



## Il est temps pour appliquer les normes spécifiques des explorations fonctionnelles respiratoires réalisées chez les patients Tunisiens

It is high time we apply specific norms for functional respiratory tests performed in Tunisian patients

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### Dear Editor,

I read with great interest the study of Mjid et al. (1) aiming to evaluate the impact of body composition [ie, fat-free mass (FFM) and body mass index (BMI)] of chronic obstructive pulmonary disease (COPD) patients on lung function [ie, plethysmographic data and 6-min walk distance (6MWD)]. Such studies are very encouraged. On the one hand, COPD itself has substantial systemic consequences including weight loss, nutritional anomalies and skeletal muscle dysfunction (2). In COPD patients, low BMI (in particularly low FFM) is associated with worse outcomes including a higher risk of pneumonia (2). On the other hand, COPD patients' BMI influences lung function testing data (3, 4). On COPD patients, compared to normal BMI, low BMI is a risk factor for accelerated lung function decline (4), and BMI influences predicted values of static hyperinflation (3). However, in the paper of Mjid et al. (1), two methodological points, related to the plethysmographic data and 6MWD, should be highlighted.

The first point is related to the expression mode of the plethysmographic data. In their paper (ie, table 1 and table 3) Mjid et al. (1) have expressed plethysmographic data as percentages of the predicted value' without any precision about which norms were applied. In practice, the interpretation basis of plethysmographic data relies upon comparison of the measured values with the predicted ones from a 'relevant healthy' population with a comparable ethnic background (5). It is vital to reminder that even plethysmographic norms are available for Tunisian adults (6), Tunisian pulmonary departments still admit the European Community for Steel and Coal (CECA-1983) (7) plethysmographic norms as default settings for reference norms. A 2014-paper published in Tunis Med (8) unmistakably established that the use of the CECA-1983 norms (7) resulted in misreading of spirometry data in a significant percentage of subjects and that this could result in unsuitable diagnosis and/or management. Moreover,

a Tunisian study (9) does not indorse the use of the 2012-global lung initiative norms (10) to interpret spirometry in the Tunisian adult population. Finally, a 2020-review published in Tunis Med had described all lung function tests' norms available for the Tunisian population (5).

Box 1. 6-min walk distance (6MWD) reference equations for Tunisian population aged > 40 years.

Authors	Numbers	Age range	Equation: 6MWD (m) =
Masmoudi et al. (14)	80 M 75 F	40-80 years	$299.8 - 4.34 \times A + 342.6 \times H - 1.46 \times W + 62.5 \times S$
Ben Saad et al. (15)	104 M 125 F	40-85 years	$720.50 + 160.27 \times S - 5.14 \times A - 2.23 \times W + 271.98 \times H$

A: age (years). F: females. H: height (m). M: males. S: sex (0: female, 1: male). W: weight (kg).

The second point is related to the applied formula to calculate the predicted 6MWD. In their paper, Mjid et al. (1) have calculated the expected 6MWD using the following formula:  $6MWD (m) = 218 + 514 \times \text{Height (m)} - 5.32 \times \text{Age (years)} - 1.8 \times \text{Weight (kg)} + 51.31 \times \text{Sex (0: female, 1: male)}$ . On the one hand, no information was cited to help readers knowing the origin of the aforementioned formula. On the other hand, it appears that the above-cited formula was published in 1999 by Troosters et al. (11) for the Belgium population. The use of a foreign formula to predict 6MWD in Tunisian patients is a "serious" methodological problem for at least three reasons. First, some Tunisian authors have previously published 6MWD norms (12-15) and at least two 6MWD equations are available for practical use in Tunisia (14, 15) (Box 1). Secondly, Troosters et al. (11) norms included males (n=29) and females (n=22) aged 50 to 85 years, while the age range of the COPD patients included in Mjid et al. (1) study was 43 to 82 years. Therefore, for COPD patients aged 43 to 49 years, Mjid et al. (1) have extrapolated 6MWD, and this is a severe methodological issue (15). In fact, in a population of healthy Tunisian adults, there was a difference between measured 6MWD and 6MWD predicted from Troosters et al. (11) norms.

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Indeed, mean±SD measured 6MWD was significantly overestimated by 14±65 m with the Belgium equation (11).

In conclusion, it is high time we apply specific norms for functional respiratory tests performed in Tunisian patients. The latter norms are largely described in a 2020-review published in Tunis Med (5).

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## Author's reply

I read with great interest the letter to the editor of Ben Saad et al. (1) emphasizing the need to apply specific norms for functional respiratory tests performed in Tunisian patients.

Let us remind that the primary aim of our study was to describe the body composition of Tunisian COPD patients and then to examine the relationship between body composition and the severity of the disease.

To evaluate lung function, whole body plethysmography measurements were performed according to the American Thoracic Society (ATS) and the European Respiratory Society (ERS) guidelines (1,2) using a Medisoft Bodybox 5500 plethysmograph. Plethysmographic data were expressed as percentages of the predicted value according to the European Community for Steel and Coal (CECA-1993) norms (3).

The 6MWT was performed according to the ATS guidelines (4). The expected 6MWD was calculated based on the formula of Troosters et al. (5) [6MWD (m) = 218 + 514 x Height (m) - 5.32 x Age (years) - 1.8 x Weight (kg) + 51.31 x Sex (0: female, 1: male)].

To our knowledge these are the first published data on body composition in COD Tunisian patients. Even using international norms (for plethysmography and 6MWT) our results are still consistent with the literature as we demonstrated that fat-free-mass depletion is frequent in our patient and that it's correlated to air flow limitation, exercise capacity and severity of the disease.

Like Ben Saad et al. we do think that it is high time we apply specific norms for functional respiratory tests performed in Tunisian patients. These norms (spirometric) should be integrated into the software of the spirometers to facilitate their use.

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