

REVIEW ARTICLE

Role of physiotherapy in treatment of certain Oro facial disorders.

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ABSTRACT

Physiotherapy has been used to cure diseases of joints and muscles from times immemorial. It has also cured various diseases without inflicting mental trauma and the pain of undergoing surgery. This novel way of medicine has been brought into practice in dentistry as an adjuvant therapy. Postoperative physiotherapy is recognized as essential for the prevention or treatment of temporomandibular joint (TM) hypomobility or ankylosis. Therapeutic motion nourishes the joint without activating painful muscles. People with trouble of speaking clearly, swallowing problems, or muscle weakness of the mouth may benefit by facial strengthening exercises. Oral-motor exercises are useful in the treatment of phonological/ articulator disorders. Several physical therapies like massage and facial exercises are recommended to patients of Bell's palsy. It is also helpful in treating conditions like trismus, oral submucous fibrosis, Down's syndrome and even oral cancer. It is relatively simple, and non invasive, has a low cost and allows easy self management by patient. This adjunctive therapeutic modality is one of the major parts of a comprehensive management program of patients with orofacial disorders. This article reviews the importance of physiotherapy as an adjunct therapy in treatment of patients with orofacial disorders in the field of oral medicine.

KEY WORDS: *Physiotherapy, oral exercise, oral medicine, orofacial disorders.*

INTRODUCTION

The concept and benefits of physiotherapy have been a foreign idea to quite a lot of people in the past and even up to the present. Physiotherapy goes way back to the times of Hippocrates, deemed as the great Father of Medicine, who acknowledged that movement of body parts has to be encouraged to promote good blood circulation necessary for a patient's recovery. The recognition of physiotherapy and its benefits was established during the polio outbreak in the 1940's and 1950's when it became main therapy in averting the disabling effects of this disease. (CSP, 2000, EFPF, 2008)

People with injuries tend to consult medical doctors and usually demand medication to alleviate pain. The palliative effects of medicine only deal with the symptoms rather than the cause of the pain and would usually have addictive side effects. The intake of oral

medications may be avoided if there are alternative ways of dealing with pain. In this one of them is physiotherapy that has been used to cure diseases of joints and muscles from times immemorial (Eesensmith, 2007).

Various techniques like massage, electrical nerve stimulation, movement exercise, acupuncture, meditation and the application of hot or cold compress are used in treating a wide range of disease. The available literature does not reveal much information regarding the use of physiotherapy in the treatment of various orofacial disorders. Hence the present communication is undertaken to review the importance of physiotherapy as an adjunct therapy in treatment of patients with orofacial disorders in the field of oral medicine.

Treatment modalities by physiotherapy can be broadly divided into three categories which include physical

therapy like massage therapy, spray and stretch technique, therapeutic exercise, physical activity and yoga (Carolyn, 2002) Electrotherapy methods are like TENS (Transcutaneous Electrical Nerve Stimulation), MENS (Micro Current Electrical Nerve Stimulation), Electro acupuncture, Short Wave Diathermy, Micro Wave Diathermy, Ultra Violet Radiation, Infra Radiation, Ultra sound therapy, Lasers, Iontophoresis and thermal modalities like hot packs, paraffin wax's, ice packs, ice massage, cold spray are also recommended (Hemme, 1996 and Khokhar, 2008)

Physical therapy means light physical activities which help in to invigorate the endorphins to promote a sense of physical, mental and emotional well being. This optimism will serve to hasten the recovery period of the patient. The importance of therapeutic exercises lies in that that it stimulates both the muscle spindles (contraction) and the golgi tendon organs (stretching) are therefore needed to maintain normality of muscles.

According to Eesensmith (2007), massage therapy stimulates parasympathetic activity, which in turn reduces stress and anxiety. It alleviates numerous musculoskeletal pain conditions involving myofascial trigger points including back pain, headaches and fibromyalgia. Deep massage can assist in mobilizing tissue, increasing blood flow to the area and eliminating trigger points. The deep heat tends to relax the muscle tissue, decreasing pain and enhancing the effectiveness of deep massage. In a nutshell, massage is the manual manipulation and kneading of soft tissues, particularly of muscles which improved blood circulation, relaxation of tense muscles, improved range of motion and increased endorphin levels, all of which may benefit people with chronic pain. The different types of massage therapies include swedish massage, deep tissue massage, trigger point therapy or neuromuscular massage, myofascial release massage, oriental massage techniques, rolfing, skin rolling technique, (Karren, 2002).

Yoga is a traditional Indian culture and way of life which is purported to give the practitioner a "healthy body and a sound mind" and is believed to alleviate stress and induce relaxation, warm ups and stretching, postures, affirmation and visualization. Conditions like chronic obstructive pulmonary disease, coronary heart disease, asthma, epilepsy, anxiety, tension headache, migraine, insomnia, diabetes, multiple sclerosis, carpal tunnel syndrome, muscle weakness, muscular dystrophy, back or neck pain etc can be improved by yoga.

Electrotherapy is a bioelectric effect on human cells and is now frequently used in clinical physical therapy practice for pain relief and tissue regeneration. Laser photobiomodulation activates the components of the

mitochondrial respiratory chain, resulting in the start of a cascade of cellular events. Once absorbed by the tissues, the laser radiation causes the release of substances like histamine, serotonin, bradykinin and prostaglandins that are related to pain.

Rosted (2000) revealed the importance of acupuncture in treatment of various diseases. Acupuncture literally means to puncture with a needle. Various modality of acupuncture include classical acupuncture, needle free acupuncture, scalp acupuncture. Diseases and disorders that can be treated with acupuncture include facial pain, dental pain, temporomandibular dysfunction, Bell's palsy, non-insulin-dependent diabetes mellitus, herpes zoster, post-herpetic neuralgia and sjogren syndrome.

Quite recently, Ztalko (2009) described the importance of low level laser therapy (LLLT) in treating swelling and oedema in acute-phase injury and in accelerating healing of surgical wounds. Analgesic and anti-inflammatory effects of LLLT are also significant when used in treatment of ulcer, burns, herpes infections, scar tissue, keloid, scleroderma, neurodermitis, lichen planus, psoriasis, haematoma. The neurological diseases, which can be treated with LLLT, include carpal tunnel syndrome, trigeminal neuralgia, headache, facial palsy, post herpetic neuralgia, peripheral nerve injury (Ztalko, 2009).

TENS is a stimulating device which delivers electrical currents across the intact surface of the skin. Various modes of TENS used are Conventional TENS, Acupuncture-like TENS, Brief intense TENS, Burst TENS, and Modulation TENS. Analgesic effects of TENS include relief of acute pain in dental procedures, relief of chronic pain in condition like post herpetic neuralgia, trigeminal neuralgia, causalgia, peripheral nerve injuries, angina pectoris, and facial pain. In non-analgesic effects it acts as antiemetic, improving blood flow which is useful in reduction of symptoms associated with Reynaud's disease and diabetic neuropathy and improved healing of wounds and ulcers (Bellis *et al.*, 2009).

Humans are warm blooded and their tissues can be easily affected by applications of heat and cold in the form of beneficial thermal therapy. Cryotherapy techniques utilize conduction and convection as a means of cooling injured tissues. Intramuscular temperatures can be reduced by 3° to 7° C, which is helpful in reducing local metabolism, inflammation, and pain. Ice, cold packs, compression devices, vapocoolant sprays can be used to deliver cold temperature locally various *physiologic effects include*, pain relief, decreased haemorrhage, swelling and

oedema, muscle relaxation, and reduced inflammation.

Localized heat therapy usually utilizes some form of conductive heating. Hot water bottles, electric heating pads, hot packs, heat lamps, circulating fluid hot pack, hydrotherapy, paraffin baths are the different methods of delivering heat locally. The sedative, antispasmodic, analgesic, and decongestive effects of heat therapy are well known which is indicated for painful muscle spasms, abdominal muscle cramping, menstrual cramps, and superficial thrombophlebitis (Heeme, 1996).

Physiotherapy can be used in treating various orofacial disorders. Trismus is an inability to fully open the mouth. It can be treated by tongue blades, yawning exercise and Therabite jaw motion rehabilitation system. According to Simians & Travel (1983) myofascial pain can be treated by trigger point therapy which is basically the spray and stretch technique, which combines use of a vapocoolant spray with passive stretching of the muscle. Several physical therapy techniques useful in treating muscle dysfunction and pain include superficial heat (warm-wet), deep heat (ultrasound), cryotherapy (ice pack, vapocoolant spray) and electrotherapy (electrical stimulation (TENS)). These modalities reduce muscle tension, decrease inflammation and inactivate myofascial trigger points (Karren, 2002).

The exercise in physiotherapy has a peculiar importance in treatment of various orofacial disorders like TMJ pain-dysfunction like hypermobility of TMJ, People with trouble of speaking clearly and facial palsy. In TMJ pain-dysfunction, the various steps used to manage jaw joint pain include rest one self and jaw by relaxing and practicing stress reduction, by exercising regularly, by eating soft foods, by chewing on the back teeth and by eating small bites. Damage to joint or muscle can be avoided by avoiding contact sports, excessive jaw use in yawning, grinding and clenching and chewing gum, habits such as biting finger nails, pens and pencils, lip, long dental appointments and cradling the telephone between head and shoulder for a longer time.

Muscle pain can be reduced with analgesics and by applying cold packs and hot packs. The various muscle exercise like opening the mouth with a hinge movement, exercising the jaw by closing the mouth on the back teeth, putting the tip of tongue on the palate behind the front teeth, moving the tongue back across the palate as far as it will go by keeping the tongue in this position with the teeth closed for 10 seconds and opening the mouth slowly until the tongue starts to leave the palate will be helpful in relieving pain of TMJ. This exercise should repeat three times daily for five minutes (Scully, 2005).

The hypermobility of TMJ is considered to be the most common mechanical disorder of the TMJ which is characterized by early and/or excessive forward gliding of one or both TMJ. According to Rocabado (1983) "hyper mobile joints are treated by avoiding the excessive anterior translatory glides of the condyle, controlling rotation, stabilizing the joint and re-establishing normal head, neck and shoulder girdle posture." The treatment components prescribed by Rocabado include home exercise programme by realigning the head, neck and jaw through RTTPB which means R-relax, T-teeth apart, T-tongue hold the tongue on roof of the mouth just behind upper two front teeth, P-posture: imagine two strings. One string pulls straight up from the crown of your head to the ceiling; the second string pulls up and out from your breastbone, B-breathing: diaphragmatic (from your stomach).

The treatment is carried out in four phases. Phase 1 decrease joint sounds, excessive movements and restores TMJ tracking. Here one index finger is put on a TMJ and other on the chin and allow the jaw to drop down and back with guidance from the index finger. The tip of the tongue is placed against the palate and whole exercise is repeated five times. In phase 2 active exercises restore TMJ tracking by placing index fingers on both TMJs and allowing the jaw to drop down and back. Once again the tip of the tongue is placed against the palate and whole exercise is repeated five times. In phase 3 active exercise restore proper sequencing and timing of movement to TMJ. Here one index finger is put on a TMJ and other on the chin, allow the jaw to drop down and back with guidance from the index finger. The tip of the tongue is placed against the palate is allow to drop down and whole exercise is repeated five times. In phase 4 active exercise restore proper sequencing and timing of movement to TMJ. Here both index fingers are put on the TMJs, allow the jaw to drop down and back. The tip of the tongue is placed against the palate is allow to drop down and whole exercise is repeated five times. Mandible stabilization exercises are designed to balance the strength and function of the right and left TMJ muscles and to establish a normal jaw position at rest and during motion.

In stage 1 the RTTPB is performed and the light pressure is applied to the jaw by way of the index finger to the left, up to ceiling, to the right, diagonally back toward left ear, diagonally back toward right ear, in towards right and whole exercise is repeated five times. In stage 2 again RTTPB is performed, jaw position is maintain at one knuckle (knuckle of the index finger between top and bottom teeth) width apart, tongue is placed on palate and gentle pressure is applied to lower

jaw in same direction as done in stage 1 and whole exercise is repeated five times.

In stage 3 the whole exercise is done as done in stage 2 but here jaw position is maintain at two knuckle (knuckle of the index and middle fingers between top and bottom teeth) width apart . Various home exercise for treating TMJ hypermobility are shown in (Fig 1.1to 1.3)

The exercise like facial strengthening exercises or oral motor exercises will be helpful in increasing the strength and range of motion for the jaws, cheeks, lips and tongue. People with trouble of speaking clearly, swallowing problems, or muscle weakness of the mouth may benefit from these exercises.

The exercises include puckering of the lips and moving from one side to other, smiling by showing the upper and lower teeth and gums, puffing the cheeks by holding the air in the cheeks and tightly closing the lips together, doing "O" exercise by opening the jaw wide open and hiding the teeth under the lips and pursing the lips in an "O" shape, lower lip lifting by lower lip up as high as it will go as someone is pouting, lip holding by putting a small stick or tongue blade between the lips and holding with the lips only.

The exercises for tongue include, straight tongue stretch by opening the mouth and stretching it out as far as possible, side tongue stretch by stretching the tongue towards right and left and touching the corner of the mouth, up and down tongue stretch by stretching the tongue upwards towards the nose and downwards towards the chin.

Other exercises of tongue include, tongue sweep by sliding the tongue along the outside of the teeth and gums, making circles in the mouth, licking lips by the tip of the tongue, tongue-in-cheek push by pushing the tongue against the inside of the cheek and moving it up and down. The tongue blade exercises is done by sticking the tongue out straight pressing the tongue tip out against a flat wooden stick or tongue blade 2 or 3 times and putting the stick against one side of the tongue and pushing the side of the tongue against the stick while pushing the stick in. Figure 2 illustrates the various lip exercise and various tongue exercise is shown in (Figure 3).

There are various exercises which are useful in facial paralysis. The exercises can be divided into two stages. In stage 1 massage therapy is done by massaging and gently stretching the skin from the corner of the mouth towards the ear and then down to the jaw in a circular pattern. The same circular pattern is again carried out on the chin and forehead, by brushing forehead with finger, make-up brush, and ice cube or by the back of an

electric toothbrush, in an upward direction towards the hairline several times along with gently tapping the skin with finger tips. To help the eye close, look down and gently place back of index finger on eyelid to keep the eye shut, then with the opposite hand gently stretch eye brow up and work along the brow line.

For the cheeks the tongue is placed behind the lower teeth and the mouth is opened gently keeping the jaw relaxed. The massaging for the muscles is carried out along the side of the nose to the corner of the mouth using finger tips. Sweep the index finger from inside the cheek from top to bottom and then from back to front. Now place the thumb inside the cheek and with the index finger on the outside gently massage the cheek muscle. In stage 2, exercises are done in short sessions preferably in front of a mirror and repeated 2-3 times daily concentrating on the muscles being worked on. For the forehead after brushing try to raise eyebrows in a look of surprise. Brush the cheek in an upward direction from one corner of the mouth to the ear and smile at the same time. Now look down and close eyes slowly, lifting the upper lip gently without wrinkling nose. Now put the tongue behind the lower teeth and open mouth wide as if to say "ahh", pucker the lips and push forwards as if to say "ooo", also smile without showing the teeth and then smile showing the teeth. Puff the cheeks out with air and hold lips shut so that no air escapes by compressing lips together.

The lack of knowledge about physiotherapy is a prevalent situation in the majority of the population. Physiotherapy is concerned with the care, management and rehabilitation of patients. These principles apply to the management of patients with cancer through all care and rehabilitation programmes from diagnosis to the end of life (Fulton, 1994).

The absence of physiotherapy intervention would be detrimental to patient care and the ability of the patient and family to cope with the effects of the disease, or its treatment, on their functional capacity and quality of life. There is growing evidence that when early physiotherapy intervention using a program of progressive physical activity is available, quality of life can be improved (Donnell & Shea, 1993) It may help to correct lean tissue loss, muscle atrophy and deterioration in functional capacity, restoring self-efficacy, correcting disruption in social, sexual and family relationships and enhancing overall quality of life (Cole *et al.*, 2000, Hopkins, 2000)

In future this novel method of treatment should be promoted as it shows a promising result in non invasive way for beneficial of patient. It is relatively simple, has a low cost and allows easy self management by patient. This adjunctive therapeutic modality is one of the major parts of a comprehensive management program of

patients with orofacial disorders. A crucial factor in the success of all preventive and treatment regimens is the compliance of the patient. Since compliance is rather poor in many patients, much effort has to be made in making the patients aware of the dangers of not complying with the preventive protocols. This therapy is helpful in assessment of disease at an early stage, to allow strategies to be in place to cope with symptoms before they become severe. This can help to alleviate some of the distress and anxiety caused and allow for the maximising of function, independence and quality of life for each individual patient and to empower families to play an active role in care giving. Fulton and Else (1997) quotes that physiotherapy aims to "optimise the patient's level of physical function and takes into consideration the interplay between the physical, psychological, social and vocational domains of functions (CSP, 2000, EFFP, 2008).

Conclusion

People with injuries tend to consult medical doctors and

usually demand medication to alleviate pain. Though it brings temporary relief, the palliative effects of medicine only deals with the symptoms rather than the cause of the pain and would usually have addictive side effects therein lays the opportunity for physiotherapy. The intake of oral medications may be avoided is there are alternative ways of dealing with pain.

The physiotherapist understands the patients underlying pathological condition, but this is not the focus of treatment. The focus of physiotherapy intervention is, instead, the physical and functional sequel of the disease and/or its treatment, on the patient. This paper has reviewed much of the available evidence for physiotherapy treatments of orofacial disorders and found that while physiotherapy is effective there needs to be a more unified approach to treatment and consideration of psychosocial factors as well as physical changes in the outcome measures which have to be utilised for the benefit of the patients

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A. Pressure: to the left.



B. Pressure: up to ceiling



C. Pressure: to the right.



D. Pressure: diagonally back toward left ear.



E. Pressure: diagonally back toward right ear.



F. Pressure: in toward throat.



Jaw position: One Knuckle apart



Jaw position: Two knuckle-widths apart.

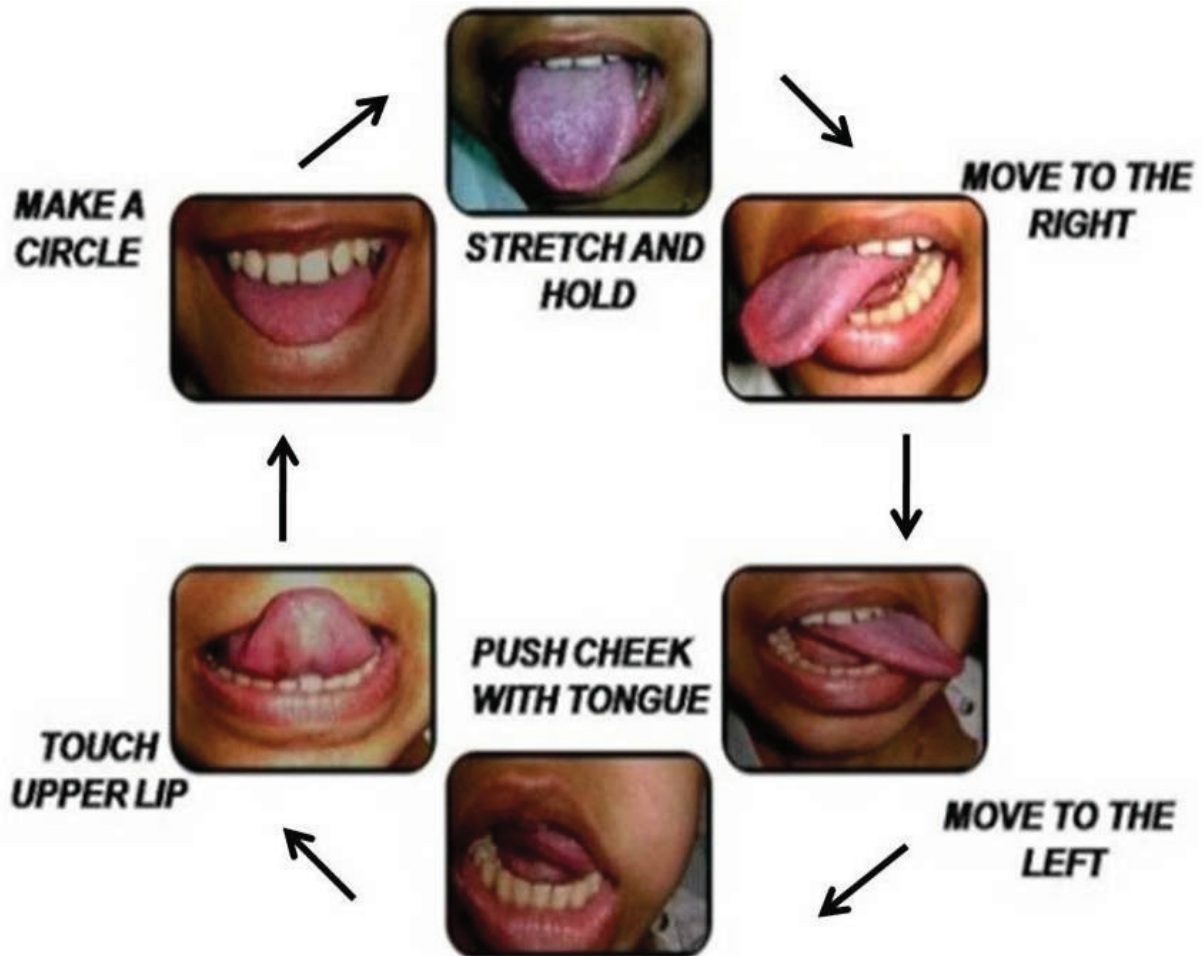


FIGURE LEGENDS-

Figure 1.1: Various home exercise for treating TMJ hypermobility.

1,2,3,4 showing the exercises which is done in phase 1, phase 2, phase 3, phase 4

Figure 1.2: Mandibular stabilization exercises-stage 1

Figure 1.3: Mandibular stabilization exercises-stage 2 and stage 3

Figure 2: Lip Exercises

Figure 3: Tongue exercises