Six-minute walk test: necessary in order to understand patient limitations

Valores de referência: uma necessidade para compreendermos a limitação dos nossos pacientes

Celso Ricardo Fernandes Carvalho

Most activities of daily living involve walking. On the basis of this concept, field tests have been devised in order to evaluate exercise tolerance in patients with lung disease. McGavin et al.[1] developed a proposal to use walk tests for the assessment of exercise tolerance in such patients, and, only a few years later, Butland et al.[2] showed that one such test—the six-minute walk test (6MWT)—could be used for assessing exercise tolerance in patients with moderate or severe COPD. As the 6MWT came to be widely used, the American Thoracic Society[3] published a consensus statement on how to perform the test, which promoted its systematic use in patients with cardiopulmonary disease. The 6MWT is currently considered an important test, not only because of its capacity to document changes resulting from physical exercise programs but also because of its association with major patient-related variables, such as activities of daily living, exacerbations, and the risk of death in patients with COPD.[4,5] However, other tests, such as the incremental shuttle walk test, have also been widely used.[6]

In view of the systematic use of the 6MWT, the first reference values for healthy American adults were published in 1998.[7] Iwama et al.[8] were the first to establish an equation for the prediction of the six-minute walk distance (6MWD) in healthy Brazilians. However, in that study, the age of the subjects was not representative of that of patients with COPD and the age distribution was not uniform. Recognizing the need for reference values that are more appropriate, the Brazilian Journal of Pulmonology has published, in the current issue, two studies proposing predictive equations for the 6MWD in Brazilians. Soares & Pereira[9] evaluated 132 employees of a large hospital in the city of São Paulo, and Dourado et al.[10] evaluated 98 employees of a university in the city of Santos. In both of those studies, height, age, and body weight seemed to be the principal predictive factors. However, each group of authors arrived at a different equation. To improve clinical practice and to increase our understanding of this topic, it would be desirable to have a single equation. My suggestion would be that, at some future date, those two groups of authors combine their data in order to produce such an equation.

Despite the discrepancies between the two studies cited above, we congratulate both groups of authors for taking the initiative to research a topic of great interest to pulmonologists: country-specific 6MWD reference values. Dourado was involved in developing the first reference equation related to the use of the 6MWT in Brazil,[8] and Pereira was among those responsible for establishing spirometric reference values for adults in our country.[11] To our pleasant surprise, Etemadinezhad & Alizadeh,[12] in this same issue, have published spirometric reference values for Iran.

It is now imperative that we employ the 6MWD predictive equations proposed here,[9,10] not only for expressing the distance covered by our patients but also for determining the physical limitation of those patients in values relative to those of the general population of Brazil.

Celso Ricardo Fernandes Carvalho
Tenured Professor,
Department of Respiratory Therapy,
University of São Paulo School of Medicine, São Paulo, Brazil

References

1. McGavin CR, Gupta SP, McHardy GJ. Twelve-minute walking test for assessing disability in chronic bronchitis. Br Med J. 1976;1(6013):822-3.
2. Butland RJ, Pang J, Gross ER, Woodcock AA, Geddes DM. Two-, six- and 12-minute walking tests in respiratory disease. Br Med J (Clin Res Ed). 1982;284(6329):1607-8.
3. ATS Committee on Proficiency Standards for Clinical Pulmonary Function Laboratories. ATS statement: guidelines for the six-minute walk test. Am J Respir Crit Care Med. 2002;166(1):111-7.
4. Celli BR, Cote CG, Marin JM, Casanova C, Montes de Oca M, Mendez RA, et al. The body-mass index, airflow obstruction, dyspnea, and exercise capacity index in

chronic obstructive pulmonary disease. N Engl J Med. 2004;350(10):1005-12.
5. Garcia-Aymerich J, Farrero E, Félez MA, Izquierdo J, Marrades RM, Antó JM, et al. Risk factors of readmission to hospital for a COPD exacerbation: a prospective study. Thorax. 2003;58(2):100-5.
6. Singh SJ, Morgan MD, Scott S, Walters D, Hardman AE. Development of a shuttle walking test of disability in patients with chronic airways obstruction. Thorax. 1992;47(12):1019-24.
7. Enright PL, Sherrill DL. Reference equations for the six-minute walk in healthy adults. Am J Respir Crit Care Med. 1998;158(5 Pt 1):1384-7
8. Iwama AM, Andrade GN, Shima P, Tanni SE, Godoy I, Dourado VZ. The six-minute walk test and body weight-walk distance product in healthy Brazilian subjects. Braz J Med Biol Res. 2009;42(11):1080-5.
9. Soares MR, Pereira CA. Six-minute walk test: reference values for healthy adults in Brazil. J Bras Pneumol. 2011;37(5):576-83.
10. Dourado VZ, Vidotto MC, Guerra RL. Reference equations for the performance of healthy adults on field walking tests. J Bras Pneumol. 2011;37(5):607-14.
11. Pereira CA, Sato T, Rodrigues SC. New reference values for forced spirometry in white adults in Brazil. J Bras Pneumol. 2007;33(4):397-406.
12. Etemadinezhad S, Alizadeh A. Spirometric reference values for healthy adults in the Mazandaran province of Iran. J Bras Pneumol. 2011;37(5):615-20.