

## RESEARCH ARTICLE

# Temporomandibular Disorders and Exercises Approaches

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Temporomandibular disorder (TMD); It is a common clinical problem that affects the masticatory muscles, temporomandibular joint (TMJ), and one or more of the hard and soft tissues adjacent to the temporomandibular joint, characterized by pain in the temporomandibular joint and/or masticatory muscles, irregularity in mandibular movements, clicking, popping sound and/or crepitation in the joint.

Since temporomandibular disorder is one of the primary sources of chronic orofacial pain affecting daily activities, it is a problem that reduces the quality of life of patients. TMD is also frequently associated with involvement of the head and neck region adjacent to the joint and other symptoms such as headache, ear-related symptoms, cervical spine dysfunction, and postural changes.

The goals of physiotherapy applications are to relax the muscle and relieve pain by reducing the increased activity of the muscle and restoring the mobility of the joint. Physiotherapy-related treatments are non-invasive, providing self-care management in an environment where the patient will be responsible for their own health. Physical therapy is a major step in the treatment of TMD and many treatment modalities are applied; includes electrophysical agents (ultrasound, microwave, laser), electro-analgesic agents (Transcutaneous electrical nerve stimulation, Russian current, biofeedback), therapeutic exercise and manual therapy. Therapeutic exercise and manual therapy applications are used to improve muscle strength, coordination and joint mobility, as well as to reduce pain, and the expectation from treatment should focus on eliminating bad body biomechanics and solving problems related to TMJ (1).

Over the past decade, research on TMD has focused on many methods for managing pain in the cervical region, masticatory muscles, and temporomandibular joint. Numerous treatment options such as analgesic and muscle relaxant drugs, occlusal splints, self relaxation training and exercise therapy have been provided in the studies. Among the treatment options, the prominence of non-invasive options for orofacial problems and the proliferation of options occupy an important place in the treatment of patients (2).

Exercise therapy aims to minimize clinical symptoms such as limitation of movement in muscles and joints, orofacial pain, which are among the main problems of patients, and to improve motor functions by moving the temporomandibular joint or surrounding structures. Exercise can be classified as self-made exercises by patients and manual therapies administered by physiotherapists to patients. Self-exercise can often be planned as home exercise or supervised exercise. The basic exercise therapy applied by physiotherapists includes mobilization, stretching, muscle strengthening and endurance exercise (1).

Exercise therapy is defined as a set of physical activity plans created for specific therapeutic purposes. The goal of exercise therapy is to restore the abnormal pattern of musculoskeletal function or to reduce pain caused by disease/injuries. There are various exercise therapy methods applied for the management of painful temporomandibular joint problems. We can define the exercises as four types according to their purpose.

## 1 | MOBILIZATION EXERCISES

The aim of the applications of manual therapy is to ensure the regeneration of the tissue that cannot perform its function, to accelerate the removal of adhesions, to provide painless controlled function and to return to its healthy form by increasing the healing capacity of the tissue. Manual therapy methods are divided into two as soft tissue and joint techniques. Soft tissue techniques, massage, muscle relaxation, stretching and exercise; joint techniques consist of traction, gliding, stretching, and exercises.

Soft tissue mobilization can be applied to temporalis, masseter, medial and lateral pterygoid muscles. Joint mobilization is a treatment method that is one of the basic components of physiotherapy and has very good results in various dysfunction problems. Its primary mechanism is to inhibit pain, increase NEH, and reduce muscle spasm. Anterior gliding, medial/lateral gliding, caudal anterior, medial gliding, open mouth anterior gliding, medial/lateral gliding techniques are the techniques applied in the jaw joint. Friction massage is one of the most preferred treatment methods in TMD. Mechanical stimulation at the cellular level has been proven to affect fibroblasts and other connective tissue components. It can be applied to the lateral joint line, the retrodiscal area, the insertion of the temporalis muscle on the coronoid process, and myofascial trigger points, especially the temporalis muscle. (3).

## 2 | STRENGTHENING EXERCISES

Resistance training is often included in the treatment plan to increase the strength of the target muscles. Isotonic jaw opening and closing exercise is applied to strengthen the jaw joint in muscle problems related to the temporomandibular joint. Strengthening exercises for chewing muscles are thought to be effective in relieving muscle pain and improving limited mandibular range of motion. The mechanism behind this is hypothesized to be an inhibitory effect involving the Golgi tendon. Based on this situation, relaxation of the tonic muscles as a result of isotonic jaw opening exercise contributes to an increase in mandibular range of motion. In addition, isotonic jaw closure exercise releases tension in the masseter and temporalis, which provides relief from muscle pain. In addition, strengthening and endurance exercises prevent the recurrence of jaw joint problems. Along with the application of force against resistance, isometric exercises are also performed. The exercises are aimed at the muscle group, not as a single muscle isolate(4).

## 3 | COORDINATION EXERCISES

Coordination exercise refers to rhythmic movements that involve and activate both agonist and antagonist muscles. Coordination exercises; improves joint muscle function, mobility and biomechanical properties, re-establishes the synchronization of TMJ movements. Such exercises include mouth opening and mouth closing isotonic exercises. For the temporomandibular joint, opening-closing or lateral movements of the mandible are effective in order to coordinate the muscle activity in the masticatory muscles. The purpose of giving coordination exercises is to improve the unbalanced muscle activity of painful muscles with repetitive coordinate movements and as a result, to reduce the complaints (5).

## 4 | POSTURAL EXERCISES

Postural exercise should be recommended especially in cases where there is poor body biomechanics due to the close relationship and interaction of the jaw joint and cervical region, in order to ensure a complete recovery. The aim of adding postural exercise to the treatment is to improve the position of the mandible and relieve symptoms such as pain, tension, clenching and fatigue. It is thought that incorrect cervical position may cause muscle pain due to the acceleration of the postural reflex in addition to the formation of abnormal muscle activity in the neck and jaw muscles. Postural exercise includes head posture correction exercises aimed at improving the mandibular position, tongue postural exercises and myofascial release (6). It is important to plan and administer exercise therapy in accordance with each patient's clinical condition, based on an accurate diagnosis, and healthcare professionals working with the jaw joint should carefully incorporate exercise into their programs as a treatment option for pain in the TMJ.

As a result, in patients with temporomandibular joint disorder, both exercises for TMJ and cervical and postural exercises can be given to relieve the complaints of the patients and the treatment can be planned accordingly. In the literature, there are many studies on TMJ and exercise planning in its treatment, but the treatment protocols are not clear yet. It should be considered as a great advantage that physiotherapy methods are non-invasive methods and are one of the first treatment steps to which patients can be referred as conservative treatment.

## 5 | REFERENCES

- [1]. Armijo-Olivo S, Pitance L, Singh V, Neto F, Thie N, Michelotti A. Effectiveness of Manual Therapy and Therapeutic Exercise for Temporomandibular Disorders: Systematic Review and Meta-Analysis. *Phys Ther.* 2016;96(1):9-25. doi:10.2522/ptj.20140548
- [2]. Svensson P, Kumar A. Assessment of risk factors for oro-facial pain and recent developments in classification: implications for management. *J Oral Rehabil.* 2016;43:977-989.

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[3]. Heres Diddens A, Kraaijenga S, Coupe V, et al. The cost-effective- ness of TheraBite(R) as treatment for acute myogenic temporoman- dibular disorder. *Cranio : the journal of craniomandibular practice.* 2017;35:290-297.

[4]. Seynnes OR, de Boer M, Narici MV. Early skeletal muscle hypertro- phy and architectural changes in response to high-intensity resis- tance training. *J Appl Physiol.* 2007;102:368-373.

[5]. Duchateau J, Semmler JG, Enoka RM. Training adaptations in the behavior of human motor units. *J Appl Physiol.* 2006;101:1766-1775.

[6]. McLean L. The effect of postural correction on muscle activation amplitudes recorded from the cervicobrachial region. *J Electromyogr Kinesiol.* 2005;15:527-535.