AN EVIDENCE-BASED GUIDELINE FOR PHYSICAL THERAPY MANAGEMENT OF TEMPOROMANDIBULAR JOINT DYSFUNCTION (TMD

Physical Therapists' Role in Treating TMD

- **Role**: Physical therapists are crucial members of the interdisciplinary team providing care for individuals with temporomandibular disorders (TMDs).
- **Purpose**: This guideline offers clinicians various evidence-based methods for effectively evaluating and managing TMD.

Patient-Reported Outcome Measures

Recommended Tool: TMD Disability

Description	The TMD Disability Index, also known as the Steigerwald Maher TMD Disability Index, was developed in 1997. It consists of 10 function-related questions tailored to TMD, using a self-report scale with five levels of severity for each question.
Validation	A 2015 study from the European School of Osteopathy at the University of Greenwich found that the TMD Disability Index is highly valid and can be effectively used for tracking patient progress and evaluating inflammation without needing repeated imaging.

Dietary Considerations

Soft Foods	To prevent overstressing the chewing muscles, recommend soft foods such as beans, steamed vegetables, fruits, cheese, cottage cheese, fish, fruit smoothies, oatmeal, mashed potatoes, scrambled eggs, soup, and yogurt.
Foods to Avoid	Advise against foods that require wide mouth opening, sticky or chewy items like caramel apples or candy bars, as well as hard or crunchy foods such as apples, pretzels, raw carrots, crunchy cereals, and tough steak.
Progression	Gradually reintroduce foods that were previously painful or difficult as symptoms improve. Periodically test and reintroduce harder foods

	based on individual tolerance.

Considerations for Manual Therapy

- **Joint Mobilization**: Utilize joint mobilization techniques (grades I or II) to alleviate pain. Techniques include:
    - Distraction
    - Anterior glide
    - Anterior glide with pre-positioned mouth opening
    - Medial/lateral glides
    - Caudal-anterior-medial (CAM) glide
    - CAM glide with pre-positioned mouth opening
- **Movement Restrictions**: Apply mobilization techniques when there is clear movement restriction, but avoid if joint hypermobility is suspected or confirmed, unless a low-grade technique is used.
- **Dosage**: Adjust joint mobilization dosage based on the patient's level of irritability, and consider incorporating cervical manual techniques as appropriate.
- **Soft Tissue Mobilization**: Perform intraoral and extraoral soft tissue mobilization with focus on:
    - Temporalis
    - Masseter
    - Medial pterygoid
    - Lateral pterygoid muscles
    - Accessory mastication muscles and cervical spine musculature if necessary.
- **Technique**: Apply one digit or a reinforced digit to target myofascial trigger points or general muscle belly. Use friction massage in different directions, particularly on the masseter and temporalis muscle bellies. Intra-oral techniques for the medial and lateral pterygoid muscles should be used with consideration of the patient’s gag reflex.

Considerations for TMD Management

Trigger Point Dry Needling

- **Use**: Consider when TMD-associated muscle pain is related to trigger points.
- **Training**: Must be sufficiently trained to implement.

Therapeutic Exercise

- **Rocabado 6 x 6 Program**:
    - **Routine**: Six exercises performed six times per day.
    - **Effectiveness**: Only studied once, showing no added benefit to the rehabilitation process.
- **Kraus' Temporomandibular Joint Exercises**:
    - **Focus**: Inhibit excessive masticatory muscle activity, enhance neuro-muscular control of mandibular movement, address joint clicking, muscle asymmetry, deviations in active ROM patterns, and spasms that limit opening via isometrics.

Patient Education

- **Central Component**: Educate on reducing parafunctional habits, addressing psychosocial factors, and providing pain science education.
- **Functional Habits**: Include caloric intake, breathing, and yawning.
- **Parafunctional Habits**: Include bruxism and lip biting.
- **Food Consistency and Chewing**:
    - Educate on the importance of chewing on both sides if possible to promote symmetry, or unilaterally if chewing is uncomfortable.
    - Harder, drier foods require more chewing cycles and longer time in the mouth.
- **Hypermobility**:
    - Educate to avoid end-range positions like yawning.
    - Teach to avoid overstretching joint structures by keeping the tongue tip in contact with the hard palate during yawning.

- **Weight Bearing**: Avoid resting the hand on the mandible while sitting.

Modalities

- **Electrical Stimulation**:
    - Recommended for TMD management.
    - Both interferential current and TENS have shown analgesic effects in pain-free volunteers under ischemic conditions.
    - Study applied stimulation for 30 minutes, which may exceed common clinical dosage times.

- **Biofeedback**:
    - Recommended for TMD management.
    - Surface electrodes typically placed over the masseter or anterior temporalis.

- **Iontophoresis with Dexamethasone**:
    - Recommended, though evidence is mixed.
    - Studies show it can deliver dexamethasone between 8-17 mm deep.
    - Long-duration (3 hours) application via low current is more effective than traditional delivery by higher currents over 10-30 minutes.

- **Therapeutic Ultrasound**:
    - Not recommended by authors of studies due to little evidence of benefit in managing TMD.

Multimodal Approaches

- **Studies**: Research shows that a minimum of five 30-minute sessions incorporating multiple methods can effectively manage TMD.
- **Methods**:
    - Soft tissue mobilization
    - Muscle stretching
    - Gentle isometric exercises with resistance

- Guided opening and closing
- Manual joint distraction
- Disc/condyle mobilization
- Postural corrections
- Relaxation techniques

- **Outcome**: These approaches are beneficial in alleviating TMD symptoms.

Cervical Spine Management

- **Focus**: Address cervical spine issues including:
  - Range of motion deficits
  - Accessory movement restrictions
  - Altered muscle recruitment patterns

Table 1: Rocabado's 6x6 Exercise Program

Name	Exercise Description/Purpose
Rest Position of the Tongue	Place the anterior 1/3 of the tongue on the palate with mild pressure. This position helps relax the tongue and jaw muscles and promotes diaphragmatic breathing.
Control of TMJ Rotation	Open and close the jaw repeatedly while keeping the anterior 1/3 of the tongue on the palate. This reduces unwanted jaw movements such as protrusion during opening, talking, or chewing.
Rhythmic Stabilization Technique	Perform gentle isometrics in the resting position for jaw opening, closing, and lateral deviation. This technique promotes muscular relaxation and improves jaw positioning through proprioceptive input.
Axial Extension of the Neck	Combine upper cervical flexion with lower cervical extension to reduce tension in the cervical muscles.
Shoulder Posture	Retract and depress the shoulder girdle to facilitate postural corrections.
Stabilized Head Flexion	Perform upper cervical spine distraction with a chin tuck (without additional cervical flexion). Lace fingers behind the neck to

Name	Exercise Description/Purpose
	stabilize C2-7 while nodding the head.

Table 2: Kraus' Temporomandibular Joint Exercises

Name	Exercise Description/Purpose
Tongue Position at Rest	Instruct the patient to keep the tip of the tongue on the palate, just behind the upper incisors, except during function. This helps maintain a relaxed tongue and jaw position.
Teeth Apart	Educate the patient that keeping the teeth apart can be therapeutic and supports the resting tongue position.
Nasal-Diaphragmatic Breathing	Teach the patient to breathe through the nose to engage the diaphragm, which reinforces proper tongue and teeth positioning.
Tongue Up and Wiggle	For patients who brace but do not grind their teeth, instruct them to assume the resting position and gently move the mandible side-to-side to disrupt bracing contractions. Reduce intensity if clicking or popping occurs.
Strengthening	Perform resisted closing with self-manual resistance of the lower incisors: 5-10 second contractions, 10 repetitions, 3-5 times per day.
Touch and Bite	For proprioceptive re-education:

- **Lateral Deviation**: Touch the contralateral maxillary canine with a fingertip and bite the finger, requiring lateral deviation towards the finger.
- **Protrusion**: Touch the outer surface of maxillary incisors with a finger and bite the finger to promote protrusion. | | **Neuro-Muscular Control** | Address excessive anterior movement of the mandibular condyle by placing the tip of the tongue on the anterior palate while gently palpating the chin and mandibular condyle. Repeatedly open and close to that range, gradually removing feedback. | | **Isometric Exercises** |
- **Reciprocal Click**: Perform isometrics just before the closing click.

- **Weakness or AROM Deviations**: If not due to structural anomalies, isometrics can be performed in any position. Use gentle contractions of agonists or antagonists to improve range of motion (ROM). |