YOUR RUN ELITE BOOK IMAGES

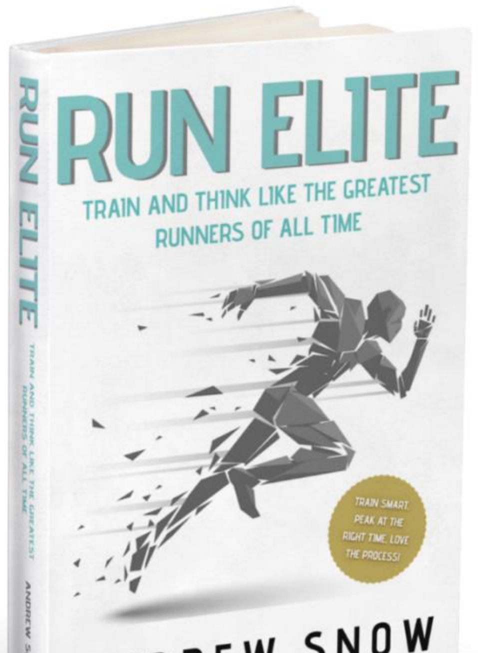


Figure 3.1: Steve Prefontaine during the Olympic Trials 5,000m against George Young in 1972. This iconic race has been glorified in two Hollywood movies. It earned Prefontaine his fastest time ever over 5,000m and set a new American record of 13:22.8.

Figure 3.2: Celebrating and feeling good is a choice, regardless of where we place in the race

or what the time on the clock says. Photo courtesy of 3palec.

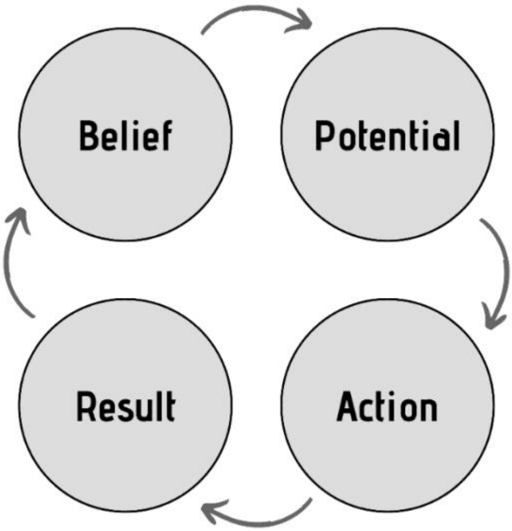


Figure 3.3: Flowchart showing the Success Cycle. Each point of the Success Cycle leads into the next point (clockwise), and the process can begin at any of the steps.

Figure 3.4: The power poses, as researched at Harvard in 2012. High power poses are shown in the top row and low power poses are shown in the bottom row.

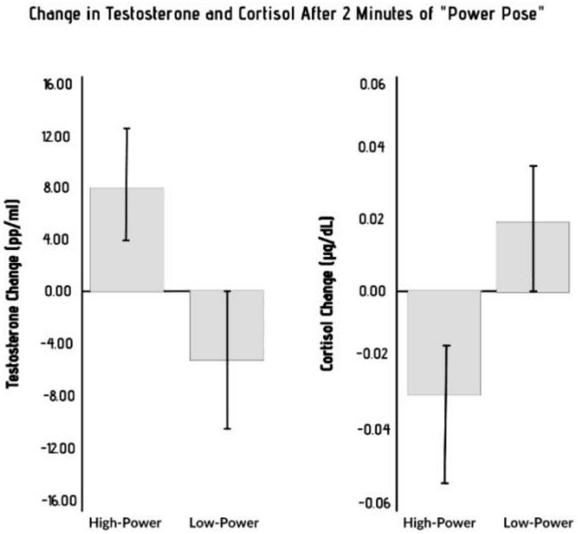


Figure 3.5: The measured changes in testosterone and cortisol in the blood following two minutes of high-power poses.

Figure 4.1: Heidi on setting a 20 minute lifetime PR in the marathon at age 47.

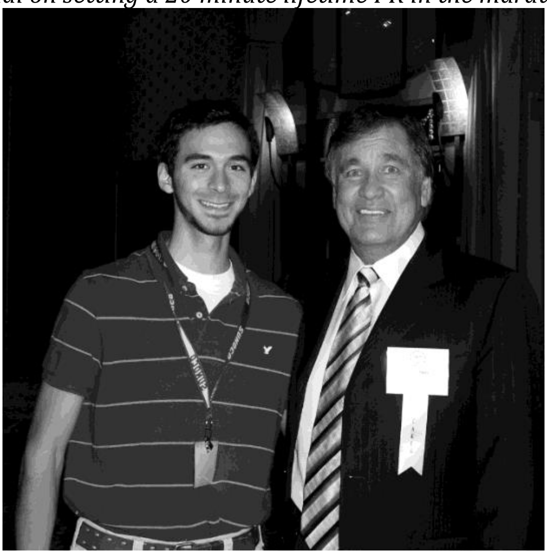


Figure 5.1: Author (left) and Billy Mills (right) talking about the Olympic victory during the 2006 American College of Sports Medicine Symposium in Connecticut.

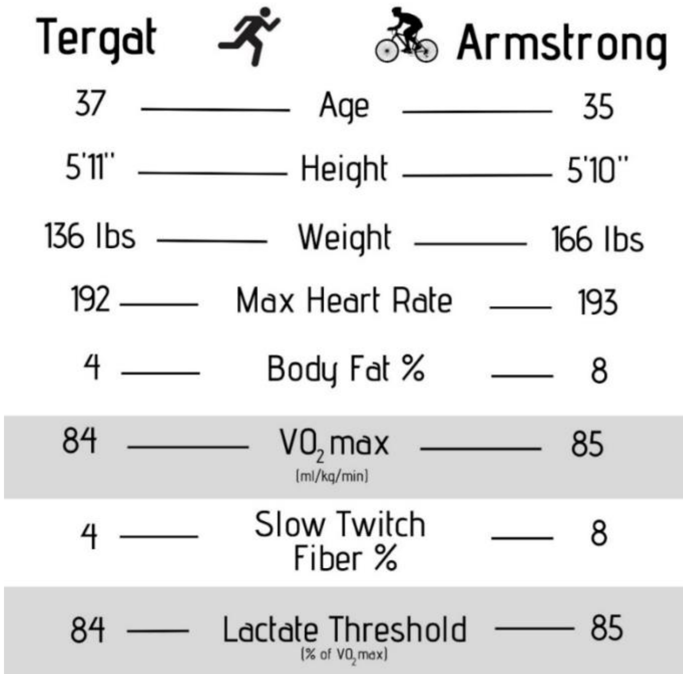


Figure 7.1: A comparison between Paul Tergat (the then-world-record holder in the marathon) and Lance Armstrong, showing that Armstrong had a superior VO_2max and LT leading up to the New York City Marathon.

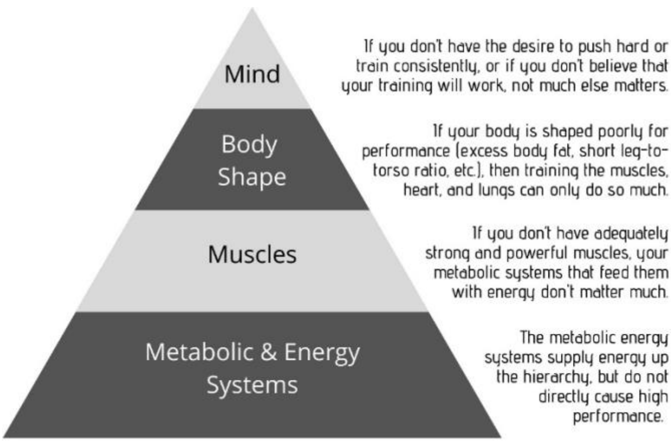


Figure 7.2: Notice that the most important aspects of your performance are that you're driven to succeed, have clear goals, and are inspired. The next most important aspect is that your body is in the best health and shape possible, which gives you a fighting chance. Next, it's important that you prepare your muscles for the demands of race day. The final important quality is that your heart, lungs, and metabolic systems will support your working muscles. Each

component supersedes the importance of the one below it.

Biomechanical Factors Related to Better Economy In Runners

Factor	Description for better running economy
Height	Average or smaller for males, slightly greater for females
Ponderal Index (weight/height)	High index and ectomorph or mesomorph physique
Body Fat	Low percentage
Leg Morphology	Mass distributed closer to hip
Pelvis	Narrow
Feet	Smaller than average
Shoes	Lightweight but well-cushioned, with minimal heel-to-toe differential
Stride Length	Freely chosen over training time
Kinematics	Low vertical oscillation of center of mass, Acute knee angle during swing, Less range of motion but greater angular velocity or plantar flexion during toe-off
Kinetics	Low peak ground reaction forces
Elastic Energy	Effective exploitation of stored elastic energy
Training	Comprehensive training background
Running Surface	Intermediate compliance

Figure 7.3: The relative contributions of several factors as they relate to distance-running performance. From Saunders et al., 2004.

Figure 7.4: Milo of Croton carries a calf every day and grows stronger over time as the calf matures into a bull, exemplifying the theory of progressive overload—a strategy that is not ideal for distance runners.

Increasing Mileage by 10% Per Week

Week #	Miles Per Week
1	30
2	33
3	36
4	40
5	44
6	48
7	53
8	58
9	64
10	71
11	78
12	86
13	94
14	104
15	114
16	125
17	138
18	152

Figure 7.5: What the 10% rule of increasing mileage would look like if a runner were to start at 30 miles per week and progress each week at 10%. Notice how the mileage increases at a much more rapid rate than would be sustainable for long by any runner, reaching a whopping 152 miles per week for even a standard 18-week training plan. A 10% increase in mileage every week is not sustainable for even one training cycle. It leads to far higher expected mileage per week than runners would anticipate when they first start.

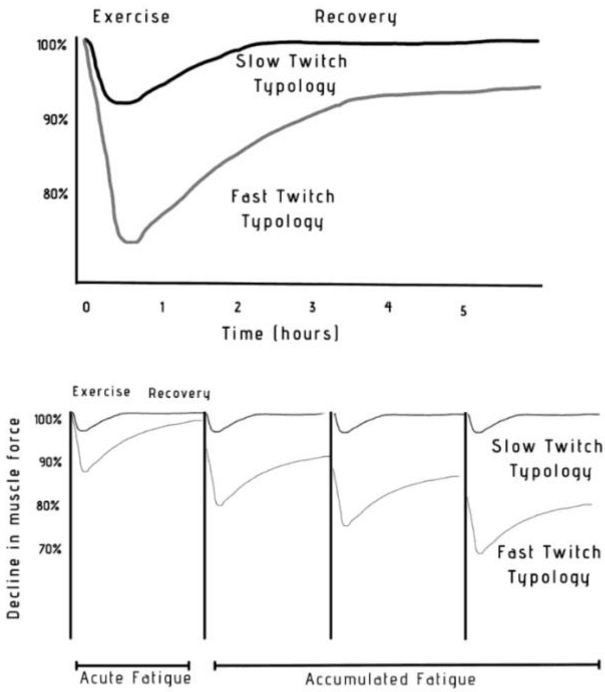


Figure 7.6: The relative recovery rates of runners with both fast-twitch and slow twitch fiber predominance.

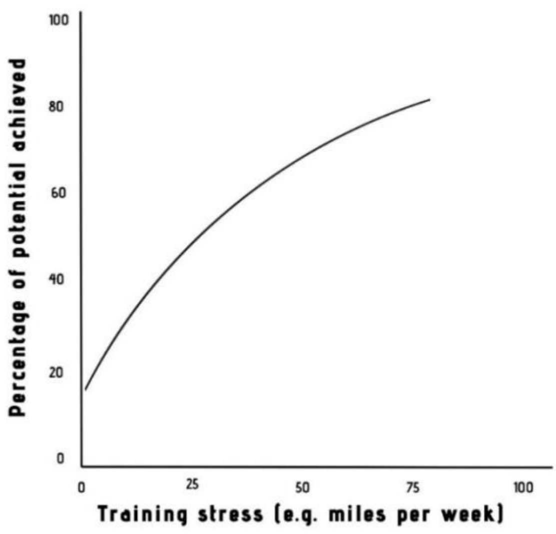


Figure 7.7: The law of diminishing return: For a runner who is anywhere beyond the early stages of their running career, mileage will only be a

moderate contributor to performance.

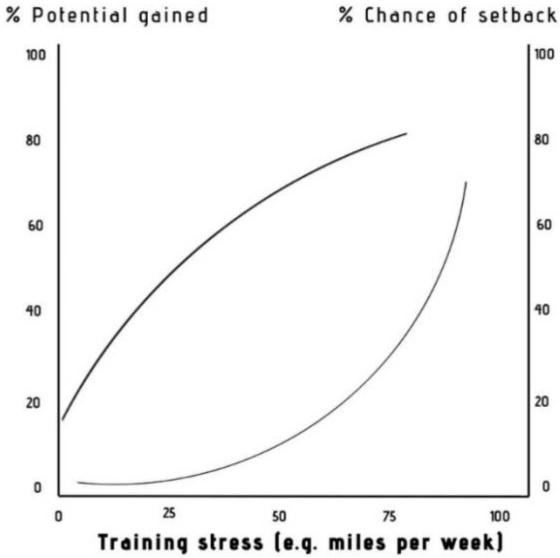


Figure 7.8: The law of diminishing return part 2: As mileage increases, so does injury risk. Not only does performance benefit less, but at some point, the body isn't able to recover and cannot handle more running.

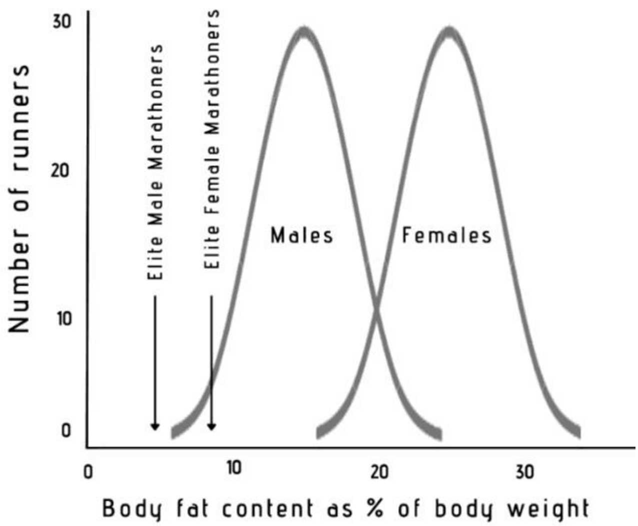


Figure 7.9: The average percentage of body fat for males and females, comparing the average population with elite marathoners.

Figure 7.10

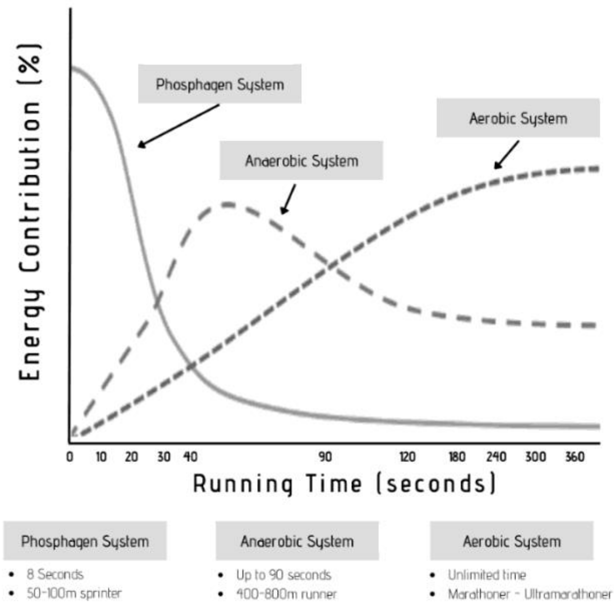


Figure 9.1: The Energy Systems: This graph shows how much any of the three energy systems contributes to performance as the duration of a race increases. Notice that all energy systems are being used at any running duration, but beyond two minutes, the relative contributions of the aerobic system dominate.

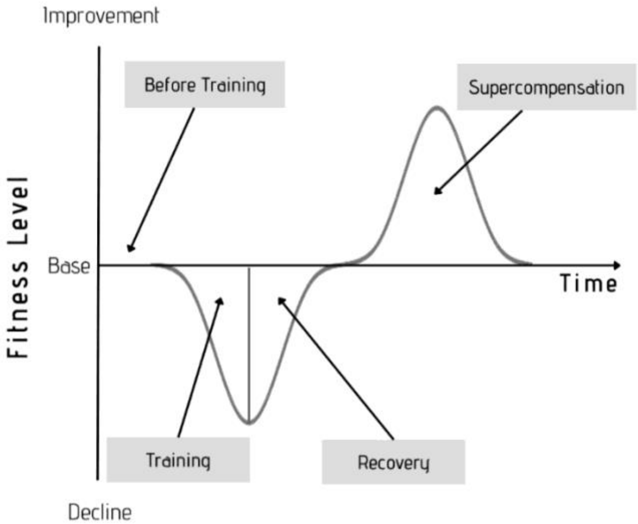


Figure 10.1: Supercompensation: Given a base level of fitness, when an athlete engages in training, their fitness level decreases. Then, during the recovery phase, fitness will not only get back to where it was, but the body will supercompensate and increase fitness for a short period of time. If training doesn't happen again, the new level of fitness will eventually decline until it has returned to the old baseline.

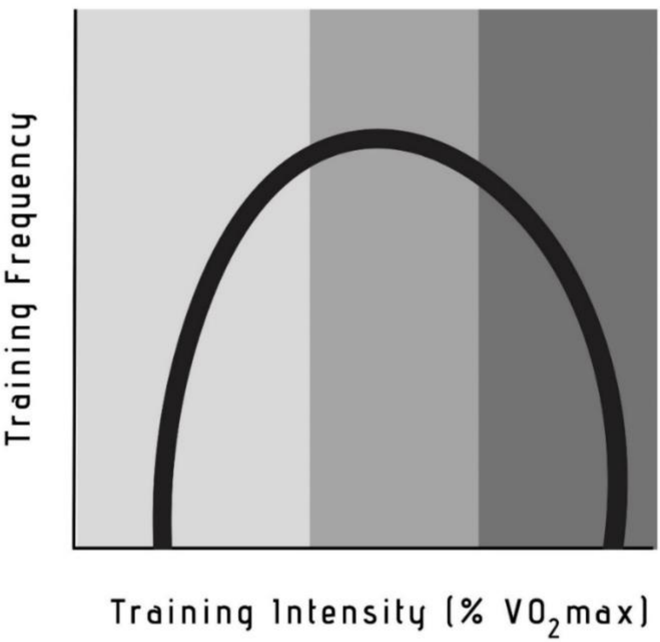


Figure 10.2: The distribution of training intensities in relatively novice athletes. Notice that most of the training is in the middle ("medium-gray"); neither truly

easy, nor very hard.

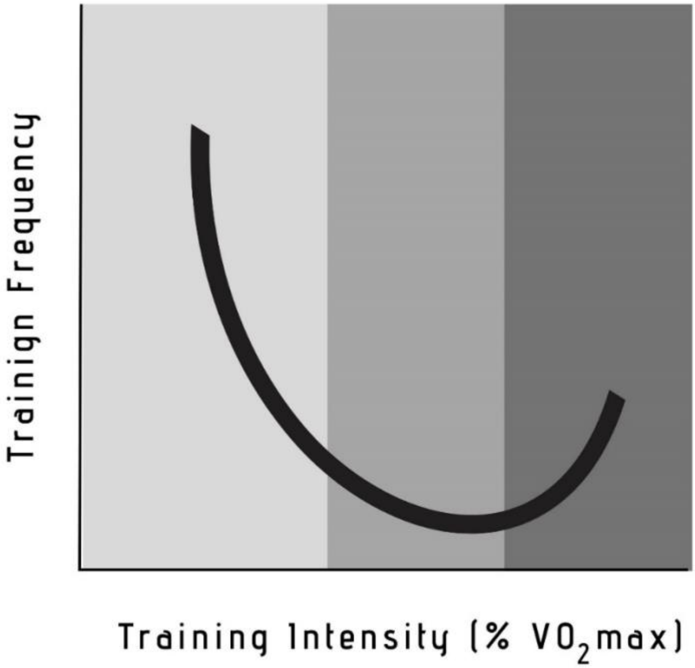


Figure 10.3: The distribution of training intensities of highly trained endurance athletes. Notice that most work is done in the "light" or easy range, and there is still a fair amount done in the "dark" or fast (hard) range. Very little is done in the "medium-gray" or medium range.

Moses Mosop's Training

January 2011

Mon	Tue	Wed	Thur	Fri	Sat	Sun
					1 60 min easy	92min moderate
3 4x5k at 86.5%, 1k rec at 66%, +9.3mi at 89% 40min easy	4 80min easy 40min easy	5 60min easy 50min easy	2x (10x400m) avg 115%, 60s rec (4min between sets) 40min easy	7 60min moderate 60min moderate	8 12.4 @ 94.5% 40min easy	9 90 min moderate
10 80min easy 60min easy	11 12.4 at 76% + 11.2 at 88.5%	12 70min moderate 50min moderate	13 70min with short fartlek 52min easy	14 60min easy 45min easy	15 50min easy 5x3k at 103-106%, 3min recovery	16 80 min moderate
17 67min moderate 55min easy	18 78min easy, last 20 mins fast (99.5%) 70min easy	19 40min easy 8x1000m at 109%, 2min rec. +10x600m @111.5%, 90s rec.	20 78min moderate 65min easy	21 50 min easy 50 min easy	22 28 miles @ 88.5%	23 60 min moderate
24 75min moderate 60min easy 31 80min easy 50min easy	25 80min moderate 50min easy	26 9mi at 89.5% 50min easy	27 60min moderate 45min easy	Special Block 1-2-3-4-3km in 108, 102, 101, 101, 100% 4x2km at 90% + 2x1km 92.5%, 78.5% (3min rec) + 6.2mi moderate	29 80 min easy	30 70 min moderate

Moses Mosop's Training

February 2011

Mon	Tue	Wed	Thur	Fri	Sat	Sun
	1 6.2mi at 87% + 7.5mi at 97% 10k at 95% (fist half uphill, second half downhill)	2 4x4km at 90% (recover easy 61-38% 40min easy	3 60min easy 50min easy	4 80min easy 50min easy	5 18x2min fast 99% (1min easy)	6 80min moderate
7 rest	8 70min easy 60min easy	9 80min easy 45min easy	10 70min easy 50min easy	11 80min easy 50min easy	12 18.6 @ 95% (very hot temps)	13 80min easy
14 90min moderate 40min easy	15 70min easy 50min easy	16 14.3min fast/1min easy + 4min fast (99.5%)	17 24.9mi at 76% 40min easy	18 60min easy 50min easy	19 20x1min fast/1min moderate 40min easy	20 80min easy
21 80min easy 50min easy	22 85min moderate 40min easy	23 4x5km 100-96% 1x3k at 98% 1k rec at 72-66% 50min easy	24 80min easy 50min easy	25 80min easy	26 10x1200m at 108.5% 40min easy	27 105min easy
28 80min easy 40min easy						

Moses Mosop's Training

March 2011

Mon	Tue	Wed	Thur	Fri	Sat	Sun
	1	2 60min easy	3 3x6min, 3x5min 3x4min, 3x3min, 3x3min, 3x2min at 84.5% (1min rec)	4 Rest (travel)	5 40min easy	6 Paris 1/2 Marathon 6147 2nd place (101.5%)
7 40min easy (travel)	8 Rest (travel)	9 50min easy (travel, funeral)	10 Rest (funeral)	11 Rest (travel)	40min (1min fast/1min easy) +20min at 101% + 20min easy 60min easy	13 100min moderate
10x1200m at 103%, + 10x200 at 114%, +10x200m at 115% 52min easy	15 60min easy 50min easy	16 80min moderate	17 80min easy 50min moderate	18 24.9mi at 93.5% 35min very easy jog	19 70min easy	20 80min easy
21 50min easy 90min easy	22 62min easy 47min progression run 88.5-->102%	23 60min easy 60min easy	24 10x1600m 102-- >110.5% 50min easy	25 70min moderate 60min moderate	26 80min moderate 60min moderate	27 90min moderate
28 8x3k at 98.5%, 1k rec at 78%	29 40min progression run	30 80min easy 60min easy	31 70min mod 50min easy			

Figure 12.1: Mosop's training leading up the 2011 Boston Marathon. This timeframe captures his support training (January 17th–March 7th), and his specific training (March 8th–April 18th). This figure and calendars below from "Elite Marathoning with Renato Canova."

Abel Kirui's Training

July 2011

Mon	Tue	Wed	Thur	Fri	Sat	Sun
				1 70 min mod 50min including 20 strides	2 20min easy + fartlek (20x2min fast, 1min mod) 40min easy	3 110min progression run 84%
4 60min easy 40min easy 50min with 30 strides	5 60min mod 60min mod	3x3k at 102.5% (3min rec), 3x1k at 107.5% (2-3min rec), 8x500m at 112% 50min easy	7 80min mod 30min easy +1hr gym	8 70min moderate 50min easy	9 50min easy 50min easy	10 24.9mi at 87.5%
11 45min easy 45min easy	12 88min moderate 50min easy	13 50min moderate 50min with 30 strides	14 rest (knee pain)	15 rest	16 rest	17 rest
18 70 moderate 45min with strides	19 70min mod	20 rest (knee pain)	21 62min easy	22 90min easy	23 60min easy	24 70min moderate
25 78min mod 52min easy	26 60min easy 40min easy	27 60min easy	28 rest (knee pain)	29 20min warm up + 500m at 100.5%	30 104min at 79%	31 40min mod, +20min with strides, +40min easy

Abel Kirui's Training

August 2011

Mon	Tue	Wed	Thur	Fri	Sat	Sun
1 4x5k at 99.5%, 1k rec at 83.5-62%	2 60min easy	3 70min easy	4 60min easy 40min easy	5 24.9mi at 90.5%	6 60min easy	7 60min mod 20min bike + gym
8 70 min moderate	9 Rest (training camp opening)	10 70min moderate	11 60min mod 60min easy + 10x100m strides	1-2-3-3-3-2-2-1km (106, 102.5, 100.5, 102.5, 100.5, 101, 103.5, 106%) rec 3-6min	13 85min mod to fast (85% avg)	14 40mi easy with strides
10x (2min fast, 1 min mod) +30min easy + 10x (30sec fast, 30sec mod) 45min mod	16 45 min easy	17 <u>Special Block</u> 6.2mi at 90%, 4min rest, 9.3mi at 98.5% 6x1600m at 105.5%, 2min rec	18 56min moderate 55min easy	19 65min mod, +30min with strides, +30min moderate	20 rest	21 130min at 81%
22 60min mod 20min easy +20min with strides	23 70min mod 50min mod	24 15x (1min fast, 1min easy) 60min with 20min of strides	25 50min easy +15x80m uphill sprints 40min easy	26 22k alternating 1k fast, 1k mod (103, 89%)	27 80min mod 60min easy	28 60min easy +30min with strides
29 60min easy	30 rest (travel to race)	31 rest (travel to race)	1	2	3	4 World Championships Marathon 2:07:38 First place

Figure 12.2: Abel Kirui's training in the months leading up to his World Championship Marathon victory.

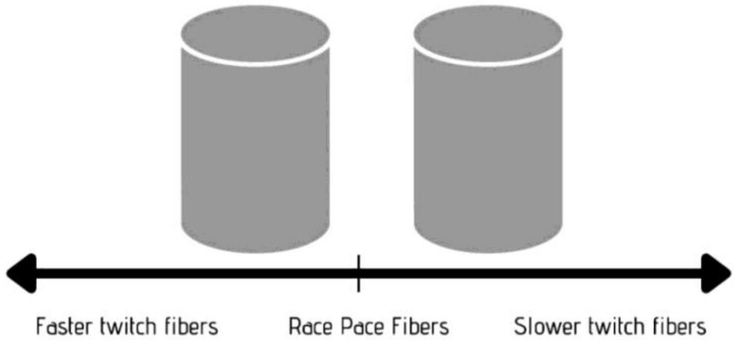


Figure 12.3: Quality workouts exist at both paces faster than and slower than goal race pace, but not at goal race pace, during support training.

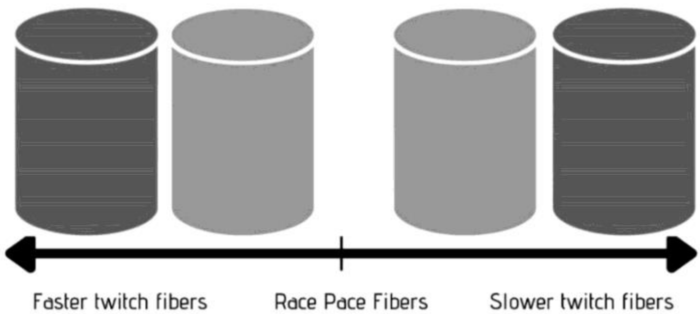


Figure 13.1: Support training (light gray) is somewhat faster than and slower than goal race pace, while base training (dark gray) is even faster than and slower than support training.

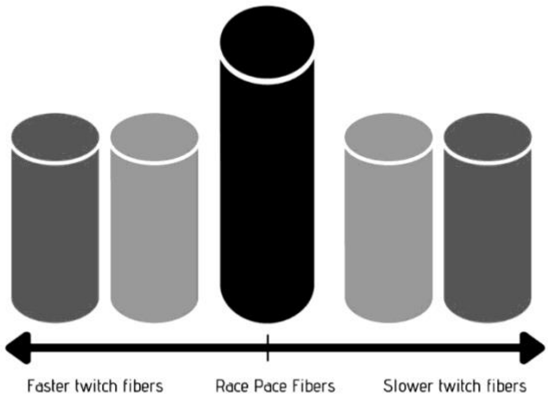


Figure 13.2: What most runners assume to be specific training (black)—training right
at goal race pace. Although there is good reason to do some training at exactly this pace, what is most effective is to do a larger amount of training at ever so

slightly faster and slower than race pace.

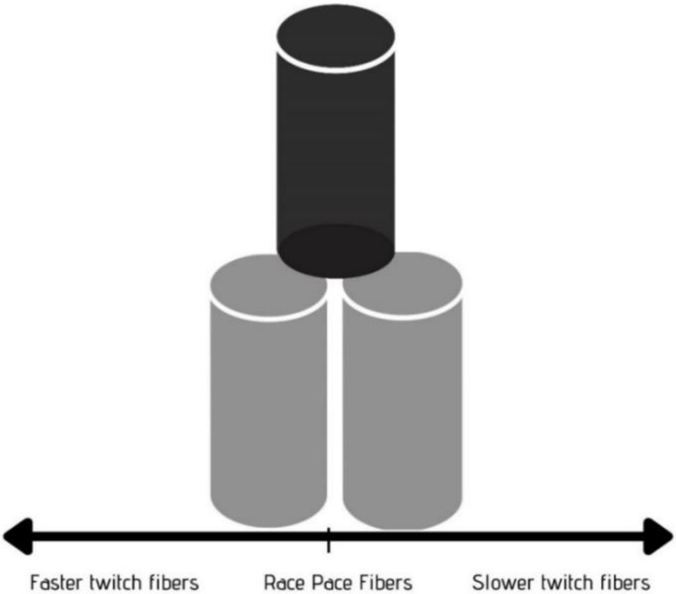


Figure 13.3: Visualization of how having well-conditioned muscle fibers on both the faster-twitch and slower-twitch spectrums (light gray) from your goal race pace will allow you to maintain goal race pace for longer (black), even when race pace fibers are fatigued.

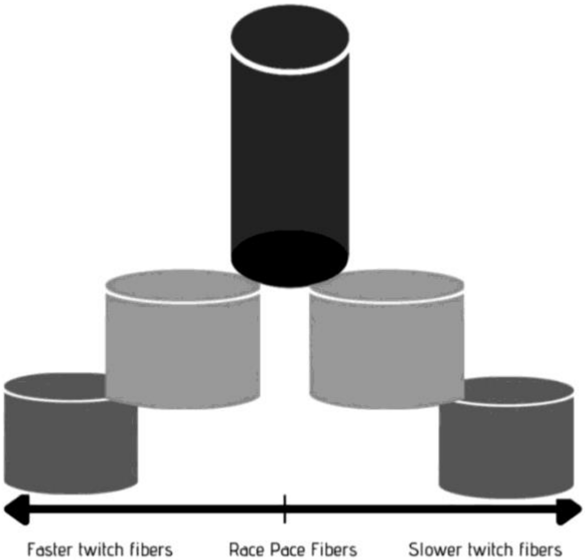


Figure 13.4: This figure shows a similar phenomenon as figure 13.3, but it is now extended to more extreme ends of the muscle fibers as fatigue increases.

By recruiting the sum of a greater range of muscle fiber types, an athlete can maintain goal race pace for even longer. The ability to do this is a result of effective base and support training.

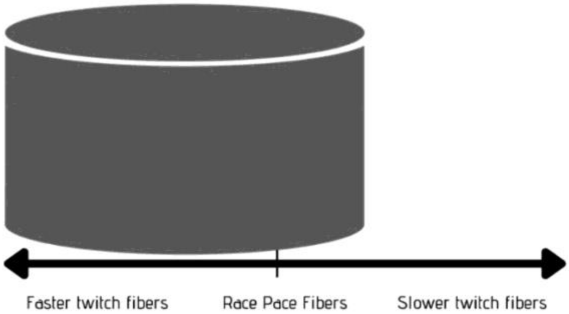


Figure 13.5: As fatigue sets in, a greater percentage of fast-twitch fibers will be recruited, as compared with additional slow-twitch fibers. When the fastest of the fast-twitch fibers become fatigued, the athlete must slow down.

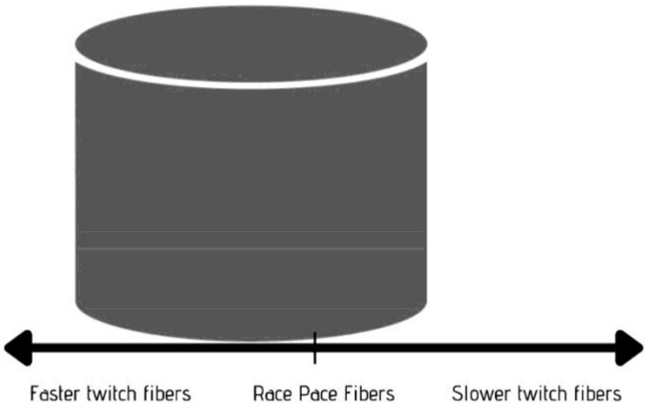


Figure 13.6: What muscle fatigue may look like in the latter portions of a race. Notice that there is more fatigue of fast-twitch fibers than there is of slow-twitch.

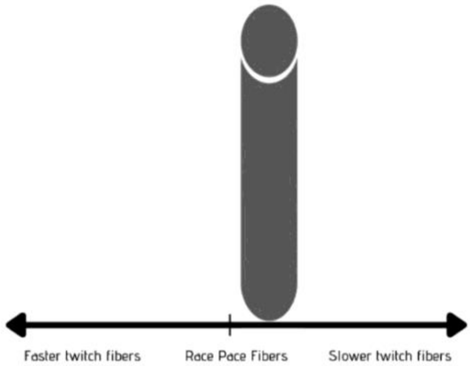


*Figure 13.7: The muscle fiber types that may be recruited during a workout
that is 20 seconds per mile slower than goal race pace.*

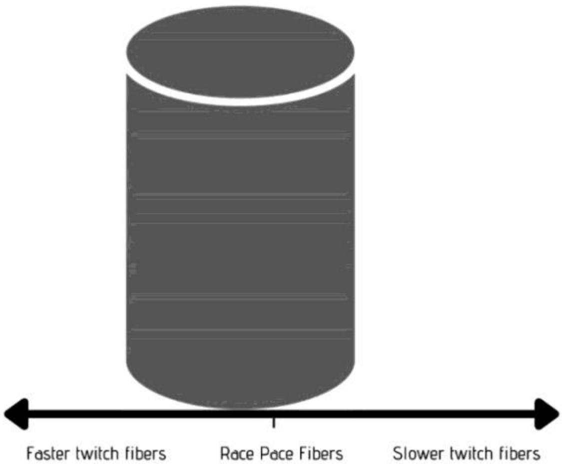


Figure 13.8: What will happen if the workout from figure 13.7 were continued. Notice that the increased muscular fatigue trends mostly toward the faster-twitch side. By the end of a specific workout like this, even a slower-than-race-pace workout will give an almost perfect amount of stimulus for the fibers that directly support race pace to improve.

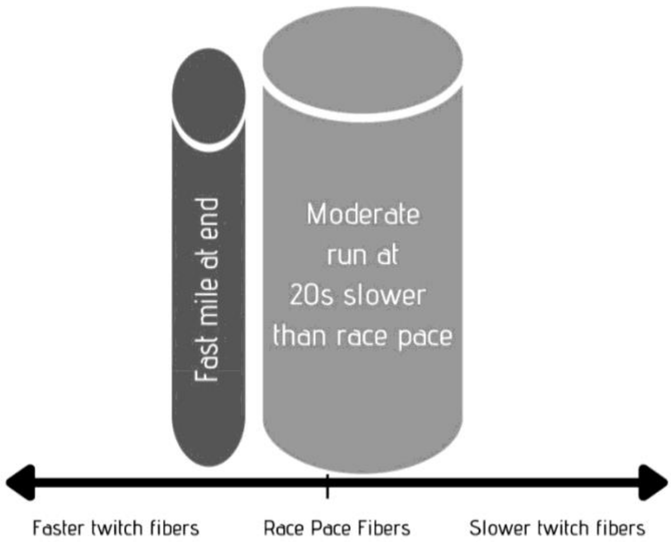


Figure 13.9: An example of how a runner may choose to add in a single mile (dark gray)
at the end of a workout that they felt was "too slow."

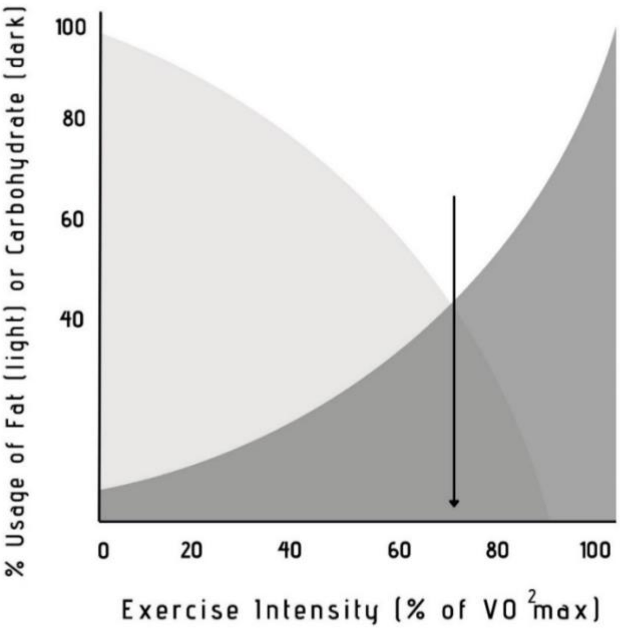


Figure 13.10: As intensity increases, carbohydrate utilization increases and fat utilization decreases.

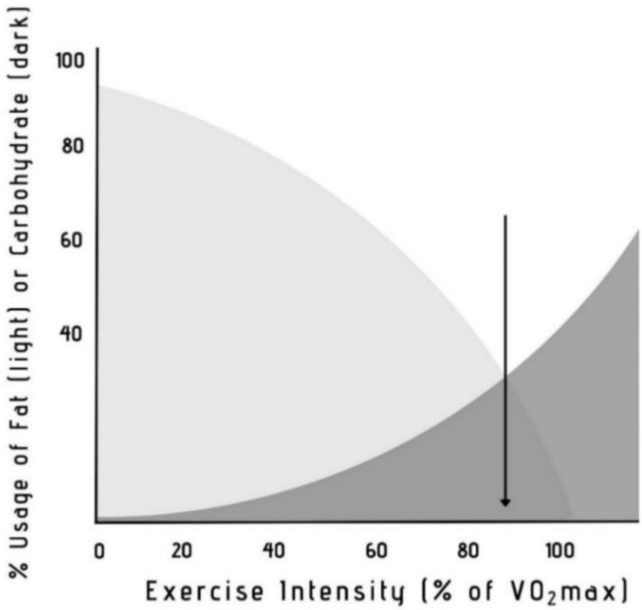
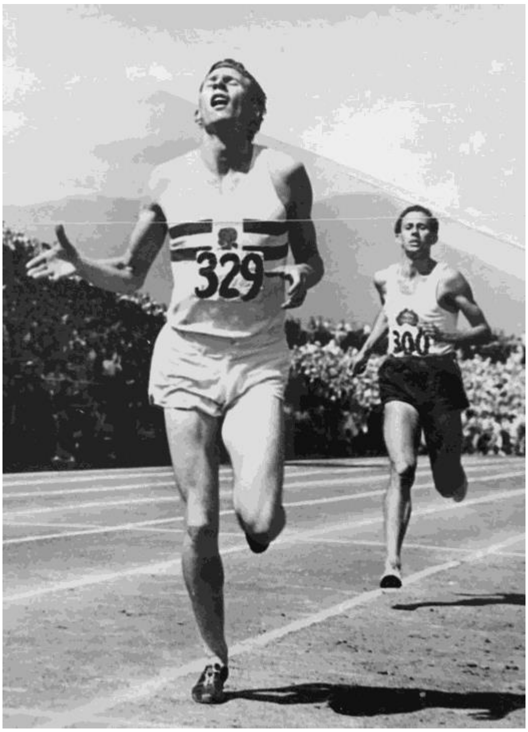


Figure 13.11: The point at which carbohydrate metabolism rapidly increases can be shifted to a higher intensity and thereby delayed through training.



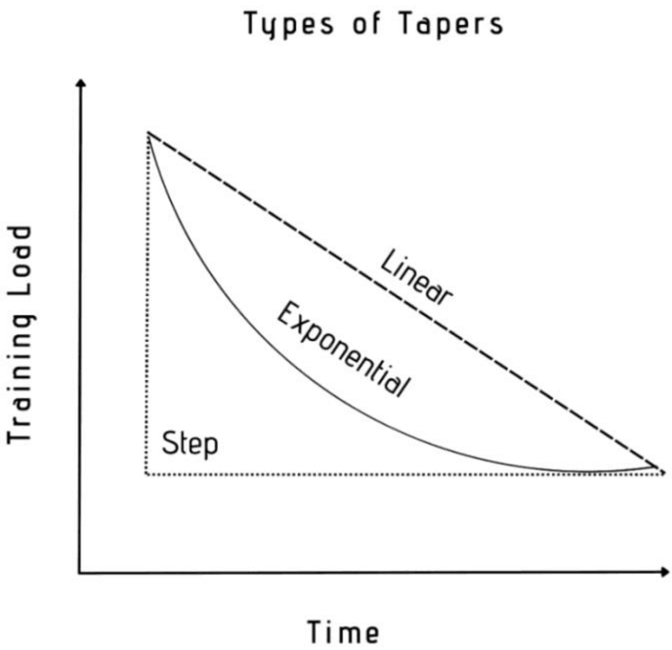


Figure 14.1: The three kinds of tapering leading up to race day. The most common timeframes to begin a taper are between one and three weeks before competition.

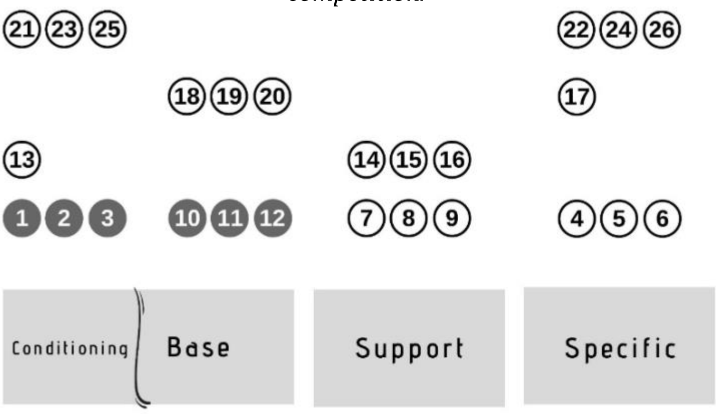


Figure 15.1: How to determine how much time to put into each phase of training.

Training Paces Associated With A Given Marathon Time

Goal Marathon Time	Base (speed)	Support (speed)	Specific (speed)	Race Pace	Specific (endurance)	Support (endurance)	Base (endurance)
2:10	4:07-4:18	4:20-4:40	4:43-4:54	4:57	5,00-5:13	5:16-5:45	5:49-6:11
2:15	4:17-4:28	4:30-4:51	4:54-5:05	5:08	5:12-5:25	5:28-5:59	6:03-6:26
2:20	4:26-4:38	4:41-5:02	5:05-5:17	5:20	5:23-5:37	5:40-6:12	6:16-6:40
2:25	4:36-4:48	4:51-5:13	5:16-5:28	5:31	5:35-5:49	5:53-6:25	6:30-6:54
2:30	4:46-4:58	5:01-5:23	5:26-5:39	5:43	5:46-6:01	6:05-6:39	6:43-7:09
2:35	4:55-5:08	5:11-5:34	5:37-5:51	5:54	5:58-6:13	6:17-6:52	6:57-7:23
2:40	5:05-5:18	5:21-5:45	5:48-6:02	6:06	6:09-6:25	6:29-7:05	7:10-7:37
2:45	5:14-5:28	5:31-5:56	5:59-6:13	6:17	6:21-6:37	6:41-7:19	7:24-7:51
2:50	5:24-5:38	5:41-6:07	6:10-6:25	6:29	6:32-6:49	6:53-7:32	7:37-8:06
2:55	5:33-5:48	5:51-6:17	6:21-6:36	6:40	6:44-7:01	7:06-7:45	7:51-8:20
3:00	5:43-5:58	6:01-6:28	6:32-6:47	6:51	6:56-7:13	7:18-7:58	8:04-8:34
3:05	5:52-6:08	6:11-6:39	6:43-6:59	7:03	7:07-7:25	7:30-8:12	8:18-8:49
3:10	6:02-6:18	6:21-6:50	6:54-7:10	7:14	7:19-7:37	7:42-8:25	8:31-9:03
3:15	6:11-6:28	6:31-7:00	7:04-7:21	7:26	7:30-7:49	7:54-8:38	8:44-9:17
3:20	6:21-6:37	6:41-7:11	7:15-7:33	7:37	7:42-8:01	8:06-8:52	8:58-9:32
3:25	6:30-6:47	6:51-7:22	7:26-7:44	7:49	7:53-8:13	8:19-9:05	9:11-9:46
3:30	6:40-6:57	7:01-7:33	7:37-7:55	8:00	8:05-8:25	8:31-9:18	9:25-10:00
3:35	6:50-7:07	7:11-7:44	7:48-8:07	8:12	8:16-8:37	8:43-9:32	9:38-10:15
3:40	6:59-7:17	7:21-7:54	7:59-8:18	8:23	8:28-8:49	8:55-9:45	9:52-10:29
3:45	7:09-7:27	7:31-8:05	8:10-8:29	8:34	8:40-9:01	9:07-9:58	10:05-10:43
3:50	7:18-7:37	7:41-8:16	8:21-8:41	8:46	8:51-9:14	9:19-10:12	10:19-10:57
3:55	7:28-7:47	7:51-8:27	8:32-8:52	8:57	9:03-9:26	9:32-10:25	10:32-11:12
4:00	7:37-7:57	8:01-8:38	8:43-9:03	9:09	9:14-9:38	9:44-10:38	10:46-11:26
4:05	7:47-8:07	8:11-8:48	8:53-9:15	9:20	9:26-9:50	9:56-10:51	10:59-11:40
4:10	7:56-8:17	8:21-8:59	9:04-9:26	9:32	9:37-10:02	10:08-11:05	11:13-11:55
4:15	8:06-8:27	8:31-9:10	9:15-9:37	9:43	9:49-10:14	10:20-11:18	11:26-12:09

Figure 16.1: Training paces for each phase of training for a given marathon time.

Base Training Example

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Mileage
Week 1		E Strides	E	E Strides	E	E Strides	E	40
Week 2		E Strides/ Hill Sprints	E	E Strides/ Hill Sprints	E	E Strides/ Hill Sprints	E	40
Week 3		E Strides/ Hill Sprints	E	E Strides/ Hill Sprints	E Strides/ Hill Sprints	E	E	40
Week 4		E Strides/ Hill Sprints	E	E Strides/ Hill Sprints	E Strides/ Hill Sprints	E	LR 12m	40
Week 5		E Strides/ Hill Sprints	E	E Strides/ Hill Sprints	E Strides/ Hill Sprints	E	LR 14m	46
Week 6		E Strides/ Hill Sprints	E	E Strides/ Hill Sprints	E Strides/ Hill Sprints	E	LR 14m	46

Figure 17.1: Sample First 6 Weeks of Base Training. E = easy run

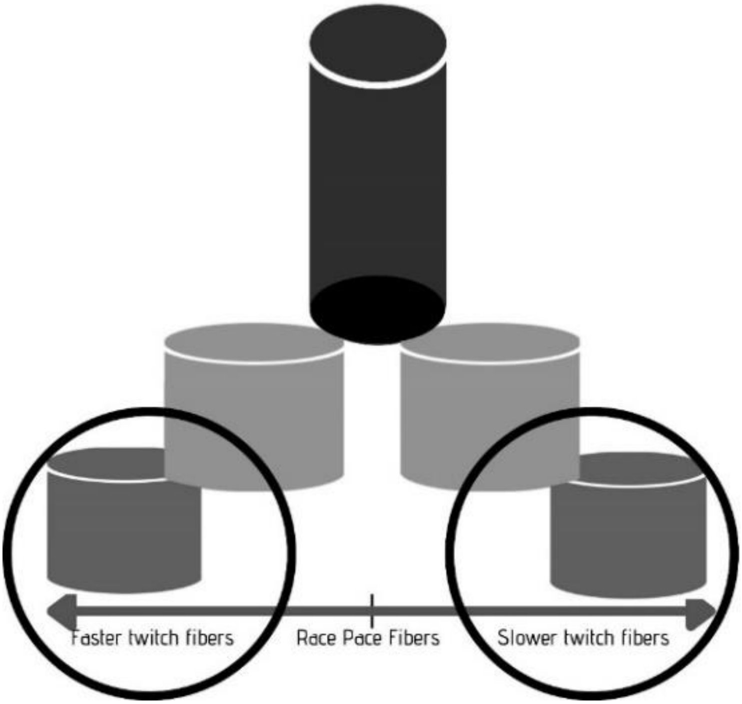


Figure 17.2: Areas of focus in base training are circled.

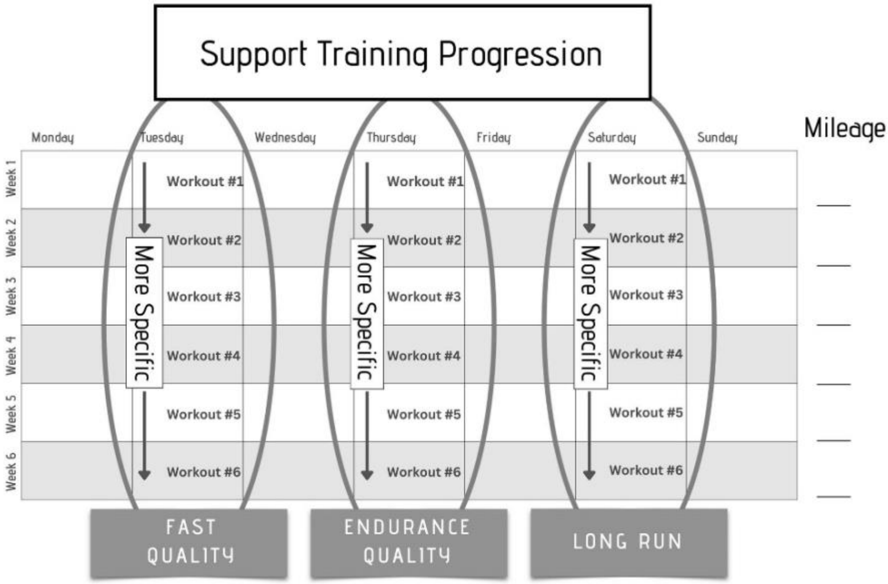


Figure 17.3: Progressive Support Training Structure. Each quality session of a given type should increase with specificity each week.

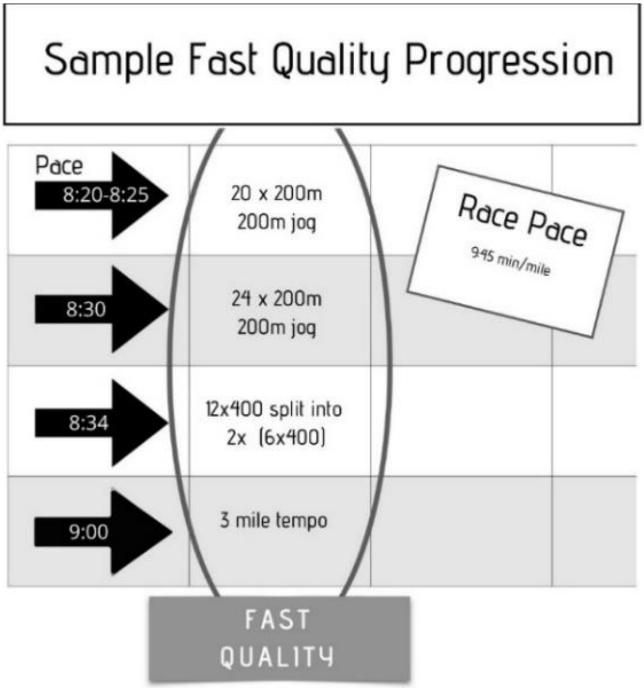


Figure 17.4: Four-week fast-quality progression for a 9:45 half marathon goal.

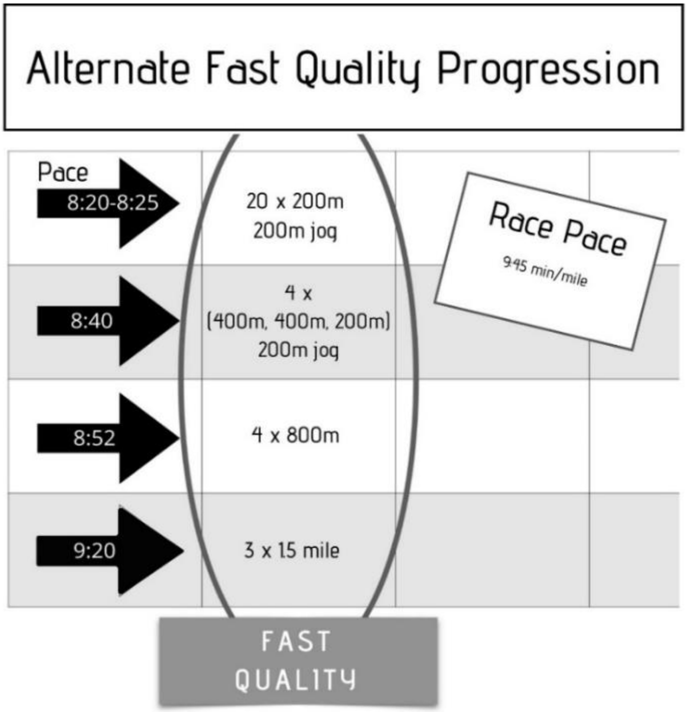


Figure 17.5: Alternate four-week fast-quality progression for a 9:45 half marathon goal.

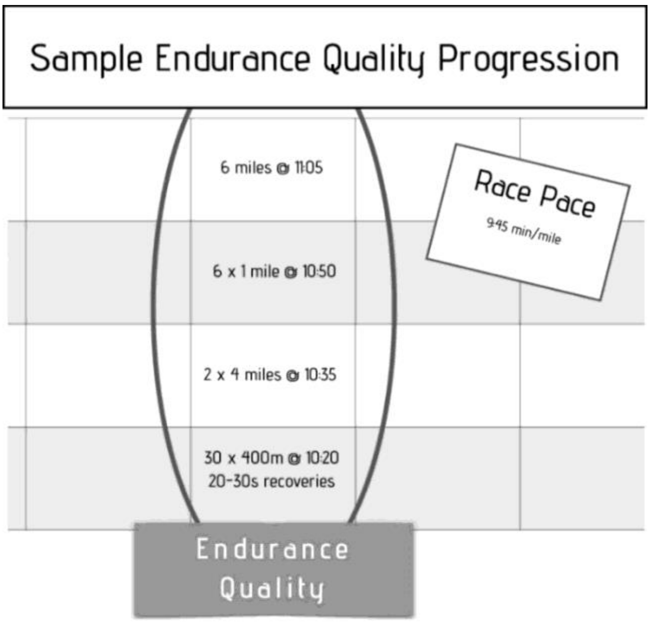


Figure 17.6: Four-week endurance-quality progression for a 9:45 half marathon goal.

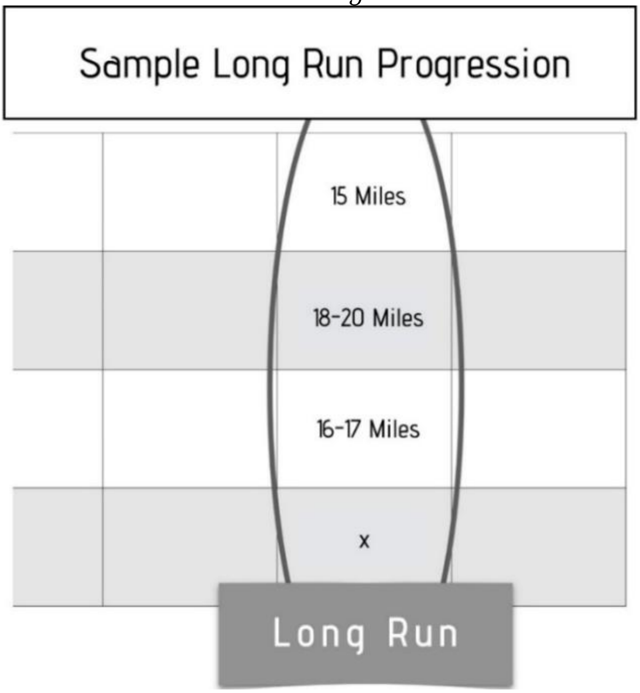


Figure 17.7: Four-week long run progression for a half marathon at 9:45 pace goal.

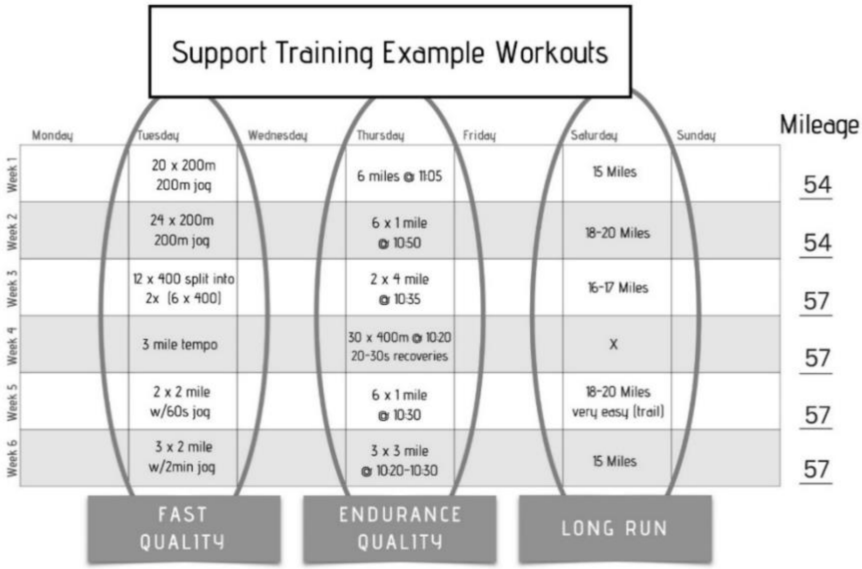


Figure 17.8: Six-week support training workout plan for half marathon with

9:45 goal pace.

Specific Training Structure

		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Mileage
	Week 1								
Key Workouts	Week 2								
Key Workouts	Week 3								
Key Workouts	Week 4								
Maintenance Workouts	Week 5								
Maintenance Workouts	Week 6								
Maintenance Workouts	Taper						Race Day		

Figure 17.9: Three-week range for key workouts in specific training.

Specific Training Example Workouts

		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Mileage
	Week 1			Fast Quality Workout			Sarcomere Run		58
Key Workouts	Week 2			Short Race-Pace Run			Special Block		58
Key Workouts	Week 3							Very Long Run	58
Key Workouts	Week 4			Short Sarcomere Run			Alternation Run		58
Maintenance Workouts	Week 5		Short Race-Pace Run			Short Race-Pace Run		Medium-Long Run w/ short Race Pace	58
Maintenance Workouts	Week 6			Short Race-Pace Run			Short Race-Pace Run		58
Maintenance Workouts	Taper		Short Race-Pace Run				Race Day		48

Figure 17.10: Example of how to structure specific-phase workouts.

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Triphasic Model Training Templates

Base Training

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Mileage
Week 1								
Week 2								
Week 3								
Week 4								
Week 5								
Week 6								
Week 7								
Week 8								
Week 9								
Week 10								
Week 11								
Week 12								

Triphasic Model Training Templates

RUN ELITE

Support Training

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Mileage
Week 1								___
Week 2								___
Week 3								___
Week 4								___
Week 5								___
Week 6								___

FAST QUALITY (Tuesday) · ENDURANCE QUALITY (Thursday) · LONG RUN (Saturday)

Specific Training

		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Mileage
	Week 1								___
Key Workouts	Week 2								___
Key Workouts	Week 3								___
Key Workouts	Week 4								___
Maintenance Workouts	Week 5								___
Maintenance Workouts	Week 6								___
Maintenance Workouts	Taper						Race Day		___

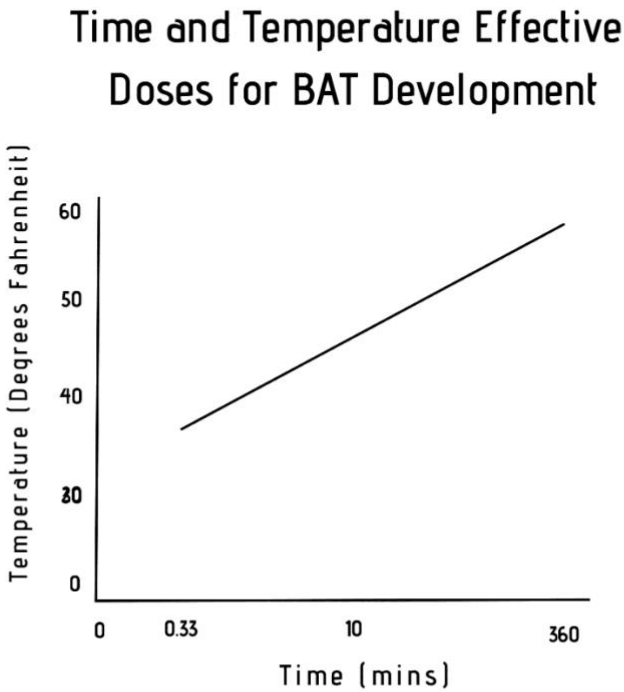

Figure 18.1: Effective exposure times and temperatures for improving BAT, based on the three mentioned data points.

Figure 20.1: Kenny Moore (right) and Gerry Lindgren (left), 1971.

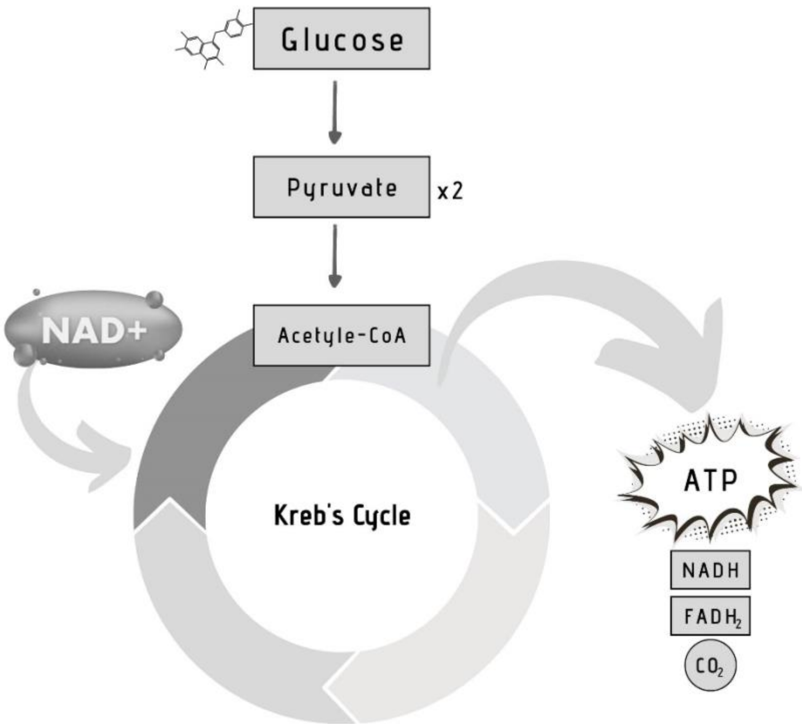

Figure 20.1: Simplified Krebs Cycle. Notice that main inputs and acetyle-COA (a semi broken down form of sugar) and NAD+ and that energy (ATP) is manufactured. NAD+ is an essential molecule for the production of energy in the body.