Queens College Step Test

Queens College test protocol is part of the “Mines Rescue” pre-employment testing.

Equipment required:
- 41.3 cm (16.25 inch) step
- Metronome set to cadence of – refer to “How to Use a Metronome”:
  - 88 beats per minute (22 steps per minute for females)
  - 96 beats per minute (24 steps per minute for males)
- Heart rate monitor
- Stop watch
- Calculator

Prior to starting the test:
- Record resting HR (applicant should still be wearing the monitor)
- Ask applicant their age – circle on the testing paperwork
- Calculate 85% of HRmax (220-age*.85)
- Demonstrate to the applicant how to perform the test by stepping up and down on the step keeping in time with the beat of the metronome
  - The applicant can lead with either foot and is able to change the leading leg during testing, but MUST stay in time with the metronome.
  - The stepping must be UP / UP / DOWN / DOWN
  - Applicant’s should not be holding on to a railing / wall during the test

Conduct testing:
- Have the applicant start testing at the same time as starting the stop watch
- Watch for uneven weight bearing between left / right legs, use of hands on thighs for support, forward flexed posture, signs of fatigue etc
- If the applicant deviates from the beat, instruct them a few times but if they keep slowing down due to fatigue, cease testing
- During testing check the HR at least 3 times (you may ask the applicant to tell you, you may just look at the watch, but inform them that you need the HR and not to stop or slow down)
- At the end of the 3 minutes have the applicant cease stepping
- Allow the applicant 20 seconds recovery time then take the heart rate
- If the applicant is unable to complete testing (self determined or clinician instructed) record time completed and heart rate at stopping in the “20 sec post HR” location on paperwork (in results record "not completed")
- Record the “20 sec post test heart rate”

Scoring:
- Using the following calculations estimate VO2Max (McArdle et al.,1972)
  - men: VO2max (ml/kg/min) = 111.33 - 0.42 x heart rate (bpm)
  - women: VO2max (ml/kg/min) = 65.81 - 0.1847 x heart rate (bpm)
- Compare the estimated VO2Max to the norms on the testing paperwork

Cease Step Test Immediately if:
- The applicant reaches 85% heart rate max at any point during testing