Clinical Practice Guideline: **Oral Sensorimotor Therapy and Myofunctional Therapy**

Date of Implementation: **July 20, 2017**

Product: **Specialty**

Related Policies:
CPG 149: Sensory Integrative (SI) Therapy
CPG 165: Autism Spectrum Disorder (ASD) - Outpatient Rehabilitation Services (Speech, Physical, and Occupational Therapy)
CPG 166: Speech-Language Pathology/Speech Therapy Guidelines
CPG 257: Developmental Delay Screening and Testing
CPG 287: Stuttering Devices and Altered Auditory Feedback (AAF) Devices
CPG 288: Augmentative and Alternative Communication (AAC) and Speech Generating Devices (SGD)
CPG 289: Voice Therapy

GUIDELINES

American Specialty Health – Specialty (ASH) considers oral sensorimotor therapy or myofunctional therapy medically necessary for the treatment of tongue thrust, deviant or reverse swallow, or oral myofunctional disorders in children who have a diagnosed neuromuscular disease adversely affecting swallowing.

Oral sensorimotor therapy or myofunctional therapy is not medically necessary for the treatment of tongue thrust, deviant or reverse swallow, or oral myofunctional disorders in children who do not have a diagnosed neuromuscular disease adversely affecting swallowing.

DESCRIPTION/BACKGROUND

According to the Academy of Orofacial Myofunctional Therapy (AOMT), Orofacial Myofunctional Therapy is neurological re-education exercises to assist the normalization of the developing, or developed, craniofacial structures and function. It is related to the study, research, prevention, evaluation, diagnosis, and treatment of functional and structural alterations in the region of the mouth (oro), face (facial) and regions of the neck (oropharyngeal area).

Myofunctional disorder, or orofacial myofunctional disorder, including abnormal fronting (tongue thrust) of the tongue at rest and during swallowing, lip incompetency, and sucking habits, can be identified reliably. These conditions co-occur with speech misarticulations

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in some individuals. Chewing and swallowing skills may also be affected. Atypical swallowing is a myofunctional problem consisting of an altered tongue position during the act of swallowing. Speech-language pathologists provide structural assessment including observation of face, jaw, lips, tongue, teeth, hard palate, soft palate, and pharynx, as well as perceptual and instrumental diagnostic procedures to assess oral and nasal airway functions as they pertain to orofacial myofunctional patterns, swallowing, and/or speech production (e.g., speech articulation testing, aerodynamic measures). Depending on assessment results, intervention addresses the following:

- Alteration of lingual and labial resting postures
- Muscle retraining exercises
- Modification of handling and swallowing of solids, liquids, and saliva
- Speech sound production errors if present

Sensorimotor therapy was the first exercise system proposed for treating pediatric dysphagia in children with neuromuscular disorders such as cerebral palsy. The oral sensorimotor therapy (OST) approach provides structured sensory and movement experiences needed by the child to facilitate improved feeding and swallowing function and acquisition of new feeding and swallowing skills. Historically, the sensorimotor therapy in general has been used to describe a therapeutic approach that provided a structured sensory environment (input). The aim of the sensory structure is to modify specific abnormalities in the movement patterns exhibited by the patient during articular functional task and, in children with disability, to facilitate acquisition of more mature developmental skills. Structured sensory inputs are continued throughout the activity in a manner that is responsive to the changing postural adjustments and task-oriented movements of the patient. The interventions are used to improve task efficiency and quality of performance, reduce the movement errors and involuntary movements that interfere with task performance or inhibited acquisition, and elicit new movement components. The sensory modalities include external input that is associated typically with the task, such as food taste and temperature and contact sensations and resistance provided by utensil and bolus, as well as other modalities, such as vibration and massage that are selected to alter muscle tone for initiation and performance of the target task.

Nonspeech oral motor treatments (NSOMTs) are a collection of nonspeech methods and procedures that claim to influence tongue, lip, and jaw resting postures; increase strength; improve muscle tone; facilitate range of motion; and develop muscle control. In the case of developmental speech sound disorders, NSOMTs are employed before or simultaneous with actual speech production treatment. NSOMTs categories include active muscle exercise, passive muscle exercise, and sensory stimulation.

Oropharyngeal dysphagia encompasses problems with the oral preparatory phase of swallowing (chewing and preparing the food), oral phase (moving the food or fluid posteriorly through the oral cavity with the tongue into the back of the throat) and pharyngeal phase (swallowing the food or fluid and moving it through the pharynx to the oesophagus). Populations of children with neurological impairment who commonly experience dysphagia include, but are not limited to, those with acquired brain impairment (for example, cerebral palsy, traumatic brain injury, stroke), genetic syndromes (e.g., Down syndrome, Rett syndrome) and degenerative conditions (for example, myotonic dystrophy). The speech-language pathologist (SLP) is the primary member of the swallowing management team who will provide this type of dysphagia management. The primary focus of the SLP for dysphagia management is first to eliminate or reduce aspiration risk, as well as to improve or restore swallowing function. Ultimately, the management plan will depend on the physiologic underpinnings of the disorder and patient variables such as cognition, motivation, and ability to attend therapy sessions or participate in therapy.

EVIDENCE REVIEW

Much of the evidence on OST for children with neurological disorders is dated. According to Sheppard (2005), research up to that point in time suggests that oral preparation, oral initiation, and pharyngeal phases of swallowing may be improved by OST. However, treatment effects appear to be specific for individual strategies. The patient population is limited to children (and adults) with neuromuscular disorders. This includes disorders of muscle tone and movement. In cases of multiple disability, OST has advantages for working with children with cognitive and language limitations. It appears that improvements from OST are dose-dependent for both frequency of practice and duration of the treatment program. OST is, therefore, appropriate for use in settings in which involvement of the speech-language pathologist and the interventions can be continued over relatively long periods of time. Ruscello (2008) examined nonspeech oral motor treatments (NSOMTs) in the population of clients with developmental speech sound disorders. Results of the review of literature indicate that the application of NSOMTs is questionable due to several uncertainties that include (a) the implied cause of developmental speech sound disorders, (b) neurophysiologic differences between the limbs and oral musculature, (c) the development of new theories of movement and movement control, and (d) the paucity of research literature concerning NSOMTs. Clinically there appears to be no substantive evidence to support NSOMTs as interventions for children with developmental speech sound disorders.

Arvedson et al. (2010) completed a systematic review on the effects of oral-motor exercises on swallowing in children. The aim was to determine the state and quality of evidence on the effects of oral motor exercises (OME) on swallowing physiology, pulmonary health, functional swallowing outcomes, and drooling management in children with swallowing disorders. Sixteen studies of varying methodological quality were included. The included studies incorporated a wide variety of OME, and mixed findings were noted across all of the outcomes targeted in this review. Authors concluded that based on the results of this evidence-based systematic review, there is insufficient evidence to determine the effects of

OME on children with oral sensorimotor deficits and swallowing problems. Lazarus et al. (2011) systematically reviewed and examined the state and quality of the evidence for the use of oral sensory-motor treatment (OSMT) in adults to improve swallowing physiology, pulmonary health, functional swallowing outcomes, or drooling/secretion management. Of the 23 studies identified, the majority (18) were classified as exploratory research. Many of the studies had significant limitations and did not meet the standards of scientific rigor needed for the American Speech-Language-Hearing Association's National Center for Evidence-Based Practice in Communication Disorders treatment research. Additionally, there was a large degree of heterogeneity among the studies in terms of participants, interventions, and findings. Authors concluded that few efficacy studies have been conducted on the use of OSMT to improve swallowing in adults. Based on the results of this review, there was insufficient evidence to draw any conclusions on the utility of OSMT in dysphagia treatment.

Morgan et al. (2012) examined the effectiveness of interventions for oropharyngeal dysphagia in children with neurological impairment, including oral sensorimotor therapy. The review included randomized controlled trials and quasi-randomized controlled trials for children with oropharyngeal dysphagia and neurological impairment. The data were categorized for comparisons depending on the nature of the control group (for example, oral sensorimotor treatment versus no treatment). Effectiveness of the oropharyngeal dysphagia intervention was assessed by considering primary outcomes of physiological functions of the oropharyngeal mechanism for swallowing (e.g., lip seal maintenance), the presence of chest infection and pneumonia, and diet consistency a child is able to consume. Secondary outcomes were changes in growth, child's level of participation in the mealtime routine and the level of parent or carer stress associated with feeding. Only 3 studies met the inclusion criteria. Two studies were based on oral sensorimotor interventions for participants with cerebral palsy compared to standard care and a third studied lip strengthening exercises for children with myotonic dystrophy type 1 compared to no treatment. In this review, we present the results from individual studies for four outcomes: physiological functions of the oropharyngeal mechanism for swallowing, the presence of chest infection and pneumonia, diet consistency, and changes in growth. However, it is not possible to reach definitive conclusions on the effectiveness of particular interventions for oropharyngeal dysphagia based on these studies. Authors concluded that this review demonstrates that there is currently insufficient high-quality evidence from randomized controlled trials or quasi-randomized controlled trials to provide conclusive results about the effectiveness of any particular type of oral-motor therapy for children with neurological impairment.

Ferluga et al. (2013), in a comparative effectiveness report, states that evidence is insufficient and inconsistent, with a paucity of comparative studies on oral sensorimotor interventions. Poor quality studies had positive results; whereas those with more rigor show no effect, but may have been underpowered. Studies providing effectiveness data for feeding interventions in populations of any age with cerebral palsy (CP) were included in the review. Authors included studies focused on nonsurgical and surgical interventions for feeding and nutrition difficulties. Nonsurgical interventions included positioning, oral appliances, oral stimulation, sensorimotor facilitation, and caregiver training. The review included 21 studies with conflicting results related to the effects of sensorimotor interventions on short-term improvements in feeding. One study (Snider et al., 2011) included in the comparative effectiveness report stated there was conflicting evidence (level 4) that sensorimotor facilitation techniques are more effective than alternative treatment or absence thereof in enhancing feeding safety and efficiency. However, the RCTs may have been underpowered (small sample sizes), and the less rigorously designed studies indicated positive results.

Van Dyck et al. (2016) investigated the effects of orofacial myofunctional treatment (OMT) on tongue behavior in children with anterior open bite (AOB) and a visceral swallowing pattern. The study comprised of 22 individuals age range of 7 to 10 years. Functional characteristics including tongue posture at rest, swallowing pattern and articulation and presence of AOB were measured at the beginning of treatment, at the end of treatment and 6 months after treatment. The authors determined OMT did change tongue elevation strength, tongue posture at rest and tongue position during swallowing of solid food. The authors concluded OMT can positively influence tongue behavior however further research is recommended to clarify the success of OMT as an adjunct to orthodontic treatment and to identify possible factors influencing the outcome. Rhooms et al. (2019) examined the effect of sensorimotor interventions on oral feeding outcomes and to determine whether multimodal interventions lead to better oral feeding performances than unimodal interventions. The search identified 35 articles. Twenty-six studies examined a unimodal intervention, with the majority focusing on oral sensorimotor input and the others on tactile, auditory, and olfactory input. Nine studies assessed multimodal interventions, with the combination of tactile and kinesthetic stimulation being most common. Results varied across studies due to large differences in methodology, and caution is warranted when interpreting results across studies. The heterogeneity in the studies made it difficult to make any firm conclusions about the effects of sensorimotor interventions on feeding outcomes. Overall, evidence on whether multimodal approaches can lead to better oral feeding outcomes than a unimodal approach was insufficient.

Merkel-Walsh (2020) sought to 1) define variations in terminology and treatment methodology for orofacial myofunctional disorders (OMDs) in children 0-4 years of age and in special populations, and 2) compare and contrast service delivery models for children ages 0-4 and individuals with special needs versus older children and children who are neurotypical. A literature review of scholarly articles, professional presentations, poster presentations, blogs, and social media were analyzed using three tiers of evidence-based practice to include clinical expertise/expert opinion; external and internal evidence; and client/patient/caregiver perspectives. The author concluded that professional texts and publications used consistent language when discussing treatment of OMDs in young children and children with special needs. Terminology and treatment approaches for young children and/or children with special needs who present with OMDs were inconsistent in social media and professional presentations. The treatment modalities used in orofacial myofunctional therapy to stimulate oral motor responses depend upon age and cognitive status. OMDs should be treated in infants, young children, and individuals with special needs according to the methods of the pediatric feeding specialist. Orofacial myofunctional therapy requires volitional control and self-monitoring; as such, it is contraindicated for infants and toddlers as well as those individuals who cannot actively engage in therapeutic techniques.

Shortland et al. (2021) reviewed the existing evidence for OMT and myofunctional devices (MDs) used by SLPs. Twenty-eight studies met the criteria for inclusion in the review. Two thirds were published in the last decade and involved the use of OMT/MDs targeting multiple areas of speech pathology intervention within the same study, that is, swallowing, breathing, oral hygiene, and speech production. Majority of studies were rated as low level of evidence. All studies used OMT, with very few using MDs. While the assessment, treatment protocols, and outcome measures were highly variable, all the studies reported an improvement in the function of the orofacial systems posttreatment. Few studies reported long-term follow-up data. Almost half of the studies recommended the use of OMT/MDs in a multidisciplinary/interdisciplinary team or in conjunction with other therapy. Authors concluded that there has been an increase in literature over the last decade in SLPs' use of OMT; however, there are only a small number of studies to date that explore the use of MDs. There is a growing body of evidence to support the use of OMT and MDs within a multidisciplinary team for people with communication and swallow difficulties. However, development of future research should consider investigating assessment and outcome measures, optimal dosage, and service delivery.

Abd-Elmonem et al. (2021) investigated the effect of oral sensorimotor stimulation on oropharyngeal dysphagia in children with spastic quadriplegia. A convenient sample of 71 children age ranged from 12 to 48 months diagnosed with spastic quadriplegia, were randomly assigned into two groups. Children in the control group received 90 minutes conventional physical therapy training five times/week for four successive months while those in the experimental group received 20 minutes of oral sensorimotor stimulation before the same program as in control group. Oral motor function, body weight, segmental trunk control and gross motor function were assessed at baseline and after completing treatment. Overall, 64 (32 in the experimental group, 32 in the control group) children completed treatment and data collection. The baseline assessment showed non-significant differences regarding all measured variables while within group comparisons showed significant improvement in the two groups. The post-treatment comparisons revealed significant differences in the oral motor function and physical growth in favor of the experimental group. Finally, there was non-significant difference regarding segmental trunk control and gross motor function. Authors concluded that oral sensorimotor stimulation has the capability to improve feeding in children with spastic cerebral palsy diagnosed with oropharyngeal dysphagia.

Min et al. (2022) performed a study to identify the effect of oral motor facilitation technique (OMFT) on oral motor function and feeding skills in children with cerebral palsy (CP). Deficiencies in oral motor function and feeding skills are common in children with CP. OMFT is a newly designed comprehensive oral motor therapy, including postural control, sensory adaptation, breathing control, sensorimotor facilitation, and direct feeding. A total of 21 children with CP (3-10 years) participated in 16 weeks (16 sessions) of OMFT. The effects on oral motor function and feeding skills were assessed using the Oral Motor Assessment Scale (OMAS) before the treatment, 8 and 16 weeks after OMFT. Significant improvement was found in oral motor function and feeding skills including mouth closure, lip closure on the utensil, lip closure during deglutition, control of the food during swallowing, mastication, straw suction, and control of liquid during deglutition after OMFT. Mouth closure was the most effective and mastication was the least effective item. Sixteen weeks is more effective than 8 weeks of OMFT. Authors concluded that OMFT could be an effective and useful oral motor therapy protocol to improve oral motor function and feeding skills in children with CP.

PRACTITIONER SCOPE AND TRAINING

Practitioners should practice only in the areas in which they are competent based on their education, training, and experience. Levels of education, experience, and proficiency may vary among individual practitioners. It is ethically and legally incumbent on a practitioner to determine where they have the knowledge and skills necessary to perform such services and whether the services are within their scope of practice.

It is best practice for the practitioner to appropriately render services to a member only if they are trained, equally skilled, and adequately competent to deliver a service compared to others trained to perform the same procedure. If the service would be most competently delivered by another health care practitioner who has more skill and training, it would be best practice to refer the member to the more expert practitioner.

Best practice can be defined as a clinical, scientific, or professional technique, method, or process that is typically evidence-based and consensus driven and is recognized by a majority of professionals in a particular field as more effective at delivering a particular outcome than any other practice (Joint Commission International Accreditation Standards for Hospitals, 2020).

Depending on the practitioner’s scope of practice, training, and experience, a member’s condition and/or symptoms during examination or the course of treatment may indicate the need for referral to another practitioner or even emergency care. In such cases it is prudent for the practitioner to refer the member for appropriate co-management (e.g., to their primary care physician) or if immediate emergency care is warranted, to contact 911 as appropriate. See the *Managing Medical Emergencies (CPG 159 – S)* policy for information.

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