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Functional positions of occlusion

Bernard Jankelson, D.M.D., *Seattle, Wash.*

The two intercuspal positions are centric relation and centric occlusion. To ascertain the occlusal position of the mandible during function requires instrumentation that can track the mandible during eating, swallowing, or any other movement. A new instrument, the Mandibular Kinesiograph, senses a magnetic field and electronically tracks mandibular movement in three planes. It simultaneously provides a write-out of the data on a multichannel oscillograph or oscilloscope. It records horizontal, vertical, and lateral movements, and their velocity. It determines and records mandibular position during swallowing or chewing, when voluntarily retruded, when voluntarily closing to centric occlusion, and when closing under the influence of electronic stimulation to the myocentric position. It senses and records whether and when the mandible is at "rest" position. It also senses and displays the stability or instability of occlusion before and after occlusal adjustment or reconstruction. It does not require placement of metallic contacts or switches; set-up time is a matter of minutes; large numbers of subjects can be recorded.

The Myo-monitor was used in 50 subjects to stimulate the muscles involved in mandibular movement and to decondition and relax muscles which may have developed avoidance conditioning through proprioception of what exists in the pathway of closure. The mandible was then closed to the myocentric position by a Myo-monitor stimulus. The deconditioning effectiveness of the musculature by the Myo-monitor was monitored on the Kinesiograph.

Centric relation is characteristically off-target, compared to the swallowing or chewing position, by from 0.5 to several millimeters. The centric relation position is always "retrusive" in relation to the functional position of occlusion. The mandible is at centric relation only when the dentist applies manual guidance or force, or the patient forcibly retrudes. After such intervention ends, the mandible does not normally return to the centric relation position.

The centric occlusion position is the intercuspal position used by most subjects when eating or swallowing. Centric occlusion coincides, not with centric relation, but with the myocentric position.

The occlusal position reached through stimulation with the Myo-monitor closely represents the innate or primitive occlusal position of the individual.

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