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Title: Difference in assessment of peak cough flow on healthy subjects using mouthpiece and facemask techniques

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Body: BACKGROUND: The Peak Cough Flow (PCF) is the maximum air flow generated during a cough. It is used to assess cough in patients with respiratory muscle weakness, mainly in patients with neuromuscular pathology. This is done using a flowmeter graduated in Liters/minute. However, the literature describes two forms of evaluation: with a facemask or a cylindrical mouthpiece. OBJECTIVE: The objective of this study was to determine if a significant difference exists in the PCF when using a mouthpiece with a nose clip technique (PCFmouth) in comparison with a facemask technique (PCFmask) and to determine the most sensitive method. METHODS: We recruited 34 (16 men) healthy adult subjects that performed the cough maneuver. For the PCFmouth evaluation we used a cylindrical disposable mouthpiece and a nose clip. For the PCFmask evaluation we used a silicone mask with an inflatable pneumatic border. Each subject proceeded with three maneuvers to obtain reproducible values and the order was randomized. RESULTS: The population characteristics was: age of 22.1 ± 2.3 years (range 18-29), 11 smokers (32.4%), 12 subjects performed physical activity at least 3 times per week (35.3%). The PCFmouth was 4.6% higher than the PCFmask (499.1 ± 114.5 v / s 477.9 ± 94.5 L/min), existing a statistically significant difference ($p = 0.006$). CONCLUSION: In a healthy population, there is a significant difference in PCF values using the mouthpiece with nose clip technique assessment versus the facemask technique assessment in healthy subjects. From these results, we recommend the use of a mouthpiece to measure peak cough flow.