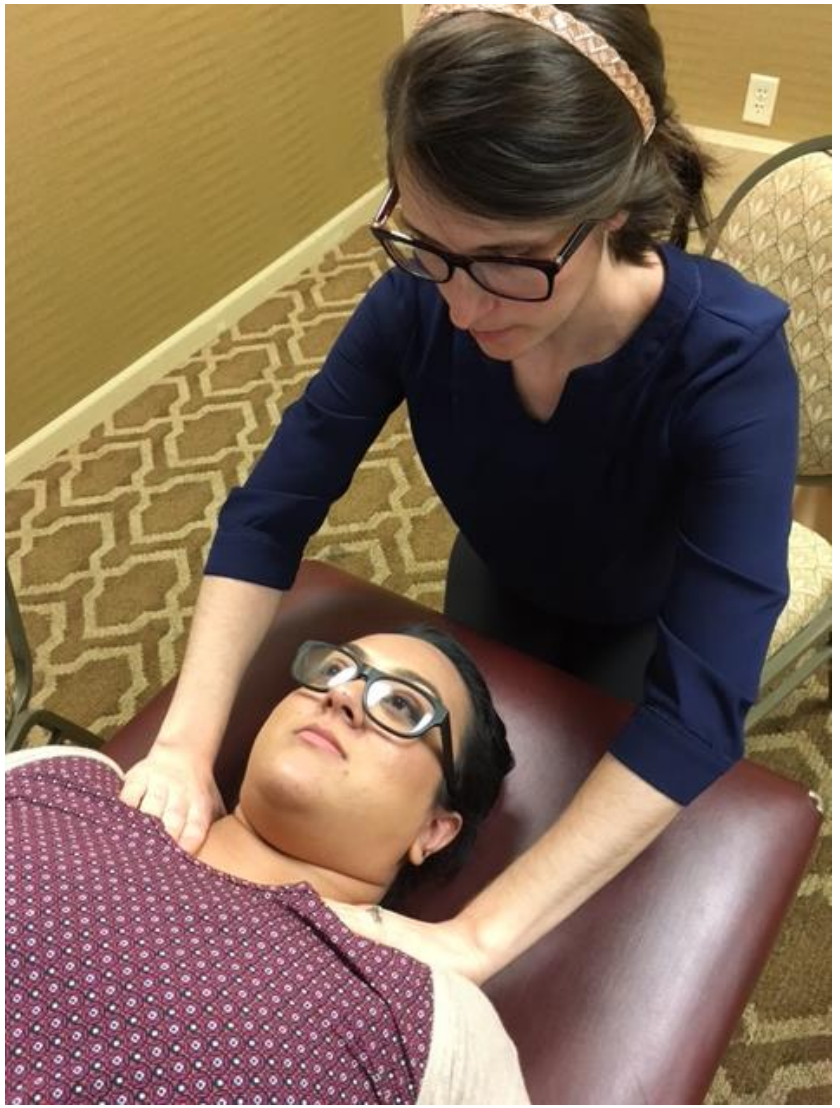
Lateral Position

AP Position

Thoracic Inlet Myofascial Release

- Patient is supine
- Sit at the head of the bed
- Place hands over the shoulders with thumbs posterior over the T1-2 costovertebral junction and other fingers over the sternal clavicular junction and anterior ribs 1-2
- Assess rotation with sidebending, rotation, flexion/extension
- Move into either direct or indirect barrier in all three planes
- Hold 20-60 seconds until feel release of tissue

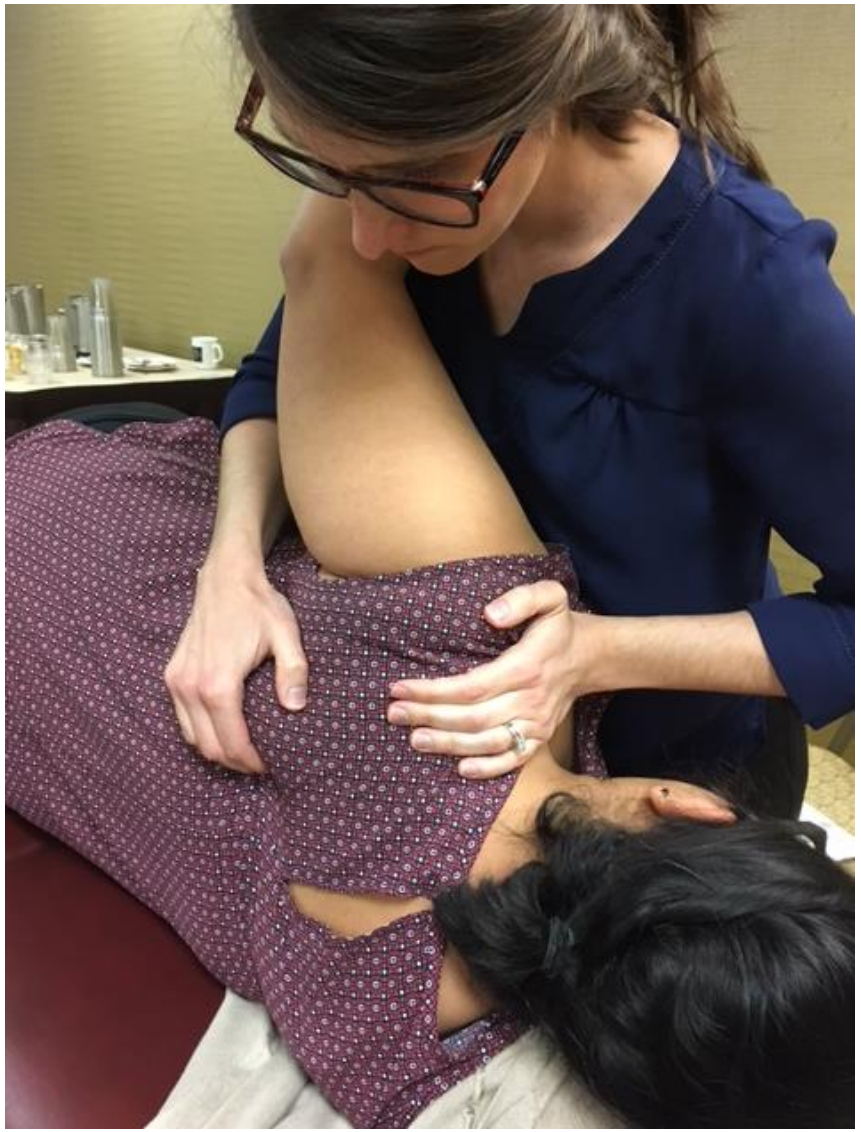
Thoracic Inlet Myofascial Release



Lateral Recumbent Scapulothoracic Myofascial Release

- Patient is in lateral recumbent position with affected shoulder upright
- Physician stands by patient’s front side of the shoulder
- Place one hand on the superior angle of the scapula and the other hand on the inferior medial angle of the scapula
- Patient places their hand over the physician's caudad arm
- Induce a circular motion of the shoulder and scapula with the cephalad hand to help release the muscles
- The caudad hand touches the thromboids and paraspinal muscles along the medial aspect of the scapula
- Assess facial restrictions in all plans. Take the scapula into direct or indirect position and hold until release is felt

Lateral Recumbent Scapulothoracic Myofascial Release



Other Common Osteopathic Findings Post-partum

- Effects of relaxin on pelvic ligaments, different labor positions, epidural placement, and post-operative immobility all contributing
- Pubic Symphysis dysfunction
- Coccydynia
- Sacral dysfunction: torsions, bilateral sacral flexion
- Weakness of the abdominal fascia
- Pelvic floor dysfunction
- Innominate dysfunction
- Cervical, upper extremity and upper thoracic tension (breastfeeding and carrying newborn around contribute)
- Cranial dysfunction- depression/anxiety

References

- Brown, Haywood, MD, FRCPC. "Physiology of Pregnancy." *Approach to the Pregnant Woman and Prenatal Care*. Merck Manuals, Oct. 2013.
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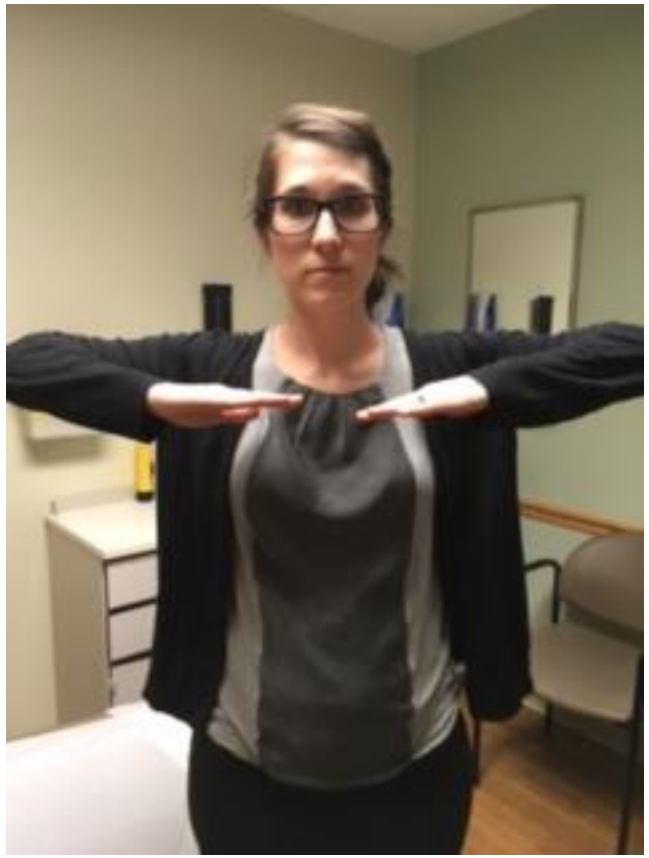
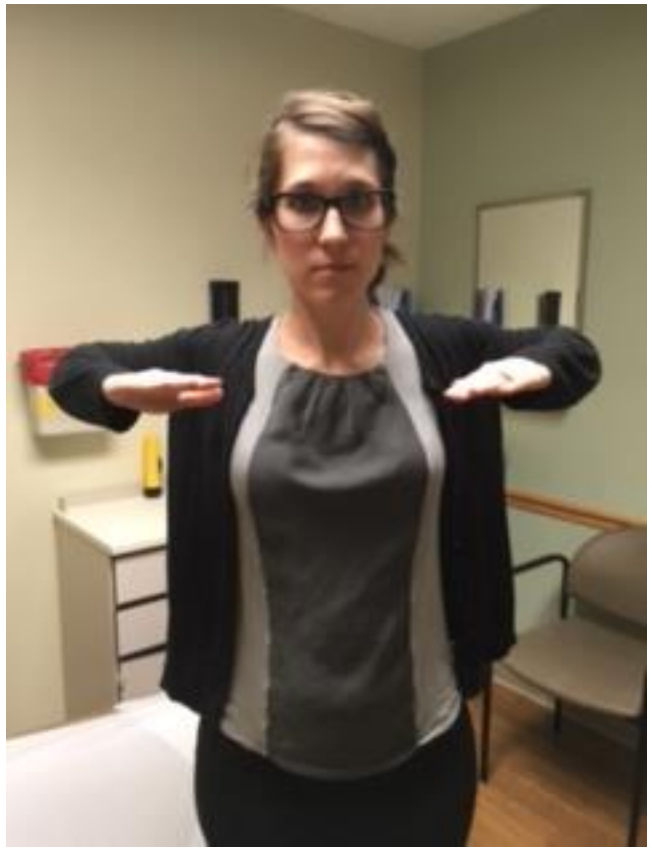
Home Stretching Program

- Scapular Approximation
- Upper Body Stretch
- Psoas Stretch
- Knee raises
- Posterior Pelvis Tilt
- Cat/cow stretches

Scapular Approximation

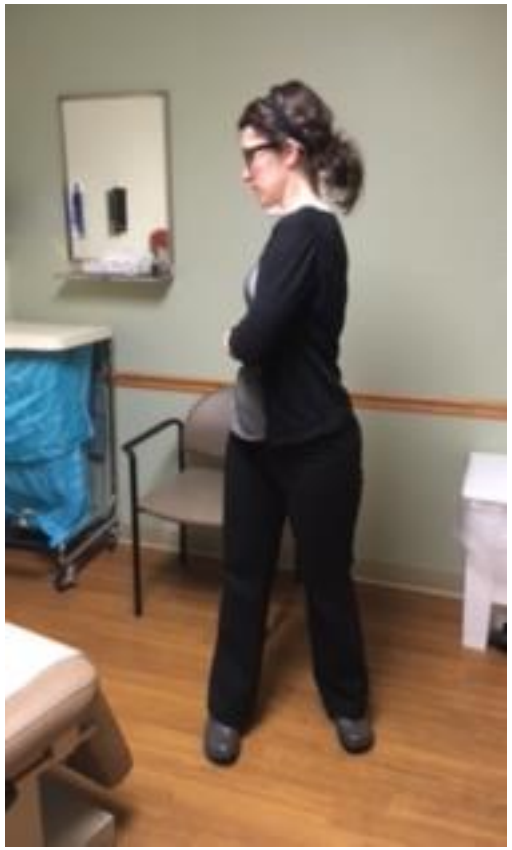
- Use: increases motion of the chest, shoulders, and decreases thoracic kyphosis and muscular stress
- Squeeze scapulae together
- No activation of anterior chest
- Hold 20 seconds and release
- Repeat 3 times





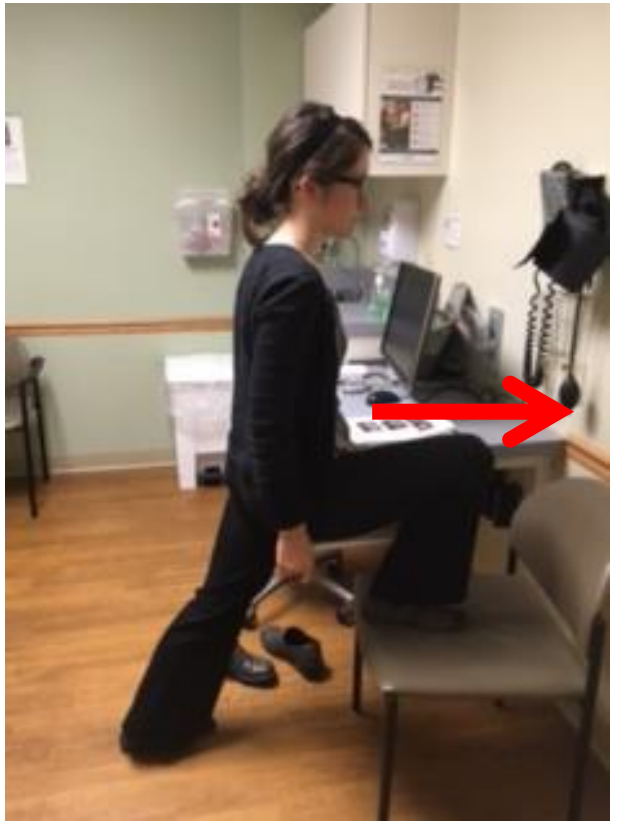
Upper Body Stretch

- Uses: mobilize thoracic and lumbar spines, loosen T/L diaphragm
- Stand with legs shoulder apart
- Rotated upper torso bilaterally
- Hold on each side 10 seconds
- Repeat 2-3 times on each side



Psoas Stretch

- Uses: Low back pain, hip pain, sciatica symptoms
- Stand with one leg on the chair
- Other foot three feet behind chair
- Lean forward on the chair
- Hold for 20 seconds
- Repeat on opposite side



Knee raises

- Uses: SI joint and round ligament pain
- Flex thigh to 90^{o} with knee bent
- Reach one knee towards opposite arm
- Hold for 20 seconds
- Repeat on opposite side

Posterior Pelvis Tilt

- Use: to decrease lumbar lordosis
- Lie supine with knees bent
- Lift buttocks and push lumbar spine against bed/floor
- Tilt pelvis posteriorly
- Hold for 10-20 seconds
- Repeat three times

Cat/cow stretches

- Use: alleviate pressure from pubic symphysis and inguinal ligaments
- Patient is on hands and knees or elbows and knees
- Alternately arch and lower back
- Hold for 10 seconds, repeat 2-3 times
- Applicable during labor as well.