The Role of Physical Therapy in Tinnitus Management

October 6, 2017
Kay Cherian PT, DPT, Cert MDT
cheriak@ccf.org
Goals

1. Describe the physical therapy component of the Tinnitus Management Clinic at Cleveland Clinic.

2. Present case examples / common orthopedic findings.

3. Review our past reviews/research on tinnitus.

4. Identify who needs physical therapy and which physical therapist should treat tinnitus patients.
Tinnitus Management Clinic

Physical Therapy
Physical Therapy

• Has anyone had PT before?
  — For what body part?

• Consider your onset of Tinnitus
  — Was it insidious? after MVA/fall? etc..

• Do you have any additional symptoms?
  — Neck pain/tightness/stiffness
  — Headache
  — Jaw pain/popping/clicking/locking
  — Shoulder or mid back pain
Cervical Spine

• Derangement vs dysfunction
  • Joint vs muscle
• C0-1, C1-2, C2-3
  • upper cervical region
  • 50% of rotation at C1-2
• C5-6-7-8-T1
  — More strain with protrusion
Temporomandibular Joint

• It is common with patients with neck pain
  • even if no complaints

• Jaw muscles linked to neck
  – Buccinator mm→suboccipital region
    (tensor veli palatini and eustachean tube)

• Poor posture puts strain on jaw muscles

• Increased clenching and grinding: with stress/anxiety
Physical Therapy

• Posture / Habits
  – Common sitting position
    – Forward head
  – Sleeping positions
    – Prone vs sidelying position
  – Ergonomics
    – Lap top/desk top computer and phone/texting
  – Occupational positions
    – Plumber vs dentist

© https://familylifegoals.com/phone-neck-pain
Dr. Kenneth K. Hansraj
What is Good Posture?

• Sitting up straight will reduce the amount of stress on your joints and muscles.

• Begins at lumbar spine and can effect everything above if poorly positioned.
Check your posture

• How are you sitting during the day?

• Is your head forward?

• Are you slumped?

This can aggravate your neck and your symptoms
Tinnitus Screen
Physical Therapy Active Screen

• Sign and symptom baseline
• Range of motion c/s, t/s
  —Changes with unweighted?
• Check UE strength
• Repeated testing of cervical spine
  —Monitoring any present signs and symptoms
    *especially tinnitus levels
• Patient education
  —Explain findings
  —Complete assessment needed?
Why should physical therapy be included in assessment of tinnitus?

Why look at the neck and jaw?

Literature is suggesting we should consider these areas for tinnitus management:
Sanchez TG, Rocha CA, Latifpour DH, Michiels S, Buergers R Montazem A.
Patient #1

Somatic

- M- 42 insidious onset
- Bilateral intermittent tinnitus- worse in am, with lifting or bending
- Additional symptoms present 6 yrs, worsened 1 month prior to appt
  - Headaches
  - Blurry vision
  - Dizziness
- THI: 62/100 (*Severe disability)
- DHI: 40/100 (moderate disability)
- HDI: 38/100 (moderate disability)
- NDI: 12/50 (mild disability)
Patient #1

Somatic

• Reduced mobility in upper and lower cervical spines
• Lower cervical derangement with myotomal weakness
• DNF weakness
• Jaw clenching esp. when lifting weights
• Limited thoracic mobility
• Tinnitus was altered with cervical and jaw motions
• Treatment 10 sessions

• Presented as poster and then published in 2013
The Role of Physical Therapy in Tinnitus: A Case Report

Kay Niedermeer MPT, Cert. MDT1 and Neil Cherian, MD2

1Physician Medicine and Rehabilitation, *Neurological Institute, Cleveland Clinic

Abstract:
Tinnitus is a common disorder with limited treatment options. In the past ten years, research has identified that neck and jaw contractions can influence tinnitus. While treating patients for headaches, dizziness, and temporomandibular disorders, we have been able to decrease the intensity and frequency of tinnitus despite not being the focus of the treatment. To date there have been no published reports that identify specific physical therapy interventions for improving tinnitus. This abstract is based on a case description of a 42 year old man who is an avid weight lifter. We work as a line operator at a main wall building and maintain prolonged positions where his neck and head are in flexion and extension. His tinnitus was described as a bilateral buzzing and was intermittent. It began six years ago and was worsening. Along with this he complained of headaches, blurry vision and neck tightness. On his initial evaluation his tinnitus was rated on VAS 4-10. His tinnitus handicap inventory score was 62.180. Evaluation revealed decreased cervical motion as measured by CROM. Resisted muscle contractions of the cervical spine in flexion, extension and rotation increased his tinnitus. Jaw contractions had no effect on neck pain. However, jaw pain and jaw muscularity was rated as well as significant cervical upper pain. Physical therapy focused on normalising cervical spine mechanics via repeated movement assessment, joint mobilisation and soft tissue massage. The patient demonstrated significant improvement in his tinnitus. This was likely due to increased movement in cervical spinal biomechanics and tone. This improvement was objectively measured by changes in the following disability measures on discharge: TH, NHI, DHI. Overall, tinnitus is a complex disorder along with the lack of cervical interventions. It is imperative to identify potential contributions from the cervical spine and temporomandibular disorders. This may lead to future understanding of this condition and the subsequent development of effective treatment strategies.

Background:
- Estimated 50 million Americans experience tinnitus.
- Approximately 10-12 million people are disturbed enough to seek medical attention.
- Around two million people are severely bothered by tinnitus symptoms making it difficult to perform their daily activities.
- Around 75% of tinnitus patients can modulate their symptoms with contractions of the head, neck and jaw (Dale, et al., 2020).
- A review of 69 randomized controlled trials of tinnitus treatments concluded that a single treatment could be considered effective if it produced long term, persistent and diagnostic reductions in tinnitus (Dale, 2019).
- There are no prospective, randomized controlled studies in the published literature investigating specific physiotherapy treatment protocols for improving tinnitus.

Methods:
- Retrospective chart review of one patient that was referred to PT from Neurological Institute at The Cleveland Clinic. July 2007 for cervicalgia, peripheral vertigo, migraine and Tinnitus.

Case:
- Description:
  - 42 y/o male with bilateral intermittent tinnitus / buzzing
  - Symptoms reported (tinnitus, headaches, dizziness, blurry vision) have been present for 6 years, but worsened 1 month prior to evaluation.
  - Tinnitus got worse in the am, with lifting and bending forward.
  - His job required him to maintain prolonged positions of head protrusion and neck flexion while working on equipment. (See illustration 1)
  - MRI report identified C3-C6-T7 contact with slight flattening of the vertebral canal to the left and midline at C5-C6 and minimal narrowing of at anterior to the left neural foramina at C5-C6. Mild narrowing of anterior to left neural foramen at C6-7. Auditory testing was normal.

Initial Evaluation Findings:
- Visual Analog Scale (VAS): 4/10
- Tinnitus Handicap Inventory (THI): score was 62/180 (Severe handicap)
- Neck Disability Index score was 24/100 (moderate disability)
- Headache Disability Inventory was 38/100 (DS)
- Dizziness Handicap Inventory was 40/100 (DS)
- His range of motion was limited in extension, retraction and cervical rotations (PLR) (See Illustration 1).
- Sonographic motion assessment identified tightness in right upper cervical rotation (C1-2).
- Resisted muscle contractions of the cervical spine in flexion, extension and rotation increased his tinnitus.
- Resisted muscle contractions of his jaw had no effect on his tinnitus.
- Active cervical range of motion was evaluated by using a CROM (see illustration 2) to obtain clear objective measurements.

Plan of Care:
  - Patient progressed through the following flow as he tolerated.
  - Each progression of movement was completed while monitoring improvements in his tinnitus and cervical mobility.
- Repeated Retraction: Repeated Extension: Repeated Flexion: Stretching neck muscles
  - As the patient reported increased motion and improvement he was compliant with her HEP additional techniques listed below: added, as tolerated by patient.
  - Extension mobilization of upper cervical and thoracic spine to assist in improving overall mobility.
  - Right to left mobilization of C1 on C2.
  - Soft tissue massage of neck and jaw musculature was completed in the supine position.
  - Jaw tracking exercises were given to assist in normal muscle contraction / function. Education to avoid clenching his teeth when lifting weights.
  - Patient education carried postural cervical spine position with focus on avoiding protrusion.
  - Patient education on correct ergonomic positions to maintain while at work.
  - Patient education on individual home exercise program.

Outcome measurements:
- THI: Tinnitus handicap inventory. The THI is a 25 item questionnaire that assesses the distress in function, emotion and the somatosensory experiences of tinnitus. A ‘yes’ response to an item receives 4 points, ‘sometimes’ receives 3 points, ‘no’ receives 2 points. The higher the reported score, the higher the disability (Neuman, Sandrini et al., 1998).
- DHI: Dizziness handicap Inventory. DHI is a 25 item questionnaire that assesses physical, functional, emotional aspects of dizziness. A ‘yes’ response to an item receives 4 points, ‘sometimes’ receives 3 points, ‘no’ receives 2 points. The higher the reported score the higher the disability. (VAS: Visual analog scale)
- VAS: is a method of rating tinnitus from 0 to 10, where 0 represents no symptoms present and 10 represents an extremely loud/ intense sensation of tinnitus.
- HI: Headache disability index. The HI is a 25 item questionnaire that assesses functional and emotional characteristics of headaches. A ‘yes’ response to an item receives 4 points, ‘sometimes’ receives 3 points, ‘no’ receives 2 points. The higher the reported score, the higher the disability.
- NDI: Neck Disability Index. The NDI is a ten item questionnaire that assesses both physical and mental/health care categories. Each item is scored from 0-5 with a possible total score of 50, which is then converted into a percentage to determine overall disability rating.
- CROM: Cervical range of motion. The CROM fits on the patient’s head and theagi are placed around the neck to assist with measuring degrees of motion in planes. Measurements of patient’s cervical motion in the table.

Data Analysis:
- Measurements were completed on all data from the patient’s initial visit, mid treatment and at discharge from treatment, all data can be located in table 2, graphs 1 and 2.

Discussion:
Counseling posture has a significant effect on this biomarker. The cervical spine and in this case also produced improvement in tinnitus. The most restricted core segment motion was extension. Normal cervical extension is estimated at 70° degrees by most sources. Normal cervical extension, as well as overall motion is very individualized by what is allowed at each of the cervical segments. This mobility is also influenced by age, joint posture habits and tissue quality. This patient’s prior posture habits and work requirements led him to a position of cervical protrusion as well as flexion. Due to his habitual position mechanical was placed on the cervical following structures as mentioned below.

- The patients neck position when he began treatment was:
  - Cervical flexion
  - Upper cervical extension and flexion of lower cervical spine.

Due to his resting posture the tissues in his neck were exposed to constant stretch ("tension"). This sustained lasting / lifelong contraction occurred and produced and / or increased neck symptoms. This sustained posture and muscle length alterations could also assist in producing a malalignment of C1 on C2 which then alters upper cervical spine mechanics further. The malalignment then produces abnormal proprioceptive feedback in the cervical spine. The C1-C2 segment is responsible for approximately 90% of cervical rotation. Tinnitus could also be a byproduct of the abnormal positioning of this segment.

After treatment his cervical motion on neck posture improved significantly with the following results:
- Cervical flexion
- Extension

The decreased tension of this abnormal structure led to improvement in his tinnitus. Studies suggests that the gape lesion points are responsible for gape ting tinnitus (Carr and Chen 2002). In this case the patient’s cervical musculature displayed increased tone on initial examination, this improved with treatment and increased cervical mobility.

Questions:
- Can the tinnitus be caused by biomechanical problems in the cervical spine affecting the spinal alignment that in turn impacts the gape lesion group?
- Can the malalignment of C1 on C2 favor Homer in generating abnormal proprioception and somatosensory symptoms as tinnitus?
- One theory: increased tone is a result of discs and biomechanical problems. Godo ligation irregularities. Tinnitus.

Conclusion:
Tinnitus patients would benefit from a physical therapy evaluation for the following reasons:
- To identify any biomechanical abnormalities in the cervical spine and / or jaw
- To educate patients in proper posture, ergonomics, and a variety techniques
- Studies are needed to critically evaluate the role of mechanical interventions of the cervical spine in treatment of tinnitus. This is crucial because all of the other available treatment methods have conflicting and inconclusive evidence regarding efficacy. Given this, any such approaches with a potential for benefit should be further investigated.

References:
Clinical Report

Improving Tinnitus with Mechanical Treatment of the Cervical Spine and Jaw

DOI: 10.3766/jaaa.24.7.3

Kay Cherian*
Neil Cherian†
Chad Cook‡
James A. Kaltenbach§
Patient #2

Pulsatile

- F-age 48 onset after fall hitting back of head
- Initially noted tightness in L jaw and L tinnitus began 8 days after fall
- Post surgical- (muscle release in middle ear)
- Additional symptoms:
  - Headaches nightly
  - Jaw tightness bilaterally
- THI: 92/100 (*severe disability)
- DHI: 0/100
- HDI: 42/100 (moderate disability)
- NDI: 23/50 (moderate disability)
Patient #2

**Pulsatile**

- Reduced mobility C0-1 L, C1-2 L
- Lower cervical derangement with myotomal weakness
- DNF weakness
- Poor thoracic mechanics: limited motion rotation
- Tinnitus was altered with cervical and jaw motions, and with shoulder strength testing
- *Hypermobility testing 5/9 ** not previously diagnosed*
- Tinnitus was improved with axial compression of cervical spine (stabilization)
- Treatment limited due to out of state patient (4 sessions)
  - Also note patient was hospitalized for suicidal ideations
Common Orthopedic Findings

- Cervical involvement (with or without pain)
  - Reduced motion
    - General
      - Weighted/unweighted
    - Specific joints (upper vs lower)
      - C0-1, C1-2 as well as C5-6-7-T1
  - Weakness in deep neck flexors/anterior neck muscles
  - Lower derangement with myotomal weakness
  - Tenderness to palpation / overuse of muscles (SCM, suboccipitals, UT)
Common Orthopedic Findings cont.

• Jaw involvement
  – Pain with jaw motion
  – Parafunction:
    – Clenching/grinding, biting lips etc.
  – Abnormal mechanics:
    – Popping/clicking, limited motion, hypermobility
  – Tenderness to palpation of TMJ or muscles of mastication
  – Poor posture
    – Leaning on hand
    – Sleeping on side
Trigger points in these neck and jaw muscles have been known to contribute to tinnitus.

Travell and Simons
Common Orthopedic Findings cont.

• General findings
  —Posture
    —Forward head/posterior cranial rotation, protruded jaw
      —Alters mechanics of neck and jaw
      —Weakness of anterior neck, tightness of posterior mm
    —Rounded shoulders
      —Can aggravate shoulders and thoracic/lumbar spines
    —Poor ergonomic awareness/endurance
Our findings
CCF Pilot Study

• 2008 study of 10 patients
  – Limited demographic information

• Monitored THI, CROM, DHI, NDI, neck strength at initial visit, mid, and at discharge

• 10 PT sessions: manual and exercise
CCF Pilot Results

Neck Motion

Overall cervical motion improved. Bilateral rotation was most improved by 34 and 28% Cervical extension also improved by 26%

THI Changes

Ave. Initial THI was 42
*most improvement in emotional sub category
*28.4 total point drop in THI after treatment- 10 sessions
Common Factors of Patients that Attend a Multidisciplinary Tinnitus Management Clinic.  
Kay Cherian, PT, DPT, Cert. MDT1 Alma Gojani Azehni, DPT2, Neil Cherian, MD1, Craig W. Newman, PhD4, Sharon A. Sandridge, PhD4, James Kaltenbach PhD2  
Karyn A Kahn, DDS,4 Scott M. Bea, PayD2  
Cleveland Clinic Rehabilitation and Sports Therapy1, MetroHealth System2, Neurological Institute3, Head and Neck Institute4, Lerner Research Institute5  

2014 TMC Review  

Abstract  

Background and Purpose: Tinnitus is prevalent in approximately 50 million Americans and in the majority of these patients it impacts their quality of life. While there is no cure for tinnitus, a multidisciplinary team approach is helpful and worthwhile to address and help patients manage their tinnitus and improve their quality of life. The purpose of this retrospective study was to determine the characteristics of patients attending a Multidisciplinary Tinnitus Management Clinic (TMC) at the TMC.  

Subjects: Medical charts of 156 patients who attended the Tinnitus Management Clinic from January 2010 to October 2013 were analyzed to determine their characteristics.  

Methods and Materials: The outcome measure results were obtained by reviewing the TMC paper charts. To determine what additional services were sought after TMC, EPIC (electronic medical records) was used to obtain such information.  

Data Analysis: Basic descriptive statistics were used to obtain mean scores for outcome measures, number of patients that returned for individual evaluation and percentage of those that showed improvement after PT treatment.  

Introduction  

Tinnitus can be described as the perception of sound in the absence of actual sound. It is not a disease but a symptom of other medical conditions such as head injury, meniere’s disease, middle ear infections and other neurologic and/or psychiatric disorders.  

Tinnitus has been related to sensory, recurrent cranial nerve injuries, treatment of sensorineural hearing disorder, and poor prognostic factors.  

Purpose: This retrospective study reviewed medical records of patients seen in TMC with the purpose of answering the following questions:  

1. What are the common findings of the outcome measures?  
2. Are there any differences between treatment groups?  
3. How many patients returned for an individual evaluation after the first multidisciplinary screen and with which provider did they return?  
4. What are the common findings after Physical Therapy (PT) treatment?  

Methods  

Subjects: Patients that attended the TMC during the period of January 2012 to October 2013 were included in the analysis.  

N=156  

Patients that completed the aforementioned outcome measures on their initial visit  

Exclusion:  

• Missing or incomplete information from the outcomes measures.  

Methods:  

• TMC paper charts were reviewed to collect:  

- Gender  
- Age  
- Occupation, mechanism of onset, date of onset, symptoms (tinnitus, noise, pain, sleep disruption, hearing loss),  
- Severity of Tinnitus (Tinnitus Handicap Inventory-16 Tinnitus).  
- Electronic medical records were reviewed to determine any follow up care with the provider  
- If seen by PT, the number of physical therapy visits and the outcome measures scores post-PT treatment were recorded  

Results  

1. Patients that attended the TMC during the period of January 2012 to October 2013 were included in the analysis.  

2. Patients that completed the aforementioned outcome measures on their initial visit  

Exclusion:  

• Missing or incomplete information from the outcome measures.  

Methods:  

• TMC paper charts were reviewed to collect:  

- Gender  
- Age  
- Occupation, mechanism of onset, date of onset, symptoms (tinnitus, noise, pain, sleep disruption, hearing loss),  
- Severity of Tinnitus (Tinnitus Handicap Inventory-16 Tinnitus).  
- Electronic medical records were reviewed to determine any follow up care with the provider  
- If seen by PT, the number of physical therapy visits and the outcome measures scores post-PT treatment were recorded  

45% of patients for which data were available showed significant decreases in THI score.  

Discussion  

• The THI score can be the result of many different factors  
• Limited information about effective and active treatments for tinnitus exist currently.  
• Multidisciplinary programs to address tinnitus are rare  
• Basic information on the importance of lifestyle changes are shared with patients  
• Dietary modifications, sleep hygiene, use of auditory devices, cognitive restructure, relaxation music, CD, and additional education via “The Mindfulness and Acceptance Workbook for Anxiety”.  

Conclusions  

• TMC has been beneficial for patients who suffer from tinnitus  
• We surmised that the education and individual screening sessions were beneficial in decreasing the symptoms of tinnitus. Therefore individual evaluations were not needed in 45% of the patients that returned for physical therapy, indicating mechanical treatment of the cervical spine and jaw are helpful in decreasing and managing tinnitus in patients with somatically induced tinnitus.  
• Most patients reported other symptoms such as neck pain, jaw pain or discomfort, dizziness and headache, as well as tinnitus, all of which can be treated by physical therapy intervention.  
• The cervical spine and temporomandibular region should be assessed in tinnitus patients to rule out mechanical influences due to the connectivity of the systems.  

References  


The authors hold no disclosures.
2014 TMC Review

• Inclusion: 108 patients
  – Patients from January 2012 to October 2013
  – Completed outcome measures at initial visit
    – NDI
    – THI
    – DHI
    – GAD-7
    – PHQ-9
  – Retroactive chart review (paper chart and electronic medical chart)
2014 TMC Review

- Age range 30-84 y.o.
  - 59% male
  - 41% female
- Location:
  - 14% L, 12% R, 15% in head
  - 59% bilateral tinnitus
- Frequency
  - 75% constant
  - 24% intermittent
2014 TMC Review

• Additional symptoms reported:
  – 60% neck pain
  – 40% jaw pain

Graph 4: NDI scores at TMC screening day and post PT treatment
Graph 3: THI scores at TMC screening day and post PT treatment

Graph 5: HDI scores at TMC screening day and post PT treatment
CHARACTERISTICS OF PATIENTS WITH SOMATIC TINNITUS

Craig W. Newman, PhD¹, Sharon A. Sandridge, PhD¹, Gina Stillitano, AuD¹, and Neil Cherian, MD²
1Head & Neck Institute, 2Neurological Institute | Cleveland Clinic

BACKGROUND

- Somatic tinnitus occurs when at least one somatic component, e.g., dizziness, itch, localized pain is the primary source.
- Although its neurophysiologic mechanisms are not fully understood, evidence supports the existence of neural connections between somatic and auditory systems.
- It is estimated that approximately 80% of individuals presenting with tinnitus have a somatic component.

PURPOSE

This study was undertaken to describe the characteristics of a subgroup of patients with somatic tinnitus including:
- personal factors, duration, and quality of the tinnitus;
- duration of tinnitus over time;
- factors affecting the reduction or exacerbation of tinnitus discomfort;
- etiologic and biomechanical problems of the head, neck, upper, and lower extremities;
- impact of somatic tinnitus on health-related quality of life (HRQoL).

METHODS

A retrospective chart review was conducted for 238 patients seen in the Cleveland Clinic Tinnitus Clinic (TMC) between January 2000 and December 2010. Of these patients, 138 individuals were identified as having a co-occurring tinnitus and were included in the study. The remaining 100 individuals did not meet the inclusion criteria. For each participant, demographic information, medical history, and tinnitus symptoms were collected. A survey was completed by all participants to assess the impact of somatic tinnitus on HRQoL.

RESULTS

- Physical characteristics: Each of the TMC participants underwent a physical examination by the otolaryngologist to identify somatic tinnitus. In addition to a baseline hearing examination, 138 of the patients underwent an audiological evaluation and 25 underwent an MRI/MRA evaluation.

CONCLUSIONS

- Evidence is accumulating that the perception of tinnitus is modulated, arising from central integration among sensory and motor systems.
- Somatoform tinnitus is a common phenomenon, and its prevalence may be underestimated.
- Over one-third of these patients reported that their tinnitus was influenced by a daily habit or other lifestyle behaviors.
- Tinnitus increased following the use of medications for a greater percentage of individuals with somatic tinnitus compared to the control group.

CLINICAL MANAGEMENT STRATEGIES

- Management strategies are based on the patient's history and the degree of tinnitus-related disability.
- Use of a multidisciplinary approach including audiological, neurological, and psychological evaluation.
- Use of psychological therapy to address the impact of tinnitus on patients' quality of life, including the use of cognitive-behavioral therapy and biofeedback.
- Use of tinnitus retraining therapy (TRT) to help patients adjust to and habituate to their tinnitus.
- Use of tinnitus maskers to reduce the perceived loudness of tinnitus.

REFERENCES

Neck Disability Index

This questionnaire has been designed to give the doctor information as to how your neck pain has affected your ability to manage in everyday life. Please answer every section and mark in each section only the ONE box which applies to you. We realize you may consider that two of the statements in any one section relate to you, but please just mark the box which most closely describes your problem.

Section 1 – Pain Intensity
❑ I have no pain at the moment. (0)
❑ The pain is very mild at the moment. (1)
❑ The pain is moderate at the moment. (2)
❑ The pain is fairly severe at the moment. (3)
❑ The pain is very severe at the moment. (4)
❑ The pain is the worst imaginable at the moment. (5)

Section 2 – Personal Care (Washing, Dressing, etc.)
❑ I can look after myself normally without causing extra pain. (0)
❑ I can look after myself normally but it causes extra pain. (1)
❑ It is painful to look after myself and I am slow and careful. (2)
❑ I need some help but manage most of my personal care. (3)
❑ I need help every day in most aspects of self care. (4)
❑ I do not get dressed, I wash with difficulty and stay in bed. (5)

Section 3 – Lifting
❑ I can lift heavy weights without extra pain. (5)
❑ I can lift heavy weights but it gives extra pain. (1)
❑ Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently positioned, for example on a table. (2)
❑ Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned. (3)
❑ I can lift very light weights. (4)
❑ I cannot lift or carry anything at all. (5)

Section 4 – Reading
❑ I can read as much as I want with no pain in my neck. (5)
❑ I can read as much as I want with slight pain in my neck. (1)
❑ I can read as much as I want with moderate pain in my neck. (2)
❑ I cannot read as much as I want because of moderate pain in my neck. (3)
❑ I cannot read at all. (5)

Section 5 – Headaches
❑ I have no headaches at all. (0)
❑ I have slight headaches that come infrequently. (1)
❑ I have moderate headaches which come infrequently. (2)
❑ I have moderate headaches which come frequently. (3)
❑ I have severe headaches which come frequently. (4)
❑ I have headaches almost all the time. (5)

Section 6 – Concentration
❑ I can concentrate fully when I want to with no difficulty. (5)
❑ I can concentrate fully when I want to with slight difficulty. (1)
❑ I have a fair degree of difficulty in concentrating when I want to. (2)
❑ I have a lot of difficulty in concentrating when I want to. (3)
❑ I have a great deal of difficulty in concentrating when I want to. (4)
❑ I cannot concentrate at all. (5)

Section 7 – Work
❑ I can do as much work as I want to. (5)
❑ I can do my usual work, but no more. (1)
❑ I can do most of my usual work, but no more. (2)
❑ I cannot do my usual work. (3)
❑ I can hardly do any work at all. (4)
❑ I cannot do any work at all. (5)

Section 8 – Driving
❑ I can drive my car without any neck pain. (5)
❑ I can drive my car as long as I want with slight pain in my neck. (1)
❑ I can drive my car as long as I want with moderate pain in my neck. (2)
❑ I cannot drive my car as long as I want because of moderate pain in my neck. (3)
❑ I can hardly drive at all because of severe pain in my neck. (4)
❑ I cannot drive my car at all. (5)

Section 9 – Sleeping
❑ I have no trouble sleeping. (5)
❑ My sleep is slightly disturbed (less than 1 hour sleeplessness). (1)
❑ My sleep is mildly disturbed (1-2 hours sleeplessness). (2)
❑ My sleep is moderately disturbed (2-3 hours sleeplessness). (3)
❑ My sleep is greatly disturbed (3-5 hours sleeplessness). (4)
❑ My sleep is completely disturbed (5-7 hours sleeplessness). (5)

Section 10 – Recreation
❑ I am able to engage in all my recreation activities with no neck pain at all. (5)
❑ I am able to engage in all my recreation activities, with some pain in my neck. (1)
❑ I am able to engage in most, but not all, of my usual recreation activities because of pain in my neck. (2)
❑ I am able to engage in a few of my usual recreation activities because of pain in my neck. (3)
❑ I can hardly do any recreation activities because of pain in my neck. (4)
❑ I cannot do any recreation activities at all. (5)

0-4 No disability
5-14 Mild disability
15-24 Moderate disability
25-34 Severe disability
>35 Complete disability
2017 TMC Somatic Review

• 69/138 > 5 on NDI (> mild disability)

• Breakdown:
  – 0-4: 56/138 (no disability)
  – 5-14: 49/138 (mild disability)
  – 15-24: 16/138 (moderate disability)
  – 25-34: 2/138 ** (severe disability)
  – 35-50: 0/138 (complete disability)
Pt #1 severe disability
• 58 yo female
• Location: bilateral
• Baseline 8/10
• Modulated with both jaw and neck
• NDI:
  — Problems reported with HA, reading and driving

Pt #2 severe disability
• 53 yo female
• Location: inside head
• Baseline 10/10
• Modulated with both jaw and neck
• NDI:
  — Problems reported with lifting, concentration, recreation
2017 Somatic Review

- We are not using a jaw outcome measure at this time
- Consider this in the future for additional information

- Patients do have dental exam regardless of additional symptoms
Components of “Full” PT Evaluation

- Mechanics of spine, jaw and upper quarter
- Range of motion of joints
  - General/Specific joint mobility (C0-1, C1-2 etc.)
  - Jaw (opening, lateral excursion, protrusion)
- Strength
  - Upper extremity, DNF
- Tenderness to palpation (neck, jaw external + intraoral muscles)
- *Repeated motions (monitoring symptoms)
Components of PT Treatment

• Manual
  – Joint mobilization
  – Massage
  – Manipulation
  – Dry needling
  – Taping

• Referral to MD or dentist if needed
Components of PT Treatment

• Education
  – Posture correction
  – Ergonomics (work/home changes)
  – Correct sleeping positions-supporting neck

• Exercises
  – Correct mechanical deficits that are identified
  – Strengthen weak areas
  – Stretch tight areas
Take home messages…
Who to refer to PT?

• Neck pain, tightness, abnormalities of movement, tenderness of muscles
• Jaw deficits of movement, tenderness of muscles, crepitus, clicking, history of clenching/grinding
• Additional symptoms of HA, dizziness
• Tinnitus related to neck trauma, MVA
• History of additional spine, orthopedic problems
• Can modulate tinnitus
How to identify an appropriate PT

• What to look for:
  — **Active PT**
    — Patient is involved in their care, progress
    — Home exercises are a must
    — Manual therapy: massage, mobilizations, “hands on approach”
  — **Passive PT**
    — Patient is not as involved in care
    — No home exercises
    — Electric stimulation, hot pack, cold packs, general gym exercises
Locating a PT

• [www.apta.org](http://www.apta.org)
  — Find a PT- helps to ID PT local to patient
  — Look for OCS (orthopedic specialist certification)
  — Look for manual certifications (COMT, OMT etc)

• [www.mckenziefmt.org](http://www.mckenziefmt.org)
  — Specialized training in cervical and lumbar spine mechanics
  — Find a certified or diplomaed therapist on the list

*May need to ask if they are comfortable treating neck, headache and dizzy patients to get with appropriate PT. This PT can handle tinnitus patients even though they may not have treated them in the past.
Now we welcome questions