IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Interactive Presentations - IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (IP)

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# NON-INVASIVE MONITORING OF JAW DYNAMICS IN STRESSFUL ENVIRONMENTS: A CASE STUDY FROM CAMÕES

**Abstract**

Background: The movement of the jaws is a pivotal aspect of our masticatory function and speech, profoundly impacting our daily lives and overall health. Psychological stress, an increasingly prevalent condition in today's fast-paced society, can significantly affect these movements. Individuals under stress often exhibit behaviors such as clenching and bruxism, leading to long-term detrimental impacts on the maxillofacial structure. Given the repetitive nature of jaw movements, even minor deviations from the norm can have profound, lasting effects on both the function and structure of the jaw. Furthermore, extensive research has underscored the interconnection between jaw orientation in space, its movements, and broader physiological domains such as body posture and coordination. This relationship highlights the complexity of jaw movements and their far-reaching implications on human health and well-being. Methods: Our research initiative used insights from two comprehensive scoping reviews to identify a range of interventions capable of measuring jaw movement accurately and non-invasively. We devised and piloted an adaptation of existing methodologies, utilizing standard camera equipment. This approach was designed to monitor jaw movements without interfering with the subjects' daily activities. Our pilot studies refined these methods, and the approach was subsequently applied to participants in the Caving Analog Mission: Ocean, Earth, Space (CAMões) project. This project offers into jaw movement in environments that simulate the conditions of space exploration. Results and Findings: Through iterative development and testing, we established a final approach that involved marking anatomical landmarks on participants and instructing them to chew gum while being recorded by a camera. This camera was part of their standard documentation kit, ensuring that our methodology integrated seamlessly into their daily routines without additional burdens. This technique not only facilitated the accurate recording of jaw movements but also did so in a manner that was unobtrusive and user-friendly. Conclusion: Our developed methodology represents a feasible, cost-effective intervention for recording jaw function and movements without disrupting natural behaviors. This approach has the potential to advance our understanding of jaw dynamics, particularly in relation to psychological stress and its physical manifestations. As we proceed with data analysis, we anticipate sharing comprehensive findings at the upcoming conference. Our research offers promising avenues for future studies, potentially leading to novel interventions that can mitigate the adverse effects of stress on jaw function and, by extension, on overall health and quality of life