Age-Grade Tables

Tables for grading road-running performances based on gender and age.
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Background

In 1989 the National Masters News and the World Association of Veteran Athletes (WAVA) compiled a booklet, Masters Age-Graded Tables, of tables for grading athletic performances based on sex and age. These tables covered all standard track and field events plus standard long-distance running events and race-walking events. They only covered ages 30 and above. These tables were compiled by a committee composed of Rodney Charnock, Peter Mundle, Charles Phillips, Gary Miller, Bob Fine, Rex Harvey, Phil Mulkey, Bob Stone, Mike Tymn, Christel Miller, Phil Raschker, and Al Sheahen. In 1994 the tables were updated and were extended to ages 8 through 19 in Age-Graded Tables, National Masters News, P.O. Box 2372, Van Nuys, CA 91404.

New Method developed

In 2002 I scored a race in which it seemed to me that the younger runners were not being treated fairly. I began, at that time, to create new tables using a new method of fitting curves to the data. After some months I began to work with Rex Harvey who was associated with the World Masters Athletics (WMA). Working closely with Rex Harvey through the spring of 2004, Rex, and I developed new tables for track distance running and road races up to 200 km.

2004/2006 (2002) Tables

- The first tables done by Rex Harvey and me were called the WMA 2002 tables. Work on the male tables was completed in 2004 and the female in 2006. We refer to them as the male 2004 and female 2006 tables.

- These tables include both the in-stadium events and road events.

2010 Long Distance Running Tables

- In 2009, information was provided that indicated that the female tables for older runners at the longer distances were too soft. Several runners were obtaining percentage performances of over 100%. The female tables were then adjusted based on recent data provided by Marian and Don Lein. Don was the USATF Masters Long Distance Running Chair.

- The 2010 tables were created in early 2010. They were approved by both WMA and by United States USA Track & Field (USATF). They are available here:

- https://github.com/AlanLyttonJones/Age-Grade-Tables/tree/master/2010%20Files

- These tables are called the WMA/USATF 2010 tables.

- The male tables were not changed since their completion in 2004.

- The track tables have not changed since the 2004/2006 tables.

2015 Long Distance Running Tables

- When a new world record, 2:02:57, for the men's Marathon was set on September 28, 2014 at the Berlin Marathon by 30-year-old Denis Kimetto of Kenya, it generated a blog by Robert James Reese from Runner's World magazine. He suggested that it may be time to update the age-grade tables. This inspired us to check on how many times had changed in the almost ten years since the men's tables were established and the almost five years since the women's tables were updated.

- Ken Young from the Association of Road Racing Statisticians was helpful in evaluating the 2015 tables.

- The 2015 tables were approved in January 2015 by both the USATF Masters Long Distance Running committee chaired by Don Lein and by the WMA.

2020 Long Distance Running Tables

- Unfortunately, Ken Young died in 2018. Tom Bernhard took on the task of updating the single-age bests.

- Working with Tom Bernhard, 2020 standards were developed. The standards are included in the GitHub repository in the '2020 Files" directory: FemaleRoadStd2020.xlxs and MaleRoadStd2020.xlxs.

- In addition, the working files that produced the standards are included in the '2020 Files' directory: maleRoad2020.xlxs and femaleRoad2020.xlxs. A document in the docs folder, Creating Road Running Age Tables.docx, describes how the tables are produced. This will allow someone to fork this repository and create new age group tables for, say, 2025.

- Another document in the folder docs, "Evaluating 2020 Standards Against 2019 Rankings.docx", compares top performances by masters athletes using the 2015 standards and the 2020 standards. The comparisons were done by Tom Bernhard. Each comparison is followed with an explanation of the differences and, in all cases

except the road mile, includes a graph showing the differences between the 2015 and 2020 standards.

- The 2020 tables were approved on May 20, 2020 by the Masters Long Distance Running Council (MLDR) of USA Track and Field Federation

- Here is a link to an age-grade performance calculator that uses these standards. It is maintained by Howard Grubb at USAT&F MLDR Road age-grading calculator 2020.

2025 Long Distance Running Tables

- Again, working with Tom Bernhard who provided the single-age bests, the 2025 standards were developed. The standards are included in the GitHub repository in the '2025 Files" directory: FemaleRoadStd2025.xlxs and MaleRoadStd2025.xlxs.
- The working files that produced the standards are included: maleRoad2025.xlxs and femaleRoad2025.xlxs.
- For the 2025 tables, an improved interpolation scheme for computing age factors for the distances other than 5 km, 10 km, Half-Marathon, and Marathon. The standards are developed for 5 km, 10 km, Half-Marathon, and Marathon. Then the standards at all the other distances are computed by interpolation. For example, for the 6 km distance, the log of the difference between 10 km and 5 km divided into the log of the distance between 6 km and 5 km. This number, which we call u, is between zero and one. It is used in the interpolation. Again, for the 6 km standards. The standard for each age is computed by taking the standard for the age at 5 km, S_5, and the standard for that age at 10 km, S_{10} and using the formula to compute the standard at 6 km, S_6.

  $$S_6 = S_5(1 - u) + S_{10}u$$

- The 2025 tables were approved on 2025-01-10 by the Masters Long Distance Running Council (MLDR) of USA Track and Field Federation

- In April 2025, tables for 1 km and 3 km were added at the request of a user from China.

How the Age-Grade Tables are used

Many races include the age-grade performance for each finisher. The performance is 100% or less. A score of 100% means that the runner has matched the open time for that age. A score of 50% means the runner took twice as long as a runner with a score of 100%.

RunSignUp adds the age-grade performance figure to all races run at one of the standard distances. They estimate that 30% to 40% of all U.S. race results are on their site. Here is an example of RunSignUp results showing the age-grade score, which they call "Age Percentage" for a 20 km race.

Place	Bib	Name	Clock Time	Pace	Age	Gender	City	State	Age Percentage
1	59	T TROY ROBINSON	1:12:59.36	5:52	31	M	JOHNSON CITY	NY	75.3
2	83	A ALEX CRAVER	1:17:25.40	6:14	36	M			71.6
3	69	J JORDAN VARANO	1:17:51.65	6:16	45	M	BINGHAMTON	NY	75.8
4	56	E ERIC REPP	1:19:49.50	6:25	22	M	HARPURSVILLE	NY	68.9
5	65	B BRYANT STEWART	1:21:01.97	6:31	36	M	ENDICOTT	NY	68.4
6	24	B BRYANT FARLEY	1:21:26.12	6:33	30	M	SYRACUSE	NY	67.5
7	47	R RICHARD NICHOLS	1:24:26.38	6:48	39	M	GAITHERSBURG	MD	66.7

Note that the first-place finisher, Troy Robinson, and third-place finisher, Jordan Varano, have about the same age-grade score even though they are 14 years different in age and have finish times that are different by almost five minutes.