



## **The Cooper VO2 Max Test**

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**THE COOPER VO2 MAX TEST**

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<https://bootcampmilitaryfitnessinstitute.com/run/the-cooper-vo2-max-test/>

## **1.0 Introduction**

Testing and measurement are the means of collecting information upon which subsequent performance evaluations and decisions are made but in the analysis we need to bear in mind the factors that may influence the results.

## **2.0 Objective**

The Cooper Test (Cooper, 1968) is used to monitor the development of the athlete's aerobic endurance and to obtain an estimate of their VO2max.

## **3.0 Resources Required**

To undertake this test you will require:

- 400 metre track
- Stopwatch
- Whistle
- Assistant

## **4.0 How to Conduct the Test**

This test requires the athlete to run as far as possible in 12 minutes.

1. The runner warms up for 10 minutes;
2. The trainer gives the command "GO", starts the stopwatch and the runner commences the test
3. The trainer keeps the runner informed of the remaining time at the end of each lap (400m)
4. The trainer blows the whistle when the 12 minutes has elapsed and records the distance the runner covered to the nearest 10 metres

## **5.0 Normative Data for the Cooper Test**

*Male Runners*

<b>Age</b>	<b>Excellent</b>	<b>Above Average</b>	<b>Average</b>	<b>Below Average</b>	<b>Poor</b>
13-14	>2700m	2400-2700m	2200-2399m	2100-2199m	<2100m
15-16	>2800m	2500-2800m	2300-2499m	2200-2299m	<2200m
17-19	>3000m	2700-3000m	2500-2699m	2300-2499m	<2300m
20-29	>2800m	2400-2800m	2200-2399m	1600-2199m	<1600m
30-39	>2700m	2300-2700m	1900-2299m	1500-1999m	<1500m
40-49	>2500m	2100-2500m	1700-2099m	1400-1699m	<1400m
>50	>2400m	2000-2400m	1600-1999m	1300-1599m	<1300m

*Female Runners*

<b>Age</b>	<b>Excellent</b>	<b>Above Average</b>	<b>Average</b>	<b>Below Average</b>	<b>Poor</b>
14	>2000m	1900-2000m	1600-1899m	1500-1599m	<1500m
15-16	>2100m	2000-2100m	1700-1999m	1600-1699m	<1600m
17-20	>2300m	2100-2300m	1800-2099m	1700-1799m	<1700m
20-29	>2700m	2200-2700m	1800-2199m	1500-1799m	<1500m
30-39	>2500m	2000-2500m	1700-1999m	1400-1699m	<1400m
40-49	>2300m	1900-2300m	1500-1899m	1200-1499m	<1200m
>50	>2200m	1700-2200m	1400-1699m	1100-1399m	<1100m

**6.0 VO2 Max Formula**

An estimate of a runner's VO2 Max can be calculated as follows:

*Formula:*

$$(\text{Distance covered in metres} - 504.9) \div 44.73 = \text{VO2 Max}$$

*Example:*

$$(2550 - 504.9) \div 44.73 = 45.72 \text{ mls/kg/min}$$

**7.0 Analysis**

Analysis of the test result is by comparing it with the runner's previous results for this test. It is expected that, with appropriate training between each test, the analysis would indicate an improvement in the runner's VO2 Max, anaerobic and aerobic thresholds.

**8.0 Target Group**

This test is suitable for endurance athletes and players of endurance sports (e.g. football, rugby) but not for individuals where the test would be contraindicated.

**9.0 Reliability**

Test reliability refers to the degree to which a test is consistent and stable in measuring what it is intended to measure. Reliability will depend upon how strict the test is conducted and the individual's level of motivation to perform the test.

**10.0 Validity**

Test validity refers to the degree to which the test actually measures what it claims to measure and the extent to which inferences, conclusions, and decisions made on the basis of test scores are appropriate and meaningful. This test provides a means to monitor the effect of training on the runner's physical development. There are published VO2 Max tables and the correlation to actual VO2 Max is high. For an assessment of your VO2 max see the VO2max normative data tables above.

## **11.0 References**

Cooper, K.H. (1968) A Means of Assessing Maximal Oxygen Intake. *Journal of the American Medical Association*. 203, pp.201-204.