MECHANICAL DIAGNOSIS EVALUATIONS OF THE SPINE AND ALL THE EXTREMITIES
JOINTS
NURSE PRACTITIONER ASSOCIATION NEW YORK STATE
33RD ANNUAL CONFERENCE
OCTOBER 19, 2017

Mechanical Diagnosis and Therapy Of the Spine and Extremities

Joseph G. Maccio, MA, PT, Dip, MDT
Joseph R. Maccio, DPT, Dip, MDT

THE MCKENZIE METHOD OF MECHANICAL DIAGNOSIS AND THERAPY (MDT)
-A Dynamic of Examination, Diagnosis, Intervention and Prevention
-An evidence based assessment and diagnostic system with structured clinical reasoning framework whose principles integrate current research.
-Management of the patient with both spine and extremity problems assessing mechanical responses as well as the influence of non mechanical factors.
THE MCKENZIE INSTITUTE
EDUCATIONAL PROGRAMS

Program of Certification:
- Part A: Lumbar Spine (Days 1-4; Day 1 is an online component)
- Part B: Cervical & Thoracic Spine (Days 5-8; Day 5 is an online component)
- Part C: Advanced Lumbar Spine and Extremities - Lower Limb (Days 9-12)
- Part D: Advanced Cervical & Thoracic Spine and Extremities - Upper Limb (Days 13-16)
- Credentialing Exam (Day 17)
- Re-credentialing every 3 years

THE MCKENZIE INSTITUTE
EDUCATIONAL PROGRAMS

Diploma in Mechanical Diagnosis and Therapy:
established by The McKenzie Institute International
- Credentialing in MDT
- 360-hour clinical residency training program
- Theoretical component (10 weeks, 300 study hours)
- Advanced written and practical examinations
- Attainment of the Diploma in MDT is recognition of achievement to the highest level in The McKenzie Institute post-graduate educational program and excellence in the practical application of the McKenzie Method.

CERTIFIED MCKENZIE CLINIC

- Active physiotherapy utilizing the McKenzie Method of Mechanical Diagnosis and Therapy must be administered at the Certified McKenzie Clinic
- At least one of the therapists in the Certified McKenzie Clinic must hold the qualification of Diploma in Mechanical Diagnosis and Therapy
- Continuous staff training towards MDT Certification
- Assures the highest quality of care within the MDT system
- Dartmouth-Hitchcock, Cleveland Clinic, HSS, Temple University
OBJECTIVES

1) Differentiate Mechanical VS. Inflammatory pain
2) To be able to identify directional preference and the importance of centralization.
3) The when and why's of ordering a MRI.
4) Reducing the reoccurrence rate of extremity pain
5) Ruling out the spine as a source of extremity pain

CONTRAST FROM OTHER TREATMENTS

- Repeated movements for assessment and management
- Emphasis on patient independence*
- Avoidance of therapist dependency
- Use of minimal intervention
- Combination of exercise and therapist intervention as necessary
- Exercises used for pain relief

Neck-pain sufferers cost US more than $7 billion Annually
(according to Evidenced-Based Education for allied professionals)

Back-pain sufferers cost US more than $100 billion annually
(according to an article published by News Medical)

70% of Americans are confident in their doctor's Advice and do not seek a second opinion (AARP)
- Increases in TKA volume have been driven by both increases in the number of Medicare enrollees and in per capita utilization

- 600,000 TKA procedures annually in US costing $15,000 per procedure and $9 billion aggregate annually  
  
  (Cram 2012)

- Use of shoulder arthroplasty has increased nearly 10-fold in the last 25 years  
  
  (Adams 2006)

- Originally developed to address humeral fractures, but has since been expanded to include glenohumeral arthritis  
  
  (Mather 2010)

- Average cost of total shoulder replacement is over $10,000 (excluding rehabilitation, revision, hospital stay, or complication/disability costs)  
  
  (Mather 2010)

WHY WE DO WHAT WE DO:

REASON 1

Richard Deyo MD, MPH Study Results 2009

- 629% increase in epidural injections  
  (1994-2001)

- 423% increase in opioids for back pain  
  (1997-2004)

- 307% increase in MRI studies  
  (1994-2005)

- 220% increase in spinal fusion surgeries  
  (1990-2001)
WHY WE DO WHAT WE DO: REASON 2

Worsening Trends in the Management and Treatment of Back Pain (Mafi et al., 2013)

- Prescribing narcotics doubled since 1999.
- Higher MRI use resulted in more back surgeries.

Opioid Overdose Deaths Skyrocket in Women (Mack et al., 2013)

- From 1999 to 2010 deaths from prescription opioid pain relievers (OPR) increased by 415% in women
- ER visits from misuse/abuse of OPR among women doubled from 2004 to 2010.

WHY WE DO WHAT WE DO: REASON 3

"I cannot thank you enough. I was in so much pain. I had been suffering with it for so long, I believed that was the way it was going to be for the rest of my life. When I was referred to your office I had doubts. I had supposedly seen a McKenzie therapist before and it was not effective. You and your staff were all very kind and caring. You have given my life back to my family and me. Thank you!"

"I had lower back pain on and off for 10 years. The last 2 years, pain was constant pain. I had seen a neurosurgeon, chiropractor, physical therapist, and even my primary care doctor. I had tried most medication and I had tried the McKenzie method. I was getting worse. In October 2011, I found out about Maccio Physical Therapy. I went for my first appointment. With some relief, I committed to your program. It only took two weeks until the pain went away. I was amazed. The methods you used were definitely more involved. You and your staff were all very kind and caring. You have given my life back to my family and me. Thank you!"

"In August of 2010, I was in a car accident and experienced severe pain in my lower back. I was referred to a neurosurgeon by the emergency room. After X-rays, CT-scan, and MRI I was sent to physical therapy. By December I saw no improvement. My primary doctor sent me to a chiropractor. I felt relief from that for a few hours after the appointment. I went back to the neurosurgeon in January 2011 and was told that the pain was not going to go away. I was referred to a second neurosurgeon who sent me to surgery. After surgery I was 100% better. In May of 2011 I was referred to a third neurosurgeon who said surgery wouldn't help. After a weekend of confusion, I asked my primary doctor for another opinion. He referred me to a second neurosurgeon who said surgery wouldn't help. After another weekend of confusion, I asked my primary doctor for another opinion. He referred me to Maccio Physical Therapy. After two days I was feeling better. After three weeks of the McKenzie Method, I am almost pain free. I am so grateful I went for a second and third opinion! Maccio has really helped me to get my quality of life back!" - Kristie

Referred by a former patient

WHY WE DO WHAT WE DO: REASON 4

<table>
<thead>
<tr>
<th>False Positive Rates for Lumbar MRI</th>
<th>Disc Bulge</th>
<th>Disc Protrusion</th>
<th>Disc Extrusion</th>
<th>Disc Pathology</th>
<th>Disc Bulge (Protrusion, protrusion, degeneration)</th>
<th>Bone Deviation or Compression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boden et al.</td>
<td>20%</td>
<td>NA</td>
<td>1%</td>
<td>64%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jones et al.</td>
<td>32%</td>
<td>27%</td>
<td>1%</td>
<td>49%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hsu et al.</td>
<td>69%</td>
<td>13%</td>
<td>4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grossberg et al.</td>
<td>39%</td>
<td>18%</td>
<td>5%</td>
<td>4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weishaupt et al.</td>
<td>24%</td>
<td>40%</td>
<td>18%</td>
<td>4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood et al. (1)</td>
<td>53%</td>
<td>37%</td>
<td>63%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVERAGES</td>
<td>38%</td>
<td>29%</td>
<td>9.5%</td>
<td>60.5%</td>
<td>4%</td>
<td>11%</td>
</tr>
</tbody>
</table>
HERZOG 2016

- 12 MRIs were obtained over a 3 week period
- Pt was middle-aged female with low back pain and associated radicular symptoms
- All 12 images were different, no one report had agreement on conclusive findings
- One found no HNP, 2 found HNP at all five levels, remaining 7 reports found HNP at one or more levels
Focus on medical factors

Quebec Task Force Report:

“There is so much variability in making a diagnosis that this initial step routinely introduces inaccuracies which are then further confounded with each succeeding step in care.” The diagnosis “is the fundamental source of error…. Faced with uncertainty, physicians become inventive.”

**WHY WE DO WHAT WE DO: REASON 5**

<table>
<thead>
<tr>
<th>Capital Health Plan</th>
<th>Prior to MDT Pilot Study</th>
<th>Current Rate (After MDT Pilot)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neck and Back MRI Rate</td>
<td>73%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Spinal Imaging Rates</td>
<td>Decreased 85%</td>
<td></td>
</tr>
<tr>
<td>Surgical Rates</td>
<td>Reduced 40%</td>
<td>(with only 50% MD participation)</td>
</tr>
</tbody>
</table>

**Pain management rates have significantly decreased**

**WHY WE DO WHAT WE DO: REASON 6**

Health Plan Joins With Physical Therapy Facility to Manage Back and Neck Pain

Capital Health Plan achieved a 79% improvement in pain scores and a 54% improvement in function scores for its members.

[Logo of Capital Health Plan, IMC, Michelin, and GE]
WHY WE DO WHAT WE DO: REASON 7

5 Things an MD can do for a patient with neck, knee, shoulder, and back pain
1. Drugs
2. Injections
3. Surgery
4. Testing
5. MDT with positive results

#4 strategic benefit:
SAFE / no-risk care:
Avoids:
- Opiates, addiction, overdoses, deaths
- Unnecessary surgery: at least 50% of the >200K fusions/yr in U.S. (as well as the injections) are rapidly reversible....identifiable beforehand!!
- Complications: infections, blood loss, anesthesia, drug interaction, prolonged/incomplete/non-recovery, worse pain, re-operations
- Medical errors: 3rd leading cause of hospital deaths
WHY WE DO WHAT WE DO: REASON 8

- Gina - Original Success Story - November 2009
  “When I first came for McKenzie physical therapy I was discouraged with my prognosis. After 17 years of back problems - 4 epidurals, 1 surgery, multiple courses of PT, I wasn’t so sure anything would help. Dartmouth-Hitchcock Spine Center referred me to a McKenzie Certified Clinic. After 5 visits with Joe, I’m not quite so discouraged. I might say I’m a bit optimistic about my future. I’m still skeptical, but hopeful. Thanks to all the staff.”

- Gina - Update 2013
  “I could not believe I could continue to keep my back pain away after all I’d been through. Joe Maccio gave me my life back. After seeing Joe three years ago I have not had one problem with my back. If you have back problems I urge you to see him to try to avoid invasive procedures. I only wish I knew about him sooner!”

---

How common is this “rapidly reversible” condition?

<table>
<thead>
<tr>
<th>Condition</th>
<th>Acute</th>
<th>Chronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donelson</td>
<td>84-89%</td>
<td>58%</td>
</tr>
<tr>
<td>SuRka</td>
<td>60-83%</td>
<td>61%</td>
</tr>
<tr>
<td>Worneke</td>
<td>77%</td>
<td>55%</td>
</tr>
<tr>
<td>Karas</td>
<td>73%</td>
<td>52%</td>
</tr>
<tr>
<td>Donelson</td>
<td>58%</td>
<td>43%</td>
</tr>
<tr>
<td>Delito</td>
<td>61%</td>
<td>49%</td>
</tr>
<tr>
<td>Erhard</td>
<td>55%</td>
<td>49%</td>
</tr>
<tr>
<td>Kopp</td>
<td>52%</td>
<td>43%</td>
</tr>
<tr>
<td>Long</td>
<td>43%</td>
<td>49%</td>
</tr>
<tr>
<td>Donelson</td>
<td>32%</td>
<td></td>
</tr>
<tr>
<td>Laslett</td>
<td></td>
<td>49%</td>
</tr>
</tbody>
</table>

---

OUR PUBLISHED RESEARCH

The application of mechanical diagnosis and therapy in lateral epicondylalgia

- Joe Maccio, Susan Devlin, Robert Teborowski, and Stephen Hay

---
OUR CONTRIBUTION TO OTHERS’ RESEARCH

MDT CLINICAL MANAGEMENT

Goals
- Relieve Pain
- Restore Function
- Prevent Reoccurrence

DIRECTIONAL PREFERENCE

- Characteristic of Derangement Syndrome
- Postures or movements in one direction decrease, abolish, localize, or centralize symptoms and often increase a limitation of movement.
- Postures or movements in the opposite direction often cause these symptoms and signs to worsen.
DIRECTIONAL PREFERENCE

CENTRALIZATION

- Centralization: a common phenomenon, among patients with low back and neck pain, which occurs during repeated lumbar test movements as part of the mechanical assessment, in which the pain progressively recedes toward the lumbar or cervical midline. With continued exercise, the midline pain can be quickly abolished.

DIRECTIONAL PREFERENCE AT THE SHOULDER
BACKGROUND

- Presence of Centralization has been shown to be an excellent predictor of a good outcome. (Werneke (99, 01), Aina (04), Long (04, 08))
- Prevalence of Centralization diminishes with age (Werneke 2008)
- The Medical Management of Low Back Pain appears to be greatly influence by imaging.

PREDISPOSING AND PRECIPITATING FACTORS

PREDISPOSING FACTORS
- Sitting posture
- Frequency of flexion
- Loss of extension range

PRECIPITATING FACTORS
- Movements
- Lifting

CLASSIFICATION

Pain of spinal origin can be classified into 3 syndromes:

- Derangement Syndrome (80%)
- Dysfunction Syndrome, ANR (8%)
- Irreducible Derangement
- Posture Syndrome
- Foraminal Stenosis
- Neural Foraminal Pathology
- Entrapment
WORKING POSTURES

POSTURE SYNDROME
- End range stress on normal structures
- Mechanical deformation due to prolonged stress eventually produces pain
- Can eventually lead to a derangement

DYSFUNCTION SYNDROME
- End range stress of adaptively shortened structures
- Mechanical deformation immediately produces pain at end of range consistently
- May be discogenic, zygapophyseal, ligamentous, muscular, aponeurosis, etc
- ANR
- Trauma and time
DERANGEMENT SYNDROME: THE MASTER OF DISGUISE

- Anatomical disruption and/or displacement of structures
- The structures' increased mechanical deformation immediately or eventually produce pain
- Lower and upper cervical spine dynamics

DISC BULGE HERNIATION EXTRUSION

Conceptual model
NUCLEUS PULPOSUS DEFORMATION FOLLOWING APPLICATION OF MECHANICAL DIAGNOSIS AND THERAPY: A SINGLE CASE REPORT WITH MAGNETIC RESONANCE IMAGING.

EVALUATION PROCESS
- PATIENT HISTORY- 1st role is to establish a hypothetical diagnosis
  - Location of pain
  - Duration of current episode of pain
  - Intermittent or Constant pain
  - Do you have the pain all the time? Or does it come and go?
  - Mechanism of Injury
  - Symptomatic and Mechanical responses to:
    - Bending, sitting, rising from sitting, turning, lying, rising from lying
    - Time of day: upon waking, as the day progresses, in the evening
    - Better, worse, no change
  - What is guaranteed to make your symptoms worse?
  - What is guaranteed to make your symptoms better?
  - How many previous episodes and similarities?
  - RED FLAGS and possible contraindications to MDT?
  - Occupation:

PHYSICAL EXAMINATION
- Primary role:
  - Confirm hypothetical diagnosis from patient history
  - Determining appropriate loading strategy
- Posture:
  - Habits
  - Acute spinal deformity – lateral shift, torticollis, etc
  - Other abnormalities: leg length difference, scoliosis, atrophy, etc
TEST MOVEMENTS:  
CERVICAL AKA ACTIVE PHYSIOLOGICAL MOVEMENTS

- Protrusion (Pro) and Repeated (Rep Pro)
- Retraction (Ret) and Repeated (Rep Ret)
- Retraction Extension (Ret Ext) and Repeated (Rep Ret Ext)
- Sidebend (SB) and Repeated (Rep SB)
- Rotation (Rot) and Repeated (Rep Rot)
- Flexion (Flex) and Repeated (Rep Flex)

Examination Terms

Terms used to determine the response to repeated movements, sustained positions, treatment procedures and/or functional activities and positions on pain patterns in musculoskeletal disorders. These are used BEFORE, DURING and AFTER the procedure to accurately evaluate the response.

DURING MECHANICAL LOADING

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase</td>
<td>Symptoms already present are increased in intensity.</td>
</tr>
<tr>
<td>Decrease</td>
<td>Symptoms already present are decreased in intensity.</td>
</tr>
<tr>
<td>Produce</td>
<td>Movement or loading creates symptoms that were not present prior to the test.</td>
</tr>
<tr>
<td>Aboilish</td>
<td>Movement or loading abolishes symptoms that were present prior the test.</td>
</tr>
<tr>
<td>Centralizing</td>
<td>Movement or loading moves the most distal pain in a proximal direction.</td>
</tr>
<tr>
<td>Peripheralizing</td>
<td>Movement or loading moves the pain more distally.</td>
</tr>
<tr>
<td>No Effect</td>
<td>Movement or loading has no effect on the symptoms.</td>
</tr>
</tbody>
</table>
AFTER MECHANICAL LOADING

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worse</td>
<td>Symptoms produced or increased with movement or loading remain aggravated following the test.</td>
</tr>
<tr>
<td>Not Worse</td>
<td>Symptoms produced or increased with movement or loading return to baseline after testing.</td>
</tr>
<tr>
<td>Better</td>
<td>Symptoms decreased or abolished with movement or loading remain improved after testing.</td>
</tr>
<tr>
<td>Not Better</td>
<td>Symptoms decreased or abolished with movement or loading return to baseline after testing.</td>
</tr>
<tr>
<td>Centralized</td>
<td>Distal symptoms abolished by movement or loading remain abolished after testing.</td>
</tr>
<tr>
<td>Peripheralized</td>
<td>Distal pain produced during movement or loading remain after testing.</td>
</tr>
<tr>
<td>No Effect</td>
<td>Movement or loading has no effect on symptoms after testing.</td>
</tr>
</tbody>
</table>

DERANGEMENT SYNDROMES

- CD1/2
- CD3/4
- CD5/6
- CD7

PRINCIPLE OF MANAGEMENT

1. Reduction of derangement
   *(end-range is where the magic happens!)*
2. Maintenance of reduction (5-7 days)
3. Recovery of function
4. Prevent recurrence
PROGRESSION OF FORCE

- Posture Correction
- Retraction
- Retraction with patient overpressure
- Retraction Extension
- Retraction Extension with Patient Overpressure
- Sustained Retraction Extension prone on elbows
- Distraction Retraction with Extension/Rotation
- Mobilizations

REGRESSION OF FORCE

- Unloaded Retraction (repetitive or sustained)
- Retraction in Flexion
- Retraction with distraction
- Traction

CASE STUDY

[Blank case study form with various fields for information entry]

HISTORY

- Present Symptoms: Pain and restricted movement
- Present Location: Neck and back
- Compressed as a result:
- Symptoms at creation:
  - Pain in neck/shoulder/hands
- General symptoms related to pain:
  - Tenderness
- Better:
  - Stiffness
- Worse:
  - Standing
- Movements that make the symptoms better:
  - Sitting
- Movements that make the symptoms worse:
  - Standing
- Year of first episode
- Previous History
- Previous Treatment: Chiro - no effect
MECHANICAL (INTERMITTENT / CONSTANT) VS INFLAMMATORY (CONSTANT)
Evaluate

Location
Classification
Direction
Load

Re-evaluate

AREAS OFTEN OVERLOOKED

- Education
- Recovery of function
- Over pressure
- End Range
From the Better/Worse section, what can you conclude from a biomechanical perspective?

a. Better with extension, worse with flexion
b. Better turning left, better bending
c. Better looking up and better changing lanes
d. Better with flexion, worse with extension

From the Movement Loss section, what derangement might be considered?

a. Left anterior lateral derangement
b. Right posterior lateral derangement
c. Left posterior lateral derangement
Why does the Test Movement section not represent a reducible derangement?

a. Movement in one direction produces symptoms; movement in the opposite direction abolishes symptoms
b. No evidence of centralization; no evidence of peripheralization; no lasting changes
c. Because there is end range pain only and a directional preference is clearly seen

What is your diagnosis?

a. An irreducible derangement
b. A left symptomatic lateral foraminal stenosis

diagnosis: left symptomatic lateral foraminal stenosis

Movement to maximally close down left inter-vertebral foramen

<table>
<thead>
<tr>
<th>Movement</th>
<th>Extension, left side bend, left rotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle Treatment</td>
<td>Posture correction, avoiding end range of retraction and extension; flexion of the lower cervical spine, with or without right rotation</td>
</tr>
<tr>
<td>Response to treatment</td>
<td>Symptoms with gradually decrease in frequency and intensity over 2-3 weeks</td>
</tr>
</tbody>
</table>
Cloward Spots: Referred Pain (1959)

Dreyfuss: Cervical Zygapopyseal (Referred Pain Patterns)
THE REDUCTION OF CHRONIC NON-SPECIFIC LOW BACK PAIN THROUGH THE CONTROL OF EARLY MORNING FLEXION: A RANDOMIZED CONTROLLED TRIAL.

86 volunteers with chronic/recurrant low back pain
6 months no treatment
Phase 1: 6 months - 1 group eliminate early morning flexion, 1 group sham treatment
Phase 2: Sham group switched to flexion avoidance for last 6 months

Results: Flexion Avoidance Group
- Significant pain reduction (p<0.01)
- Reduction of medication use (p<0.05)
- Reduction of impairments (p<0.01)
- 80% of participants elected to continue avoidance of AM flexion
WHY NON-SPECIFIC EXERCISE SOMETIMES FAILS

HISTORY AND PHYSICAL EXAM

- History and physical exam should lead to the following conclusions
  - Syndrome classification
  - Appropriate therapeutic loading strategy, or
  - Appropriate testing loading strategy

*Assessment and treatment are not separate but a continuum

CARDINAL FEATURES

- Symptomatic and mechanical responses
- Classification of subgroups (syndromes)
- Focus on centralization
- Self treatment
- Progression of forces
- Patient education
**MRI OF THE ASYMPTOMATIC SHOULDER IN OVERHEAD ATHLETES (CONNOR, 2003)**

- Hypothesis: Asymptomatic dominant shoulders of elite overhead athletes have higher incidence of MRI abnormalities than either their non-dominant shoulder or shoulders of random asymptomatic volunteers.
- 5 year follow-up study
- 13/20 (65%) had findings with partial- or full-thickness tears or evidence of Bennett’s Lesions with no subjective symptoms. None of the athletes studied had any shoulder related problems during the study period.

---

**SPORTS MEDICINE SAID TO OVERUSE M.R.I.’S**

**THE NEW YORK TIMES OCTOBER 2011**

- Subjects: 31 healthy professional baseball pitchers
- Symptoms: Not injured, no pain
- Findings:
  - 90% abnormal shoulder cartilage
  - 87% abnormal rotator cuff tendons

“If you want an excuse to operate on a pitcher’s throwing shoulder, just get an M.R.I.,”

–Dr. James Andrews

---

**X-RAY VS. MDT**

- 55 year old female
- Date of Injury 1/14/14
  - Shoulder Sprain
  - Highly recommended for shoulder replacement based on failure of PT and X-Ray Findings
- Initial: DASH 89, VAS 5/10
- ROM
  - Elevation 90 Degrees
  - IR Major Loss
- FULL ROM and MMT restored by Visit 9!!
- Final: DASH 5, VAS 0/10
RESEARCH PARTICIPATED IN

- Application of the McKenzie system of Mechanical Diagnosis and Therapy (MDT) in patients with shoulder pain
- 15 Shoulders Evaluated
- 70% of shoulder patients were found to have cervical derangements
Lumbar Referred Pain

- Lumbar Spine?
- SI Joint?
- Hip?
The McKenzie System's (MDT) derangement classification in OA knees: Efficacy of MDT treatment versus evidence based care: A randomized controlled trial

Richard Rosedale PT, DPT, MTC, Ravi Rastogi PT, MTC, DPT, MTC, Sean Willis PT, DPT, MTC, Frank Filice PT, DPT, MTC, James Howard MD, Douglas Naudie MD, Bert Chesworth PhD, Stephen May PhD, Shawn Robbins PhD,
### PAULINE
- 74 year old female
- History: Bending in garden 10 days ago
- VAS: 9/10
- Impairments: Difficulty walking
- ROM: minus 20 extension

**Testing:** X-ray Severe DJD

**Treatment Options:** TKR

**Diagnosis:** Derangement

**Directional Preference:** Extension

**Result:** Painfree, normal ROM walking back to pre-incident status

---

### HENRIETTA - HIP
- 87 year old female
- 5 Month History of R groin and thigh pain
- Occurred post lymphedema wrapping
- Unable to walk or lift leg secondary to pain and weakness

- **Modified LEFS:** 21/64
- **VAS:** 6/10
- **Ambulating with walker/ Pain walking**

**Testing:** X-Ray, MRI, Diagnostic Ultrasound, Orthopedic Consultation, Kidney Function Test

**Limited P/AROM Hip Flexion**

**Difficulty getting out of a car (hip flexion)**

**Treatment Options:** Injection (Hospitalized), Orthopedic Surgery, Tendon Release?, Physical Therapy

**Diagnosis:** Hip Derangement

**Directional Preference:** Flexion

**Result:** Full ROM and Strength

**VAS:** 0/10

- **Modified LEFS:** 64/64
- Ambulating without assistive device without antalgic gait. Return to the gym for soft conditioning

---

### MDT AND THE HIPS

I went to the Emergency Room in the fall of 2012 with extreme hip pain. I was sent to an orthopedic surgeon who diagnosed me with Sciatica. He gave me options that included painful cortisone shots and an expensive operation. He also suggested trying physical therapy. My son had seen Joseph Maccio Sr. a few years ago after a knee replacement surgery. He had a great experience. When I arrived at Maccio I could barely walk. I had too much pain in my hip. Just getting in and out of the car was particularly difficult. Since I’m unable to take prescription medications I was in a great deal of pain. My first physical therapy visit left me discouraged. I felt as though nothing would help my condition. The team at Maccio came together to diagnose and treat my hip. My pain gradually began to reduce. I am now pain-free, I walk without a cane, and I can get in and out of the car without a problem. I would definitely suggest Maccio Physical Therapy to anyone.

-Henrietta
Sometimes Teenagers Know Best.

“Towards the end of April 2017, I injured my knee while playing softball as a catcher. I went to the doctor and was told I had sprained my ACL. He told me that my knee was stable and I would need surgery. I decided to go to MacCoss Physical Therapy as it was recommended from a friend. Within one week of going to physical therapy my knee pain diminished back and I felt less pain doing everyday things. After weeks of physical therapy with MacCoss, I returned to the doctor and I no longer need surgery on my knee. If I had not attended physical therapy my upcoming softball season would have been over. Thanks to MacCoss Physical Therapy I feel stronger and more confident on the field.”

-Cierra

“Why we do what we do. It’s all about patient choice.” -Lindsey Garthwaite, ATC, OPT, Cert.

MDT
 PATRICIA

- 62 year old female
- History: 2 ½ year Plantar Fasciitis
- VAS: 9/10
- Impairments: Difficultly walking especially early morning and after sitting
- ROM: Dorsi flexion neutral
- Testing: X-ray Severe
- Treatment Options: injection, ice
- Diagnosis: Derangement
- Directional Preference: Extension
- Result: Painfree, normal ROM and walking.

EFFECT OF CORTICOSTEROID INJECTION, PHYSIOTHERAPY, OR BOTH ON CLINICAL OUTCOMES IN PATIENTS WITH UNILATERAL LATERAL EPICONDYLAGIA

Objective: To investigate the effectiveness of corticosteroid injection, multimodal physiotherapy, or both in patients with unilateral epicondylagia (LE)

Use of corticosteroid injection:
- 1 year post- patients resulted in worse clinical outcomes

Use of physiotherapy:
- 1 year post- no significant difference

Use of MDT:
- 3 weeks post- 90% improvement in pain and function
- 3 months post- no reoccurrence of pain and full return to function

Conclusion: MDT is a more effective method to reduce pain in LE patients compared to traditional PT and cortisone injection.
**APPLICATION OF MDT ON THE HUMAN ELBOW**

- No previous research
- Evaluate "elbow pain" using MDT
- Treat using MDT
- How does MDT classification and treatment differ from lateral epicondylalgia/epicondylitis (LE)?

**METHODS**

- 7 Consecutive patients
- Outcome Measures
  - Elbow range of motion (flexion and extension)
  - Functional Index: Upper Extremity Functional Scale (UEFS)
  - Grip Strength
  - LE special orthopedic tests
    - Mill's Test
    - Cozen's Test
    - Maudley's Test
- 3/7 fit diagnostic criteria for LE

**CLASSIFICATION/ TREATMENT**

- Derangement: 6/7
  - Extension: 5/6
  - Loaded: 4/5
  - Unloaded: 1/5
  - Flexion: 1/6
  - Unloaded: 1/1
- Dysfunction: 1/7
RESULTS

- Average of patients perceived improvement: 87%
  - At three month follow up: 95%
- Average pain at discharge: 0.6/10
- Average UEFS at discharge: 79/80
- Increase in elbow extension ROM: 2.7°
- Increase in elbow flexion ROM: 6.7°
- Increase in grip strength: 6.4 lbs per pressure
- Average number of treatments: 3.4
- Average duration of treatment: 13.6 days

CLINICAL RELEVANCE

- MDT can be used on the extremities
  - Shoulder
  - Knee
  - Ankle
  - Thumb
  - Temporomandibular
  - Sacroiliac
- Faster treatment
- Patient independence/education
- Long-term results
DIRECTIONAL PREFERENCE OF THE WRIST: A PRELIMINARY INVESTIGATION

REVIEWED BY: RENEE SPINELLA AND RICHARD ROSEDALE IN THE WORLD PRESS

This study supports previous extant studies indicating that MDT clinicians can use the MDT classifications of Derangement, Dislocation and Postural Syndrome and OTHER subgroups and effectively apply them to the wrist. It is also important to note that 19 patients were evaluated for wrist pain and categorized as having a Central Derangement. This also supports the recommendation to screen the cervical spine thoroughly for all upper extremity presentations, even down to the wrist.

NASS
NORTH AMERICAN SPINE SOCIETY
- The Application of Mechanical Diagnosis and Therapy in Failed Anterior Cervical Discectomy and Fusion: A Case Report
- The Management of an Anterior Lumbar Derangement: A Case Report
- The Application of Mechanical Diagnosis and Therapy to an Ankle Sprain: A Case Report
- Application of Mechanical Diagnosis and Therapy on the Human

McKenzie Institute Part A Lumbar Spine Course
April 10-12, 2015
And Part B Cervical and Thoracic Spine
February 27 - March 1, 2015 & September 18-20, 2015
at Russell Sage College
Nurse Practitioners invited to observe patient treatments

www.macciophysicaltherapy.com
YOU HAVE A CHOICE

- Only 18% of patients with lower back pain are referred to physical therapy by their doctor’s
- Medicare reports a 629% increase in cost for epidural steroid injections and a 220% increase in spinal fusion surgery rates
- Physical therapy is safe, has no side effects and teaches you what to do to manage and prevent your pain from coming back
McKenzie Online Course

Overview of the McKenzie Method

This free course is designed to provide a very broad overview to better understand the principles of the McKenzie Method before embarking on formal training.

Go to:
http://www.mckenziemdt.org/eduCourseOnline.cfm
References


