

# The Combined Role Of Dentists, Dental Assistants, And Physical Therapists In Treating Temporomandibular Joint Disorders (TMD)

Essam Mohammed Saleh Sulong<sup>1</sup>, Abdullah Saad Naser Albasri<sup>2</sup>, Areej Awaid Alharbi<sup>3</sup>, Nada Atif Alessa<sup>4</sup>, Fahad Hasan Alharbi<sup>5</sup>, Ahmad Salem Salm Alahmady<sup>6</sup>, Bandar Ali Almohammadi<sup>7</sup>, Mona Mousa Sharif Alfaifi<sup>8</sup>

<sup>1-4\*</sup> Ministry of health- Makkah Health Cluster -Saudi Arabia

<sup>5-7\*</sup> Ministry of health- Madinah Health Cluster -Saudi Arabia

<sup>8\*</sup> Ministry of health- Jazan Health Cluster -Saudi Arabia

Corresponding Author: Essam Mohammed Saleh Sulong.

## Abstract

Temporomandibular disorders (TMD) are complex conditions involving the temporomandibular joint and associated structures. Management has shifted from a traditional biomedical approach focused on dental occlusion to a biopsychosocial model, emphasizing the importance of integrated, interdisciplinary care. This research paper analyzes the collaborative roles of dentists, dental assistants, and physical therapists in TMD management, highlighting the dentist's role in diagnosis and orthopedics, the physical therapist's expertise in rehabilitation and neuromuscular education, and the dental assistant's function in patient support and compliance. It argues that integration across these disciplines enhances patient outcomes through combined therapeutic techniques, such as occlusal splint therapy and manual therapy. The paper also demonstrates that early interdisciplinary intervention can significantly reduce long-term costs associated with orofacial pain.

**Keywords:** Temporomandibular Disorders (TMD), Interdisciplinary Care, Biopsychosocial Model, Orofacial Pain Management, Team-Based Therapy, Dentist- Dental assistant-Physical Therapist Collaboration.

## 1. Introduction

Temporomandibular disorders (TMD) constitute a heterogeneous group of musculoskeletal and neuromuscular conditions that affect the temporomandibular joint (TMJ), the muscles of mastication, and all associated tissues. As a major cause of non-dental pain in the orofacial region, TMD represents a significant public health challenge, affecting approximately 10% to 15% of the adult population globally. The epidemiology of the disorder reveals a striking sexual dimorphism, with a significantly higher prevalence in women aged 20 to 40, and a substantial financial burden associated with loss of work and healthcare utilization [1].

### 1.1 Historical Context

The management of TMD has undergone a profound metamorphosis over the past century. In the early to mid-20th century, the prevailing dogma was "gnathological," positing that malocclusion—specifically, discrepancies between the intercuspal position of the teeth and the centric relation of the condyles—was the primary etiology of TMD. Consequently, treatment was mechanistic and often invasive, focusing on aggressive occlusal equilibration, full-mouth rehabilitation, and surgical restructuring of the joint.

However, the late 20th and early 21st centuries witnessed an explosion of research that challenged this linear "tooth-to-joint" causality. Systematic reviews and longitudinal studies, such as the OPPERA (Orofacial Pain: Prospective Evaluation and Risk Assessment) study, failed to find a consistent correlation between static occlusal factors and the onset of TMD pain [2]. Instead, these studies

highlighted the role of central sensitization, genetic susceptibility, psychosocial distress, and comorbidities such as fibromyalgia and widespread pain.

This evidence precipitated a shift toward a biopsychosocial model, advocated by the National Academies of Sciences, Engineering, and Medicine (NASEM) in their landmark 2020 report [3]. This model recognizes that while biological factors (tissue injury, inflammation) are the initiators, the maintenance of the disorder is often driven by psychological factors (stress, catastrophizing, depression) and social factors (healthcare access, support systems).

## **1.2 The Imperative for Interdisciplinary Teams**

The complexity inherent in the biopsychosocial model exceeds the scope of practice of any single healthcare profession. A dentist, while expert in the stomatognathic system, typically lacks the training to manage cervical spine dysfunction or central sensitization syndromes. Conversely, a physical therapist is an expert in musculoskeletal rehabilitation but cannot diagnose odontogenic pathology or manage intraoral orthopedics. The dental assistant, often overlooked in academic discourse, holds a unique position of trust and operational control that is essential for patient adherence to behavioral prescriptions.

Therefore, the "Combined Role" discussed in this paper is not a luxury but a clinical necessity. Effective management requires a triangulated approach:

1. The Dentist provides the diagnostic foundation, rules out mimics, and manages the intraoral environment.
2. The Physical Therapist restores functional mobility, addresses craniocervical contributors, and desensitizes the nervous system.
3. The Dental Assistant ensures operational continuity, reinforcing education and facilitating the logistics of care.

This paper will dissect these roles, examining the evidence base for their specific interventions and the mechanisms by which their collaboration improves clinical and economic outcomes.

## **2. Anatomical and Physiological Foundations of Interdisciplinary Care**

To appreciate the necessity of a combined approach, one must first understand the intricate anatomical and physiological interconnectedness of the head, neck, and jaw. The stomatognathic system does not function in a vacuum; it is physically and neurologically integrated with the cervical spine and the central nervous system.

### **2.1 The Craniocervical-Mandibular Continuum**

The relationship between the mandible and the cervical spine is biomechanical, anatomical, and neurological. This "craniocervical-mandibular continuum" explains why therapies directed at the neck often resolve jaw pain, and vice versa.

#### **Biomechanical Linkage:**

The mandible connects to the cranium via the TMJ, while the cranium articulates with the cervical spine at the atlas (C1) and axis (C2). A complex web of musculature connects these structures. The suprahyoid muscles (digastric, stylohyoid, mylohyoid, geniohyoid) connect the mandible to the hyoid bone, while the infrahyoid muscles connect the hyoid to the sternum and scapula.

- **Forward Head Posture (FHP):** In a patient with FHP, the head is positioned anterior to the center of gravity. To maintain a horizontal gaze, the posterior cervical extensor muscles (e.g., suboccipital group) shorten, and the cranium rotates posteriorly. This tension is transmitted through the hyoid musculature, creating a retraction force on the mandible. This posterior pull can increase the intra-articular pressure within the retrodiscal tissues of the TMJ, predisposing the patient to inflammation and altering the occlusal contact pattern [4].

### Neurological Convergence:

The sensory innervation of the TMJ and face is provided by the trigeminal nerve (CN V). The sensory innervation of the upper cervical spine is provided by spinal nerves C1, C2, and C3.

- **Trigemincervical Nucleus Caudalis:** The afferent fibers from both the trigeminal nerve and the upper cervical nerves converge onto the same second-order neurons in the trigemincervical nucleus caudalis in the brainstem. This convergence is the anatomical basis for referred pain. The brain may misinterpret nociceptive input from the trapezius or splenius capitis (neck muscles) as pain originating in the masseter or TMJ. This phenomenon explains why "dental" treatments often fail in patients whose primary driver is cervical dysfunction, and underscores the critical role of the physical therapist in the diagnostic equation [5].

### 2.2 Central Sensitization and Neuroplasticity

Chronic TMD is frequently maintained by central sensitization—a state of hyperexcitability in the central nervous system where nociceptive neurons become hyper-responsive to normal or sub-threshold stimuli.

- **Mechanism:** Constant bombardment of the central nervous system by peripheral nociceptors (from the jaw or neck) leads to neuroplastic changes in the dorsal horn of the spinal cord and the brainstem. Inhibitory pathways are dampened, and facilitatory pathways are upregulated [6].
- **Clinical Presentation:** Patients with central sensitization exhibit allodynia (pain from non-painful stimuli, like light touch) and hyperalgesia (exaggerated pain response). They often suffer from comorbid conditions such as tension-type headaches, migraine, and fibromyalgia [2].
- **Treatment Implication:** Mechanical treatments directed solely at the joint (like surgery or aggressive bite adjustment) are often ineffective for centralized pain. Instead, management requires a combination of pharmacotherapy (managed by the dentist) and sensory re-education/graded motor imagery (managed by the physical therapist) to "down-regulate" the nervous system [4].

### 3. The Role of the Dentist: Diagnostic Authority and Intraoral Management

The dentist serves as the primary entry point and the clinical leader of the TMD team. Their responsibilities are foundational: they must establish the diagnosis, rule out odontogenic pathology, and implement intraoral orthopedic therapies.

#### 3.1 Comprehensive Diagnosis and Classification

The first and most critical duty of the dentist is accurate diagnosis. Orofacial pain is notorious for mimicry. A patient pointing to the ear may have otitis media, a TMJ disorder, or referred pain from a molar tooth.

- **The Diagnostic Criteria for TMD (DC/TMD):** This is the internationally accepted gold standard for classification, which the dentist must apply rigorously. It utilizes a dual-axis system [4]:
  - **Axis I (Physical Diagnosis):** Classifies the condition into Pain-related TMD (myalgia, arthralgia, headache attributed to TMD) and Intra-articular TMD (disc displacement with reduction, disc displacement without reduction, degenerative joint disease/osteoarthritis, subluxation).
  - **Axis II (Psychosocial Status):** Assesses pain-related disability and psychological distress (depression, anxiety). While the dentist may not treat the psychological condition, identifying high Axis II scores is crucial for prognosis and referral.

- **Differential Diagnosis:** The dentist must systematically rule out [7]:
  - Odontogenic Pain: Pulpitis, cracked tooth syndrome, periodontal abscess.
  - Neuropathic Pain: Trigeminal neuralgia, glossopharyngeal neuralgia.
  - Salivary Gland Pathology: Sialolithiasis or tumors.
  - Vascular Pain: Temporal arteritis (a medical emergency).
  - Neoplasia: Tumors of the nasopharynx or jaw.

### 3.2 Splint Therapy: Stabilization vs. Repositioning

Occlusal appliances, commonly known as splints or orthotics, remain the cornerstone of dental management. The mechanism of action is multifactorial: splints alter the vertical dimension of occlusion, reduce joint loading, stabilize the unstable occlusion, and potentially reduce parafunctional muscle activity via biofeedback or by disrupting the engrams that trigger bruxism [8].

#### Stabilization Splints (Michigan Splint):

- **Design:** A hard acrylic appliance, usually worn on the maxilla, that provides a flat, smooth biting surface with even contacts on all supporting cusps and canine guidance during excursion.
- **Indication:** This is the "gold standard" for myogenous TMD, arthralgia, and bruxism.
- **Efficacy:** Systematic reviews and meta-analyses conclude that hard stabilization appliances, when adjusted properly, have good evidence of modest efficacy in reducing TMD pain compared to non-occluding appliances or no treatment [9].
- **Safety:** Because they do not permanently alter the bite, they are considered reversible and safe for long-term use.

#### Anterior Repositioning Splints (MORA):

- **Design:** These appliances have indentations that guide the mandible into a forward (anterior) position upon closing.
- **Mechanism:** By bringing the condyle forward, the appliance attempts to recapture an anteriorly displaced articular disc, eliminating the reciprocal click.
- **Indication:** Primary indication is for TMJ disc displacement with reduction that is associated with painful clicking or intermittent locking.
- **Controversy:** Long-term use (24 hours/day) carries a significant risk of causing a "posterior open bite"—a condition where the back teeth no longer touch when the natural teeth are in contact. Consequently, clinical guidelines recommend these be used only part-time (e.g., while sleeping) or for short durations to manage acute intracapsular pain [10].

#### The Role of the Dentist in Fabrication:

The dentist's skill in capturing an accurate centric relation record and meticulously adjusting the splint is paramount. A poorly adjusted splint that introduces occlusal interferences can exacerbate muscle hyperactivity, turning a therapeutic device into a pathogenic one.

### 3.3 The Occlusal Controversy: Disclusion Time Reduction (DTR)

While the mainstream consensus favors reversible therapy, a specific subset of the dental literature advocates for Disclusion Time Reduction (DTR). This treatment is predicated on the theory that prolonged contact between posterior teeth during excursive movements (lateral grinding) triggers muscle hyperactivity via mechanoreceptors in the periodontal ligament [11].

- **Technique:** DTR utilizes T-Scan technology (digital occlusal analysis) to measure the timing of tooth contacts with millisecond precision. The dentist performs subtractive coronoplasty (enamel adjustment) to reduce the "disclusion time" to less than 0.4 seconds.
- **Mechanism Claim:** Proponents argue that rapid disclusion shuts down the contraction of the masseter and temporalis muscles, breaking the feedback loop of hypertonicity.
- **Evidence Base:** Several studies cited by proponents (e.g., Kerstein et al.) report statistically significant reductions in electromyographic (EMG) activity and symptom intensity following DTR, particularly in patients who have failed conservative care (splints/PT).
- **Mainstream Rebuttal:** Critics and major associations (AAFP, NASEM) caution that occlusal adjustments are irreversible. They argue that the evidence for occlusion as a primary etiology is weak and that the success of DTR might be attributed to the placebo effect or the general reduction of occlusal awareness. Nevertheless, for a specific subset of patients with "stomatognathic dystonia" driven by occlusal interferences, DTR represents a targeted, albeit aggressive, dental intervention.

### 3.4 Pharmacotherapy

The dentist manages the pharmacological aspect of TMD, prescribing medications to address inflammation, muscle spasm, and central sensitization.

- **NSAIDs:** (e.g., Ibuprofen, Naproxen) are the first line for arthralgia and capsulitis to reduce peripheral inflammation.
- **Muscle Relaxants:** (e.g., Cyclobenzaprine, Diazepam) are used for acute myospasm and trismus to induce muscle relaxation and sedation, often aiding sleep.
- **Tricyclic Antidepressants (TCAs):** (e.g., Amitriptyline, Nortriptyline) are prescribed at sub-depressive doses (10-30mg) for chronic myofascial pain. Their mechanism involves the inhibition of serotonin and norepinephrine reuptake, which modulates pain processing in the central nervous system and improves sleep architecture [1].
- **Corticosteroids:** In cases of severe acute inflammation, a short course of oral steroids or an intra-articular injection may be indicated.

## 4. The Role of the Physical Therapist

If the dentist is the architect of structure, the physical therapist (PT) is the engineer of function. The PT's role complements the dentist by addressing the functional deficits, movement impairments, and cervical spine contributions that lie outside the scope of dental practice.

### 4.1 Evaluation and Assessment

The PT performs a comprehensive musculoskeletal evaluation that extends beyond the jaw.

- **Postural Assessment:** Evaluating forward head posture, rounded shoulders, and thoracic kyphosis, which mechanically load the TMJ [4].
- **Cervical Screening:** Testing cervical range of motion (ROM) and performing segmental mobility testing (e.g., PA glides) to identify upper cervical dysfunction that may be referring pain to the face [5].
- **Jaw Tracking:** Analyzing the quality of mandibular movement. Deviations (S-curves or C-curves) indicate specific muscle imbalances or disc obstacles that require targeted neuromuscular re-education [12].

### 4.2 Manual Therapy (MT)

Manual therapy involves skilled passive movements applied to joints and soft tissues. It is a core component of PT management for TMD.

- **Joint Mobilization:** PTs apply specific grades of force (Grade I-IV) to the TMJ.
  - Distraction: Pulling the mandible inferiorly to unload the joint and stretch the capsule.
  - Anterior Glide: Facilitating the translation of the condyle, which is essential for opening. This is particularly effective for "closed lock" patients (disc displacement without reduction) to stretch the retrodiscal tissues and improve ROM [5].
- **Soft Tissue Mobilization:** PTs perform intraoral and extraoral massage to release hypertonic muscles. Intraoral techniques allow direct access to the medial pterygoid and the tendon of the temporalis, areas often inaccessible to the patient. Techniques include myofascial release (MFR) and trigger point pressure release to reduce ischemia and break the pain-spasm cycle [13].
- **Cervical Mobilization:** Given the convergence theory, mobilizing the hypomobile segments of C1-C3 is a high-yield intervention. Evidence suggests that manual therapy directed solely at the cervical spine can significantly improve maximum mouth opening (MMO) and reduce pressure pain thresholds in the masticatory muscles [5].

#### 4.3 Therapeutic Exercise

Active exercise induces neuroplastic changes in the motor cortex, restoring coordination and endurance.

- **Coordination Exercises:** Many TMD patients exhibit aberrant motor control. "Rocabado's 6x6" program is a standard protocol focusing on tongue rest position, shoulder retraction, and stabilized jaw opening.
- **Controlled Opening:** Patient's practice opening the mouth while keeping the tongue pressed against the palate (the "N" position). This limits opening to rotation only, preventing the anterior translation that often causes clicking or subluxation. This re-educates the muscles to function without engaging the disc-derangement mechanism [14].
- **Craniocervical Flexor Training:** Strengthening the deep neck flexors (longus colli/capitis) corrects forward head posture, reducing the passive tension on the hyoid musculature and the mandible [15].
- **Evidence:** Systematic reviews highlight coordination exercise as particularly effective for pain relief and joint mobility, superior to passive treatments alone [14].

#### 4.4 Dry Needling

Dry needling (DN) is an invasive technique used by PTs (where permitted by law) to treat myofascial trigger points. A fine filiform needle is inserted into the trigger point to elicit a local twitch response.

- **Mechanism:** The twitch response is thought to deplete the muscle of acetylcholine and wash out nociceptive substances (Substance P, CGRP, bradykinin) from the local tissue environment, effectively "resetting" the muscle length and reducing pain.
- **Evidence:** Studies indicate that DN is effective for reducing pain in tension-type headaches and myofascial TMD. However, systematic reviews suggest it is best used as an adjunct to manual therapy and exercise rather than a standalone cure. It creates a window of pain relief that allows the patient to perform their exercises more effectively [16].

#### 4.5 Post-Surgical Rehabilitation

For the subset of patients requiring TMJ surgery (e.g., arthrocentesis, arthroscopy, total joint replacement), the PT is a critical member of the recovery team.

- **Early Mobilization:** Evidence strongly supports early supervised PT over home exercises alone following condylar discectomy or joint replacement. The goal is to prevent the formation of intra-articular adhesions (scar tissue) and maximize functional opening [4].
- **Edema Management:** Modalities like ultrasound and manual lymphatic drainage are used to reduce post-operative swelling, which can mechanically restrict motion.

## 5. The Role of the Dental Assistant

Often underrepresented in the scientific literature, the Dental Assistant (DA) plays a pivotal operational and clinical role in the interdisciplinary TMD team. As the staff member with the most patient contact time, the DA acts as the bridge between the complex clinical prescription and the patient's daily reality.

### 5.1 Triage and Diagnostic Data Collection

In a high-functioning TMD practice, the DA acts as the primary screener.

- **Symptom History:** DAs are often trained to administer validated questionnaires (e.g., the DC/TMD Symptom Questionnaire). They flag key indicators such as "pain with opening," "locking," or "morning headaches" before the dentist enters the exam room.
- **Imaging:** DAs acquire the necessary radiographic records, including panoramic X-rays to screen for gross pathology (e.g., degenerative changes, cysts) and Cone Beam CT (CBCT) scans for detailed osseous evaluation [17].
- **Face-Bow and Mounting:** In restorative cases involving TMD, the DA performs the face-bow transfer, a procedure that records the relationship of the maxilla to the hinge axis of the TMJ. They then mount the diagnostic casts on an articulator. This step is crucial for analyzing occlusal discrepancies and planning splint therapy [18].

### 5.2 Chairside Support and Splint Fabrication

The fabrication and delivery of occlusal splints rely heavily on the DA's technical skills.

- **Digital and Analog Impressions:** Whether using alginate or a modern intraoral scanner, the DA captures the dentition. For TMD patients with limited opening (trismus), this requires specific techniques to minimize discomfort and prevent muscle guarding during the procedure [19].
- **QuickSplint Protocol:** DAs can fabricate anterior deprogrammers (e.g., QuickSplint) chairside. This involves filling a pre-formed tray with fast-setting vinyl polysiloxane and seating it on the patient's teeth [20].
  - **Utility:** These immediate appliances disclude the posterior teeth, shutting down muscle hyperactivity. They are invaluable for differential diagnosis (distinguishing muscle pain from joint pain) and providing same-day relief for acute symptoms while a permanent splint is being made.
- **Splint Adjustment:** While the dentist performs the final occlusal refinement, experienced DAs (Expanded Duty Dental Assistants or EDDAs) often perform the initial fit check, removing sharp edges and ensuring the appliance seats fully without rocking.

### 5.3 Patient Education and Behavioral Coaching

TMD management relies heavily on **self-management**. The DA is the primary educator and coach for these home-care protocols.

- **The "Soft Diet" Talk:** DAs provide detailed dietary instructions, explaining not just "soft food" but the mechanics of chewing (e.g., cutting food into small pieces to avoid wide opening).

- **Rest Position Training:** DAs teach the physiologic rest position of the mandible: "Lips together, teeth apart, tongue on the roof of the mouth." They may instruct patients to place visual cues (stickers) on their computer or dashboard as reminders to check their jaw position throughout the day [21].
- **Splint Care:** DAs educate patients on proper hygiene for their appliances (e.g., using cool water to prevent warping, avoiding abrasive toothpaste).

#### 5.4 The "Soft Intel" and Psychosocial Support

Patients often feel intimidated by the doctor and may withhold information about stress, anxiety, or non-compliance. They are frequently more candid with the dental assistant.

- **Surveillance:** A DA might learn that a patient is going through a divorce or has stopped wearing their splint because of a gag reflex. This "soft intel" is critical for the dentist to know, as it may explain a lack of treatment progress. The DA's ability to build rapport and relay this information to the team is a key component of the biopsychosocial management strategy [22].

#### 5.5 Expanded Duties in International Contexts (UK)

In the United Kingdom and other jurisdictions, the role of the dental nurse (assistant) is expanding further. Guidelines from the NHS and General Dental Council (GDC) outline roles for dental nurses with enhanced skills.

- **Specific Duties:** These may include phlebotomy (drawing blood, relevant for regenerative procedures like PRF injections in the TMJ) and delivering smoking cessation advice. Smoking is a significant risk factor for chronic pain and poor wound healing; thus, the dental nurse's role in behavioral counseling directly impacts TMD prognosis [23].

### 6. Comparative Analysis of Therapeutics

The following table summarizes the key therapeutic interventions managed by the interdisciplinary team, contrasting their mechanisms and evidence strength.

**Table 1: Comparative Analysis of Interdisciplinary TMD Interventions**

Intervention	Primary Provider	Indication	Mechanism of Action	Evidence Strength
<b>Stabilization Splint</b>	Dentist (Assist: DA)	Myalgia, Bruxism, Arthralgia	Joint unloading, occlusal protection, disruption of engrams.	<b>High</b> for pain reduction and tooth protection.
<b>Anterior Repositioning Splint</b>	Dentist	Disc Displacement with Reduction (Acute)	Capturing the disc by positioning mandible anteriorly.	<b>Moderate</b> for acute clicking/locking; risk of occlusal change.
<b>Manual Therapy (MT)</b>	Physical Therapist	Hypomobility, Neck Pain	Mobilization of joint capsule, reduction of muscle ischemia.	<b>Moderate-High</b> for improving ROM and reducing pain.
<b>Coordination Exercise</b>	Physical Therapist	Aberrant motion, deviation	Neuromuscular re- education, cortical reorganization.	<b>High</b> for restoring functional trajectory.

<b>Dry Needling</b>	Physical Therapist	Myofascial Trigger Points	Disruption of motor endplates, biochemical washout.	<b>Moderate</b> ; best as adjunct to exercise.
<b>Disclusion Time Reduction (DTR)</b>	Dentist	Muscular TMD with occlusal interference	Reduction of muscle hyperactivity via immediate disclusion (T-Scan).	<b>Controversial</b> ; proponents claim high efficacy, but irreversibility concerns remain.
<b>Pharmacotherapy</b>	Dentist	Acute pain, Inflammation	Anti-inflammatory, muscle relaxation, central modulation.	<b>High</b> for acute management; adjunct for chronic.
<b>QuickSplint (Deprogrammer)</b>	DA (Fabrication)	Diagnostic Triage, Acute Pain	Immediate disclusion of posterior teeth.	<b>Practical</b> for triage; short-term efficacy.

## 7. Outcomes, Economics, and Special Populations

### 7.1 Economic Impact of Interdisciplinary Care

The "siloed" approach to TMD is not only clinically less effective but also economically inefficient. Patients often undergo a "diagnostic odyssey," visiting ENTs, neurologists, and GPs before receiving a correct diagnosis.

- **Cost-Effectiveness:** Research demonstrates that early interdisciplinary intervention prevents the transition to chronic pain, which is the primary driver of cost. A comprehensive study comparing high-risk patients who received early intervention (biobehavioral skills + PT concepts) versus non-intervention found a stark difference in healthcare utilization.
  - **Intervention Group:** Average cost of \$131 per person for jaw-related care at one-year follow-up.
  - **Non-Intervention Group:** Average cost of \$422 per person.
  - This represents a 320% higher cost for those who did not receive the combined care approach. The early intervention group also exhibited significantly fewer signs of depression and chronicity [24].

### 7.2 Special Populations: Athletes

The relevance of TMD extends to high-performance populations. A study on elite soccer players highlights the systemic nature of oral health [25].

- **Findings:** In a cohort of professional soccer players, oral health issues were prevalent. While direct correlations between TMD and specific performance metrics like lactate threshold (v4: 14.9 km/h) were difficult to isolate due to the high baseline health of athletes, the study noted that oral inflammatory burdens (periodontitis, dental abscesses) elevate systemic cytokines (IL-6, TNF-alpha).
- **Implication:** This systemic inflammation can contribute to muscle fatigue and impaired recovery. Furthermore, athletes are prone to stress-induced bruxism. The dental-PT team is crucial here: the dentist protects the dentition with splints, while the PT manages the cervical strain from heading the ball and the overall musculoskeletal balance.

### 7.3 Long-Term Patient Satisfaction

Follow-up studies of patients treated in interdisciplinary clinics (Dentist + PT + Psychologist) show high levels of patient satisfaction. In a Norwegian study of refractory TMD patients, the majority reported improvements in quality of life and general health symptoms three years post-evaluation, validation of the comprehensive approach even in difficult, chronic cases [2].

### 8. Conclusion and Recommendations

The management of Temporomandibular Disorders has graduated from a mechanistic, tooth-centric discipline to a nuanced, interdisciplinary science. The complexity of TMD—with its muscular, articular, cervical, and psychosocial dimensions—defies the scope of any single profession.

- **The Dentist** provides the structural stability, diagnostic authority, and pharmacological management, ensuring the delicate occlusal machinery is protected.
  - **The Physical Therapist** acts as the functional restorative expert, unlocking the cervical-mandibular constraints that perpetuate pain and retraining the neuromuscular system.
  - **The Dental Assistant** serves as the clinical linchpin, bridging the gap between prescription and compliance, acting as the primary conduit for patient education, and facilitating the complex logistics of modern care.
  - From my experience as a physical therapist, I've observed that temporomandibular joint disorders (TMDs) affect not only the physical aspects but also play a crucial role in the psychological and emotional dimensions of patients. Stress, anxiety, and depression can exacerbate the symptoms of these disorders and the pain, contributing to a vicious cycle of stress and pain.
  - Therefore, integrating psychological strategies with physical therapy can have a significant positive impact. I find that providing relaxation techniques, such as deep breathing exercises, yoga, and meditation, greatly contributes to symptom relief. Furthermore, enhancing patients' awareness of their bodies and how their emotions affect them empowers them to manage stress and pain.
  - Thus, I believe it is essential to offer comprehensive treatment programs that consider the psychological and emotional aspects of patients, enhancing the effectiveness of treatment and helping them overcome the challenges they face.
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