

The multi-stage shuttle run 20 m (MSR 20 m) test and its variants

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Abstract

For assessing the maximal aerobic power of large groups of subjects, one has to rely on valid, reliable, self and inexpensive tests. The MSR 20 m, popularly known as Beep test, is considered such a test, being used worldwide on both children and adults and in a variety of setting rankings; physical education, adult fitness programs and specific sports performance testing. Since 1982, when Léger and Lambert proposed this, many researchers have evaluated the MSR 20 m test, most of them concluding that it is an instrument not only valid, but also reliable.

Briefly, subjects are asked to run back and forth a 20 m course, starting at a speed of 8.0 km/h (children) or 8.5 km/h (adults). Then the speed is progressively increased the subjects being instructed to keep pace dictated by the sound signals on an audiotape. When the subjects can no longer follow the pace and reach the 20 m line consecutively twice with the beep, the test is finished and the final successfully completed level of speed is used to predict the maximal oxygen uptake (VO₂ max) using special equations and/or tables. Apart from VO₂ max, the scores in the MSR 20 m can be expressed in METs, or in completed speed levels plus shuttles, number of completed 20 m shuttles, total distance covered (meters), maximal speed (Km/h) and time to exhaustion in the test (seconds).

In order to improve the VO₂ max prediction power and/or to better adapt to a specific sport, a number of modifications were proposed in the protocol of the MSR 20 m test. This resulted in four somehow new tests and the present paper offers a brief description of them. From a chronological perspective these variants of the MSR 20 m test are: the MSR 20 m in which speed is increased every 20m shuttle (1999), the Léger soccer (foot) test (2000), the 20m square shuttle test (2004) and the hexagon multi-level running aerobic test 10 m (2007).

Key words: The multi-stage shuttle run 20 m (MSR 20 m) test; its variants.