

Comparing a Tongue Fatigue-Inducing Paradigm (FIP) on Maximum Isometric Pressures (MIP) and Perceived Effort (PE) of the Tongue in Healthy Elderly (HE) versus Parkinson's Disease Patients (PDP)

Raskin I¹, Van Nuffelen G² and Vanderwegen J¹

¹Thomas More University College, Antwerp, Belgium

²Antwerp University Hospital, Antwerp, Belgium

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Abstract

Tongue strength is critical for bolus propulsion and meal consumption requires many swallows. PDP often complain of mealtime-associated fatigue resulting in prolonged mealtimes and/or premature ending of meals, potentially due to failure to repeatedly produce sufficient tongue pressure. We used a tongue FIP to study MIP and PE and influencing parameters. A total of 31 PDP and 31 HE were included. All testing and measurements used the IOPI. Two separate testing sessions were performed with an interval of 48-72 hours. Each session consisted of a baseline MIP and PE measurement, followed by the FP and 3 MIP and PE recovery measures (0, 5, and 15 minutes after completion of the FP). The FP is made up of 40 sets; each set comprised 5 repetitions at 80% of the BL MIP (confirmed by visual feedback on IOPI), followed by 1 MIP. FP was aborted at pronounced discomfort, session duration exceeding 30min (equaling a max. of 200 reps and 40 MIPs), or when MIPs during FP were <50% of BL MIP. Significant fatigue (defined as decreased MIP) was observed at the end of FP in PDP with swift recovery during recovery, as opposed to stable MIP in HE throughout the session. No difference in FIP-failure was noted between groups. MIP-variability increased during recovery and the second session, which also demonstrated higher MIPs. PE was stable during the first session but significantly lower during session two. The FP demonstrated fatigue in PDP-tongues with almost immediate recovery. PE only moderately reflects objective tongue effort.

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