

moving in the right direction

Mechanical Diagnosis And Therapy®
of the spine and extremities

This edition focuses on the various ways MDT is used as a screening tool by different clinicians in varying environments. Whether it be pre surgery to screen and ensure that conservative care is truly exhausted or post surgery to check to see if there is a mechanical finding inhibiting recovery. Scott reminds us of the other side of the coin: MDT screens not just for responders but equally important exposes non-responders so these patients can be appropriately directed. We also have insights into MDT and the RTW process and MDT's "fit" with the athletic population. To satisfy the thirst to keep exploring the extremities, we have a special online bonus case study from Audrey Long with great insight and lessons to learn...Enjoy!!

►► A Reflection on MDT's Value as a Screening Tool

Scott Herbowy, PT, Dip. MDT

MDT as a screening tool conceptually is a comfortable thought for many of you who read this. However, when faced clinically with a result that is not the most desirable, that comfort zone often crumbles, resulting in panic mode. The consequences of this for many is to fall back on old habits and interventions and even to employ desperate measures in the hope that something better will transpire. A primary example of this occurred on a recent Part D course.

In October, I presented a Part D course where six patients were evaluated. They were all spine patients equally divided between necks and backs. The first five patients all had fairly straightforward histories and on examination, they were easily classified. Four of the five patients centralized classically and the remaining patient abolished symptoms and obstruction to movement quickly. The sixth patient was a completely different story. The history was confusing and completely unlike the previous five. On examination, there was no consistency in presentation, erratic responses to loading and certainly no hint of centralization. The outcome and what the patient was sent away with is irrelevant. What struck me most was the discussion that followed amongst the course participants. Many, if not most, were simply unwilling to accept the fact that the prognosis for that last patient was poor. They wanted to give excuses, postulated about "other" causes for the presentation, and even offered alternative approaches to "figure it out" and fix her.

Having experienced this reaction previously, I wondered as to why – even with persons on the advanced courses in MDT education – does the thought that all patients are not fixable or treatable in a physical therapy setting seem so threatening? Classification and prediction rules are all the rage, however, most are all directed with the thought of 'how do I fix this patient' and none really address who should not be treated. The average MDT practitioner is fine acknowledging that a sinister presentation should be excluded but when a purely musculoskeletal presentation needs exclusion, this is somehow not comfortable.

A recent shoulder patient I examined was a woman with shoulder pain of six months duration. Therapy for three months offered no improvement. On examination over three days, we were able to temporarily improve movement loss but pain never improved. The examination was extensive, the patient was compliant but the results were simply not there. On the fourth visit, the patient and I acknowledged this; she was disappointed but not upset. To the contrary, she offered quite a pleasing comment. "I am impressed that it only took you three visits to figure out what the other therapists took three months to finally realize."

I recall on Part A in 1984, watching in amazement as McKenzie fixed patient after patient. A year later on Part B, I was almost shocked at a cervical spine patient that McKenzie could not fix. I clearly remember asking him at the break about the "unfixable" patient (although I am sure he does not remember me). He responded in his ever enchanting way, "he does not centralize, does not improve in any way, my experience suggests we have little to offer beyond the encouragement of natural history."

The ultimate message I give to you is to let the system work for you, whether it is in the spine or the extremities. This does not mean that you will fix all your patients; it means through the strength of MDT as a screening tool, you will have the ability to quickly identify responders from non-responders. With respect to responders, the predictability in outcomes based on classification gives your patient appropriate and positive expectations. For the non-responder, they can be directed to other appropriate care and prevented from being over treated or treated inappropriately. Allowing the system to work, results in evidence based conclusions. Identifying a patient as a non-responder and not wasting resources or the patients' time is not "failure" but rather a success! Your patients will be thankful and the beneficiaries of your skills provided by MDT. ■

Special Online Bonus! A Tricky Case Study

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▶▶ MDT: A Powerful Tool with Athletes

Allan Besselink, PT, Dip. MDT, Director, Smart Sport International

The McKenzie Method® has a very intuitive “fit” with an athletic population. First and foremost, the active populace is typically in the “mind set” of self-treatment and training. Athletes, be they recreational or elite, seek treatment methods that are active and patient-centered. These patients are highly responsive to such measures and typically prefer approaches that facilitate “empowerment” and self-treatment. The McKenzie Method provides a great screening process – to understand the mechanical loading strategies, directional preference, and thus safe aspects of training that can be resumed early on in the injury recovery process.

The beauty of working with a sports population is that sport technique is defined by a combination of sustained postures and repeated mechanical loading. It's all in their training history! Posture plays a key role in all sports. Sustained loading can produce tissue creep. Training may involve many hours of repetitive mechanical loading, oftentimes with the additional component of axial loading. Over time, there is the added effect of fatigue which may be reflected in an alteration in “form” or posture as well (i.e. running). With sport training demands, you have the potential for mechanical disorders related to sustained positioning and/or repetitive mechanical loading.

The sports medicine world is traditionally very “pathology-driven”, so my first forays with McKenzie into this world were like speaking a foreign language. Conditions such as “iliotibial band syndrome” and “plantar fasciitis” were oftentimes found to be derangements that would be considered fast responders and not left to a life of ultrasound, massage, and e-stim. Contractile dysfunctions required specific mechanical loading for remodeling – not rest and passive modalities. The assessment process quickly establishes responders and non-responders with classification guiding the treatment intervention. Based on the results of mechanical testing and screening, we can safely prescribe activities that will allow the athlete to return to training – as soon as possible – or to fully understand the mechanical issues limiting their resumption of training. Training loads can be prescribed based on directional preference.

Most athletes are of the recreational variety. The majority maintain occupations that are the basis for their day. The difficulty is that oftentimes they will become victims of “day affects play” – the impact of their daily work activities on sport. Imagine a computer programmer (who is also training for a marathon) who spends eight to ten hours of his/her work day sitting in sustained end range position of the cervical spine. After work, the person does their training – with the expectation of taking this chronically flexed spine and having his/her body undergo repeated mid/end range extension (depending on the running pace). Is it the running that causes their cervical or lumbar pain? Or is it the tissue creep with sustained flexion, with obstruction to repeated extension and axial loading that is relevant?

The mechanical assessment not only guides treatment – it provides the basis for effective sports injury prevention as well. Does the athlete present mechanically with a situation that is ultimately preventing their optimal sport technique and performance? The concepts used in establishing a mechanical diagnosis will ultimately aid in keeping the athlete healthy and injury-free. Having an understanding of the sport and the biomechanics required for optimal technique will assist the clinician in not only uncovering the types of loading that may have contributed to the injury but also the appropriate prevention of injury and overall optimization of human performance.

The use of MDT, especially as an assessment process, is highly appropriate to integrate into a more effective sports medicine paradigm. MDT is a functional approach to sports injuries as it involves dynamic movements as part of the assessment process and implements patient-centered self-treatment strategies. When used in conjunction with knowledge of the effect of mechanical loading strategies on the athlete's sport technique and biomechanics, Mechanical Diagnosis and Therapy™ is a powerful tool in the assessment, screening, treatment, and prevention of athletic injuries.■

▶▶ MDT as a Screening Tool for Return to Work

Michelle Spross, MSPT, Dip. MDT and Scott Herbowy, PT, Dip. MDT

Return to work has been looked at extensively in the literature as a statistic demonstrating successful outcomes of treatment. A patient's return to work becomes complex because it is dependent on many factors such as worker's motivation, employer expectations, job requirements, ability to perform light duty, a case manager or insurance company's decision and a physician's approval. However, return to work can be looked at in a much broader sense. Return to work is simply a specific aspect of recovery of function.

Can MDT be used as a screening tool for return to work? The literature indicates yes. During the initial MDT assessment, Werneke¹ has reported that centralization is a stronger predictor of outcome than non-organic pain behavior. Thus, centralization can be utilized as a good screening tool for predictability to determine return to work. Many clinicians rely on behavioral factors as an explanation for failed intervention, especially in an occupational medicine setting. Utilizing centralization as a screening tool can provide a more objective predictor even when the patient presents with yellow flags.

So, when does a patient return to work? When they are pain-free? When they can handle the pain? In MDT, we begin assessing return to activity as part of the third phase of treatment of derangement, recovery of function. This phase is often poorly understood and underutilized. While

many clinicians think about remodeling of developing scar tissue, another perhaps more important aspect of recovery of function is testing for integrity of repair. Most clinicians want to abolish the pain or make the patient feel better, when in fact abolition of pain does not correlate with tissue repair. Pain resolution may indicate reduction of the mechanical problem; however, the tissue often remains fragile and unable to withstand everyday normal mechanical stresses. Therefore, when the patient performs a functional activity, they will rederange. Until healing is complete, the patient is at high risk of recurrence of derangement.

These concepts are what allow MDT to be an excellent screening tool for returning to work. Patients and clinicians monitor mechanical and symptomatic baselines to determine what activities they can perform without rederanging. This translates well into the work setting. When patients can perform the necessary work tasks without rederanging, the patient is safe to return to work. Patients will perform their reductive exercise to prevent recurrence. Additionally, patients will now have the tools to self-assess throughout the day.

MDT is an excellent screening tool for return to work. By looking at centralization and recovery of function, MDT clinicians can accurately predict return to work status. Additionally, MDT enables patients to return to work with the tools to prevent reinjury.■

¹Werneke M, Hart DL.; Centralization phenomenon as a prognostic factor for chronic low back pain and disability. *Spine*; Apr 1;26(7):758-65, 2001.

▶▶ MDT as a Pre-surgical Screening Tool

Max Folkersma, PT, Cert. MDT

With lengthening waitlists, increased difficulty accessing medical spine specialists, the high number of non-surgical cases seen by spine surgeons and ambiguous long-term results for spine surgery, the concept of pre-surgical screening has 'arrived'. With pre-surgical screening, patients requiring surgery may be better selected.

A study by Rasmussen et al¹ illustrates support of this concept. It demonstrates the success of pre-surgical screening clinics in reducing the number of back surgeries (specifically disc surgeries) in a county of Denmark. Since the installation of two pre-surgical clinics, the rate of disc surgery was reduced by 50% over a ten year period. Unfortunately, success of all care (conservative and surgical) provided or recommended by the clinics was not measured. The clinic was composed of rheumatologists, physical therapists (MDT trained), nurses, social workers, and occupational therapists. All patients were seen by the rheumatologist and physical therapist for an MDT evaluation and on an individual basis, were given practical advice on back pain management and exercise guidance as per the McKenzie method. The patients were also given education regarding the favorable prognosis of LBP. Some patients were referred for physiotherapy follow-up.

The authors do not credit the decrease of surgery rates entirely to the success of the clinic. An education program and professional support was offered to the referring GPs to improve the management of back pain patients, thereby decreasing the number of referrals to surgeons. Finally, a media campaign directed towards the public was believed to have changed patient's attitudes towards back pain.

A reduction of surgeries occurs first in the GP's office with improved first-line care for back pain sufferers. The addition of pre-surgical screening by physiotherapists and non-surgical physicians is a second-line screening that can help deal with more complicated cases. Physiotherapists are ideally placed as neuromuscular experts to provide pre-operative non-surgical screening of back patients. MDT is a validated back evaluation tool whose outcome can be easily understood and reproduced by clinicians trained in the MDT method.

I have worked at clinics for the McGill Spine and Scoliosis Centre of the McGill University Health Centre (MUHC) in Montréal, Québec since 2005. The clinic is composed of three Orthopaedic spine surgeons, a Physiatrist, a Family Physician, a Physiotherapist (Certified in MDT) and nursing personnel. The main roles of the non-surgical staff are to catch "red-flag" cases and to screen-out patients not appropriate for surgery in order to direct them towards appropriate conservative care. Additionally, the physiotherapist will evaluate if patients have received appropriate evidence-based physiotherapy (as per guidelines) and provide follow-up physiotherapy care as needed. Some patients are given a trial of physiotherapy to determine if they are amenable to conservative care, or are offered physiotherapy to prepare for eventual surgery. We not

only screen patients, but also manage post-operative cases, from discectomies to extensive spine fusion surgeries and disc replacement surgeries.

As MDT therapists, we possess a useful skill set in the ability to quickly determine if a patient will respond to physiotherapy (centralisers and patients demonstrating a directional preference). More importantly, as MDT practitioners we are not limited by a diagnosis; rather, we determine treatment plans based on symptom response in order to place a patient in a treatment category (or sub-grouping). In the literature, sub-grouping has been shown to have more effective treatment outcomes than treating by diagnosis.

Working in a surgical clinic has been both stimulating and challenging. Initially, my role as the physiotherapist assigned to the clinic was to see patients that the physicians thought were appropriate for physiotherapy. Over the last three years, this role has gradually evolved to the point where the physiotherapist is the first person the patient will see. I will then report back to the physician with my clinical impression (i.e. the PT will see the patient to determine the severity of the complaint and provide an opinion to the physician regarding whether the patient should go through a trial of PT care) and subsequent care to the patient is determined with the physician. My role within the clinic is to select and direct patients, not to provide treatment, which is unusual for a physiotherapist. This appears to be the direction of physiotherapy services in the spine setting as a physiotherapist has now been requested to screen patients for the Neurosurgical spine team at the MUHC.

Patients seen by myself in the clinic are generally very receptive knowing that we are part of the medical team and that they are being seen by "spine specialists". In order to being considered for surgery, patients need either to present with 'red-flag' signs & symptoms, or exhaust conservative pathways to back care (PT, blocks, pain clinic, etc.) and even then need to fit selection criteria to move onto a 'surgical' evaluation.

With the addition of pre-surgical screening, we can better manage overloaded surgical wait lists and provide appropriate care to patients faster and more efficiently (whether it is surgical or conservative). Physiotherapists may not be able to select surgical cases, but we can pick up responders to conservative care, and pick out "red-flag" cases using a consistent, reproducible evaluation tool. The McKenzie evaluation closely resembles a physician's physical exam with the added benefit of repeated movement testing and a standardized subjective evaluation. ■

¹ Rasmussen C et al. Rates of Lumbar Disc Surgery Before and After Implementation of Multidisciplinary Nonsurgical Spine Clinics. *SPINE* 30(21):2469-73, 2005.

Link to access article:

http://journals.lww.com/spinejournal/Abstract/2005/11010/Rates_of_Lumbar_Disc_Surgery_Before_and_After.22.aspx

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Renaissance Harborplace Hotel – Baltimore, MD
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MDT Screening with a Post-Op Patient

Yvonne Body, PT, Dip. MDT

An 81 year old male presented who had a C2-7 fusion six months ago secondary to rapidly progressive cervical myelopathy. His primary complaints were of left sided neck pain, decreased balance and decreased independence with gait. The onset of neck pain occurred approximately six weeks ago for no apparent reason. The patient requested that we address his C-spine pain initially because this was most limiting for him. He reported intermittent neck pain which was brought on with prolonged sitting, approximately one hour, and was improved with sitting with a neck support and changing positions. He also reported being out of his hard collar for the past month. The patient has a complicated medical history, but nevertheless had been cleared to participate in physical therapy.

11-28-08 Initial Assessment

The completed assessment form for this case study is posted in the MDT Resource Center at www.mckenziemdt.org/resource.cfm.

12-03-08

Patient returned for his second visit and stated that neck pain was improving and exercises were going well. Patient presented with increased ROM with retraction and bilateral rotation. Provisional classification was confirmed. The home exercise program (HEP) was reviewed and postural strengthening exercises were initiated in order to address his deconditioned status.

12-08-08

Patient stated that his neck pain was much better and was only present if he sat for a long time, approx three hours. Patient's ROM with retraction and bilateral rotation continued to improve and strengthening exercises were progressed in order to increase his functional independence in the home and community.

12-15-08

Patient stated that he had a follow up appointment with the surgeon and has been released to swim and golf. The patient stated "I can't golf because I can hardly walk". At this time, all cervical pain has been resolved and his exercise program expanded to include balance and proprioception activities that would simulate golfing.

Next four visits: (over the next three weeks)

Cervical spine pain continued to be resolved and he was no longer limited with sitting. Therapy continued to focus on functional strengthening and balance activities. Patient reported practicing putting at home.

01-07-09

Patient reported return of cervical spine pain (yesterday) and it was still present. Upon further investigation, it was determined that the reason for the return of symptoms was most likely secondary to sitting on a soft cushion (which placed him in a slouched sitting posture) and practicing golf for 30 minutes. Patient denied performing

his loading strategy of repeated retraction with the onset of symptoms. In the clinic, repeated retraction in sitting was performed with an initial response of increase, no worse, but with repetitions the increase in pain diminished, with an increase in ROM. The patient was encouraged to resume his HEP as indicated initially and to continue sitting with a lumbar support. The patient was also educated on performing retractions in order to interrupt repeated, or sustained, flexed postures as in putting.

01-12-09

Patient reported not experiencing any cervical spine pain for the past several days. The functional strengthening program was resumed.

The patient was seen for one more visit and his cervical spine pain had remained abolished. Physical therapy will be placed on hold secondary to other medical issues.

Discussion

When patients are seen in the clinic following an extensive cervical spine surgery, it is not unusual for them to report symptoms of pain. It is important not to assume that their symptoms are secondary to the surgical procedure, but may be mechanical in nature, especially if the onset of symptoms is several months after surgery.

This case study is a good example of just such a situation. The patient presented with a complicated medical

history. It is important to note that his neurological deficits were present prior to surgery. During the interview process, it became evident that his neck pain behaved mechanically, and was unrelated to the other neurological symptoms that he reported. During the physical examination, he responded as a classic derangement syndrome, and his symptoms were abolished and remained better in three visits.

From a pathoanatomical standpoint, this patient poses a conundrum. If he underwent a fusion from C2-7, what exactly is obstructing his motion? How can you explain the classic re-derangement that occurred several weeks later when faulty postures and positions were resumed without performing their reductive exercise for prophylaxis? A common error that occurs with therapists new to Mechanical Diagnosis and Therapy during the interview process is not looking for patterns. This patient described a classic pattern of the derangement syndrome with onset of symptoms with sustained slouched sitting. MDT allows the clinician to utilize symptomatic and mechanical responses to loading strategies and takes away the burden of attempting to treat pathoanatomically. The patients are most interested in getting rid of their symptoms, not whether you can explain it on the spine model. This patient was quite pleased with the abolishment of his cervical pain, allowing him to get on with more important things like returning back to life and his golf game. ■

"A common error that occurs with therapists new to Mechanical Diagnosis and Therapy during the interview process is not looking for patterns."

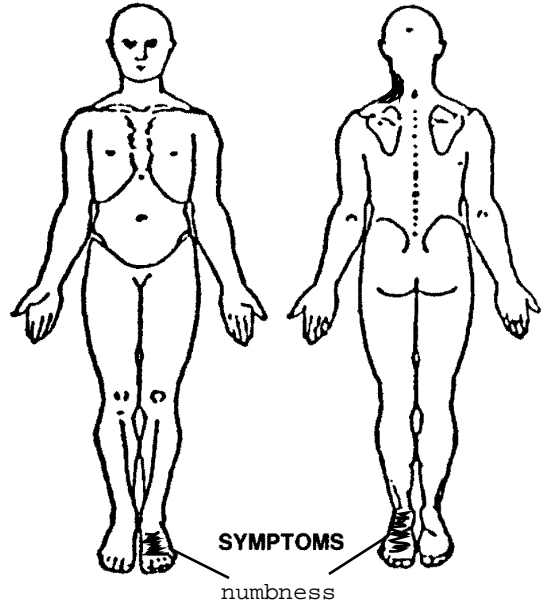


THE MCKENZIE INSTITUTE CERVICAL SPINE ASSESSMENT

Date 11/28/08
 Name _____ Sex M / F
 Address _____
 Telephone _____
 Date of Birth _____ Age 81
 Referral: *GP / Orth / Self / Other* _____
 Work: Mechanical stresses _____

 Leisure: Mechanical Stresses _____
 Functional Disability from present episode _____

 Functional Disability score _____
 VAS Score (0-10) _____



HISTORY

Present Symptoms L sided C-spine P
 Present since onset ~ 6 weeks ago Improving / Unchanging / Worsening
 Commenced as a result of _____ Or no apparent reason
 Symptoms at onset: neck / arm / forearm / headache
 Constant symptoms: neck / arm / forearm / headache Intermittent symptoms: neck / arm / forearm / headache
 Worse bending sitting ~1hr turning lying / rising
am / as the day progresses / pm when still / on the move
 other _____
 Better bending sitting turning lying
am / as the day progresses / pm when still on the move
 other sitting with neck support, changing positions
 Disturbed Sleep Yes / No Pillows _____
 Sleeping postures Prone / sup / side R / L Surface Firm / soft / sag
 Previous Episodes 0 1-5 6-10 11+ Year of first episode _____
 Previous History Status post 5 level cervical decompression C2-7 6 months ago, prior to surgery
pt had difficulties with walking; experienced UE/LE Sx's; hand numbness
 Previous Treatments C2-7 anterior discectomy; cord/root decompression; interbody fusions
D/C of cervical collar 4 weeks ago

SPECIFIC QUESTIONS

Dizziness / tinnitus / nausea / swallowing / +ve / -ve Gait / Upper Limbs: normal / abnormal
 Medications: Nil / NSAIDS / Analg / Steroids / Anticoag / Other See History & Physical unstable / poor balance
 General Health: Good / Fair / Poor Hypertension, splenic lymphoma; receiving blood transfusions
 and chemo but is currently on hold
 Imaging: Yes / No
 Recent or major surgery: Yes / No See above Night Pain: Yes / No
 Accidents: Yes / No _____ Unexplained weight loss: Yes / No
 Other: Pt was admitted to ICU x2 weeks following surgery due to complications with respiratory
insufficiency; airway edema

EXAMINATION

POSTURE

Sitting: Good / Fair / Poor Standing: Good / Fair / Poor Protruded Head: Yes / No Wry Neck: Right / Left / Nil
 Correction of Posture: Better / Worse / No effect Relevant: Yes / No
 Other Observations: significant kyphotic posture present resulting in a decrease in ability to sit erect
normal bilateral bicep

NEUROLOGICAL

Motor Deficit Bilateral UE = 5/5 Reflexes ↑d bilateral tricep; absent bilateral
 Sensory Deficit intact to light touch bilateral UE Dural Signs patellar achilles

MOVEMENT LOSS	Maj	Mod	Min	Nil	Pain
Protrusion				✓	
Flexion		✓			*
Retraction	✓				*
Extension	✓				*

	Maj	Mod	Min	Nil	Pain
Lateral flexion R	✓				
Lateral flexion L	✓				
Rotation R		✓			*
Rotation L	✓				*

TEST MOVEMENTS Describe effect on present pain – During: produces, abolishes, increases, decreases, no effect, centralising, peripheralising. After: better, worse, no better, no worse, no effect, centralised, peripheralised.

	Symptoms During Testing	Symptoms After Testing	Mechanical Response		
			↑Rom	↓Rom	No Effect
Pretest symptoms sitting:	No symptoms				
PRO					
Rep PRO					
Ⓛ RET	prod Ⓛ C-spine	NW			
Rep RET	prod Ⓛ C-spine ; with reps ↓ P	NW	✓ ret	& R/L	rotation
RET EXT					
Rep RET EXT					
Pretest symptoms lying:					
RET					
Rep RET					
RET EXT					
Rep RET EXT					
If required pretest pain sitting:					
LF - R					
Rep LF - R					
LF - L					
Rep LF - L					
ROT - R					
Rep ROT - R					
ROT - L					
Rep ROT - L					
FLEX					
Rep FLEX					

STATIC TESTS

Protrusion _____ Flexion _____
 Retraction _____ Extension: sitting / prone / supine _____

OTHER TESTS Ⓛ Babinski, 2 beat clonus bilaterally

PROVISIONAL CLASSIFICATION

Derangement Dysfunction Postural Other post surgical
 Derangement: Pain Location unilateral - upper cervical flexion principles

PRINCIPLE OF MANAGEMENT

Education: sitting posture-use of lumbar support Equipment Provided: _____
 Mechanical Therapy: Yes / No _____
 Extension Principle: _____ Lateral Principle: _____
 Flexion Principle: upper cervical flexion principles Other: _____
 Treatment Goals: repeated ret 10-20x every 2 hrs,
more often if sitting for prolonged periods



THE MCKENZIE INSTITUTE EXTREMITIES ASSESSMENT

Date Nov 3, 2008

Name _____ Sex **M**

Address _____

Telephone _____

Date of Birth _____ Age **52**

Referral: *GP / Orth / Self / Other* self

Work Managerial desk work 90%

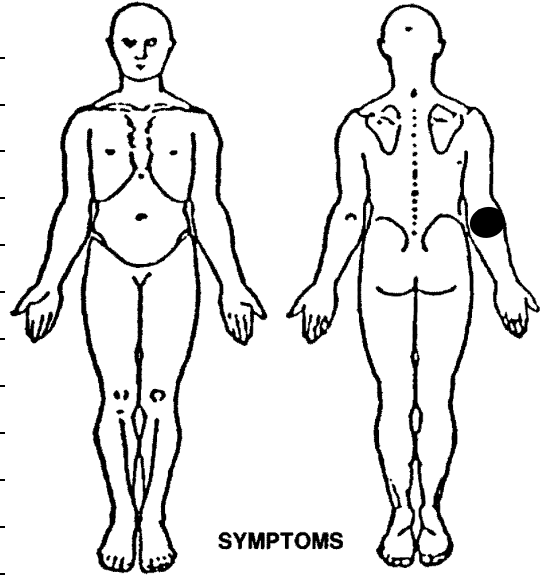
Leisure Reading, golf, weights

Postures / Stresses _____

Functional Disability from present episode Can't shake hands

Functional Disability score _____

VAS Score (0-10) _____



HISTORY

Present Symptoms Diffuse elbow pain

Present since March or April '08 *Improving / Unchanging / **Worsening***

Commenced as a result of Increased weights on biceps curls to 35 lbs *or no apparent reason*

Symptoms at onset: Uncertain, very mild

Constant symptoms: **Intermittent symptoms**

What produces or worsens Shaking hands, biceps curls, flex + supinate to lift (e.g. jug of water)

What stops or reduces Stop movement

Continued use makes the pain Better **Worse** No Effect

Pain at rest **Yes** *sometimes – only if pushes weights too hard, usually no pain at rest*

Disturbed night **No**

Other Questions “not worse” if keeps biceps curl to 10 lbs
but hand shakes create the sharpest pain even with “little old ladies”

Treatments this episode none

Previous episodes no

Previous treatments n/a

Spinal history Continues exercises learned for lumbar derangement last year

Has annual prostate checks due to strong family history prostate cancer Paraesthesia Yes **No**

Medications tried none Effect _____

Present medication none

General health Notes loss of muscle mass, last 2 months 8 lb weight loss in already slim individual

Imaging None

Summary: ~~Acute / Sub-acute~~ **Chronic** Trauma / **Insidious onset**

Sites for physical examination elbow

EXAMINATION

Observation Tall, slim, long limbed body type – no swelling

Baseline measurements (pain or functional activity) Painful to light hand shake

Active Movements (note symptoms and range)	PDM	ERP
Full and painfree		
Passive Movement (+/- over pressure) (note symptoms and range):		
Produce pain with overpressure to extension (pain location? "inside"?)		✓
Flexion, supination, pronation all NE with OP		
Combined elbow extension + wrist flexion, then wrist extension to ER NE		
Resisted Test Response (pain)		
Pain free elbow and wrist including pronation and supination		
But grip in the handshake position produces pain++ (small amp movements mid range)	✓	
No pain with dynamometer grip strength test and position, strength > left		

Repeated Tests (choose the most symptomatic from above)

Baseline symptoms 0 at rest	Symptoms response		Mechanical Response e.g. hand shake		
	During Movement – Produce, Abolish, Increase, Decrease, NE	After Movement – Better, Worse, NB, NW, NE	↑ROM	↓ROM	No Effect
Active movement, passive movement, resisted test					
flexion	NE	NE			✓
Flexion + OP	NE	NE			✓
extension	NE	NE			✓
Extension + OP +/- WB	Produce ERP	NW			✓
Ext + med glide, lat glide	Both produce ERP	NW			✓
Effect of static positioning					
Other tests: eg loaded, compression, unloaded etc.	25 lb biceps curls (couldn't find heavier)	NE !			
	Repeated extension with resistance using theraband,	B, with hand shake NE? ER extension			

SPINE prior lumbar, no cervical complaints

Movement Loss nil

Effect of repeated movements Not tested

Effect of static positioning _____

Spine testing Not relevant / relevant / secondary problem

PROVISIONAL CLASSIFICATION Peripheral

Dysfunction – Articular _____ **Spine**

Derangement _____ Contractile _____

Other _____ Postural _____

_____ Uncertain _____

PRINCIPLE OF MANAGEMENT

Education Self test ER extension and hand shake

Exercise Resisted extension with theraband Frequency 2 x 10, Q2h

Treatment Goals Pain free hand shake, resume 25 lb biceps curls (which were pain free before)

CASE STUDY

Enlightening Extremities

Audrey Long, PT, Dip. MDT

This is a patient with a type of elbow presentation I had not encountered before. I was a bit uneasy after the physical exam because my findings seemed out of synch with the history and baseline tests. I did not recognize a familiar "pattern". Applying MDT has really helped me improve my "poker face". I never let on to the patient that he had me a bit stumped. I simply followed the MDT play book. It took two visits, but we figured it out. Hope you enjoy this case. Do any of you have any cases where MDT in the extremity surprised you? We'd love to hear from you.

Clinical reasoning:

Day 1:

From the history, I suspected derangement because:

1. Pain was worsening despite minimal use
2. Pain can become constant with overuse (heavy bicep curls, lots handshakes at a function)
3. Chief complaint was pain in a midrange position (handshake)

I could not yet rule out contractile dysfunction because:

1. Hand shake and biceps curls involve contractile tissue.
2. He has had it long enough for dysfunction to develop.

Other: Red flag - weight loss? On further questioning, he admitted to being one of those people who historically can lose weight easily and lifts weights to help him keep weight on. Prostate cancer tends to metastasize to the lumbar spine. Is the elbow possible? I don't know, but the history sounded very mechanical, so we search this out first.

The physical exam surprised me. It was so easy, with a light handshake, to produce a sharp pain. Yet active and resisted tests failed to produce this pain. There was no obstruction to movement that I could see. Only with very firm overpressure to extension, could I produce ERP with extension, but this was not nearly as sharp as the handshake pain.

If what I had was extension dysfunction, I could not explain the handshake pain or the aggravation with biceps curls (he showed me and he did not get to full extension with these). Where was that derangement lurking? I have never seen an elbow quite like this one before.

I was close to sending him off to "produce NW" with overpressure in extension for a few days but we had time to explore a bit further, so I started adding resistance (increased load) since he was NW with tests up to that point. In fact, he was surprised that the biceps curls tested in the clinic did not produce some ache. Ah ha! "*Sometimes*" biceps curls produce pain. Hello derangement, I know you're in there somewhere! (*or maybe Audrey needs a holiday*).

When the resisted extension seemed to produce some change for the better (though certainly not convincing), he was happy to be sent home with that. Could it be this simple that resisted biceps curls were part of the onset and resisted triceps would be part of the resolution?

No – not that simple.

2nd visit four days later:

He returned worse. Overall "more tender", sometimes there was a constant ache, and he had cut back on the exercises after two days.

Exam: Vague, did he have baseline ache or not? It was "tender" but not to touch. Full ROM = NE, resisted tests NE, but "OUCH" with gentle handshake.

Review the resisted extension exercise, technique was as prescribed, NE

Thoughts? Worse after a few days of extension? OK, let's flex.

Repeated flexion NE, flexion +OP (wrist in supination) – B+ with handshake!

Extension + OP, less ERP.

New home program – repeated flexion + OP while on vacation.

Follow-up by phone 2 weeks later:

Handshakes were pain free and he is back doing his weights at 25 lbs.

Main lessons:

1. Follow the rules – if "NW", continue to test and progress forces.
2. Just because a movement has NE one day does not mean that it is not worth reviewing on further visits. Things change.
3. Making a patient worse is not always a bad thing. You have exposed the lesion. Simply change the direction of testing to find the reductive movement.

Now, just don't ask me to explain what happened from an anatomical perspective!