

MODIFIED INCREMENTAL STEP TEST

Equipment

- Standard commercially available 20cm non-slip single step (80cm length and 40cm width)
- Audio recording
- Pulse oximeter and sphygmomanometer
- Dyspnoea and rating of perceived exertion (RPE) scales
- Recording sheet and clip board
- Mobile phone to call for assistance if required*

*If the physiotherapist has immediate concerns at any time during an assessment at home, call 000 for an ambulance

Prepare the participant and environment

- The step should be positioned next to a stable surface of appropriate height so that the participant can use their dominant hand for balance/support if required e.g. kitchen bench
- With the participant in a seated position
 - measure resting oxyhaemoglobin saturation (SpO₂) and pulse rate using the pulse oximeter
 - obtain resting dyspnoea and RPE measures
 - measure blood pressure (BP) using sphygmomanometer
 - confirm appropriate footwear
- Provide instruction regarding the test

Conducting the step test

- The test starts in a standing position
- Turn on the audio recording (initial rate of 10 steps per minute increased at a rate of one additional step per 30 seconds)
- Monitor SpO₂ and pulse rate continuously using pulse oximetry

The test is terminated when:

(1) the participant indicates they are unable to continue

- (2) the participant fails to keep up with the beeps for two consecutive steps
- (3) the tester considers that the participant is not fit to continue
- (4) SpO₂ falls to < 80%

Record at the end of the test:

- (1) end test SpO₂, pulse rate, end test dyspnoea and RPE, BP
- (2) lowest SpO₂ recorded during the test
- (3) reason for test cessation
- (4) test end time (to enable calculation of number of steps and determination of appropriate training rate)

Two tests: rest between tests to recovery, use results from best test

CALCULATION FOR NUMBER OF STEPS BASED ON TEST TIME

The initial stepping rate is 10 steps/min with increments of 1 step every 30 seconds.

PRESCRIPTION FOR CONSTANT RATE STEP TRAINING

initial training load = 44% of the final MIST level achieved

e.g. if a participant finished the MIST on level 10, initial step training would be prescribed at level 4

INSTRUCTIONS FOR MIST

“The aim of this test is to step on and off the step as many times as you can, keeping to the speed indicated by the beeps on the audio recording.

You should step up with the first foot, then place the second foot up on the step (‘up, up’), then step down with the first foot, then down with the second foot (‘down, down’)

[demonstrate and ask patient to practice]

At first the stepping speed will be very slow, but you will need to speed up every 30 seconds. Your aim should be to follow the set rhythm for as long as you can. You should stop stepping only when you become too breathless to continue or can no longer keep up with the set pace.

At each minute we will ask you to rate the severity of your breathlessness and your leg fatigue using the scales.

The test is progressive, in other words it is easier at the start and harder at the end. The stepping speed for the first 30 seconds is very slow, so don’t go too fast.

If you need to, you are allowed to swap legs at any time during the test.

The test will start after a 3-second count down.

Do you have any questions?”

If the participant is having difficulty keeping up the required pace, use the following prompts:

“You need to increase your speed to keep up with the test”

“Up, up, down, down”