Dry Needling

Objectives
- Define Functional Dry Needling
- Review indications, contraindications, and precautions to Functional Dry Needling
- Discuss the characteristics of a Trigger Point and what changes occur after Dry Needling
- Demonstration

Definition
“A skilled intervention performed by a physical therapist that uses a thin filiform needle to penetrate the skin and stimulate underlying myofascial trigger points, muscular and connective tissues for the management of neuromusculoskeletal pain and movement impairments.”

– American Physical Therapy Association Dry Needling Task Force, May 2012

Dry Needling is...
- A treatment option/therapeutic modality utilized as an adjunct to other physical therapy techniques
- Not performed as a stand-alone service, but when appropriate, utilized within an established physical therapy plan of care
- Performed by a Physical Therapist who has successfully complete a certification course for Therapeutic Dry Needling

Trigger Point Definition
- **Active Trigger Points**
  - Hyperirritable spots
  - Taut band of skeletal mm/fascia
  - Painful upon compression
  - Produces characteristic pain, referred tenderness, motor dysfunction and/or autonomic phenomena
- **Latent Trigger Points**
  - Painful upon palpation
- **Satellite Trigger Points**
  - Develop in a zone of reference of key trigger points
  - Induced neurogenically or mechanically by activity of a key trigger point
Physiologic Effect of Dry Needling

- Increased blood flow
  - Measured with Doppler flowmetry in upper trapezius following needling (Cagnie, 2012)
- Decreased banding
  - Following the local twitch response in dysfunctional tissue
  - Restores normal sarcomere length
  - Restores normal length-tension relationship (Hseih, 2012)
- Decreased SEA
  - Eliciting a local twitch response quiets electrical activity (Chen, 2007)
  - Local twitch response could be viewed visually and with real time US
  - Increased electric activity is noted as a characteristic of neuromuscular dysfunction that is correlated with low pain pressure thresholds (Ge, 2011 and Xu, 2010)
- Biochemical changes (Shah, 2005 and Shah, 2008)

Not just for Myofascial Pain Syndromes or Chronic Pain

- Ankle Sprains
- Foot Drop
- Patellar Tendonitis
- Snapping Hip
- General Hip Pain
- Shoulder Impingement
- Shoulder Instability
- Scapular Dyskinesia
- Treating Proximal NR and Muscle
- Post Op with poor ROM or decreased muscle activation

Dry Needling Uses

- ↑ ROM
- ↓ Pain
- Movement re-education:
  - Restore efficient muscle contraction/recruitment
  - Improve neurological conduction (root to periphery)
- Restoration of function
  - facilitation (i.e. mechanical/tactile stimulation)
  - restoring optimal length-tension relationships (by decreased banding)
  - alleviating undue strain on nearby pain generating structures
- "RESET" the system to allow more normal movement to occur
  - RESET, REINFORCE, RELOAD!

Contraindications

- Inadequate knowledge
- Consent denied by patient
- Compromised equipment
- 4th trimester of pregnancy
- Scalp areas of infants
- Stipples, melolobic, and external genitalia
- Uncontrolled anticoagulant usage
- Compromised immune system
- Local infection, skin lesion or active tumor
- History of lymph node removal, local lymphedema
- Occipital region with Arnold Chiari
- Area over cardiac pacemaker
- Area over examp or T/S without advanced training
- Controlled anticoagulants
- Autoimmune Diseases
- History of lymph node removal
- Respiratory Illness (acute, subacute, chronic)

Relative Contraindications

- Needle aversion or phobia
- Significant cognitive impairment
- Communication barrier
- Hx of traumatic or spontaneous pneumothorax
- Metal allergy
- Abnormal bleeding tendency
- Vascular disease
- Area of breast implant or spinal stimulator
- Area of laminectomy
- Scoliosis
- Severe osteoporosis
- Post surgical

Precautions

- Needle aversion or phobia
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Dry Needling Uses

- Traumatic injuries:
  - Treat trigger points/area of dysfunction
  - Caution treating acute injuries to allow inflammatory process to occur
- Non-traumatic injuries:
  - Assess globally to determine root cause of pain

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Post Surgical Protocol*

- 6 weeks: nothing that communicates with area of surgery
- 12 weeks: Local area of surgery (with surgeon’s approval)

Potential Complications Associated with Dry Needling

- 1%-10%
  - Needle insertion pain
  - Muscle soreness
  - Fatigue
  - Bruising
- Uncommon .1%-1%
  - Aggravation of symptoms
  - Feeling Faint or Dizzy
  - Stuck or bent needle
  - Headache
- Rare/Very Rare (.01%-1%)
  - Infection
  - Pneumothorax
- Other (<.01%)
  - Vasovagal response
  - Fainting
  - Forgotten needle
  - GI issue (nausea, vomiting)
  - Neurological Response
  - Emotion Response (anxiety, euphoria)

Myotomal Testing

<table>
<thead>
<tr>
<th>Nerve Root</th>
<th>Muscle/Muscle action</th>
<th>Peripheral nerve</th>
</tr>
</thead>
<tbody>
<tr>
<td>C4</td>
<td>Levator scapulae</td>
<td>Dorsal scapular n.</td>
</tr>
<tr>
<td>C5</td>
<td>Deltoid, infraspinatus</td>
<td>Suprascapular n.</td>
</tr>
<tr>
<td>C6</td>
<td>Biceps, subscapularis</td>
<td>Musculocutaneous n.</td>
</tr>
<tr>
<td>C7</td>
<td>Triceps, flexor carpi ulnaris</td>
<td>Radial n.</td>
</tr>
<tr>
<td>C8</td>
<td>Extensor pollicis longus, opponens pollicis</td>
<td>Radial n.</td>
</tr>
<tr>
<td>T1</td>
<td>Intrinsics</td>
<td>Median n. (index only)</td>
</tr>
</tbody>
</table>

Time to practice!!

- Needle safety
  - Wash hands
  - Put on gloves - purell
  - Clean treatment field
  - Open and unlock sterile needle – do not touch needle shaft
  - Palpate and place tube on target tissue
  - Tap firmly with index finger
  - Remove guide tube and hold in hand
  - Advance needle: be cautious of
    - Burning
    - Electrical
  - Apply compression after needle removal
  - Immediately dispose of needle in sharps container

Case 1

Upper extremity

- 27 year old male with on/off complaint of neck pain/ upper trap soreness. Reports soreness with sitting/ computer work/ reading brings on neck soreness right greater than left. About 1-3 times a year will have bout of neck pain that is enough to cause difficulty with ADL’s. No specific history of neck injury. Played college soccer, was a goalie. Now very active and performs power lifting.
Case 1

- Exam Findings
  - TTP along (B) UT (R)> (L)
  - Mild limitation in C/S Side bend and Rotation
  - Tightness felt at end range shoulder flexion
  - Limited Shoulder IR
  - TTP along subscapularis
  - (R) sided weakness noted with shoulder abduction and ER with myotomally testing

Myotomal Testing

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<th>Action</th>
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<tr>
<td>C4</td>
<td>Levator Scapulae</td>
<td>Neck side bending</td>
</tr>
<tr>
<td>C5</td>
<td>Deltoid</td>
<td>Shoulder abduction</td>
</tr>
<tr>
<td></td>
<td>Infraspinatus</td>
<td>ER</td>
</tr>
<tr>
<td>C6</td>
<td>Biceps</td>
<td>Supination</td>
</tr>
<tr>
<td></td>
<td>Subscapularis</td>
<td>IR</td>
</tr>
<tr>
<td>C7</td>
<td>Triceps</td>
<td>Elbow extension</td>
</tr>
<tr>
<td></td>
<td>Flexor Carpi Ulnaris</td>
<td>Ulnar deviation</td>
</tr>
<tr>
<td>C8</td>
<td>Extensor Pollicis Longus</td>
<td>Thumb extension</td>
</tr>
<tr>
<td>T1</td>
<td>Intrinsics</td>
<td>Finger abduction and adduction</td>
</tr>
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Treatment

- Dry Needling to C5-C6 (R) spinal segments down to cervical multifidus
- Dry Needling to Deltoid and Infraspinatus
- Use of E-stim proximal ↔ distal to improve conduction along pathway
- Retest
- Corrective exercises to help reinforce change and maintain gains

Case 2

- Lower extremity
  - Gastroc/soleus

References

References

- Simons DG, Travell JG, Simons LS. Travel and Simons’ myofascial pain and dysfunction: The trigger point manual. Lippincott Williams & Wilkins.
- www.kinetacore.com
- www.SFMA.com

Questions