

IAAF CECS Level IV – Middle and Long Distance

Practical Session: Specific Testing and Monitoring

Tests and measurements are well-established ways in which coaches and athletes evaluate the athlete’s status, either in preparation for commencing a particular phase of training, to assess the effectiveness of a completed phase of the training programme, to identify talent or as a predictor of performance. There has been a trend in recent years for coach and athlete alike to believe that, to be of any value, such tests require expensive facilities and similarly expensive equipment. This is certainly not always the case, as field testing on the track can be more valid and reliable than laboratory procedures when related to the ultimate test, competition itself. This will always be the case until such time as we conduct competitions in laboratories. Like any good training tool, tests should also provide motivation for the athlete, especially when there is no competition, and is valid for any individual athlete when used on an ongoing basis. The Kosmin Test is a good example of a field-based test.

*“*Planning and evaluation of training and of athletic performance constitute a unity. The purpose of evaluation is to check the progress being made in implementing the training plan and, above all, to find out how efficient the training methods, means of training, the load structure and all the components are.”

Harre, Principles of Sports Training

The Kosmin Test was devised in the former Soviet Union to be an event specific test of anaerobic power and endurance. They are some of the best field tests for middle distance athletes and requires nothing more complex than a track, a stopwatch, a tape measure and the athletes themselves. The Kosmin Test was introduced to the West in the late 1970s, when the renowned middle distance coach Frank Horwill introduced the British Milers’ Club to the first details. He arranged for the calculation and publishing of tables for the test from the formulae used in the Soviet Union, making it easy to use for any coach.

Frank Horwill provides the following supporting data from his experience of coaching Tim Hutchings, 4th place finisher in the 1984 Los Angeles Olympic 5000m: *“When Tim Hutchings first broke 4 minutes for the mile in the Emsley Carr Mile in 1978, he had run 1720 metres total distance on the Kosmin Test a week before. I was able to say to him “You are ready to break 4 minutes.” In the race he ran 3:57.8. The test had predicted he could do 3:41.6 for 1500m.”*

**The Kosmin Test**

**Purpose:** Event specific tests of anaerobic power and endurance, predicting 800m and 1500m performance.

**Equipment:** 400m track, stopwatch, marking tape and a tape measure

**Procedure**: There are, in fact, two separate and distinct Kosmin Tests, one specifically for predicting 800m performance and another specifically for 1500m performance. The latter can be easily adapted to predict performance in the mile.

The 800m test involves the athlete running for two maximal efforts of 60 seconds at a time with the coach observing and marking where the athlete completes each 60 seconds. There is a 3 minutes rest between the efforts of 60 seconds and the athlete starts again on the track where the first 60 seconds expired. This might, for example, be at 412 metres. Should the athlete then cover another 394 metres in 60 seconds, the total distance covered is 806 metres.

The 1500m test involves the athlete running as far as they can in four ‘controlled, maximal’ efforts of 60 seconds with respective rests diminishing from 3 minutes, 2 minutes to 1 minute. The coach marks the distance achieved in each 60 seconds of running and totals these together.

**Scoring:** The total distance run in each 60 seconds is totalled and reference made to the appropriate table e.g. for the 806 metres run above, referring to the Kosmin Test Tables for 800m prediction, we can predict that the athlete will run 2:01.6. If the athlete had covered a total of 910 metres we could predict a subsequent performance of 1:49.1.

**Note for developing athletes:** Both the 800m and 1500m tests mimic the anaerobic demands of their respective events in an exhaustive fashion. The 1500m test is particularly challenging and possibly produces greater amounts of lactate and hydrogen ions than in many 1500m races. Because it is so psychologically and physiologically demanding, the 1500m test should be reserved for the experienced athlete, with a high training age and probably older than 18 years.

The Kosmin Test not only helps to predict current performance levels but can help to identify what should be the ongoing focus for training. If the coach examines the way in which an athlete achieves their final score it can help to identify where there are strengths and weaknesses to be addressed in the athlete’s training. For example, if we carry out the 800m Kosmin Test and an athlete runs a total of 830m this would indicate from the tables a current performance capacity of 1:58.6. But, if we look at how the 830m was achieved this can reveal more, provided the athlete has run the test at maximum effort in all sections. Look at these two examples:

a) 441m + 389m = 830m (speed levels are good but speed endurance is poor)

b) 418m + 412m = 830m (speed endurance is good but speed needs to be improved)

In example a) there is a great discrepancy between the first and second distance run in 60 seconds. From this, the athlete appears to have good speed but poor speed endurance or possibly a poor basic general endurance foundation. In this case, performance improvements should come from a focus in training on specific endurance development. In example b) the two distances achieved are almost the same, indicating that endurance levels are very good but basic speed needs to be the training focus.

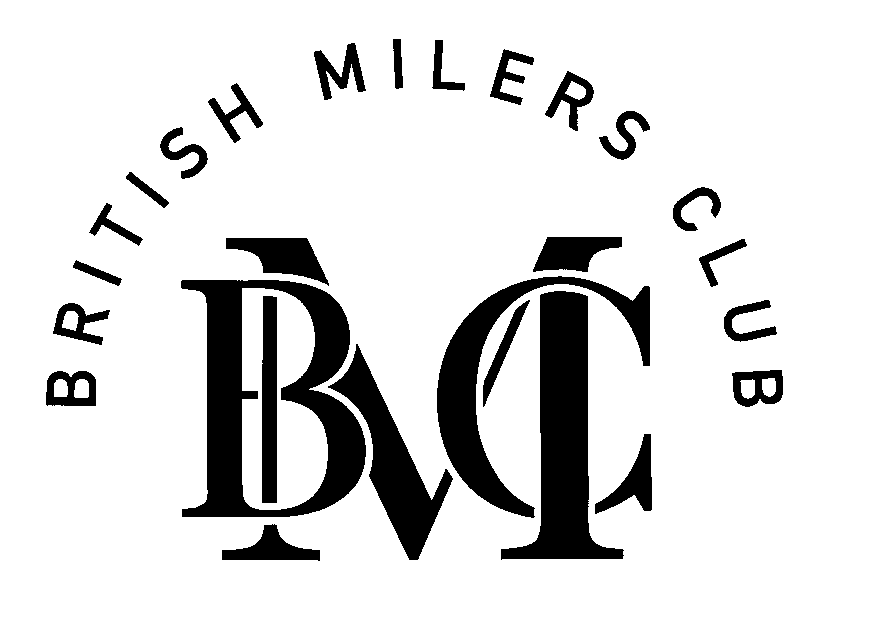
The same principle of analysis can be applied to the 1500m Kosmin Test results and, because of the four repetitions with diminishing recoveries, can reveal a great deal of what are the athlete’s current component speed and speed endurance levels and what should be the ongoing training focus.

The tables can be used for male and female athletes but they tend to over-predict where performances are slower than 2:05 and 4:05. If an athlete achieves, for example, a total of 710 metres for the two 60 seconds efforts of the 800m test, this would predict 2:12.9 from the tables. In actual practice, the athlete will probably be ready to run around 2:15 - 2:16. As the times predicted for 800m become slower and exceed 2:20, the inaccuracies tend to increase to 4 - 5 seconds, or greater. Similar adjustments need to be made for 1500m test.

Despite this over-prediction the test provides motivation for the athlete, especially when there is no competition, and is individually valid when used on an ongoing basis. Many coaches use this test at the beginning of the General Preparation Phase to establish a baseline, then at the beginning of the Specific Preparation Phase and possibly at the end of the Specific Preparation Phase, or even in the Competition Period – if suitable competitions are not available.

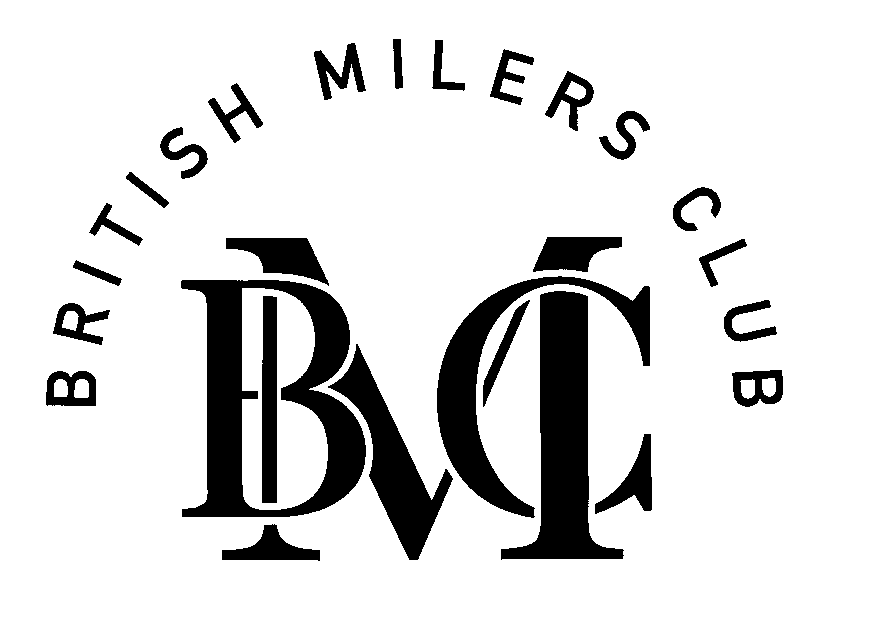
**The Kosmin Test Scoring Tables**

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| --- | --- | --- | --- | --- | --- |
| **Kosmin Test**  Predicting 800m performance  2 x 60 secs (maximal effort) [3 mins] | | | | | |
| **DISTANCE** | **PROJECTED 800m TIME** | **DISTANCE** | **PROJECTED 800m TIME** | **DISTANCE** | **PROJECTED 800m TIME** |
| 500  505  510  515  520  525  530  535  540  545  550  555  560  565  570  575  580  585  590  595  600  605  610  615  620  625  630  635  640  645  650 | 2:38.0  37.4  36.8  36.2  35.6  35.0  34.4  33.8  33.2  32.6  32.0  31.4  30.8  30.2  29.6  29.0  28.4  27.8  27.2  25.6  26.0  25.4  24.8  24.2  23.6  23.0  22.4  21.8  21.2  20.6  20.1 | 655  660  665  670  675  680  685  690  695  700  705  710  715  720  725  730  735  740  745  750  755  760  765  770  775  780  785  790  795  800 | 2:19.5  18.9  18.3  17.7  17.1  16.5  15.9  15.3  14.7  14.1  13.5  12.9  12.3  11.7  11.1  10.5  9.9  9.4  8.8  8.2  7.6  7.0  6.4  5.8  5.2  4.6  4.0  3.4  2.8  2.2 | 805  810  815  820  825  830  835  840  845  850  855  860  865  870  875  880  885  890  895  900  905  910  915  920  925  930  935  940  945  950 | 2:01.6  1.0  0.4  1:59.9  59.2  58.6  58.0  57.4  56.8  56.2  55.7  55.1  54.5  53.9  53.3  52.7  52.1  51.5  50.9  50.3  49.7  49.1  48.5  47.9  47.3  46.6  46.0  45.4  44.8  44.2 |

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**The Kosmin Test Scoring Tables**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Kosmin Test**  Predicting 1500m performance  4 x 60 secs (maximal effort) [3mins, 2mins, 1mins] | | | | | |
| **DISTANCE** | **PROJECTED 1500m TIME** | **DISTANCE** | **PROJECTED 1500m TIME** | **DISTANCE** | **PROJECTED 1500m TIME** |
| 1300  1305  1310  1315  1320  1325  1330  1335  1340  1345  1350  1355  1360  1365  1370  1375  1380  1385  1390  1395  1400  1405  1410  1415  1420  1425  1430  1435  1440  1445  1450 | 4:49.7  48.9  48.1  47.3  46.5  45.6  44.8  44.0  43.2  42.4  41.6  40.8  40.0  39.2  38.4  37.5  36.7  35.9  35.1  34.3  33.5  32.7  31.9  31.1  30.3  29.5  28.7  27.8  27.0  26.2  25.4 | 1455  1460  1465  1470  1475  1480  1485  1490  1495  1500  1505  1510  1515  1520  1525  1530  1535  1540  1545  1550  1555  1560  1565  1570  1575  1580  1585  1590  1595  1600  1605 | 4:24.6  23.8  22.9  22.1  21.3  20.5  19.7  18.9  18.1  17.3  16.5  15.7  14.9  14.1  13.2  12.4  11.6  10.8  10.0  9.2  8.4  7.6  6.8  5.9  5.1  4.3  3.5  2.7  1.9  1.1  0.3 | 1610  1615  1620  1625  1630  1635  1640  1645  1650  1655  1660  1665  1670  1675  1680  1685  1690  1695  1700  1705  1710  1715  1720  1725  1730  1735  1740  1745  1750  1755  1760 | 3:59.5  58.7  57.9  57.1  56.3  55.4  54.6  53.8  53.0  52.2  51.4  50.6  49.7  48.9  48.1  47.3  46.5  45.7  44.9  44.1  43.2  42.4  41.6  40.8  40.0  39.2  38.4  37.6  36.7  35.9  35.1 |

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