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FUNCTION-GUIDED ORAL REHABILITATION

INTERDISCIPLINARY APPROACH TO DIAGNOSIS AND TREATMENT OF CRANIO-MANDIBULAR DYSFUNCTIONS

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The mandible is a multifunctional organ. A number of authors point out the mutual influence of bite and body posture. This organ is responsible for biting, tearing, and grinding food. The mandible is closely linked functionally with the hyoid bone, larynx, tongue, and pharynx, therefore, this organ is involved in speech and swallowing. Furthermore, movements of the mandible are integrated into the functioning of the muscle chains that maintain the body's upright posture and have functional connections with the muscles of the lower leg, trunk, and neck, the upper limbs, and the facial muscles. Any shifts in the center of body mass projection lead to counter movements of the mandible. The temporomandibular joint (TMJ) is characterized by significant proprioceptive afferentation and has a large representation in the cerebral cortex, which is necessary for precise jaw positioning. Thus, the mandible plays an important role not only in chewing food but also acts as a "gyroscope" for our body, assisting spatial positioning and the coordinated work of the muscle chains that maintain the body's upright posture. This role is especially significant during dynamic loads, walking, and running. The influence of bite on body posture has been identified in both healthy individuals and patients with temporomandibular joint (TMJ) disorders. It has also been shown that surgical and non-surgical interventions on the mandible have a significant impact on postural and gait stability. Therefore, studying mandibular movements, along with studying the movements of regions relative to the vertical axis of the body, allows us to integrate mandibular movements into the work of the body's muscle chains and diagnose disorders of the masticatory muscles. Dentistry, manual therapy, applied kinesiology, and acupuncture have accumulated a significant body of techniques necessary for the correction of functional occlusion by affecting the muscular-fascial structures and reflex zones. At the same time, video analysis of mandibular movements is essential for the diagnosis and monitoring of occlusion disorders during treatment. The advantages of this method include the absence of consumables, the non-invasive nature of the procedure, and the absence of physical contact with the patient's skin, mucous membranes, and biological environments. Identification and tracking of marker points using artificial intelligence does not require the placement of physical markers on the skin, significantly speeding up the procedure. Existing techniques: Myographic examination allows for the assessment of muscle innervation and indirect assessment of its functional activity. However, this method does not allow for the integrated assessment of the interactions of many muscles. It is methodologically complex, as it requires the application of electrodes (most methods use invasive needle electrodes). The lateral pterygoid and medial pterygoid muscles, which are important for jaw positioning, are practically impossible to examine with this method. X-ray tomography and magnetic resonance imaging are used to examine the TMJ. While providing valuable information about jaw position and joint condition, this technique does not allow for the assessment of the functioning of the muscle chains or the condition of the masticatory muscles. Therefore, there is currently no non-invasive technique that can assess the trajectory of mandibular movement or indirectly evaluate the function of the masticatory muscles and muscle chains associated with maintaining body position. The development of this technique will significantly improve the efficiency of determining functional occlusion and the durability of the results.

Keywords: *interdisciplinary approach, functional diagnosis and treatment, functional occlusion, cranio-mandibular disorders.*