CONTEMPORARY CLASSIFICATION OF EXERCISES IN ORAL-MOTOR SPEECH THERAPY

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Abstract. Modern Logopedics as a science and practice is increasingly recognized as belonging to the field of health care and public health. Classically defined as paramedical in nature, Speech and language pathology and therapy maintain close interdisciplinary links with a number of medical sciences. Diagnosis and treatment of speech disorders have the most points of contact with rehabilitation. What they have in common is the focus of the means on motor recovery or motor learning. Oral motor therapy is used in a number of developmental and acquired speech disorders: articulation disorders, cleft lip and palate, traumatic and postoperative injuries of the articulatory apparatus, dysarthria, dysphagia, phonation disorders, orthodontic disorders, fluency disorders. Despite the different nature of the disorders, oral motor therapy is planned by speech therapists as a relatively universal practice. Also, despite its debatable nature and the lack of sufficiently definite scientific evidence for its effectiveness, oral motor therapy is one of the mandatory elements in the scheme of therapeutic planning in both children and adults. One of the conditions for substantiating oral motor therapy as effective and for proving the place of oral motor exercises in speech therapy is the correct planning of the applied means and their dosing based on determining the rehabilitation potential of the patient and the consideration of the requirements and restrictions for the implementation of the motor program in home environment. This can be done by putting practical approaches on a scientific basis. The aim of the article is to systematize the means of speech oromotor therapy, following the principles of classification of exercises in kinesitherapy and medical rehabilitation. The principle of differentiation of the means according to the criteria of the patient's activity, localization of the exercises and the set therapeutic goal is applied. On this basis, a distinction is made between passive, passive-active and active exercises, static and dynamic (isometric and isotonic), exercises for the facial muscles and for each articulator. The planning of orofacial myofunctional therapy in speech therapy sessions involves the division of exercises against resistance and with different aids. Speech therapy massage as a passive means is also divided into different categories (manual and massage with appliances, extra-oral and intraoral). In conclusion, the proposed classification justifies the intersections between speech therapy and medical rehabilitation in theoretical terms. The classification can be used in speech therapy practice as a starting point for planning the scheme of therapy for various speech disorders.
Keywords: oral motor therapy, speech and language pathology, classification

1. INTRODUCTION

Oral motor therapy is used in a number of developmental and acquired speech disorders: articulation disorders, cleft lip and palate, traumatic and postoperative injuries of the articulatory apparatus, dysarthria, dysphagia, phonation disorders, orthodontic and myofunctional disorders, fluency disorders. Despite their different nature, oral motor therapy is planned by speech therapists as a relatively universal practice. Also, despite the lack of sufficiently definite scientific evidence for its effectiveness (especially to articulation disorders) and the debatable nature of non-speech oral exercises, oral motor therapy is one of the mandatory elements in the scheme of therapeutic planning in both children and adults (Alhaidary, 2019). On the one hand, this fact requires more research to be conducted in search of evidence for the effectiveness of oral motor therapy, and on the other hand, its means to be systematized and put on a scientific basis.

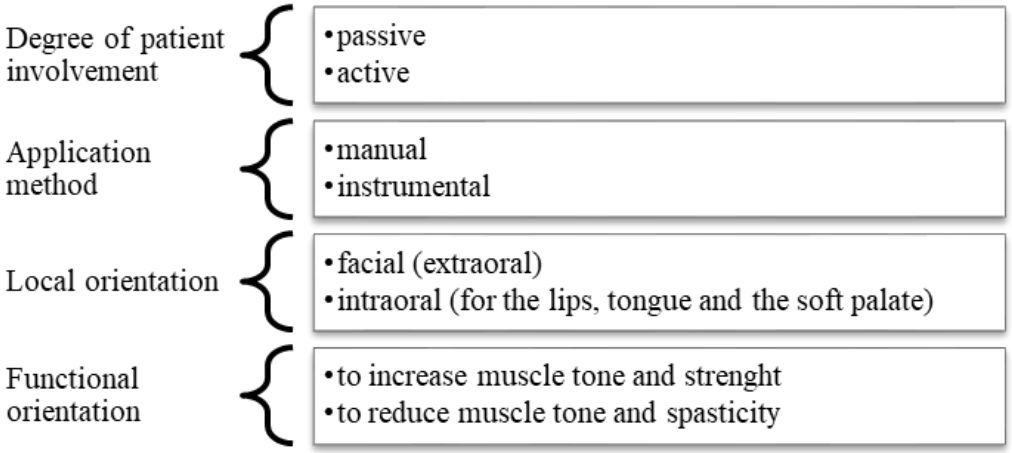
The main source of evidence is results that track the direct or indirect effect of exercise on articulation and intelligibility in children with feeding disorders (Kollia, Tsiamtsiouris & Korik, 2019), children with apraxia of speech (Lundeborg, McAllister, 2007), abnormally changed muscle tone in adults with acquired dysarthrias and dysphagia (Grechko, Pryanikov, Shevstova, Pryanikova, 2019), children with low muscle tone such as in Down syndrome (Kumin, Chapman Von Hagel, Chapman Bar, 2001), children with neurological pathology as cerebral palsy or in risk groups, such as born pre-term or small-for-age (Manno, Fox, Eicher, and Kerwin, 2005), in cleft palate and in myofunctional disorder and other orthodontic disorders (Bogoroditskaya, Sarafanova, Golovaneva, 2016; Martins, Lima, Demeda, 2014; Yahina, Lerner,, 2013). The effectiveness of oral motor therapy to improve swallowing has been demonstrated in studies with patients with dysphagia after stroke (Akai, 2015; Robbins, Gangnon, Theis, Kays, Hewitt, Hind, 2005; Steele, Bayley, Péladeau-Pigeon & Stokely, 2013), as well as in studies in chronic temporomandibular disorders and post-operative conditions of the oral cavity (Machado, Mazzetto, Da Silva, 2016; Matyakin, Ahundov, 2012).

2. MATERIALS AND METHODS

The growing number of evidence for the benefits of oromotor therapy in various disorders of speech and swallowing allows its means to be clearly systematized so that they can be applied in practice in an optimal way for each patient. In view of this, oral-motor therapy in Logopedics can be defined as a system of passive and active means of influencing the biomechanical components of speech and feeding mechanisms. Its purpose is to provide a sufficient amount of motor tasks and sensory stimulation of the facial, masticatory and lingual muscles (Boyadzhieva-Deleva, 2020). It is assumed that oral-motor therapy provides stimulation of the muscle tone, strength, coordination and range of motion for achieving the optimal movements needed for rehabilitation or development of oral feeding and intelligible speech.

The derivation of the modern classification of the means of oromotor speech therapy is based on the classification of the physical exercises in the kinesitherapy and rehabilitation (Slunchev, Bonev, Bankov, 1986). The reason for this is in the application of the principle of motor learning and sensory-motor stimulation in the rehabilitation or development of the necessary movements. Ruscello (2007) systematizes the means of rehabilitation in Logopedics according to their functional purpose, but in addition to this criterion for the classification proposed here, three more are applied (fig. 1). Each means can be classified according to more than one criterion at a time.

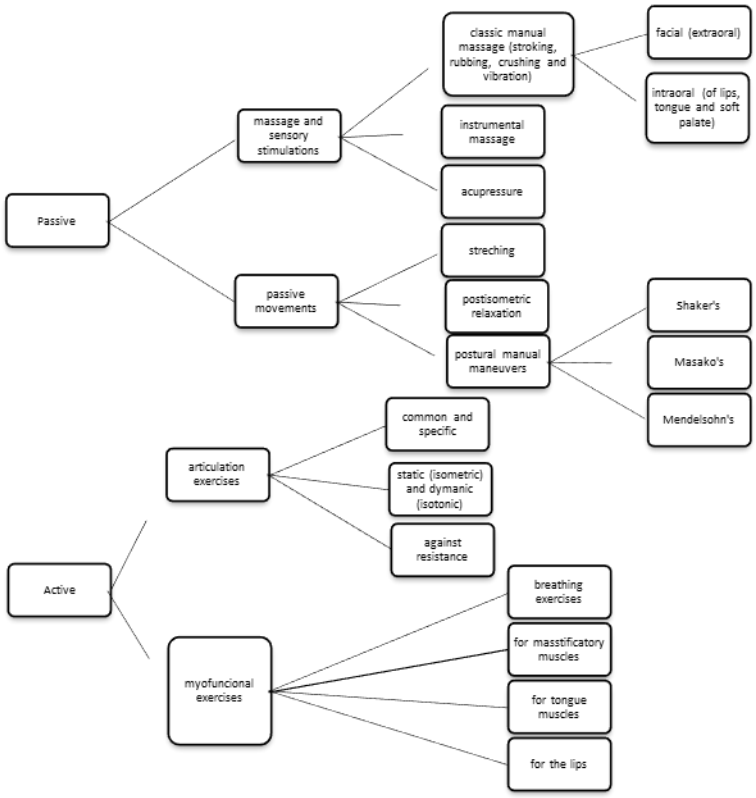
Fig. 1. Basic criteria for classification of means in oral motor speech therapy



According to the patient's own effort and volitional participation, the means of oromotor therapy are primarily divided into passive and active (fig. 2). In the effective scheme of oral motor therapy passive means must be applied first, which will gradually turn into active.

Passive means include various massage complexes, techniques for sensory stimulation of the face and oral cavity and passive movements. According to the method of application, the passive means are subdivided into manual and instrumental. In speech therapy massage, basic and additional techniques are applied from the classical manual, instrumental and acupressure massage (Boyadzhieva-Deleva, 2010). The main techniques of manual massage are stroking, rubbing, crushing and vibration. According to their place of application, speech therapy massage is divided into extraoral (on the face and neck) and intraoral (for the lips, tongue and soft palate). Each technique seeks to achieve integrated sensory and motor goals through which to influence speech biomechanics and feeding mechanisms. According to the criteria of functional orientation, massage techniques are differentiated into toning and relaxing massage. Passive movements applied after the massage include stretching, postisometric relaxation and complexes of passive-active movements to facilitate swallowing or voice production, also called postural manual maneuvers: Manual Circumlaryngeal Therapy, effortful swallow, Masako's maneuver, Mendelsohn's maneuver and Shaker's maneuver (Akai, 2015; Coscarelli, Verrecchia, Le Saec, Coscarelli, Santoro, & de Campora, 2007; Roy, Bless, Heisey, Ford, 1997).

Fig. 2. Classification of the means of speech oral motor therapy



According to their functional purpose, the active means are primary divided into two large groups: articulation exercises (articulation gymnastics) and orofacial-myofunctional exercises (myogymnastics). Articulation gymnastics is a complex of motor exercises aimed at forming or restoring the functional mobility of articulators during speech. It is traditionally included in working with isolated and complete speech disorders (such as articulatory disorders, cleft palate speech or dysarthrias). In order to achieve the desired effect, the performance of each movement must follow the pre-set goal of setting the sound and automating its isolated pronunciation, as well as facilitating the mechanisms of coarticulation. The main parameters of the movements of each articulator must be taken into account: optimal muscle tone, force of contraction, direction of movement, volume (range), coordination with the movements of other articulators and speed of movement (Boyadzhieva-Deleva, 2020). According to their local orientation, the exercises from the articulation gymnastics are divided into exercises for the facial and masticatory muscles and for the muscles of the oral cavity. The general exercises serve to warm up the oral muscles, while the specific exercises are planned for a specific staging of the articulators for a given target sound.

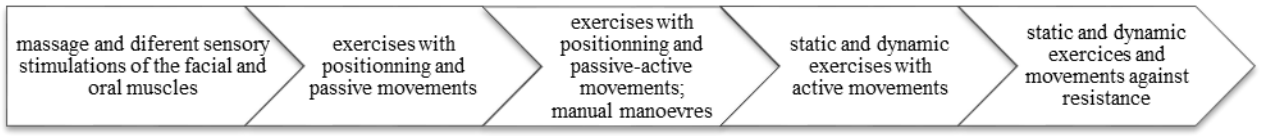
Myogymnastics is an additional therapy to orthodontic treatment of pathological oral habits, malocclusions and diseases of the maxillofacial region of neurogenic and traumatic origin (Epifanov, 2002; Tokarevitch, et al., 2015). Myogymnastics combines four main groups of exercises: for the lips, for the tongue, for the masticatory muscles and breathing exercises (Khemka Thosar, Baliga, 2015).

Exercises in both articulation and myogymnastics are performed following verbal instructions and imitation. They can be passive-active or fully active, the former providing a transition from massage to independent movement. Depending on whether it is working on shaping and maintaining a certain posture or on the smooth fluent switching between two poses, the exercises are divided into static (postural) and dynamic (for sequence), in which isometric or isotonic muscle contraction, respectively, predominates. Static exercises also aim to create the place and way of articulating a given sound, while dynamic ones are aimed at coarticulation. Static exercises are the basis on which dynamic exercises are built. Both articulatory and myogymnastic may include non-speech movements of oral praxis (blowing, swelling of the cheeks, gurgling, imitation of coughing, etc.) and can be performed both lightly and freely, as well as against resistance (by force). Various aids and tools are used in resistance exercises (trainers, applicators, plates, etc.).

3. RESULTS AND DISCUSSION

Based on the proposed classification, a sequence diagram can be derived in the application of exercises from speech oral motor therapy (fig. 3). The scheme can be used both in diagnosis and determination of rehabilitation potential, as well as in long-term therapeutic planning and dosing of exercises in each individual speech therapy session. The scheme can also support the proper self-implementation of the therapeutic program at home, which is a condition for achieving the desired results.

Fig. 3. Scheme of sequence in the application of the means of speech oral motor therapy



4. CONCLUSION

It is important for practicing speech therapists to be aware that the ultimate goal of oromotor therapy is the transfer of formed skills and motor abilities in a functional situation during feeding and intelligible speech. For optimal effectiveness of complex speech therapy oromotor exercises should be combined with other sensorimotor, linguistic and cognitive tasks.

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