

Letter to the Editor

Regarding the article: “Maximum phonation time in the pulmonary function assessment”

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Dear Chief Editor of CEFAC Journal

This letter to the editor refers to the recently published article “Maximum phonation time in the pulmonary function assessment”¹, which aimed to assess the agreement of the maximum phonation time with the Slow Vital Capacity (SVC), intra and inter-examiner, through the single-breath counting test (SBC), of the sustained /a/ phoneme and of the SVC. The main contribution of the article related to the excellent agreement found between intra-examiners and the referral of these techniques to help in the understanding of lung function, in addition to presenting objective values of standard error of measurement in individuals without lung or parenchymal disease. The article itself opens up future possibilities, so that the single-breath counting test can be used to estimate SVC and monitor disease evolution in patients presented with COVID-19

SBC is a test in which individuals are asked to inhale as much air as possible and, during exhalation, to start counting numbers in an ascending order, starting with the number one to the largest number they can reach, in a single exhalation, maintaining the tone and intensity of a habitual phonation^{2,3}. As lung function is directly related to voice production, individuals with limited lung functionality may have an altered SBC²⁻⁶. In addition, as it is a technique that makes it possible to quantitatively assess the emission, it is possible to develop research that compares pre and post treatment values, in different populations and in monitoring the disease's evolution.

In this context, the global fight against the corona virus (COVID-19) pandemic has raised important questions about social isolation and the need for individual and risk-free pulmonary assessment^{7,8}. In this sense, safer techniques where the patient is quarantined and isolated have advantages, regarding contagion and cross contamination, however, they need to be reliable and have a good internal and external validation. In these circumstances, there is a need for studies that allow for a more inclusive and universal assessment of lung function with good reliability and agreement. In addition, these techniques support the professional who cannot use the formal test, due to fear of spreading the disease.

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During this time of pandemic, many patients have a deterioration of respiratory function, with reduced lung volumes and capacities⁹. Under these circumstances, in which patients are confined in their home, it is difficult to make an early diagnosis and even monitor the evolution of the clinical condition, using standard test procedures¹⁰. In addition, control of the infection was further impaired by the limited number of specific facilities for the admission of COVID-19 positive patients⁷. Furthermore, the assessment of hospitalized patients and the use of specific equipment to check lung function, such as spirometer/ventilometer, requiring qualified professionals to apply, disinfect and dispose materials, makes the use of standard procedures very costly and difficult to put into effect^{4,8,11}.

For over 10 years, a group of Brazilian researchers has studied the relationship between SVC and SBC^{2-4,12,13}, identifying a positive correlation both in hospitalized patients¹² and in young people without respiratory complaints¹³. Another important study group³ evaluated an estimate of SVC from SVC in 221 hospitalized individuals. By means of a simple linear regression, equations of the lines analyzed were verified in an absolute form, $SVC=55 SBC + 735$ ($R^2=0.56$; $p<0.0001$) and relative, $SVC=0.84 SBC + 14$ ($R^2=0.57$; $p<0.0001$). The authors³ call attention to the early identification of a limitation of respiratory function by SBC, based on a mathematical equation, using only the voice, and the SBC technique which can be performed in any environment.

Escossio et al.² evaluated the accuracy of SBC to determine SVC in hospitalized patients. For such, the SVC was fixed at 20ml/kg to identify patients with limited respiratory function, and a cutoff point of 21 was found for SBC (sensitivity=94.44% and specificity=76.62%). From these results, the authors concluded that SBC could be a reliable screening option.

A very interesting discussion about the Brazilian group's first research has been recently published in a letter to the editor⁴. In it, researcher Yossef Aelony comments on the importance of the technique in patients with contagious diseases such as tuberculosis, and discusses a publication that took place in 1962, in which young males, probably Caucasians, counted up to 100 ± 20 ¹⁴, in English. The discussion raises important questions and ideas for future research, such as the issue of SBC being different in other languages and the different body structures found in people around the world.

In the light of what has been presented above, SBC is proposed as an alternative in the assessment of SVC, however, the goal is not to replace spirometry, but to add to the understanding of pathophysiological information. This type of study provides possibilities for future research involving children and/or even patients who are unable to perform the spirometry technique properly, due to fatigue or other shortcomings. It is also a precursor to possibilities of multicentric comparisons involving other languages, in addition to being able to be carried out by teleconference and by patients at home, who need clinical follow-up, particularly in the current pandemic circumstances.

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