Fibromyalgia: an Integrated Osteopathic Approach

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Objectives

- Define fibromyalgia in terms of osteopathic philosophy and principles
- Review pathophysiological theories of fibromyalgia
- Learn musculoskeletal exam procedures and findings supportive of a diagnosis of fibromyalgia
- Design an osteopathic integrated treatment approach to the patient with fibromyalgia including OMT
Lecture Outline

- Definition of terminology
- Pathophysiology
- Evaluation
- Diagnosis
- Integrated management plan
- OMT and Coding
Vocabulary

- **Hypersensitivity**
  - Altered perception of pain
- **Hyperalgesia**
  - Enhanced pain sensation to a noxious stimulus
- **Allodynia**
  - Abnormal sensation of pain to previously non-noxious stimuli
Fibromyalgia Syndrome (ACR 1990)

- Above/below waist, bilateral, axial
- 11/18 tender points
- Sleep disturbance, fatigue, depression
- 3 months duration
- 1-6% prevalence in pediatric primary care using this criteria
- Muscles feel soft, doughy
- Hypermobile
Juvenile Primary Fibromyalgia Syndrome

- 3 months of musculoskeletal aching in 3 areas of the body, sleep disturbance, and 5 tender points (Yunus & Masi, 1985)
- No underlying pathophysiology
- 25-40% in Rheumatology practice of children with chronic pain
Myofascial Pain

- Pain elicited upon palpatory exam in muscles, tendons, ligaments, and surrounding connective tissue.
- Can be localized, regional or radiating.
- May or may not be related to a known neurologic pattern.
- Bilateral or unilateral
- One body region or several regions
- Persistent or intermittent
Myofascial Pain Syndrome

- Trigger point
  - Focal tenderness
  - Taut band of local soft tissue
  - Radiating pain upon digital pressure
  - Restricted range of motion of muscle
  - Altered firing patterns during movement
  - Muscle weakness without atrophy
  - Responds to local treatment
Neuropathic pain

- Nerve injury or dysfunction
- Hypersensitivity of ANS/PNS/CNS
- Allodynia, hyper- and hypo-algesia, parasthesias, muscle and vascular abnormalities
Overlap

- 20% of myofascial pain patients have fibromyalgia
- 72% of fibromyalgia patients have trigger points
FMS is associated with:

- Chronic fatigue syndrome
- Multiple chemical sensitivity
- Irritable bowel syndrome
- Tension and migraine headaches
Differential Diagnosis

- Hepatitis C
- Hypothyroidism
- Polymyalgia Rheumatica
- Rheumatoid arthritis
- SLE
- Spondyloarthritis
- Lyme disease
- Depression, coexistent
Differential Diagnosis

- Polymyositis/dermatomyositis
- Eosinophilia-myalgia syndrome
- Hyperthyroidism
- Osteomalacia
- Chronic fatigue syndrome
- Psychogenic rheumatism
- Vasculitis
Commonly associated symptoms:

- Fatigue
- Irritable bowel (e.g., Diarrhea, constipation, etc.)
- Sleep disorder (or sleep that is unrefreshing)
- Chronic headaches (tension-type or migraines)
- Jaw pain (including tmj dysfunction)
- Cognitive or memory impairment (fibrofog)
Commonly associated symptoms:

- Post-exertional malaise and muscle pain
- Morning stiffness (waking up stiff and achy)
- Menstrual cramping
- Numbness and tingling sensations
- Dizziness or lightheadedness
- Skin and chemical sensitivities
When there is no nerve injury...

- Complex Regional Pain Syndrome, Type I
  - Reflex sympathetic dystrophy
  - Limb pain plus
  - Vascular abnormalities
  - Regional
Etiologies and exacerbators

- Genetic: strong familial disposition
- Infection
- Physical trauma
- Immune stimulation
- Emotional distress
Low cervical: at the anterior aspect of the interspaces between the transverse processes of C5-C7

Second rib: just lateral to the second costochondral junctions

Lateral epicondyle: 2 cm distal to the lateral epicondyle

Trapezius: at the midpoint of the upper border

Supraspinatus: above the scapular spine near the medial border

Gluteal: at the upper outer quadrant of the buttocks at the anterior edge of the gluteus maximus

Greater trochanter: posterior to the greater trochanteric prominence

Knee: at the medial fat pad proximal to the joint line

Occiput: at the insertions of one or more of the following muscles: trapezius, sternocleidomastoid, splenius capitus, semispinalis capitus
Symptoms and Syndromes Related to Fibromyalgia

- Tension/migraine headache
- Affective disorders
- TMJD syndrome
- Constitutional symptoms and syndromes
- Fatigue
- Sleep disturbances
- Idiopathic LBP
- Irritable bowel syndrome (IBS)
- Nondermatomal paresthesias
- Memory and cognitive difficulties
- Sicca sx, vasomotor rhinitis, accommodation problems
- Vestibular complaints
- Multiple chemical sensitivity, “allergic” symptoms
- Esophageal dysmotility
- Neuromally mediated hypotension, mitral valve prolapse
- Noncardiac chest pain, dyspnea due to respiratory muscle movement dysfunction
- Interstitial cystitis, female urethral syndrome, vulvar vestibulitis, vulvodynia

Shared Features of Non-nociceptive or “Central” Pain Syndromes

- Characterized by multiple somatic symptoms and high rates of co-morbidities with other related syndromes
- 1.5 – 2X more common in females
- Strong familial/genetic underpinnings
- Triggered or exacerbated by “stressors”
- Pain and/or sensory amplification most reproducible pathophysiological feature
- Dysautonomia, neuroendocrine dysfunction, and neurogenic inflammation also commonly noted, but of unclear physiological significance
Genetics of Fibromyalgia

- Familial predisposition
  - Most recent work by Arnold, et al suggests >8 odds ratio (OR) for first-degree relatives, and much less familial aggregation (OR 2) with major mood disorders
  - Much stronger with bipolarity, obsessive compulsive disorder

- Genes that may be involved
  - 5-HT2A receptor polymorphism T/T phenotype
  - Serotonin transporter
  - Dopamine D4 receptor exon III repeat polymorphism
  - COMT (catecholamine o-methyl transferase)

5 Gurney S, et al. Rheumatol Int. 2003;23(3):104-107
A patient satisfies diagnostic criteria for fibromyalgia if the following 3 conditions are met:

1) Widespread pain index (WPI) 7 and symptom severity (SS) scale score 5 or WPI 3–6 and SS scale score 9.
2) Symptoms have been present at a similar level for at least 3 months.
3) The patient does not have a disorder that would otherwise explain the pain.

2010 NEW Dx Criteria for Fibromyalgia
WPI (Widespread Pain Index)

- In how many areas has the patient had pain? (0 and 19)
  - Shoulders (2)
  - Hips (2)
  - Jaw (2)
  - Upper back (1)
  - Lower back (1)
    - Upper arm (2)
    - Lower arm (2)
    - Upper leg (2)
    - Lower leg (2)
    - Chest (1)
    - Neck (1)
  - Abdomen (1)
SS (Symptom Severity) scale

- Fatigue
- Waking unrefreshed
- Cognitive symptoms

For the each of the 3 symptoms above, indicate the level of severity over the past week using the following scale:
- 0  no problem
- 1  slight or mild problems, generally mild or intermittent
- 2  moderate, considerable problems, often present and/or at a moderate level
- 3  severe: pervasive, continuous, life-disturbing problems

Considering somatic symptoms in general, indicate whether the patient has:*
- 0  no symptoms
- 1  few symptoms
- 2  a moderate number of symptoms
- 3  a great deal of symptoms

- The SS scale score is the sum of the severity of the 3 symptoms (fatigue, waking unrefreshed, cognitive symptoms) plus the extent (severity) of somatic symptoms in general. The final score is between 0 and 12.
Sleep Evaluation

- Sleep study lab: obstructive sleep apnea and restless leg syndrome.
- Sleep study with EEG evaluation of sleep stages/levels. Look for alpha intrusion.
Postural Structural
Postural Structural
Circulatory
Metabolic – Internal Medicine
Neurologic
# Standard Treatments

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<tr>
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<tr>
<td><strong>SNRIs</strong></td>
<td><strong>Sodium oxybate (Xyrem),</strong>&lt;br&gt;4.5-6 mg nightly</td>
<td><strong>SSRIs</strong></td>
</tr>
<tr>
<td>• Duloxetine (Cymbalta), 60 mg once or twice a day</td>
<td>Tricyclic antidepressants&lt;br&gt;• Amitriptyline (Elavil),&lt;br&gt;25 mg at bedtime</td>
<td><strong>• Fluoxetine (Prozac),</strong>&lt;br&gt;10-60 mg a day</td>
</tr>
<tr>
<td>• Milnacipran (Savella), 50-100 mg twice a day</td>
<td>Gabapentin (Neurontin),&lt;br&gt;400-800 mg three times a day</td>
<td><strong>• Paroxetine (Paxil),</strong>&lt;br&gt;20-40 mg a day</td>
</tr>
<tr>
<td>Pregabalin (Lyrica), 300-450 mg a day</td>
<td>Tramadol, 37.5 mg, plus acetaminophen, 325 mg (Ultracet),&lt;br&gt;* every 6 hours, as needed</td>
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</table>

SNRI=serotonin norepinephrine reuptake inhibitor; SSRI=selective serotonin reuptake inhibitor.

* Off-label use; not FDA approved for fibromyalgia.
## Effect sizes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Duloxetine</th>
<th>Milnacipran</th>
<th>Pregabalin</th>
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<tbody>
<tr>
<td>Pain</td>
<td>-0.33*</td>
<td>-0.19*</td>
<td>-0.27*</td>
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<tr>
<td>Fatigue</td>
<td>-0.10</td>
<td>-0.13*</td>
<td>-0.16*</td>
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<tr>
<td>Sleep</td>
<td>-0.31*</td>
<td>-0.05</td>
<td>-0.37*</td>
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<tr>
<td>Mood</td>
<td>-0.27*</td>
<td>-0.11*</td>
<td>0.01</td>
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<tr>
<td>QOL</td>
<td>-0.25*</td>
<td>-0.17*</td>
<td>-0.25*</td>
</tr>
<tr>
<td>NNT</td>
<td>7.2</td>
<td>19.0</td>
<td>8.6</td>
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# Fibromyalgia: Emerging Therapies

<table>
<thead>
<tr>
<th>Reference</th>
<th>Medication/Dose</th>
<th>Study Design</th>
<th>Outcomes</th>
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</thead>
<tbody>
<tr>
<td>Krell, 2005</td>
<td>Reboxetine, 8 mg/day</td>
<td>Case report (N=3)</td>
<td>Improvements in pain, functioning, mood, and fatigue</td>
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<tr>
<td>Schwartz, 2007</td>
<td>Modafinil, average dose 162 mg/day</td>
<td>Retrospective chart review (N=98)</td>
<td>28% reduction in fatigue (P&lt;0.001)</td>
</tr>
<tr>
<td>Toda, 2008</td>
<td>Neurotropin, 4 tablets/day (dose not specified)</td>
<td>Case report (N=1)</td>
<td>Subjective pain decreased by half</td>
</tr>
</tbody>
</table>
| Hidalgo, 2007 | Quetiapine, 25 mg/100 mg/day Subcutaneously           | Open-label, 12 week trial (N=30)  | No effect on pain  
|              |                                                      |                                   | FIQ decreased 16% (P<0.001)                                                                                                              |
| Cuatrecasas, 2007 | Growth hormone, 0.0125 mg/kg/day subcutaneously   | Randomized, open-label 1 year treatment of usual care with or without growth hormone (N=24) | Number of tender points decreased by 63% with growth hormone vs. 6% with usual care (P=0.0001)  
|              |                                                      |                                   | FIQ improved by 46% with growth hormone vs. 9% with usual care (P<0.05)                                                                |
| Schafranski, 2009 | Five sequential intravenous 2% lidocaine infusions, with increasing dosages (2.5 mg/kg) | Open-label, 1 month trial (N=23) | Significant improvements after 5 and 30 days, respectively, in pain (16% [P=0.01] and 12% [P=0.05]) and FIQ (13% at both time points [P=0.04])  
|              |                                                      |                                   | Two patients (9%) experienced a 50% reduction in pain after the fifth infusion                                                        |

FIQ=Fibromyalgia Impact Questionnaire  
* None of these medications have been FDA approved for the treatment of fibromyalgia.

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References  
Algorithm for Symptom-Based Management of Fibromyalgia

Patient evaluation
Does the patient have diffuse widespread pain (bilateral, above and below the waist including the axial spine)?

Physical examination, differential diagnosis and laboratory evaluation
Does the patient have another condition that could explain their pain?

Consider alternative diagnosis

Treat fibromyalgia symptoms and individualize therapy using the mVASFIQ
Administer mVASFIQ to all patients and use answers to individualize therapy

Persistent symptoms
Treat fibromyalgia symptoms: all patients get ‘PAIN’
Pregabalin, duloxetine, or milnacipran; pregabalin (25–75mg at night) if high insomnia score, duloxetine (20–30mg in morning) if high depression score or milnacipran (12.5mg in morning) if high fatigue score
Activity: daily stretching, both low-impact aerobic and resistance exercise alternating every other day
Information: discuss fibromyalgia, provide information and support group sources

Individualize symptom-based therapy using the mVASFIQ to treat “FIBRO”
Re-evaluate patients using the mVASFIQ at each visit to monitor therapy

Fatigue (physical and/or mental)
- Modafinil (200–1000mg) or methylphenidate (5–10mg) on awakening with a second dose at lunch if necessary
- Consider switching to sustained-release formulations if patient tolerates immediate release medications

Insomnia (insomnia and/or nonrestorative sleep)
- Sleep hygiene recommendations and screening for OSA and RLS
- Treat insomnia with zopiclone (1–3mg), zolpidem (5mg) or a sedating and depressant at night
- Treat RLS with dopamine agonist at night
- Sleep study for OSA
- Nonnarvotensive sleep treated with pregabalin (25–75mg)

Blues (depression and/or anxiety)
- Psychiatric vs psychologic referral
- Antidepressant medications: SSRI preferred, such as duloxetine (60mg once in morning), milnacipran (50mg twice daily), venlafaxine (75mg twice daily): older SSRI and/or TCAs optional with TCAs given at night

Rigidity (stiffness)
- Dextromethorphan (10–50mg) or transdermal (4–25mg)
- Can add tramadol or acetaminophen (37.5mg/325mg up to four times/day if needed)
- Can add nortriptyline or metamizole if neuropathic pain

Cox (pain)
- Pregabalin, duloxetine, or milnacipran at indicated doses
- Acetaminophen (1,000mg four times daily) or tramadol–acetaminophen (37.5mg/325mg up to four times daily)
- Gabapentin (100–300mg each night to start, increased to 1,200–2,400mg divided three times daily) can be tried as an alternative to pregabalin
OMT for Patients with Fibromyalgia

- Gamber, R.G., et. al.,
- “Osteopathic manipulative treatment in conjunction with medication relieves pain associated with fibromyalgia syndrome: results of a randomized clinical pilot project,”
Who? What?

- **Subjects:** Twenty-four female patients meeting American College of Rheumatology criteria for FM
- **Interventions:** OMT, education, moist heat, no additional treatment to any current medication

Outcome measures

- **Pain perceptions**
  - Pain thresholds measured at each of 10 bilateral tender points using a 9-kg dolorimeter
  - Chronic Pain Experience Inventory
  - Present Pain Intensity Rating Scale

- **Affective response to treatment**
  - Self-Evaluation Questionnaire

- **Activities** of daily living
  - Stanford Arthritis Center Disability and Discomfort Scales: Health Assessment Questionnaire

- **Depression**
  - Center for Epidemiological Studies Depression Scale

Subjects were randomly assigned to one of four treatment groups:

A. Manipulation group
B. Manipulation and education group
C. Moist heat group
D. Control group, which received no additional treatment other than current medication.

- ANOVA tests were performed on the outcome measures to the .05 level

Results

- Significant findings (p<.05) between the four treatment groups on measures of pain threshold, perceived pain, attitude toward treatment, activities of daily living, and perceived functional ability were found.

- All of these findings favored use of OMT.

This study found OMT combined with standard medical care was more efficacious in treating FM than standard care alone.


Critique

- **Strengths:** Multiple standard pain, activity and affective assessment instruments utilized; four distinct groups, including a “no additional treatment” group.

- **Limitations:** Cost effectiveness not assessed; OMT not standardized, thus external validity questionable; small sample size.

Pathophysiology

- Inflammation or injury
- Nociception
- Adaptation at muscle spindles, PNS, DRG, CNS
- Central and peripheral sensitization, facilitation
- Neuroendocrine imbalance
- Autonomic nervous system imbalance
- Sleep disturbance, fatigue, cognitive difficulties, depression
- Bilateral tenderpoints anterior and posterior, above and below waist, extremities
Gamze Ekici, PT, PhD, Yesim Bakar, PT, PhD, Turkan Akbayrak, PT, PhD, and Inci Yuksel, PT, PhD

J Manipulative Physiol Ther 2009;32:127-133
50 women
2 groups: 25 MLD – 25 CTM
5 times weekly for 3 weeks
20-40 minutes per session with PT
Pain measured by VAS and Algometry
Fibromyalgia Impact Questionnaire
Nottingham Health Profile
Health Status and Health Related QOL
Results

Both groups improved significantly in terms of pain and Hr QOL

Long term and larger studies are warranted

No reference made to the OMT study done in 2002.
Neural Facilitation or Sensitization

Aberrant Reflexes
Inappropriate Response to Stimuli or Stressors
Anatomy of Pain

Peripheral
- Nerve inflammation or injury
- NSAIDs/Opioids
- Behavioral factors minor
- Ex: OA, RA

Central
- Central disturbance in pain processing
- TCA, Neuroleptics
- Behavioral factors prominent
- Ex: FMS

Neuropathic
Mechanisms of Neuropathic Pain

1. Sprouting of sympathetic postganglionic nerve fibers on 1st afferent endings and 1st sensory cell bodies.
2. Lowered threshold for firing of C fibers (hyperesthesia) and Aδ fibers (allodynia).
3. Proliferation of α-adrenergic receptors on 1st sensory afferent endings and 1st sensory cell bodies.
4. Possible ephaptic afferent activation.
5. Permanent hyperactivation of wide dynamic range neurons.
6. Glutamate excitotoxic cell death of inhibitory neurons (glutamate storms).
7. Inadequacy of central descending serotonin, norepinephrine, opioid peptide pathways to control nociception.
8. Immobilization by pain decreases gating of nociceptive input, limiting physical therapy to initiate gating.
10. Extension of interneuron dendrites into additional spinal cord laminae.

FIGURE III.6: MECHANISMS OF NEUROPATHIC PAIN AND SYMPATHETICALLY MAINTAINED PAIN

The cascading dorsal horn system—which receives primary afferent C fibers of nociceptive origin and projects into the spinoreticular system for the conscious interpretation of excruciating and neuropathic pain—is illustrated. The sympathetic connections, in addition to secreting norepinephrine into the blood and activating the secretion of epinephrine, can synapse with terminals and cell bodies of primary nociceptive neurons in neuropathic pain syndromes. Descending central noradrenergic and serotonergic projections are also shown. Specific mechanisms relevant to neuropathic pain, particularly complex regional pain syndrome (reflex sympathetic dystrophy), are described in the numbered sites.
Complex Regional Pain Syndrome

- Crush **injury** to peripheral nerve fibers
- **Sensitization** of nerve (lowered threshold of firing)
- **Proliferation** of alpha adrenergic receptors
- Postganglionic sympathetic nerve fiber sprout
- Proliferation of postganglionic sympathetic nerve fiber sprouts to primary sensory cell bodies in DRG

- Proliferation of alpha adrenergic receptors on DRG cell bodies

- Possible ephaptic afferent activation
5) Permanent hyperactivation of WDRN
6) Glutamate Storms
7) Loss of central control of nociception
8) Inability to initiate gating with P.T.
9) Sprouting of C fibers
10) Extension of interneurons into additional laminae
Neurotransmitters in Fibromyalgia

- Substance P
- CGRP
- Neurokinin A
- Glutamate
- GABA
- Glycine
- Enkephalins
- CCK
- NE
- 5-HT
- NMDA receptors
- AMPA receptors
- Prostanoids
- Nitric oxide
- Substance P
- CGRP
- Neurokinin A
- Glutamate

Brain

C

S

M

V
Neural Influences on Pain and Sensory Processing

- Substance P
- Glutamate and EAA
- Serotonin (5HT<sub>2a, 3a</sub>)
- Nerve growth factor
- CCK

Figure Source: Cline DJ Jr, Fishman SM, Ballentine JC, Rathmell JP. Bonica's Management of Pain. 4th ed. Philadelphia, PA: Lippincott, Williams & Wilkins, 2009. Used with permission from Lippincott Williams & Wilkins Inc.
Neural Influences on Pain and Sensory Processing

**Facilitation**
- Substance P
- Glutamate and EAA
- Serotonin (5HT$_{2a,3a}$)
- Nerve growth factor
- CCK

**Inhibition**
- Descending antinociceptive pathways
- Norepinephrine-serotonin (5HT$_{1a,1b}$), dopamine
- Opioids
- GABA
- Cannabinoids
- Adenosine

Figure Source: Claus D.J., Fishman SM, Ballentine JC, Rathmell JP. Bonica's Management of Pain, 4th ed. Philadelphia, PA: Lippincott, Williams & Wilkins, 2000. Used with permission from Lippincott Williams & Wilkins Inc.
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Figure Source: Fishman SM, Ballentine JC, Rathmell JP. Bonica's Management of Pain. 4th ed. Philadelphia, PA: Lippincott, Williams & Wilkins, 2000. Used with permission from Lippincott Williams & Wilkins Inc.
# Neuroendocrine Findings In Fibromyalgia

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<th>Neuroendocrine System</th>
<th>Basal Levels</th>
<th>Reactivity</th>
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<tbody>
<tr>
<td>Autonomic Nervous System</td>
<td>Hyperactive sympathetic nervous system activity at night</td>
<td>Hypoactive</td>
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<tr>
<td>Hypothalamic–pituitary–adrenal axis</td>
<td>Normal, somewhat reduced, or elevated basal cortisol levels</td>
<td>Exaggerated corticotrophin response to infused CRH</td>
</tr>
<tr>
<td>System Response To Stressors</td>
<td>Normal thyroid hormone, prolactin, and female sex hormone levels;</td>
<td>Reduced or normal corticotrophin and cortisol;</td>
</tr>
<tr>
<td></td>
<td>Mildly reduced to normal GH, IGF-1, and androgen levels</td>
<td>Somewhat blunted GH and TH response upon stimulation</td>
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</table>
Predisposing and initiating factors:
- Genetic vulnerability
- Female gender
- Disease
- Psychological or physical trauma

Pathophysiology:
- Endocrine deviations
- Structural and functional changes in the brain

Symptoms:
- Sleep disturbance
- Low fitness
- Pain
- Fatigue
- Stress & distress

Treatment options:
- Life-style education
- Cognitive-behavioral therapy
- Physical exercise training
- Pharmacological intervention (analgesics or antidepressants)
- Sleep hygiene training
Spinal Reflexes

- Pain
- Position
- Blood and lymph vessels
- Skin
- Joints
- Muscles
- Viscera

Somato-somatic
Somato-visceral
Viscero-somatic

Afferent Reducer
MSK Exam Scheme

- Gait
- Posture
- Active ROM
- Passive ROM
- Screen the entire MSK system
- Scan the region for a local problem
- Localize and define the dysfunction (s)
  - Soft tissue pressure-pain
  - Joint and myofascial motion restriction
Why evaluate the whole body?

- Spinal cord reflexes
- Compensatory mechanisms
- Need to find primary problem
- Prognosis
- Management
- Education
Somatic Dysfunction
ICD-9 Codes

- **739.0** - Head
- **739.1** - Cervical
- **739.2** - Thoracic
- **739.3** - Lumbar
- **739.4** - Pelvis
- **739.5** - Abdomen
- **739.6** - Upper ext.
- **739.7** - Lower ext.
- **739.8** - Costal cage
- **739.9** - Nonspecified
## Diagnostic sequence in OMM

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<thead>
<tr>
<th>S</th>
<th>Patient Complaints</th>
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<tbody>
<tr>
<td></td>
<td>Pain/Discomfort</td>
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<td>Motion Loss</td>
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<tr>
<td>TARGET</td>
<td>UNREALISTIC GOALS</td>
<td>REALISTIC GOALS</td>
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<td>---------------------------</td>
<td>---------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Pain</td>
<td>Cure pain</td>
<td>Reduce pain by 25-30%</td>
</tr>
<tr>
<td>Functional disability</td>
<td>Work full-time, manage household and attend all kids’ soccer games</td>
<td>Increase household, work, and social activities by 50%</td>
</tr>
<tr>
<td>Mood disturbance</td>
<td>Always be happy and calm</td>
<td>Reduce interference from mood disturbance</td>
</tr>
<tr>
<td>Sleep disturbance</td>
<td>Sleep 8 hours every night with no interruptions</td>
<td>Improve sleep initiation and duration</td>
</tr>
</tbody>
</table>
Lecture Summary

- Defined terms related to fibromyalgia
- Reviewed pathophysiological theories
- Distinguished fibromyalgia from similar pain syndromes
- Applied an integrated osteopathic management plan
- Discussed OMT documentation and coding
Recommended Reading