It Is Inevitable that Someday You'll Face a Halt to Improvements. When Will It Come?

Racing & Facing Your Last PR

by Peter Riegel
photography by Julian Baum

Runners, like most of us, don't grow any younger with the passing years. But far from hanging up the old running shoes, some older racers keep their competitive instincts honed sharp. Case in point: Dr. Paul Spangler. An 81-year-old Californian, Spangler began running 10 years ago for his health. Today, he holds world records in events ranging from the 100-yard dash to the marathon.

One Sunday while three friends and I (all in our 40s) were out for our weekly 20-miler, we talked of the things that amuse us on such a run — outrageous news items, the latest jokes, past and future races and our levels of fitness. While discussing the last of these, Jack mentioned that after a period of injury, he was having difficulty getting close to his good performances of two years before. Joe, who always speaks his mind, teased, "Maybe you never will, Jack." The barb made all of us howl except, of course, for Jack, who snapped, "That's a hell of a thing to say, Joe." Perhaps it was, but Jack was 41 and had been running for more than seven years. Could he realistically expect to set a PR (personal record) again?

Sooner or later in every runner's career comes the realization that it has been a while since the last PR. If the runner is realistic, he will accept that age is leading him inexorably down a slower path. What can replace the satisfaction those PRs used to give? For some, age-group competition will help fill the void, but age-group placements reflect only performances relative to the race-day field and cannot be assessed quantitatively.

Some will react to the decline by increasing the intensity of their training, often leading to a flurry of better performances. For the older runner, however, training cannot be increased indefinitely — the body can't take it. Sooner or later the performances again begin to deteriorate.

At age 44, after six years of running, I felt myself beginning to slip and increased my training load. I enjoyed a year of better performances, setting two PRs each at 10-K and the marathon. By the end of the year, however, I was getting so tired that running had become drudgery. I began to dread each workout. Since I wanted to enjoy the game, I reduced my mileage and decided to train as hard as I pleasurably could, accepting whatever performances resulted. Still, I missed being able to apply a consistent measure to my racing, so I cast about for an alternative.

At first I tried comparing my times with age-group records for given distances. When I examined the records, however, I found that they were not consistent; an age record for an older runner was often faster than those for people years younger. Obviously, comparing my times on a year-to-year basis was not the answer.

The Age Standard Time Equation

While writing articles on using athletic records to measure human endurance, I found an equation that accurately described the effect of age on speed. The Age Standard Time (AST) equation, as it is called, can be used to provide a standard by which older runners can rate their performances and continue to achieve PRs long after their peak speed is gone.

The AST is defined as the time needed by a world-class runner of given sex and age to run a particular distance. In order to use the AST to evaluate personal performance, a new term is required — speed ratio. This is the ratio of a runner's speed to that of an age champion at a particular distance. Expressed mathematically,

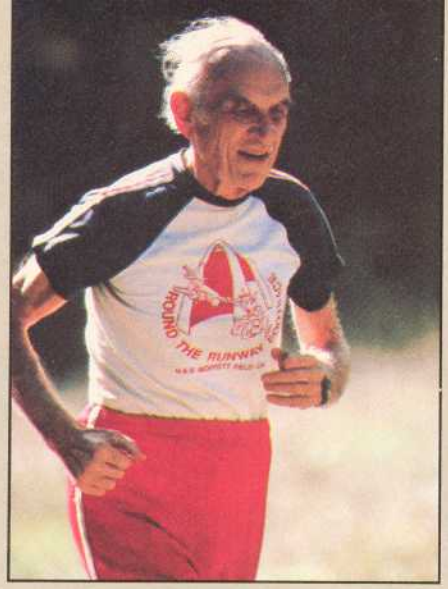
$$\text{Speed Ratio} = \frac{\text{AST}}{\text{Runner's Finish Time}}$$

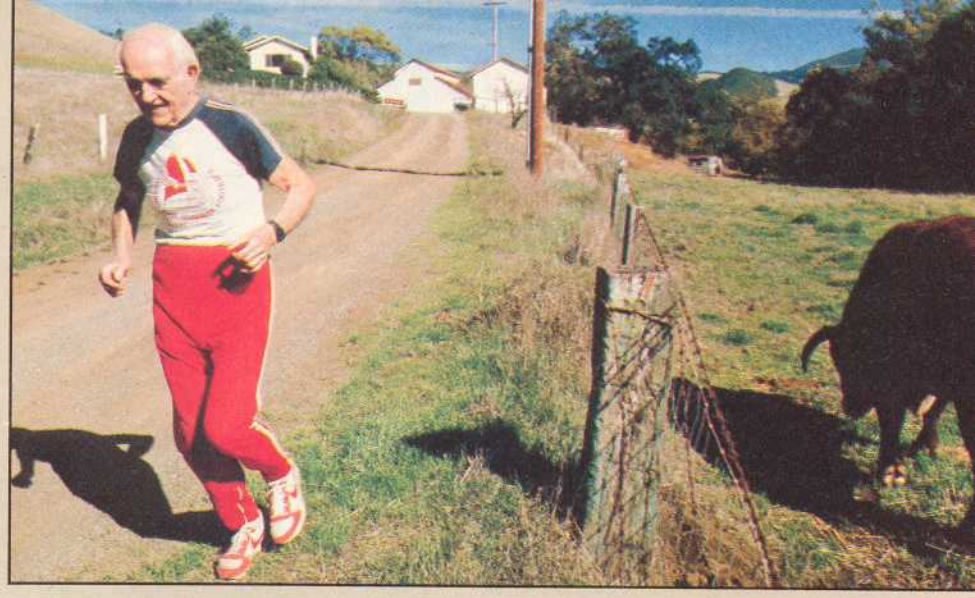
For example, suppose a 62-year-old man runs a marathon in 4:10 (250 minutes). The AST for a 62-year-old man at 26.2 miles is 169 minutes. Our 62-year-old's speed ratio is then 169/250, or .676; he ran the race 67.6 percent as fast as a world-class man his age.

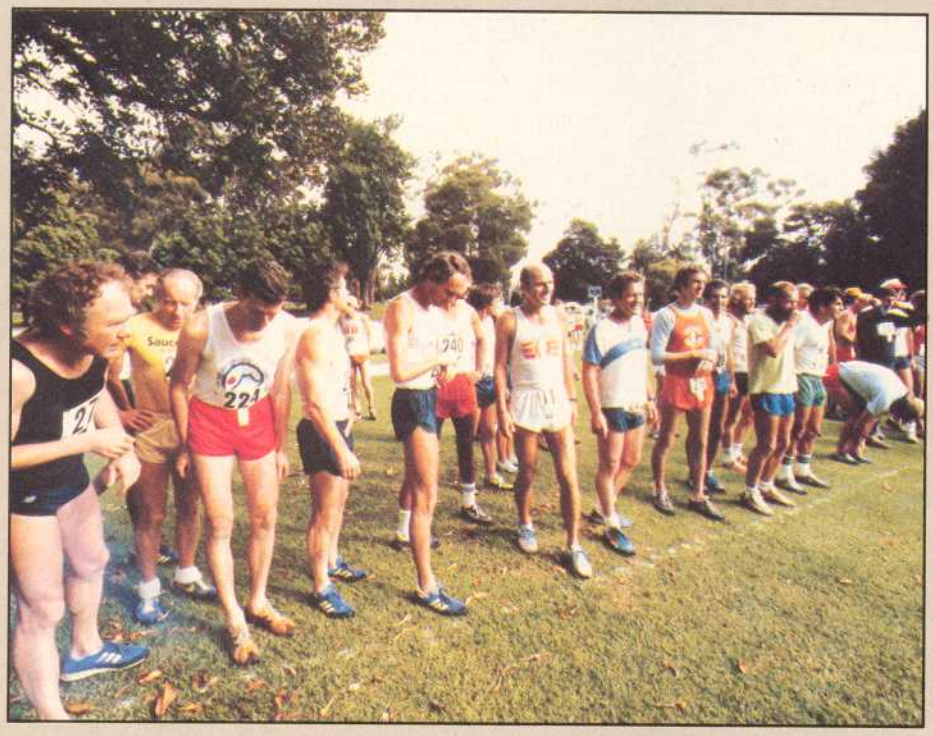
An advantage of using speed ratios is that races of different distances can be compared. Thus, the runner can have a best speed ratio for each distance he races. The highest one, his PSR or Personal Speed Ratio, will represent his best performance at any distance.

Performance loss in older competitors shows up in two ways — loss of speed and loss of endurance. On the world-class level, men lose from three to five seconds per mile each year as they age from 40 to 70, and women from six to 10 seconds. This loss of speed, applied to race distances, is evidenced by the slower times recorded by all older competitors.

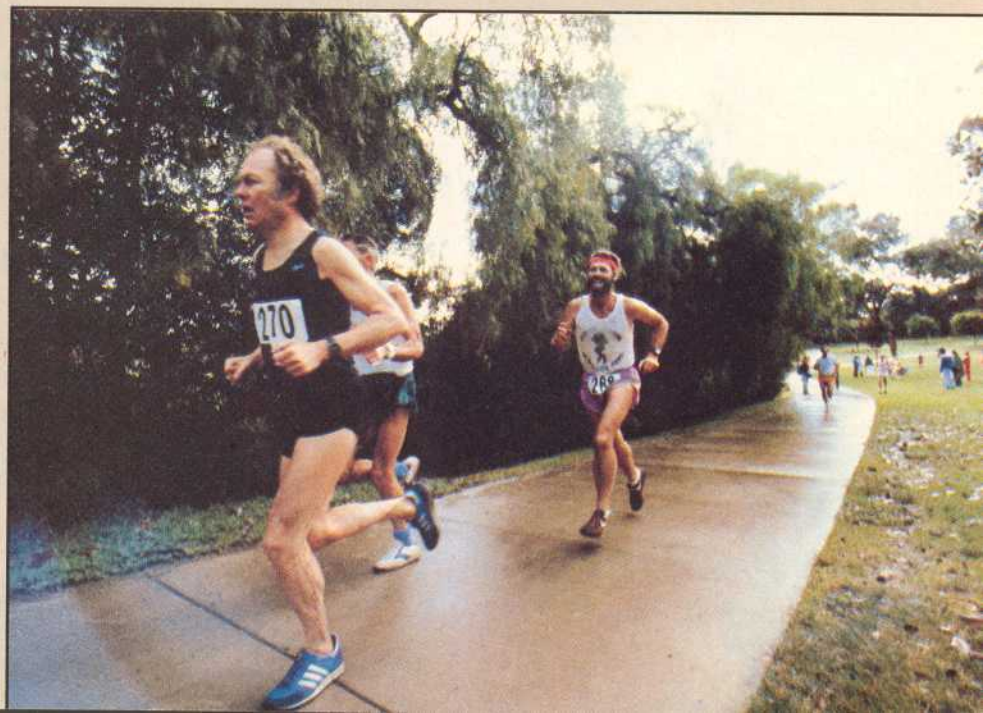
Endurance is defined here as the ability to maintain a given pace. Both men and women at age 40 are losing endurance at a rate of about 20 percent a year. This means that, on the average, runners of 41



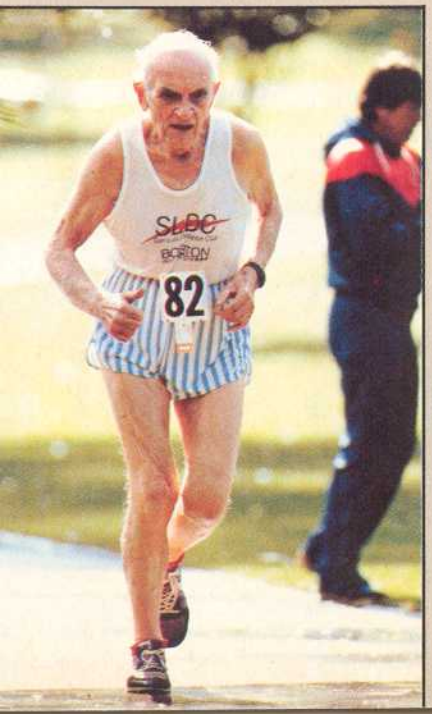


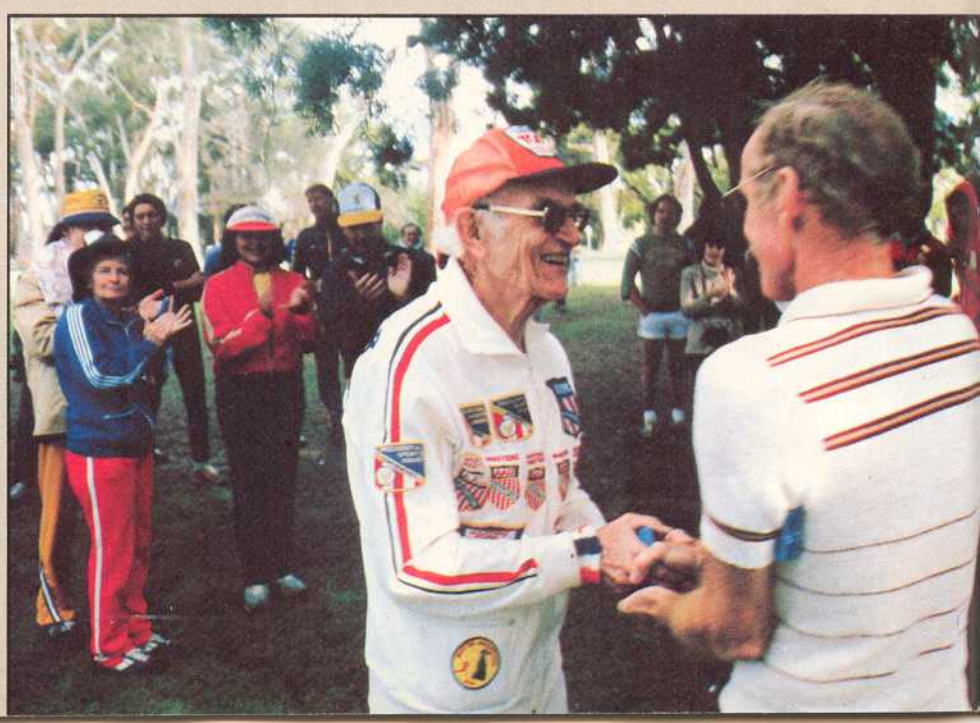


The last PR need be no less satisfying than the first, as octogenarian Dr. Paul Spangler can attest. Opposite page — Spangler relaxes at home, surrounded by some of the spoils of his many victories. Spangler holds 14 world records, more than any other runner in the world. Top, left — Spangler's daily routine at home in San Luis Obispo, Calif., begins with a six- to 10-mile run at 5 a.m. followed by a half-hour swim. Above — The countryside of the central California coast provides the backdrop for Spangler's training. Below, left — When training for a marathon, Spangler increases his weekly totals from 40 to 70 miles for three months. Left — Spangler steps to the starting line for a recent 5-K near San Diego. Below — In San Diego, he had lots of company in the masters division; still, he's undefeated in five years of competition.



Above, left — Spangler's competition heads cross-country. The combatants increasingly battle age as well as each other, but with an adequate handicapping system, it's a battle each can win. Above — Spangler hits another finish line. Ever the competitor, Spangler keeps looking over his shoulder. "There are guys in the 75 age group who will come along and wipe out my records," he says. Left — As with runners of every age, the glow of accomplishment can come only after the side stitches have gone. Below, left — Spangler's face shows the concentration and effort that marks the truly special runners and sets them apart from the pack. Below — After the race, Spangler accepts still another trophy for his packed case. Opposite page — Wearing a jacket laden with the memorabilia of a long career, Spangler continues to break new ground.





can run only 80 percent as far as they could run at 40, at the same speed. Endurance loss works like compound interest, but in reverse. Ten years of loss leave runners with only 5 to 20 percent of the endurance they had at the beginning of the decade, depending on their ages. For instance, a world-class man of 40 can run a marathon at a five-minute pace. At age 50, he can go only 3.6 miles at the five-minute pace.

Using the AST Equation

To save calculation, Tables 1 and 2 show ASTs for four commonly raced distances — five miles, 10-K, 10 miles and the marathon — for men and women from 30 to 75. If you are racing at those distances, you needn't calculate your AST — it's in the table.

Let's look at how ASTs can help you evaluate your performances. Here are some 10-K performances of a man in his 40s:

Age	Finish Time	AST (from Table 1)	Speed Ratio
43	38:30 (38.50)	29.73	29.73/38.50 = .772
44	38:51 (38.85)	30.05	30.05/38.85 = .773
48	40:20 (40.33)	31.38	31.38/40.33 = .778

Although his times are declining, his performances (relative to a champion his own age) are improving, as shown by his increasing speed ratios.

For the future, what goals should he seek? He can try to break his PR of 38:30, but that may be forever out of his reach. Instead, he should try to get a new Personal Speed Ratio. His present PSR, set at age 48, is .778. His goal for a new PSR at age 49 should be: Goal Time = AST/PSR. The AST for a 49-year-old man at 10-K (from Table 1) is 31.72 minutes. Therefore, his goal should be: Goal Time = 31.72/.778 = 40.77 (40:46). If he breaks 40:46 next year, he will have a new PSR.

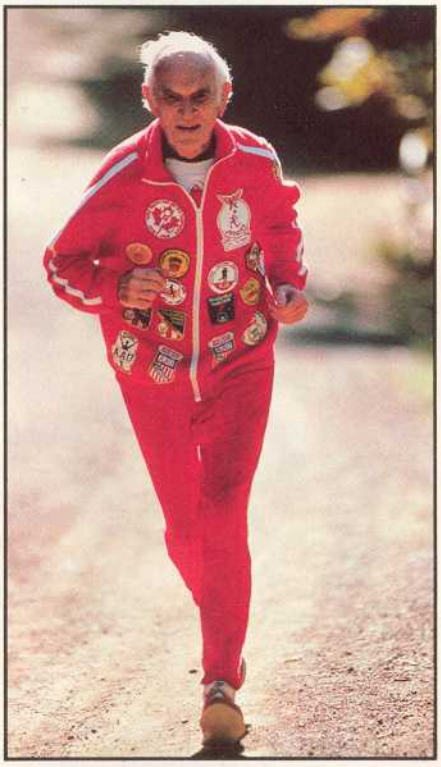
Few older runners will come close to the performances of the world-class seniors. But the world-class seniors are slowing down, too — the standard of achievement for a PR declines as all competitors age. If someone runs 80 percent as fast as his new AST (which has gotten slower), he has achieved a PSR. Thus, even though the absolute times may decline, the opportunity for a personal record remains for as long as the runner cares to race.

The AST equation can be used to compare performances at different ages and distances. Let's say a woman of 52 runs a 10-K in 50:47 (speed ratio = .838). A year later she runs a marathon in 3:45:06 (speed ratio = .895). The marathon was the better race by a substantial margin, as indicated by its higher speed ratio. She's improving with age.

Who Needs It?

Although the AST method provides a reasonable standard of performance for the older runner, it does so at the price of added complexity. Although many runners are "numbers freaks," most would like a simpler standard.

The use of a clear-cut personal record is about as simple as you can get — run a faster time and you have a new PR. It is a good system for the younger runners; if a 23-year-old runs a 2:45 marathon, chances are he'll be able to do it again when he's 28, if his training doesn't change. At least he'll be close. But what can a 43-year-old who sets a PR of 2:59 expect when he's 48? Even the world-class men have slowed by more than eight minutes in five years, and the ordinary runner probably by 10 to 11 minutes. What should he try for? Sure, he can go out at a 6:50 pace and hope for the best, but chances are he'll crash and



wind up with a worse performance than if he'd just set a more sensible goal and started more slowly.

The older runner cannot use old PRs as a standard of performance if he wants to do his best. Instead, the standard should be the Personal Speed Ratio (PSR). If the older runner uses it as his goal, he stands a better chance of performing well than if he keeps trying to beat an old PR.

When should you switch over to the new standard? If you don't try for a PR you won't get one, that's for sure. Also, some runners get faster for a while. Most of my friends and I started running seven or eight years ago, and we got better each year — for about six years — as we learned our craft. Since then we have not set PRs. In my judgment, I no longer have the capability to exceed my previous best performances, and I have shifted my thinking to try to keep raising my PSR. Have I, in so doing, thereby psyched myself out of any future PRs? Maybe I have, but I think that my performances will be better if I don't keep trying to race with my former, faster self.

Exceptions to the Rule

Although most established runners are past their primes by 40, a select few manage to retain world-class capability well into their fourth decade. Jack Foster, who owns the over-40 marathon records up to age 46, ran an awesome PR of 2:11:18 at age 41 to win a silver medal in the 1974 Commonwealth Games. Joyce Smith, at age 43, set her PR last year at the Gillette London Marathon, which she won in 2:29:56.

When Smith and Foster were in their 20s two decades ago, there was no broad base of marathoning activity in which they could participate. If they had been able to develop and build a base of experience in their youth, and later to hit the roads hard in a competitive environment, how would they have done? One can only speculate, but if these two were 20 years younger, they might well be today's marathon-record holders.

The lure of the world-class game kept these older runners training and running hard. There is strong motivation to try hard for anyone who believes he has a shot at victory against all comers. But once the belief sets in that one is no longer a top contender, motivation takes a sharp decline. Although an age-group victory is satisfying, most older runners know deep down that the real race is up front. This does not keep them from trying, but I believe that in most cases they are not trying as hard as the front-runners. Most older people are involved in marriage, child-rearing and work to a greater degree than younger, faster runners. Few older runners will completely exclude these other responsibilities to train hard enough to attain times that will be, at best, mediocre.

To avoid frustration, the older runner must accept his mediocrity. Most of the top older runners I know would give their eyeteeth for an overall victory, but then realize it is impossible. They are glad to win their age-group prizes, and are pleased that there are opportunities for them to compete with others their age. In fact, there are very few fast runners compared with age-group contenders, and without the masses of older, slower people racing for their personal goals, there would be no road racing.

In reducing world records to a single equation, performance variations disappear. What we obtain is a composite average of the performances of all of the world's best runners of every age. The resulting age-standard time tables show a smooth slowing-down with time, with none of the ups and downs associated with the performances of real people.

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Your Last PR

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When I refer to a specific number while discussing the aging slowdown, it must be understood that real runners will not lose their speed so smoothly and predictably. Good performance comes in fits and starts, and sometimes an aging runner can have a banner year without understanding why. Sometimes training changes occur, or the racing weather is better, or something in the runner's work or private life alters to permit, in some intangible way, better performances for a season or two. For these unexpected periods of good performances I am enormously grateful. It would be a poor sport indeed if each of us knew his time before the race was run.

The numbers give us truth, but only of an average sort. Each of us has the capacity to surpass himself, and the numbers and predictions can serve only as a guide, accurate in the long run but not in the short. They should not discourage us from trying our best but should, rather, help us determine what our best really is. □

These tables, calculated from the AST equation, show age standard times for men (left) and women (right) at four common race distances. To figure your speed ratio, first look up the AST for your age in the table. Divide the AST by your finish time. The result is the speed ratio — the ratio of your speed to that of a world-class person your age.

TABLE 1

AGE STANDARD TIMES FOR MEN, MINUTES

AGE	5 M	10-K	10 M	26.2 M
30	21.73	27.46	45.83	129.4
31	21.84	27.59	46	129.57
32	21.96	27.72	46.17	129.74
33	22.08	27.86	46.34	129.91
34	22.19	27.99	46.5	130.08
35	22.31	28.12	46.67	130.24
36	22.42	28.25	46.83	130.4
37	22.54	28.38	47	130.55
38	22.66	28.51	47.16	130.7
39	22.77	28.64	47.32	130.85
40	22.89	28.78	47.49	131
41	23.14	29.09	48.01	132.52
42	23.38	29.41	48.55	134.07
43	23.64	29.73	49.09	135.63
44	23.89	30.05	49.64	137.21
45	24.15	30.38	50.19	138.8
46	24.41	30.71	50.75	140.42
47	24.67	31.04	51.31	142.06
48	24.93	31.38	51.88	143.71
49	25.2	31.72	52.46	145.38
50	25.47	32.06	53.04	147.08
51	25.75	32.41	53.63	148.79
52	26.03	32.76	54.23	150.52
53	26.31	33.12	54.83	152.28
54	26.59	33.48	55.44	154.05
55	26.87	33.84	56.06	155.84
56	27.16	34.21	56.69	157.66
57	27.46	34.58	57.32	159.49
58	27.75	34.96	57.95	161.35
59	28.05	35.34	58.6	163.23
60	28.35	35.72	59.25	165.13
61	28.66	36.11	59.91	167.05
62	28.96	36.51	60.58	169
63	29.28	36.9	61.25	170.97
64	29.59	37.3	61.93	172.96
65	29.91	37.71	62.62	174.97
66	30.23	38.12	63.32	177.01
67	30.56	38.53	64.02	179.07
68	30.88	38.95	64.74	181.16
69	31.22	39.38	65.46	183.27
70	31.55	39.81	66.19	185.4
71	31.89	40.24	66.92	187.56
72	32.24	40.68	67.67	189.75
73	32.58	41.12	68.42	191.95
74	32.93	41.57	69.18	194.19
75	33.29	42.02	69.95	196.45

TABLE 2

AGE STANDARD TIMES FOR WOMEN, MINUTES

AGE	5 M	10-K	10 M	26.2 M
30	24.73	31.33	52.6	150.26
31	24.97	31.63	53.07	151.43
32	25.22	31.93	53.55	152.59
33	25.46	32.23	54.02	153.75
34	25.7	32.53	54.49	154.9
35	25.95	32.84	54.96	156.04
36	26.19	33.14	55.43	157.18
37	26.44	33.44	55.9	158.32
38	26.68	33.74	56.36	159.44
39	26.93	34.03	56.83	160.57
40	27.17	34.33	57.3	161.68
41	27.66	34.95	58.31	164.45
42	28.17	35.58	59.34	167.26
43	28.68	36.22	60.4	170.12
44	29.2	36.88	61.47	173.03
45	29.73	37.54	62.55	175.99
46	30.27	38.22	63.66	179
47	30.82	38.91	64.79	182.06
48	31.38	39.61	65.94	185.17
49	31.95	40.32	67.11	188.34
50	32.53	41.05	68.3	191.56
51	33.12	41.79	69.51	194.84
52	33.72	42.54	70.74	198.17
53	34.33	43.31	71.99	201.56
54	34.96	44.09	73.27	205
55	35.59	44.88	74.57	208.51
56	36.24	45.69	75.89	212.08
57	36.9	46.52	77.23	215.7
58	37.57	47.36	78.6	219.39
59	38.25	48.21	79.99	223.14
60	38.94	49.08	81.41	226.96
61	39.65	49.96	82.85	230.84
62	40.37	50.86	84.32	234.79
63	41.11	51.78	85.81	238.8
64	41.85	52.71	87.33	242.89
65	42.61	53.66	88.88	247.04
66	43.39	54.63	90.46	251.26
67	44.17	55.61	92.06	255.56
68	44.98	56.62	93.69	259.93
69	45.79	57.64	95.35	264.38
70	46.63	58.68	97.04	268.9
71	47.47	59.73	98.76	273.5
72	48.33	60.81	100.51	278.17
73	49.21	61.91	102.29	282.93
74	50.11	63.02	104.1	287.77
75	51.02	64.16	105.95	292.69

How To Put Time on Your Side

My introduction to the world of handicap racing came in October 1977. Ben Buckner, longtime advocate of accurate race measurement, had announced to a few running friends that he was going to put on a low-key five-mile handicap race and hoped we'd come. After the race, all were welcome to eat, drink and see slides that Ben took at the Montreal Olympics.

In the days before the race I talked with others and speculated on which of our local age-group standouts would show up. I tried to assess my chances for a trophy. Ben explained that a continuous, tape-recorded time announcement would be made, and that the slowest runner would start first, with each faster competitor taking off when his time came up. He had calculated a handicapping system based on Ken Young's well-known tables, and although we were not told the exact method used, we figured that Ben knew what he was doing.

On race day, all the local runners got a jolt. Taking time off from a Road Runners Club of America convention in Columbus, Ohio, were Ruth Anderson and Bob Boal (both multiple world age-record holders) and George Vernosky and Roland Anspach (national age-record holders). From a small local race, the event had suddenly become a world-class competition.

Many older runners are familiar with the time, near the end of the race, when they fail to respond to challenges of other runners not in their age group. In this race, however, everybody was competing with everybody else on an equal basis, and each person passed or held off represented one place higher in the awards. It was the most heated competition I've ever experienced.

The AST equation can be used to calculate handicaps for such a race. To figure a table of handicaps, first decide who the slowest competitor is likely to be. I use a hypothetical 75-year-old woman. Find her AST for the race distance in Table 2. Then, find the ASTs for the ages of all the others. The 75-year-old woman will get a head start equal to the difference between her AST and that of the next slowest competitor, and the others will start in the order of their slowness as well.

Some thought must be given to the expected quality of the field. If the handicaps are based on the performances of world-class people and your field is slower, the younger runners will have an advantage because the handicaps will be too small. Because of this, I assume that the speed ratios of the better runners will be about .85; that is the usual value of the speed ratios of age-group winners in many Ohio races. Therefore, I begin figuring the handicaps by dividing the ASTs for the race distance by .85. This gives a handicap appropriate to a local race in my area. Of course, if many top runners are expected, the unmodified ASTs should be used. All runners under age 30 are considered to be 30 in the handicapping. This is obviously not fair to the kids, but the AST equation covers only the older age range. Half a loaf is better than none.

Table 3 shows the starting times and handicaps for a 10-K race in which the best of most age groups is expected to be near an .85 speed ratio. No handicapping system is perfect, but this one should provide every runner with the sort of competition that is normally reserved for the front-runners.

The results of the "Olympic Memo-

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Put Time on Your Side

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ries Race" show that 48-year-old Ruth Anderson, who finished fifth, actually had the best performance by far, as shown by her stellar .949 speed ratio. Because there was no rational way to handicap older women in 1977, she had arbitrarily been given the same handicap as a man 10 years older. By the AST system, a woman of 48 would start a five-mile race at the same time as a 69-year-old man because their expected finish times are the same. Her handicap was too small. Although there was some mixing, the first four adult finishers had the four best speed ratios, and the next four had the next four best. Buckner's system, whatever it was, agreed well with the AST system. □

TABLE 3

HANDICAPS AND STARTING TIMES
10 KILOMETERS
HANDICAP SPEED = 85% OF AGE STANDARD SPEED

Age Years	Men Handicap Min Sec	Men Start Time Min Sec	Women Handicap Min Sec	Women Start Time Min Sec
30	0 00	43 10	4 33	38 37
31	0 09	43 01	4 54	38 15
32	0 18	42 51	5 15	37 54
33	0 28	42 42	5 37	37 33
34	0 37	42 33	5 58	37 12
35	0 46	42 23	6 19	36 51
36	0 55	42 14	6 40	36 29
37	1 05	42 05	7 01	36 08
38	1 14	41 56	7 23	35 47
39	1 23	41 46	7 44	35 26
40	1 33	41 37	8 05	35 05
41	1 57	41 13	8 49	34 21
42	2 21	40 48	9 33	33 37
43	2 46	40 24	10 18	32 51
44	3 11	39 58	11 04	32 05
45	3 37	39 33	11 51	31 18
46	4 02	39 07	12 39	30 31
47	4 28	38 41	13 28	29 42
48	4 55	38 15	14 17	28 52
49	5 21	37 48	15 08	28 02
50	5 48	37 21	15 59	27 11
51	6 15	36 54	16 51	26 18
52	6 43	36 27	17 44	25 25
53	7 11	35 59	18 38	24 31
54	7 39	35 30	19 33	23 36
55	8 08	35 02	20 30	22 40
56	8 37	34 33	21 27	21 43
57	9 06	34 04	22 25	20 45
58	9 36	33 34	23 24	19 46
59	10 06	33 04	24 24	18 45
60	10 36	32 34	25 26	17 44
61	11 07	32 03	26 28	16 42
62	11 38	31 32	27 32	15 38
63	12 09	31 00	28 36	14 33
64	12 41	30 29	29 42	13 27
65	13 13	29 56	30 49	12 20
66	13 46	29 24	31 57	11 12
67	14 19	28 51	33 07	10 03
68	14 52	28 18	34 18	8 52
69	15 26	27 44	35 30	7 40
70	16 00	27 10	36 43	6 26
71	16 34	26 35	37 58	5 12
72	17 09	26 00	39 14	3 56
73	17 45	25 25	40 31	2 38
74	18 21	24 49	41 50	1 20
75	18 57	24 13	43 10	0 00

Handicaps and starting times are shown above for a 10-K local-class race. Each runner starts at the indicated time for his age and sex. At the end, awards are given in the order of finish. No age or sex groups are used — the whole race field is handicapped into one big group competing on even terms.