

Letter to the Editor

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## Six min Walk Test as a Criterion for going to the Hospital in Suspected COVID-19 Patients; Is it Practical, Safe and Scientifically Justified?

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The current outbreak of the novel coronavirus (COVID-19) has rapidly spread worldwide, which greatly endangers the global health and economy<sup>(1)</sup>. Due to vast limitations in hospital resources, some countries have encountered serious problems for fair access to hospital beds. An interesting letter in this journal recommended 6-minute walk test (6MWT) as a proper clinical test to determine the necessity for going to the hospital in patients with suspected COVID-19<sup>(2)</sup>. 6MWT is a field exercise test in which, patient should walk for 6 minutes as far as possible. It is usually used to compare pre- and post-treatment conditions in many pulmonary and cardiac disorders or to estimate functional status of individuals with some pulmonary and cardiovascular diseases. This test may be applied as a predictor of morbidity and mortality in these patients<sup>(3)</sup>. Although the idea of finding an applicable and feasible clinical test to do at home is valuable by itself, but in our opinion, there are great concerns to use 6MWT for this purpose. Here, we will discuss about some serious concerns about the practical, judicious and scientifically justified use of this test in patients with suspected COVID-19.

- Standard requirements for conducting this test include: Walking course with 30-meter length; monitoring equipment (stopwatch, pulse oximeter, and sphygmomanometer); necessary rescue medications (oxygen, sublingual nitroglycerine, and albuterol); ability to measure baseline heart rate, blood pressure, oxyhemoglobin saturation; rapid access to a medical emergency service; and supervision of a technician certified in cardiopulmonary resuscitation<sup>(3,4)</sup>.
- As it is evident, most of these requirements are not available for laypersons living in normal apartments. On the other hand, modification and elimination of these requirements may be not safe, especially for ill patients suspected to COVID-19.
- This test has some important contraindications

including unstable angina, resting heart rate of more than 120 and blood pressure of more than 180/100 mm Hg. As COVID-19 is more prevalent in individuals with underlying medical conditions such as cardiac diseases, ruling -out of angina symptoms, arrhythmia and severe hypertension is necessary for starting the test, which is not possible for laypersons<sup>(3)</sup>.

- 6MWT is regarded as a near-maximal or maximal test, particularly in individuals with low aerobic fitness. Therefore, monitoring of test termination criteria or hemodynamic responses is not practical, as needed. Accordingly, this test may be inappropriate for sedentary individuals or individuals at increased risk for cardiovascular and/or musculoskeletal complications<sup>(5)</sup>.
- An individual's level of motivation and pacing ability can profoundly influence the test results. It is estimated that encouragement, learning effect and enthusiasm can make a difference of up to 30% in the 6MWT results<sup>(5,6)</sup>. According to this vast variability of test results, the minimal clinically important difference is estimated to be 54 meters, which is too high to achieve in two consecutive measurements in such an acute viral disease<sup>(5,7)</sup>.
- Another important concern is regarding to the potential adverse effects of high intensity physical activity on immune system. There is some evidence that high intensity exercise may weaken the immune system and increase the risk of respiratory tract infection<sup>(8,9)</sup>. As stated earlier, 6MWT is a maximal field test and addition of test-induced immunosuppression to the already suppressed immunity due to viral infection is a great concern.
- According to the potential adverse effects of exercise in patients with respiratory tract infection, sports medicine experts recommend using "neck check rule" to decide whether an individual can continue or should stop the exercise. Based on this rule, if the symptoms are below the neck including dyspnea, myalgia,

fever and gastrointestinal symptoms, which are very common in COVID-19 patients, any physical activity should be prohibited until full recovery<sup>(10)</sup>. Therefore, use of a maximal exercise test in suspected patients has no scientific justification.

As a conclusion, it seems that 6MWT may not be a suitable and safe functional test for judging the clinical condition and progression of pulmonary involvement in patients with suspected COVID-19. Therefore, a safe, feasible and easily interpretable functional test should be selected or developed compatible with special characteristics of this viral disease.

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