The European Journal of Orthodontics, Volume 19, Issue 6: December 1997.

Reliability of electromagnetic articulography recording during speaking sequences

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For the development of malocclusions and speech disorders, major aetiological significance is attributed to orofacial malfunctions, especially of the tongue. The position of the tongue to the alveolar arch and teeth, particularly within the area of the tip of the tongue, is of special interest for orthodontists. Electromagnetic articulography is a new technique used to examine tongue function and to record its movement in the midsagittal plane. The aim of the study was to determine whether this procedure offers suitable and reliable results.

Thirty-one subjects aged 14.2-37.3 years had to repeat speaking sequences five times. The German syllables they had to repeat were /asa/, /ascha/, /ata/, /ala/, /ana/, /aka/. The tongue movements were registered with an 'Articulograph AG 100®'. Distances, angles and encircled planes were evaluated, and the proportion of intra-individual to overall variability was calculated in order to check the reliability of the courses of movement. Angles and distances especially showed, depending on the position of the receiver coils, strong reliability during speaking sequences, whereas area produced unfavourable results. The analysis of log trajectories and angles appeared favourable in order to describe the courses of movement. This required, however, a systematic assessment of functional movement with electromagnetic articulography.

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