

PHE 405—Physiology of Exercise & Fitness

Cooper's 12-Minute Run Test

EQUIPMENT

Stopwatch
Measured running course
Recording sheets

INTRODUCTION

The 12-minute run test was devised by Dr. Kenneth Cooper as a simple evaluative instrument for the assessment of cardiovascular fitness. The test is one of several tests in which the participant attempts to run as far as possible in a prescribed amount of time. In fact, the 12-minute run test was adapted by Cooper from an older 10-minute run test which Cooper believed to be of insufficient duration to adequately stress the cardiovascular system for fitness measurement purposes. Obviously, anyone could have come up with the idea of the 12-minute run test – what Cooper did that received deserved acclaim was to develop extensive norms for the test.

The 12-minute run test has a number of advantages and disadvantages. The primary advantages include:

1. It can be administered to large groups or to a single individual easily and in a short period of time.
2. It does not require special equipment – a track and a stopwatch are all it takes. In fact, a regular watch with a digital or sweep second hand will do in a pinch.
3. It is a *reasonably* valid measure of cardiovascular fitness (0.7 to 0.8 correlation when correlated with maximal oxygen uptake).
4. Extensive norms are available for males and females of all ages.
5. No special knowledge about fitness testing is necessary – the test may be administered by a complete novice, even to himself/herself.

The primary disadvantages include:

1. The test is quite stressful physically, thus it should not be administered to subjects in poor physical condition without several weeks of preparatory training.
2. The severity of the test makes motivation a problem--12 minutes is a very long time when you are running for maximum distance.
3. The ability to pace oneself may play an important role in scoring. More than one test administration may be necessary for a person to achieve a valid indication of fitness.

The 12-minute run test is discussed at length by Cooper in his books (see bibliography). Several of the four "Aerobics" books are available in paperback. Norms for adult males and females are also available in these books, although more up-to-date norms are included in this document.

METHODS

The 12-minute run test will be administered in the following manner:

1. All persons in the laboratory should report for class in suitable jogging clothing and shoes.
2. The test will be administered on the 220-yard track in Racer Arena. A 440-yard (400 meter) track or other measured area can be employed equally well for the test.
3. The class will be divided into two groups. One group will take the test first while the other group records lap times and, at the conclusion of the run, counts heart rates. Immediately following the administration of the test to the first group, the second group will be tested.

4. On command subjects will begin running and will continue for exactly 12 minutes, attempting to pace themselves so as to cover the greatest distance possible. For the purposes of this laboratory, runners are asked *not* to increase their pace during the closing moments of the run. Sprinting the last part of the run increases the total distance only slightly and is extremely stressful to the individual. Since heart rate at the conclusion of the run will be used as an indication of the steady state heart rate during the run, picking up the pace toward the end will distort the interpretation. When administering the test in other situations this limit should not be placed upon the subjects.
5. At the conclusion of the 12 minutes the runner's partner (lap time recorder) will immediately palpate the runner's carotid artery. When all counters have had sufficient time to reach their runner and locate the pulse (about 15 seconds) a signal will be given to begin counting heart rate. Exactly 15 seconds later a second signal will be given to mark the end of the counting interval. The pulse count will be multiplied by 4 to convert it to beats per minute. **NOTE:** The counting of heart rate is *not* a normal aspect of the 12-minute run test, but it is included in this laboratory as a method of assessing the steady state heart rate of the runner, and thus, motivation.
6. Subjects will be classified into fitness categories according to the distance covered in 12 minutes using norms established by Cooper.
7. In addition to fitness categories, subjects will also be classified according to maximal oxygen uptake (ml/kg/min) using the following table. **NOTE:** This is a type of "predicted maximal oxygen uptake" based on Cooper's laboratory results.

TABLE 1. Predicted Values For Maximal Oxygen Uptake Based On 12-Minute Run Scores.

Miles	ml/kg/min	Miles	ml/kg/min	Miles	ml/kg/min
1.00	25	1.35	37	1.70	50
1.05	27	1.40	39	1.75	52
1.10	28	1.45	41	1.80	53
1.15	30	1.50	43	1.85	55
1.20	32	1.55	44	1.90	57
1.25	34	1.60	46	1.95	59
1.30	36	1.65	48	2.00	60

BIBLIOGRAPHY

- AAHPERD Youth Fitness Test Manual.* Washington, D.C.:AAHPERD Publications, 1975.
- AAHPERD Health Related Fitness Test Manual.* Washington, D.C.:AAHPERD Publications, 1980.
- Cooper, K. H. *Aerobics.* New York: Bantam, 1968.
- Cooper, K. H. *The New Aerobics.* New York: Bantam, 1970.
- Cooper, K. H. *Aerobics For Women.* New York: Bantam, 1972.
- Cooper, K. H. *The Aerobics Way.* New York: Bantam, 1977.