

DOES HEAD POSITION MATTER FOR THE TEMPOROMANDIBULAR JOINT? ASSESSMENT OF TEMPOROMANDIBULAR JOINT MOBILITY IN DIFFERENT HEAD POSITIONS.

Kaczmarek Łukasz ^{1,2}, Kaczmarek Beata ^{1,2}, Mysliwiec Andrzej ², Dowgierd Krzysztof ³, Lipowicz Anna ⁴

¹ HOLIMEDICA Private Physiotherapy Practice in Warsaw, Poland,

² Laboratory of Physiotherapy and Physioprevention, Institute of Physiotherapy and Health Sciences. Academy of Physical Education in Katowice, Poland

³ Head and Neck Surgery Clinic for Children and Young Adults, Department of Clinical Pediatrics, University of Warmia and Mazury, Olsztyn, Poland

⁴ Department of Anthropology, Wrocław University of Environmental and Life Sciences, Wrocław, Poland

Introduction The study aimed to evaluate the influence of different head positions—Neutral Head Position (NHP), maximum right lateral flexion (LFR), and maximum left lateral flexion (LFL)—on the range of temporomandibular joint (TMJ) mobility, as measured by digital axiography. Additionally, we analyzed the relationship between the range of motion of the cervical spine (CS) and TMJ mobility in a group of patients awaiting orthodontic treatment.

Methods An observational study was conducted involving 41 patients (10 males, 31 females). Cervical spine mobility was assessed using a CROM device. TMJ mobility (protrusion, right and left laterotrusion, and maximal opening) was measured with a Zebris axiograph in the three defined head positions (NHP, LFL, LFR). Patients were grouped based on restricted, normative, or hypermobile cervical spine mobility.

Results Protrusion significantly increased during lateral head flexion compared to NHP. Maximal opening was greatest in NHP, decreasing by 2–2.5 mm in both lateral flexion positions. Laterotrusion increased when the head was flexed laterally to the same side. Men showed statistically greater maximal opening in all positions ($p=0.011$) and greater protrusion in LFR than women. No significant correlations were found between cervical spine mobility disorders and TMJ mobility, except for left laterotrusion, which was associated with left cervical hypermobility. Individuals with normative neck mobility exhibited the lowest mandibular movement values.

Conclusions Normative cervical spine mobility favors the most stable (lowest) values of mandibular movement, while both hypo- and hypermobility may lead to increased TMJ mobility, suggesting the existence of compensatory mechanisms in this population. This highlights the need for a holistic approach in diagnosing and treating TMJ patients, explicitly considering cervical spine biomechanics.