

FIRST STEPS TO FITNESS

How far to run?
How fast? These and dozens
of other questions are answered.



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FIRST STEPS TO FITNESS

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FOREWORD

So you're starting to run? We're assuming you are, anyway, or you wouldn't be opening this book. If you've already started, you'll be glad to know that the biggest step toward fitness is behind you. There are lots of little ones to come, but none as long as the one that took you from non-runner to beginning runner.

Whether you've been running for seven days now or seven months, you know what the road to fitness looks like. It has an upward tilt and no end in sight. The road will always be somewhat uphill. Running is work, at any level. But you can take comfort in knowing that the steepest part comes at the start, and the slope gets gentler once the running habit is fixed.

On this road to fitness, there are no stopping places. Rest areas, yes. Mileposts, yes. But no final ends. You see, on this road you have to keep working just to stay where you are. And to go farther, you have to move a little harder. Because of the road's tilt, you slide back down to the start once you stop.

This may sound grim or boring, like running an endless treadmill to nowhere. It isn't—or at least doesn't have to be. There are enough compensating pleasures along the way to make the trip worthwhile. You'll learn what those are as you go along, and don't need a guidebook to point them out. Half the fun is coming upon them by surprise. And the surprises keep you going.

This book concentrates on the roadblocks, the problems and pains, that get in a runner's way. The way around these isn't so easily found. And the blocks are what stop you.

One sad fact of the sport is this: at the time you most need advice and support, you're least likely to find it. You may not know any other runners. Coaches are too busy with their seasoned racers to concern themselves with novices. Books and magazines don't help much. Most of them are too advanced.

First Steps to Fitness is written with this information gap in mind. It's intended to take the place of running friends and coaches when none are around, and to cover the questions the other publications don't have the space to cover. It's an encyclopedia of facts on running fitness—how to reach it and how to keep it.

Topics (50 of them, which answer hundreds of questions) are organized alphabetically, and are cross-referenced for quick checking. The advice (on subjects ranging from "Aerobics" through "Where to Run") is straightforward and quickly read. If you want more details, sources are listed.

This is an introduction to running from the endurance fitness point of view. Establishing basic endurance is the first step to fitness. Where you go from there—into middle distance racing, into marathoning, into sprinting—is your business. But you'll go nowhere in this sport without first building this base.

This is a source-book. Little of what's printed here is original, except in

the way it's combined. Some of the information has been published in other forms in our magazines and booklets, some in other places. Our intention here is to summarize the best advice from dozens of references.

You're welcome to collect all of those references, of course. They're listed with the 50 articles here. But we'd advise against reading too much all at once. Do it bit by bit, as problems come up.

This book and perhaps one or two others (*Aerobics* series by Kenneth Cooper, *Beginning Running* and *Runner's Training Guide* from World Publications) are enough for a start. They'll tell you what you need to know to get going. Anything more might confuse or frighten you.

Too much reading works against two states of mind you want to cultivate from the beginning:

- Forget most of what you know about running. Half of what you've heard may be wrong, the other half doesn't apply to you. If you've been exposed to running at all, it probably was through competition. And you're not training for competition—at least not right away. The plans for preparing to race and for getting fit, period, are quite different. For instance, fitness-runners have no need to go faster than a gentle lope. Anything faster may actually work against the kind of condition they're trying to nurture. But a racer can't succeed without some hard speedwork.

- Remember that running is simple. Don't get too intellectual about it. You don't need to know everything there is to learn about running to do well at it. Some things you're better off not knowing. You may hear, for example, that top marathoners run 150 miles a week, and you're not doing a tenth that much. That might bother you if you don't realize your mileage is as adequate for your needs and state of fitness as theirs is—maybe more so in terms of long-range results.

Anything you do, even a mile three or four days a week, is better than nothing. The first mile gives the biggest returns, and these diminish after that. So as long as you do a little running and follow a few elementary rules, you can't help but gain. This book reviews those rules, which simply stated are:

1. Have a plan. Know in advance what you want to do and how you are to do it.
2. Follow the plan. Be regular about your running. Make it as much a daily habit as brushing your teeth.
3. Run within your limits. Run to your own pace. Don't let others set it for you.
4. Extend your limits. Look ahead to a reasonable goal—whether it be to run a whole mile or to build for a marathon.
5. Keep a record. It shows you where you are and how far you've come.

Nearly all the references cited at the end of each article are available from Runner's World. Booklets and magazines are RW publications unless otherwise noted.

AEROBICS

“Endurance is the best kind of insurance. If you’d like to develop some, if you’d like to start back down that road toward physical fitness, then get active with the kind of exercises that will demand oxygen and force your body to process and deliver it...”

—Dr. Kenneth Cooper, from *Aerobics*

Before Dr. Kenneth Cooper wrote his first book, “aerobic” was an exotic word found only in scientific texts. It had to do with metabolism that occurred in the presence of oxygen.

Cooper found in his research that oxygen determines how fit a person is. No matter how good you look on the outside, he said, you’re not fit if your lungs and heart aren’t taking in and delivering oxygen the way they should.

He prescribed endurance activity—walking, bicycling, swimming, running—with a bias toward running because he was a runner and he considered running the most convenient way to exercise.

Dr. Cooper built his “Aerobics” system around this endurance work. He turned it into the world’s best-known fitness concept, claiming millions of followers. The beauty of his advice is that he gives specific recommendations:

- How to check your starting level and progress. (A 12-minute test run in which 1½ miles is passing for men under 30, 1.4 for ages 30-39, 1.3 for ages 40-49, and 1.2 for ages 50 and up. For women, the passing figures in the same age groups are 1.35 miles, 1.25, 1.15 and 1.05.)

- How to start. (Cooper outlines a day-by-day 3-4-month program for beginners, based on their initial condition.)

- How to measure effort. (The Aerobics point system is a simplified means of charting oxygen use. A mile run in about eight minutes is worth five points. Cooper says 30 points a week—six eight-minute miles—provides a minimum level of fitness. Higher weekly point totals are recommended.)

POINTS PER MILE (From The New Aerobics)

Pace	Points	Pace	Points
under 5:45	7	10:00-11:59	3
5:45-6:30	6	12:00-14:29	2
6:31-7:59	5	14:30-19:59	1
8:00-9:59	4		

(See related material in “Alternatives,” “Beginning,” “Breathing,” “Fitness,” “Testing.”)

For more information:

Cooper, Kenneth—*Aerobics*, M. Evans and Co., New York, 1968.

Cooper, Kenneth—*The New Aerobics*, M. Evans and Co., New York, 1970.

Cooper, Mildred and Kenneth—*Aerobics for Women*, M. Evans and Co., New York, 1971.

“Interview: Kenneth Cooper,” *RW*, Sept. 70, pp. 8-11.



“There’s no good evidence to suggest that running is any less beneficial at 10 or at 50 than it is at 20—provided you recognize your capacity and stay within it.” (Om photos)

AGE

"For both young children and old folks, the benefits of vigorous physical exertion are so self-evident that for those people no dry scientific data is required... It would appear that all things considered, long-term physical exercise has a beneficial influence—especially if done in moderation..."

—Dr. Kaj Johansen, from *Age of the Runner*

Age 25 is an important watershed in anyone's life. That goes for champion distance runners as well as the rest of us. Racers improve quickly until their mid-20s, then gradually decline in speed and endurance. They can keep running indefinitely, of course, only not as fast as before. But the physical-mental benefits remain the same.

A non-runner, though, has a different sort of problem, and a far more serious one than lost time. The 10-year period after age 25 is called the "dangerous decade." Doctors at Toronto's Fitness Institute have found that the body's condition typically deteriorates faster during this decade than at any other time in a person's life. Inactive individuals move into their 30s already dangerously deconditioned.

If you're already 30 (or 40 or more), it isn't too late to reverse the decay. But with every birthday after 25, you have to be more careful about how you approach vigorous exercise.

"The average American," says Dr. Kenneth Cooper, "takes 20 years to get out of condition, and he wants to get back in shape in 20 days. You can't do it. If your heart tolerates it, your legs won't."

Cooper, along with most other fitness leaders, recommends a "stress test" (monitoring the heart during exercise) as a prelude to a running program for anyone past the age of 30.

Older runners also acquire a certain amount of "brittleness" with age. Injuries are quicker to come and slower to heal than they used to be. Recovery time from hard efforts may be drawn out a bit more.

But once you're fit, there's no good evidence to suggest that running is any less beneficial at 10 or at 50 than it is at 20—provided you recognize your capacity and stay within it.

(See related material in "Checkup," "Heart.")

For more information:

Age of the Runner, Booklet No. 39, Sept. 74.

"Let Children Play and Grow," RW, May 73, p. 13.

Pollock, Michael, and Miller, Henry—"The Older Runner," *The Complete Runner*, 1974, pp. 83-86.

"Question of the Ages," RW, March 71, pp. 26-27.

Running After Forty, Booklet No. 5, Nov. 71.

Young, Ken—"Age Grading," RW, Nov. 72, pp. 23-24.

The Young Runner, Booklet No. 24, June 73.

"While you can't hold, see or smell the air, you can feel its movement, measure its results and taste the impurities it carries. Even when temperatures are ideal, wind, high altitude and air pollution can have a marked effect on running. In the first two instances, the effects can be good or bad—depending on your circumstances. With pollution, however, there are no redeeming factors..."

—From Running With The Elements

● **Wind**—Nature isn't always fair. Say half of a run is into the wind, the other half is with it, and the wind speed is constant. You'll spend more effort bucking the wind than you'll save with it at your back. The difference is significant, and should be taken into account on windy days. Choose courses that take maximum advantage of tailwinds, while reducing headwinds. This is critical in winter, when each mile per hour of wind reduces the "chill factor" in the temperature by about one degree.

● **Altitude**—The body has to have its oxygen to keep running, and up in the mountains there's less of it. This becomes apparent between 3000 and 5000 feet elevation, and is more dramatic the higher you go. Breathing is more difficult than usual. The heart pounds harder. On first exposure to these elevations, plan to cut back on distance and/or pace for several days. Adaptation takes 1-2 weeks or more. You'll notice you run easier and faster than normal when you come back to sea level after a long stay at altitude. Your oxygen system has super-compensated for the thin air by manufacturing extra red blood cells.

● **Air pollution**—City-dwelling runners ask, "Am I doing myself more harm by breathing this dirty air than I'm gaining by my running?" Dr. Stephen Ayres, a New York City pollution authority, answers by saying, "The value of a regular exercise program is so great that it most certainly outweighs any theoretical harm produced by environmental pollutants, particularly in the normal individual. I would recommend that people continue to run, but perhaps not push themselves to the same levels of exertion on smoggy days." Fred C. Hart, New York's air resources commissioner and a runner, adds that carbon monoxide is the biggest immediate threat. He advises runners to stay 30-50 feet away from traffic, since this poison is most potent as it comes from the exhaust but disperses quickly.

(See related material in "Aerobics," "Breathing," "Weather.")

For more information:

- Frederick, E. C.—"Training at Altitude," *The Complete Runner*, 1974, pp. 190-196.
Hammerstein, Brice—"Statistics on Smog," *RW*, March 71, p. 39.
Higdon, Hal—"Runners' Stake in Ecology," *Guide to Distance Running*, 1971, pp. 37-38.
Livingston, C. L.—"Applying Running Power," *RW*, March 73, pp. 24-26.
Lough, Jeff—"Experiments with Altitude," *RW*, Sept. 74, pp. 20-23.
Nicolai, Bill—"The Dirty Air We Breathe," *RW*, June 74, pp. 26-27.
"Up in the Air," *Running With the Elements*, Booklet No. 35, pp. 47-59;

ALTERNATIVES

"The best exercises are running, swimming, cycling, walking, stationary running, handball, basketball and squash, in just about that order..."

—Dr. Kenneth Cooper, from *Aerobics*

Not everyone is meant to be a runner in the way we're talking about running—i.e., as a long-term investment in fitness. And not everyone who runs can keep at it without interruption.

People get bored with running and give it up. Others get hurt doing it and have to stop to let themselves mend. Still others are okay mentally and physically but would rather do something else on the hottest summer and coldest winter days.

There are acceptable alternatives for anyone with these problems. The body craves continuous activity, but isn't particular about the type. Running is the quickest way to get the quota of aerobic exercise recommended by Dr. Kenneth Cooper. But there are other ways, too.

Cooper's minimum standard for fitness is 30 Aerobic points each week. A mile in eight minutes is worth five points. Six of these miles equal 30 points. He lists these equivalents:

Activity	Distance/Time
Swimming	600 yards in 15 minutes
Bicycling	5 miles in 20 minutes
Walking	3 miles in 40 minutes
Running in place	12½ minutes
Handball	35 minutes

A runner with a slight injury, too tender for pounding but not serious enough for crutches, might bicycle his points. Another might substitute swimming on a humid, 90-degree afternoon. Cross-country skiing isn't on Cooper's list, but apparently its aerobic effects are almost identical to running's. Gliding across the snow is more pleasant than plowing through it.

(See related material in "Aerobics," "Fitness.")

For more information:

"Dashing Through the Snow," *RW*, Jan. 72, pp. 24-26.

Fruktov, Anatoliy—"Race Walk Technique," *The Complete Runner*, 1974, pp. 257-262.

Higdon, Hal—"Orienteers Find New Course," *Guide to Distance Running*, 1971, p. 71.

Kiell, Paul—"While an Injury Is Mending," *RW*, April 74, pp. 30-31.

Laird, Ron—"Competitive Race Walking," *Tafnews Press*, Los Altos, 1972.

Marcec, Andrew—"Exploring Orienteering," *RW*, May 71, pp. 36-37.

Reynolds, Peter—"The Orienteering Approach," *RW*, Jan. 73, pp. 26-27.

"Road to Recovery," *Encyclopedia of Athletic Medicine*, Booklet No. 12, June 72, pp. 93-94.

"Running's First Cousin," *RW*, Feb. 73, pp. 26-28.

BEGINNING

"How do you start? By taking the first step. The first step is the longest and hardest one. Although this is a glib answer to give you when you're looking for hard facts, it's the best possible answer. Don't think about it any more. Go out now, today, and start putting one foot in front of the other. It's that simple, and that difficult..."

—From *Beginning Running*

You're checked and dressed and determined to go through with this. Okay, find a track or an out-of-the-way measured course—preferably with a soft surface—and go the first mile.

Set one mile as your immediate goal. If you can run the whole thing without laboring, you're extraordinary. If not, don't worry. You'll get there. For now, don't be too proud to walk if that's what it takes to make the mile.

Run very slowly. Forget the speed for now. Don't time yourself for the mile unless you're prepared to be discouraged. Time doesn't count at this point. You simply want to get through the first mile—running, alternately running and walking, or walking the whole way. The technique doesn't matter, so long as you're not struggling.

Why a mile? Dr. Kenneth Cooper has determined that a person needs about 10 minutes of continuous activity to get much "Aerobic" benefit. The first mile takes 10-15 minutes.

How do you know your own correct pace? Listen to your breathing. If you're with someone, can you talk to him normally, without gasping? If you're alone, can you whistle a few bars of your favorite song? You should be able to pass the talk or whistle test. If not, you're breathing too hard, which means you're running too fast.

Run at least three days a week. Progress at your own rate while breathing comfortably. Once you've reached that goal, you're ready to graduate to longer and faster ones away from the measured mile.

Dr. Joan Ulllyot of San Francisco teaches beginning runners. Once they're reasonably fit, she advises, "Go long rather than fast. Whenever anyone feels ready to advance, we encourage them to run farther and not worry about increasing speed. (Faster time, of course, comes with better condition, anyway.) This helps prevent injuries and promote enjoyment of running. If you like it, you want to do more of it, not get it over with faster, right?"

(See related material in "Aerobics," "Alternatives," "Breathing," "Bowerman," "Checkup," "Lydiard," "Van Aaken.")

For more information:

Beginning Running, Booklet No. 15, Sept. 72.

Dunne, Jim—"The Journey to Fitness," *Guide to Distance Running*, 1971, pp. 84-85.

Kelley, John A.—"Advice No One Asks from Me," *RW*, May 74, p. 19.

Sheehan, George—"Starting on the Right Foot," *Guide to Distance Running*, 1971, pp. 83-84.

Ulllyot, Joan—"Training Application," *The Female Runner*, Booklet No. 34, April 74, pp. 20-22.

BOWERMAN

"Jogging is free. It is convenient and enjoyable. It is safe. It requires no special skills or equipment. It can benefit nearly everyone who is not ill or disabled... And jogging is reasonable. You can grow fit without greatly changing your personal habits..."

—Bill Bowerman, from *Jogging*

Bill Bowerman might rank as the top distance running coach ever to come from the US colleges. He coached the Olympic team in 1972. But his reputation didn't help him any 10 years earlier when he visited New Zealand.

The jogging movement had taken hold in that country, and the vitality of the older runners both impressed and embarrassed Bowerman. He was 50 years old and fancied himself to be in good shape, yet he couldn't keep up.

Bowerman, a proud, inventive man, came back to Eugene, Ore., and started jogging programs—both for himself and the community. Today, thousands of people in Eugene run—more per capita than anywhere else in the world.

The coach always has been an advocate of moderation, even when training world class athletes. He has said, "In every case, I would prefer to undertrain a runner than overtrain him." He scaled down the programs he used with racers and applied them to fitness runners. The main contributions, on both levels, was his "hard-easy" system.

Bowerman: "The principle works as a rule of life. If you work hard for a long period, you must rest. The harder you work, the greater the need for rest. Again, the theme is moderation. In 20 years of training national and international runners at the University of Oregon, it has been found that runners progress more rapidly and painlessly by an alternating program of hard work one day and the next day easy. Chronic fatigue states are avoided."

For the novice, "hard-easy" has two applications. Bowerman says apply the principle both to individual runs and on a weekly basis. Start by alternately running and walking the distance you want to cover. At first, every running day may be hard, so rest a day between runs. Later, you may run nearly every day, but never run *hard* every day. Every runner needs rest.

(See related material in "Beginning," "Recovery.")

For more information:

Abell, Ron—"Bowerman, You Started This," RW, Aug. 74, pp. 32-33.

Bowerman, Bill—"The Bill Bowerman Formula," RW, Jan. 72, pp. 16-18.

Bowerman, Bill, and Harris, W. E.—*Jogging*, Gosset and Dunlap, New York, 1967.

Moore, Ken—"Bowerman, the Experimenter," *Coaching Distance Runners*, Booklet No. 3, Sept. 71, pp. 16-17.

Newman, Janet—"Bill Bowerman," *Runner's Training Guide*, Booklet No. 23, May 73, pp. 61-65.

BREATHING

"The first thing we have to do is increase the supply of oxygen to the heart so the heart can decrease its work load. When an athlete comes to me to train, I know the first thing I have to do. First, I have to lift his oxygen uptake. The important thing is not lung capacity, but the capacity to use the oxygen that's taken in..."

—Arthur Lydiard, from *New Views of Speed Training*

Oxygen is the fuel you run on—and improve on—and you can't run for long without a steady supply. You can go into "oxygen debt" for a few seconds, but after that you must stop and pay the deficit.

To run long, which is the object of endurance fitness activity, you have to run in a state of "respiratory balance." In other words, you're getting nearly all the oxygen you need without going into debt. This is aerobic work, and it builds endurance. At the other extreme is *anaerobic* running, a deliberate dipping into oxygen debt to build speed and muscle strength.

An all-out 100-yard dash is almost entirely *anaerobic*. Little if any of the oxygen needed for this brief sprint is taken in during the run. A marathon, however, is nearly 100% aerobic. Marathoners, even when racing at red-line pace, suck up their oxygen at the rate they need it. They have twice the oxygen usage capacities of untrained individuals.

How do you tell aerobic from anaerobic activity. By your breathing. If you're gasping for air, you're in oxygen debt. But if you can talk or whistle as you run, you have the air you need to sustain you.

Pulse is closely linked to breathing. If you're breathing heavily, your heart is racing. Doctors who specialize in exercise programs say that the upper limit of aerobic effort is about 75% of maximum pulse. This is in the range of 130-150 beats per minute for most people.

Labored breathing is unpleasant and all beginners experience it. They ask, "How can I breathe easier?" Deeper breathing, breathing from the diaphragm rather than from the throat is a limited answer, because you can't force in more air than your body is capable of accepting. The better answer is, "Slow down and gradually get the heart, lungs and circulatory system in shape." Easier breathing starts with fit organs in the chest. They're made strong and efficient with aerobic activity, and in turn allow that activity to occur on a higher plane.

(See related material in "Aerobics," "Air," "How Fast.")

For more information:

"Balancing the Oxygen Budget," Guide to Distance Running, 1971, p. 91.

Frederick, E. C.—"Oxygen Consumption," "Oxygen Transportation" and "Practical Application," The Running Body, Booklet No. 27, Sept. 73, pp. 24-32.

"Meeting Oxygen Needs," Runner's Training Guide, Booklet No. 23, May 73, pp. 47-48.

"The Need for Speed," New Views of Speed Training, Booklet No. 4, Oct. 71, pp. 5-10.

CHECKUP

"Every sensible exercise program starts with the warning, 'Get your doctor's okay first.' The problem here is that there are different kinds of doctors and different kinds of tests..."

—From **Beginning Running**

What kind of a doctor? What kind of okay?

Doctors are by no means unanimous in their approval of running as a road to fitness. Kenneth Cooper is a doctor, and of course he highly recommends the activity. Meyer Friedman is a doctor, too, and he condemns it as dull and dangerous in his book *Type A Behavior and the Heart*. Doctors are split into pro-running and anti-running factions, often according to whether or not they run. If you want to get okayed, find a pro-running doctor to give you the preliminary checkup.

The best doctor for advice to a potential runner is often one who runs himself. A great number do. Next to teachers, doctors have the greatest number of runners of any occupational group. *The Runner's Almanac* (see details below) lists many of them.

The checkup should be thorough, as thorough as you can make it and can afford. It should do much more than certify that you're alive and have no obvious defects. It should be a serious attempt to uncover hidden defects and to assess beginning fitness.

If you're over 30 or have any hint of heart disease in your history, a "stress test" is called for. This is an electrocardiogram tracing taken during exercise—either on a treadmill or on a stationary bicycle. This test spots heart irregularities that might not show up on a resting EKG, but could surface with dire consequences during the stress of a run.

Other tests should include blood pressure readings and measurements of fats in the blood, which indicate susceptibility to heart problems.

An abnormal test doesn't necessarily rule out running, but rather tells the doctor and you what precautions must be taken, what limits to stay within.

Sophisticated preventive medicine centers run tests of oxygen uptake capacity (a measure of endurance) and determine the percentage of body fat (the only way to tell precisely what "ideal weight" is). With these findings, the doctors prescribe a personal exercise plan. Dr. Kenneth Cooper operates such a center in Dallas. Others are listed in *The Runner's Almanac*.

(See related material in "Doctors," "Heart," "Illnesses," "Injuries," "Testing.")

For more information:

"How Do They Test?" RW, Feb. 73, pp. 12-13.

"Let This Be a Warning," RW, Feb. 73, pp. 12-13.

"Pre-Run Safety Check," Beginning Running, Booklet No. 15, Sept. 72, pp. 8-9.

Purdy, Gerry—"Dr. Cooper's Aerobic Center," RW, Feb. 73, pp. 13-15.

"Where to Go," 1974 Runner's Almanac, Booklet No. 33, March 74, pp. 37-83.

CLOTHING

"I've found that 'expensive' can rarely be equated with 'best.' I recommend spending your money on a good pair of running shoes rather than on expensive sweat suits or on plastic running clothes designed to make you sweat like a fish in Handiwrap..."

—Janet Heinonen, from *Runner's World*

One of the beauties of running as a sport or exercise is its cheapness. It costs very little to do. Don't neutralize that advantage by outfitting yourself as if you were on your way to the ski slopes. A few rules for dressing to run:

1. **Splurge on good shoes.** They *are* rather expensive, but they are an investment, not a luxury. They're your protection from the hard, rough ground. Spend \$20-30 on a good pair. It's your only major equipment expense.

2. **Otherwise, keep the wardrobe simple and inexpensive.** Use what you have available. Improvise instead of running up a clothing bill. Sure, stretch "jogging suits" look nice, but they are a luxury costing as much as a pair of shoes. Loose-fitting, non-chafing shirts, long pants or shorts from the closet work just as well for any purpose short of racing.

3. **Dress inconspicuously.** If you're a beginner, you already feel all eyes on you. You'll feel better about running in public if your clothing doesn't attract special attention or show off bulges you want to hide. More good reasons not to wear special suits.

4. **Don't overdress.** The tendency among people who haven't done much running is to dress as if they're going to sit outside and watch a football game. They feel toasty warm at the start. But they heat up inside as they run, and soon wish they'd left half the clothing at home. Leave half of it there before going out, or dress in layers which can easily be stripped off en route—for instance, a jacket over a sweater over a T-shirt.

5. **Dress for the weather.** This is obvious. But it needs to be emphasized again that you need less clothing than normal, even at the extremes of heat and cold. In summer, wear as little as modesty allows. In winter, bundle up the head and hands. The arms, leg and trunk need little protection except on the coldest days.

6. **Forget about short-cut weight reduction gimmicks.** Don't wear a rubberized suit or uncomfortably heavy clothing, imagining you'll lose weight that way. You'll lose water, your body's fluid balance will be messed up, your temperature will soar. But nothing will happen to your true weight that wouldn't happen without this wrapping. Lose weight the natural, safe way—with sensible exercise and diet—not by sweating yourself dry.

(See related material in "Shoes," "Weather.")

For more information:

Heinonen, Janet—"Women's Wear for Running," *RW*, May 74, pp. 28-29.

Sexton, Jim—"When It's Cold Outside," *The Complete Runner*, 1974, pp. 174-177.

COACHING

"If we define coaching as simply passing around practical knowledge, everyone who gives practical advice or reads practical books is a coach. This is coaching on its most informal level. But runners are a talkative, widely-read bunch, and some of the most effective coaching takes place this way..."

—From *Coaching Distance Runners*

This isn't "coaching" in the sense of a Vince Lombardi type shouting orders and kicking the butts of those who don't obey without question. That kind of coaching a beginning runner doesn't need. But we all sometimes need someone we can lean on.

For every rugged individual who finds his own way by trial and error along the rutted path leading to fitness, dozens of others get lost or hurt. It helps to have advice. And we're talking of coaches here as advisors who can get you over the rough spots with fewer trials and errors.

The advisors come in many forms, from professional coaches to other novices who've just come the same way themselves. Few runners are lucky enough to have a Bill Bowerman, Arthur Lydiard or Ernst van Aaken living in the neighborhood. These leaders in running for fitness do little direct teaching or coaching, and most of what they do is on an advanced plane. That's how it is with most formal coaches.

But anyone who half tries can find advice and support.

- **Approach a coach.** Find one at a local school. Ask questions. He'll probably be flattered, and will answer readily and at length. But don't expect him to coach you day to day. He doesn't have time.

- **Join a group.** Many high schools and colleges, most YMCAs have organized jogging programs offered early mornings or evenings. The double advantages are expert (or at least adequate) instruction and the company of other runners.

- **Find other runners.** Most neighborhoods have them on their streets or at their tracks. Talk with them. Runners love to talk about themselves. Find out how they've solved the same problems you're having. Run and talk at the same time if you're able. The distance goes easier that way.

- **Read.** The next best thing to having Bowerman, Lydiard or van Aaken as a personal coach is to read what they and people like them have written. The best coaching most runners will ever get comes from magazines and books. The sources are listed at the bottom of the pages throughout this book.

(See related material in "Groups," "Organizations.")

For more information:

"Coach-Athlete Team," *The Complete Runner*, 1974, pp. 362-368.

"Coaches and Coaching," *Coaching Distance Runners*, Booklet No. 3, Sept. 71, p. 8.

DIET

"Certain types of dietary control do offer the runner hope for eventual improvement of his performances. But he should be careful not to rely too heavily on them, because food and drink aren't ends but beginnings. They are the fuel that power training. But nutrition offers no substitutes for work and no short cut to success. It merely promotes work and opens the way to success. No runner ever got anywhere just by eating..."

—From the Runner's Diet

Adequate diet is a catalyst which, when combined with running, makes better running possible. When it's inadequate—or overabundant—the results show up several places in running.

The most obvious factor is weight. Most of us have too much of it. Even the so-called "normals" are too high, and most fitness doctors agree that runners should try to weight at least 10% less than the figures shown on insurance company charts. Each additional pound above ideal weight has a direct negative influence on running times. Running tends to reduce weight, but running *plus dieting* does it faster.

Carbohydrate-type foods supply most of the energy during a run. The effect is so dramatic that competitors make it a practice to stoke up on bread, potatoes, spaghetti, etc., before races. Anyone who is both running and dieting should be careful not to cut carbohydrate intake too much. The price of it might be severe energy depletion. On the other hand, runners don't appear to require higher than normal protein intake or high-calorie binges. Many successful ones, in fact, are vegetarian and many fast on occasion.

Drinks are a special concern. Runners, says researcher Dr. David Costill, often become "chronically dehydrated." They dehydrate day after day and never make up their losses. They don't just lose water, but also vital trace elements. Many commercial drinks—Gatorade and ERG are the most widely used by runners—replace the liquids and salts. Fruit juices do much the same thing.

Vitamins? The final verdict isn't in yet on the results of heavy vitamin supplementation. But one runner-physician, Dr. Thomas Bassler, has evidence to suggest that a runner needs one gram (1000 milligrams) of Vitamin C for each six miles of running. This vitamin builds resistance to injury and illness.

(See related material in "Testing," "Weather," "Weight.")

For more information:

Costill, David—"To Drink or Not to Drink," Guide to Distance Running, 1971, pp. 29-30.

"Eat, Drink and Be Wary," RW, March 72, pp. 32-35.

"First Water, Then Salts," Running with the Elements, Booklet No. 35, May 74, pp. 30-31.

Londeree, Ben, and Van Handel, Peter—"Solid and Liquid Energy," RW, July 74, pp.

26-31.

Mirkin, Gabe—"Super Foods?" RW, Nov. 72, p. 25.

"Nutrition," The Complete Runner, 1974, pp. 121-144.

The Runner's Diet, Booklet No. 14, Aug. 72.

DOCTORS

"The inferior doctor treats actual illness. The mediocre doctor cures imminent illness. But the superior doctor prevents illness..."

—Chinese proverb

Even if you didn't heed the standard warning to go see your doctor before starting to run, you'll probably see him soon enough anyway with a running-related complaint. Two in every three runners surveyed by *Runner's World* said they had such an injury and had to visit a doctor for it.

You're fortunate indeed if your doctor gives you more than the rest cure and a shot.

He asks, "How did you hurt yourself?"

You say, "I was running."

He says, "So stop running. Take a week off, and come back and see me then. If it's not better by then, take some more time off."

Then he shoots some cortisone into the sore area.

This is symptomatic treatment. It doesn't get at causes. As soon as the runner gets well, he's likely to hurt himself again in exactly the same way. Why does it happen? What is the cause? By knowing the cause and correcting it, prevention of recurrence is likely.

Sports medical people are now getting at the causes and are dealing with them before ailments progress to the treatment stage. Leaders in this kind of work are the exercise physiologists who deal with fitness testing, the physiotherapists who correct problems of strength and flexibility, and the podiatrists who handle the feet—from which most running injuries flow.

Yet runners give headaches to even the best of doctors. Runners as a group are stubborn and impatient. They don't seek help until they can't run, and then they want to run again before they're ready. Rest is a dirty word, even when it's the only solution left.

One podiatrist comments, "I see my average runner-patient only once. Either he's cured and wants no further advice, or he goes to another doctor, or he gives up on doctors completely and tries to treat himself."

Doctors and runners need to work together, to learn from each other. Only then can they get on with the work of preventing trouble instead of being bogged down in patching up and repairing.

(See related material in "Checkup," "Heart," "Illnesses," "Injuries," "Physiology," "Stress," "Testing.")

For more information:

Corrigan, Brian—"The Doctor's Vital Role," Guide to Distance Running, 1971, pp. 14-15.

"The Team Treatment," Encyclopedia of Athletic Medicine, Booklet No. 18, June 72, pp. 91-92.

"Where to Go," 1974 Runner's Almanac, Booklet No. 33, March 74, pp. 37-93.

DOGS

"Dogs are natural cowards. They simply will not engage a man who does not appear to fear them, and who gestures in a manner which seems aggressive to them. Dogs are more readily held at bay by fear than by pain..."

—Tom Osler, from *Runner's World*

Dogs are cute and funny and loveable—unless you happen to be running and you unwittingly cross the mutt's territorial lines. Then he does a Dr. Jekyll-Mr. Hyde act, and before your eyes becomes a beast intent on removing portions of your legs.

It's instinct. Dogs can't help but protect their property. And any living thing that runs from them bolsters their confidence and brings out the spirit of the hunt.

There are lots of counter-measures for dealing with dogs: stones, baseball bats, chains, chemical sprays. But they all require anticipation. You have to know you'll meet the dogs and be forearmed against them.

What if you're taken by surprise, empty-handed? Tom Osler, who has fought off dogs for more than 20 years (with but one failure), offers the following hints:

- **Don't try to run away.** This only provokes the dog, and you can't out-run anything faster than a Bassett hound. If a dog makes menacing gestures at you, slow down, walk or stop. Don't let him get behind you.
- **Take the offensive.** Shout at the dog. Yell "halt," "stop" or more original epithets. Or simply answer in kind with growls and barks of your own. Anything to frighten the animal. Noise inspires fear, which stops most attacks.
- **If noise doesn't work, try a weapon.** "Reach down for a stick, stone or can, and threaten him with it," Osler says. "The simple act of reaching for an instrument usually causes the dog to lose heart. The dog has learned before that man is far more dangerous with something in his hand."

Remember, too, that friendly dogs can also create havoc in a run. The hyperactive pup can dance up and tangle itself in your legs. Don't take your eyes off of any dog, even one that's wagging its tail.

(See related material in "People," "Where to Run.")

For more information:

Fischer, Lionel—"Discouraging Your Local Dogs," RW, Aug. 74, p. 27

Lucas, Jay—"It Starts as Puppy Love," Running with the Elements, Booklet No. 35, May 74, pp. 85-86.

Osler, Tom—"Beating Man's Best Friend," RW, July 71, p. 31.

"Repelling Dog Attacks," Running with the Elements, Booklet No. 35, May 74, pp. 83-84.

Somers, Ron—"Dog Diplomacy," RW, Dec. 73, p. 5.

EXERCISES

"When an athlete goes into training, three things can happen to his muscles. Two of them are bad: shortening of the strengthened muscles with loss of flexibility; weakness of the opposing, relatively unused muscles..."

—Dr. George Sheehan, from *Exercises for Runners*

Running, by itself, isn't enough. Not if you want to be all-around fit, or if you don't want to pay a high price in muscle and tendon injuries.

Running is one-sided. It works the legs while letting the arms coast. Some leg muscles grow super-strong while opposing ones grow lazy. The arms, shoulders, chest, back and abdominal muscles don't get much of a workout unless supplementary exercise is done—which it usually isn't.

Ironically, some of the most highly conditioned distance racers are less likely than non-athletes to pass simple tests of strength and flexibility: lifting a large portion of the body weight, doing a number of situps, bending over and touching the fingertips to the floor without bending the knees.

Flexibility is a notable problem for runners who've trained a long time. The sport tightens them, exposing them to muscle and tendon strains that might not have happened if they had remained normally supple.

The best investment any runner can make toward preventive maintenance is to buy a book outlining yoga-type exercises and to practice these at least once a day.

Why yoga instead of the conventional bouncing-type calisthenics? The yoga stretches are "static." You move into a position slowly, and then hold that position. There are none of the violent movements of calisthenics, which can cause the injuries the exercises are supposed to prevent.

Stretch before and perhaps after running, as part of the warmup and warmdown. Not only does this counteract the tightening effect of the run; it also eases the transition from rest to work and back. Activity should progress from exercise to walking to running to faster running and vice versa, with no radical jump from one to the other.

Weight training and other "upper body" strength activities are recommended for those who want more balanced and total development than running alone can offer.

(See related material in "Feet," "Injuries.")

For more information:

Costes, Nick—"Weight Training for Runners," *Guide to Distance Running*, 1971, pp. 103-104.

"Exercise," *The Complete Runner*, 1974, pp. 263-286.

Exercises for Runners, Booklet No. 29, Nov. 73.

Jackson, Ian—"All-Sports Yoga Routine," 1974.

Jesse, John—*Strength, Power and Muscular Endurance for Runners and Hurdlers*, The Athletic Press, Pasadena, 1971.

"The Runner's Final Stretch," *RW*, Jan. 73, pp. 41-43.

FEET

"The foot is a complex arrangement of 26 bones, almost twice as many ligaments and muscles, and three arches. The possibilities are good that trouble will arise in one or more of these parts and their fittings when they're put under prolonged, every-step-the-same pressure of a run..."

—From Shoes for Runners

Injuries start in the foot, simply because the foot takes the impact with the ground. The pains begin here, but they don't stay here. They radiate on up through the ankles, shins, knees, hips and back. There's much truth in the folk wisdom, "When your feet hurt, you hurt all over."

Many prominent sports doctors, not all of them foot specialists, now say that the way to handle most running complaints is to treat the feet. Even if the back aches, look first at the feet as a suspected source of the trouble.

A fraction of an inch variance from normal in the way the foot strikes the ground can be the difference between health and injury. The difference can come from the shoes you wear, or from the architecture of the feet. All feet need the best shoes available. Abnormal feet need the attention of a specialist.

Podiatrists' estimates are that at least half the population has foot irregularities which might lead to injuries when exposed to the stress of running. Most commonly, the abnormal foot either collapses toward the inside (pronates) or twists to the outside (supinates), placing unusual tensions on the entire foot-leg complex.

One way to spot these irregularities is to check your shoe wear patterns. Normally, the heaviest heel wear occurs about a half-inch to the outside of center. If you have a supination problem, wear will be farther out than this. If you pronate, wear will be closer to the center of the heel, or even to the inside.

Podiatrists can compensate for such abnormalities by fashioning special inserts for the shoes. The doctors call these "orthotics."

(See related material in "Doctors," "Exercises," "Injuries," "Shoes," "Stress," "Surfaces.")

For more information:

"The Feet," Shoes for Runners, Booklet No. 25, July 73, pp. 66-78.

Sheehan, George—"Disaster at Little Big Toe," RW, Feb. 74, p. 33.

Sheehan, George—"From the Ground Up" and "Look First at Feet," Encyclopedia of Athletic Medicine, Booklet No. 12, June 72, pp. 25-28.

Sheehan, George—"Morton's Foot: the Big Crippler?" RW, Aug. 74, p.23.

Subotnick, Steve—"Toe Trouble," RW, April 74, p. 8.

"The Vulnerable Foot," All About Distance Running Shoes, Booklet No. 1, July 71, pp. 25-28.

FEMALES

"Women are born somewhat weaker and slower than men. But they're compensated with a somewhat better endurance capacity. The difference this makes in the way the sexes run, however, isn't great. The rules of exercise physiology, of training and racing techniques, apply almost equally to women and men. But the rules of society in general and athletic administration in particular split men and women into two camps."

—From *The Female Runner*

Women have had a lot of catching up to do—in running—not because they are so much weaker and slower than men, but because public opinion has been slow in accepting them in the role of runner. Attitudes are changing, but exaggerated fears/myths about the effects of endurance work on "delicate" female bodies and psyches remain.

When it comes to running, women aren't as delicate as they might appear. They react to running in much the same way as men, and most of the reactions are positive.

"The athletically most important difference between men and women," writes Dr. Ernst van Aaken, "is that 40% of the man's body mass is muscle, compared to only 23% for women. The only muscle which both men and women can train in equal measure is the heart. It is even possible that women have a relative advantage here because the muscles of women work more slowly and men's muscles are generally more suited to explosive functions."

A woman physician and distance competitor, Dr. Joan Ullyot, adds, "In short, women are made to run long rather than fast. While I doubt that women will ever come closer than 20 seconds to the men's mile record, there is no such limitation in their ability to go long distances."

She does, however, say older female beginners are quite susceptible to injury. "These troubles are *not* due to inborn sex differences so much as to the fact that most women never run after age 10-12. We see similar injuries in older men who start after years of inactivity. It's just that women reach this point of atrophy at age 20, men at age 40."

(See related material in "Groups," "People.")

For more information:

Cooper, Mildred and Kenneth—*Aerobics for Women*, M. Evans and Co., New York, 1971.
The Female Runner, Booklet No. 34, April 74.

Heinonen, Janet—"The Woman Runner," *The Complete Runner*, 1974, pp. 89-93.

Heinonen, Janet—"Women's Wear for Running," *RW*, May 74, pp. 28-29.

Higdon, Rose and Hal—"What sports for Girls?" *RW*, Jan. 70, pp. 28-31.

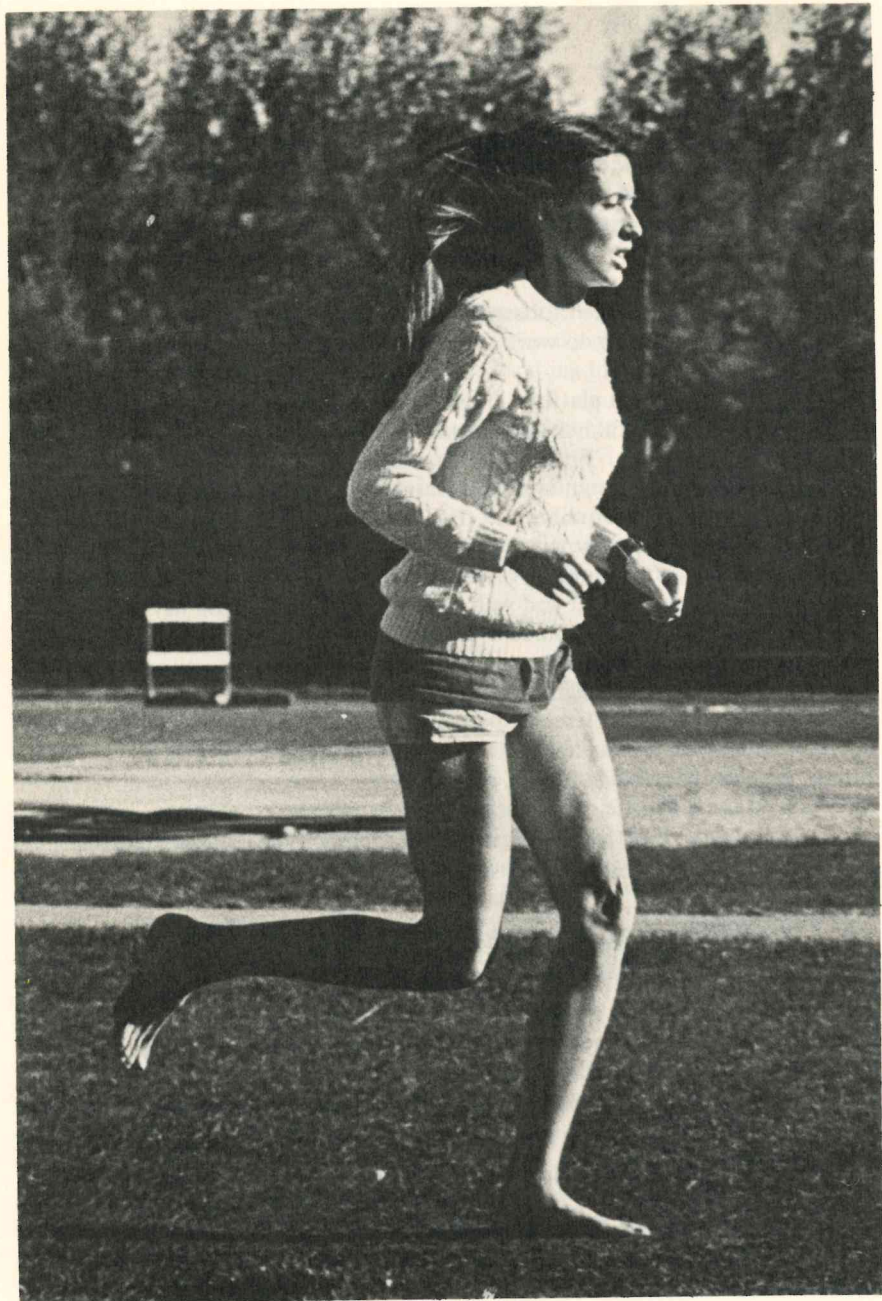
"Running and Motherhood," *The Complete Runner*, 1974, pp.159-162..

Switzer, Katherine—*Problems of a Woman*," *The Complete Runner*, 1974, pp. 54-60.

Tarnawsky, Pat—"Women Runners' Image," *RW*, June 73, p. 5.

Tarnawsky, Pat—"Women vs. the Myths," *RW*, March 71, pp. 16-17.

Westbrook, Richard—"Watch the Young Girls Run," *RW*, Sept. 74, pp. 26-27.



“Women react to running in much the same way as men, and most of the reactions are positive.” (Om photos)

FITNESS

"In essence, we should approach running not as if we were trying to smash our way through some enormous wall, but as a gentle pastime by which we can coax a slow, continuous stream of adaptations out of the body..."

—E. C. Frederick, from *The Running Body*

Health is the absence of disease or disability. Fitness is more than that. It is a learned capacity to do work smoothly, efficiently and with energy to spare.

Good health is the platform on which fitness is built. Serious runners often drive themselves to ill health then watch their fitness slip away when they can't renew it every day. Fitness is rather unstable. It doesn't store well, and the supply doesn't last long unless it is freshened several times a week. Take a week or two away from running and fitness will slip noticeably. Take a month or two away and your body will all but forget it ever was fit.

Fitness is an active process of coaxing out adaptations. They can't come without work. You can't sit and wait for fitness to come. You have to chase it—prod, challenge, stretch yourself. Once you catch up to it, you have to keep running—as Lewis Carroll said in *Alice in Wonderland*—just to stay where you are. To make further gains, you have to do even more running.

There are several different aspects of fitness. Perhaps we need qualifying adjectives when talking about it: *endurance* fitness, *speed* fitness, *strength* fitness, *mobility/flexibility* fitness, etc. Different activities work on different aspects, and there is little carryover from one to another.

Physiologists call this the "principle of specificity." It simply means you get in shape for the activity you practice and at the level of effort you practice it. If you want to be a distance runner, spend most of your exercise time running for distance—not doing related endurance activities like bicycling and swimming, and certainly not unrelated ones like shot putting and baseball.

But while the benefits of running fitness don't carry over in large measure to other sports, they do spill out into everyday living. Endurance fitness means having an easier time moving yourself around on foot, looking better, *knowing* you look and feel better. These are advantages in any field.

(See related material in "Aerobics," "Alternatives," "Beginning," "Exercises," "Testing.")

For more information:

"The Case for Running," *Beginning Running*, Booklet No. 15, Sept. 72, p. 6.

Frederick, E. C.—"Adapting to Exercise," *The Running Body*, Booklet No. 27, Sept. 73, pp. 21-23.

"The Training Effect," *Runner's Training Guide*, Booklet No. 23, May 73, pp. 17-18.

FORM

"Do what comes naturally, as long as 'naturally' is mechanically sound. If it isn't, do what is mechanically sound until it comes naturally..."

—Dr. Kenneth Doherty, from *Track and Field Omnibook*

Every beginning runner carries a picture in his head of what a runner should look like. Usually, the picture is wrong for his purposes.

He sees Steve Williams, up on his toes, pumping his arms powerfully, sprinting 100 yards. Jim Ryun gobbling up ground in a mile with great, smooth strides. A fullback breaking through the line, using his head and shoulders as a battering ram.

These running styles are effective for their purposes, but they aren't at all right for anyone running distances at 7-10 minutes per mile. Form should fit the purpose and the pace. In distance running, from the ground up, this means:

- **Feet**—The slower you go, the flatter you land. Foot-fall in a gently paced run is flat or heel first, not on the toes.
- **Stride**—Again, this is a function of speed. Stride lengthens as you increase the pace, shortens as you slow. Don't overstride. Keep your feet under you. The point of foot contact should be directly under your knee, with the knee slightly flexed.
- **Stance**—Run tall. Run with a straight back, the trunk directly over the legs. Coach Bill Bowerman says, "A forward lean might be useful for someone trying to bash down a wall with his head. But in running it merely gives the leg muscles a lot of unnecessary work."
- **Arms**—Don't lock the elbows. This creates tension and causes the shoulders to sway. Carry the arms in a position between the waistline and the pectoral muscles, swinging somewhat inward across the chest (but not radically so). Keep the hands loosely cupped.
- **Head**—Look ahead, not at the sky or at your feet but out in front of you. This level-headed running insures that you run with an erect, balanced stance, the head in line with the trunk and the trunk with the legs.

Form is the runner's "fingerprint." It is unique to him, established by heredity and solidified by habit. Innocent quirks of it should be left alone. Concentrate on correcting faults that result from blurry pictures of what running should be.

(See related material in "Exercises," "How Fast.")

For more information:

"Running with Style," *The Complete Runner*, 1974, pp. 230-241.

Westbrook, Richard—"Watch the Young Girls Run," *RW*, Sept. 74, pp. 26-27.

GROUPS

"Running is an individual sport. But even the most independent of runners sometimes needs someone he can lean on—for praise or sympathy, for advice or simply company. The best support comes from other runners..."

—From *Runner's World*

The "loneliness of the long distance runner" image is too strong for most people to see what is obvious to anyone who has run long:

- Much running is done alone, but usually because runners like it that way. It's a chance to get to know themselves.
- Running can be one of the best "team" sports. You don't have to beat anyone. It doesn't have to be competitive. You can run along together and get to know each other.

There are practical as well as social benefits to this. To talk, you have to run at a pace where breathing is easy. That means you're not going too hard. Group running makes distance seem to pass more quickly and smoothly.

Dr. George Sheehan has written, "For me, no time passes faster than when running with a companion. An hour of conversation on the run is one of the quickest and most satisfying hours ever spent. It is rivaled only by those solitary hours when I've been able to withdraw from the world and be inside myself."

A run with a group, the doctor says, loosens his tongue more effectively than a third martini.

Dr. Arnd Kruger, a German distance man, studied the sociology of such groups. He says lasting ones share these features:

1. Members have similar goals and abilities.
2. The group has a recognized leader.
3. The number of runners averages no more than seven.
4. Membership is ever-changing.
5. There is an established meeting place and time.

Groups most commonly get together for long weekend runs—longer than individuals normally would or could go by themselves. They draw strength from numbers.

(See related material in "Coaching," "Organizations," "Racing.")

For more information:

Atkins, Orville—"15 Miles Before Breakfast," *RW*, Feb. 74, p. 30.

"Group Therapy Every Saturday," *RW*, Dec. 73, p. 3.

Johansen, Kaj—"Hitch Yourself to a Star," *RW*, June 74, pp. 24-25.

"Social Running," *Run Gently, Run Long*, Booklet No. 37, July 74, pp. 52-59.

"Running's Team Spirit," *RW*, Dec. 73, pp. 12-19.

HABIT

"I had been training three hours a day, and to go from that to nothing was terrible. I would wake up shaking, and the doctor said it was actually a physical withdrawal. I had so much mental and physical energy, and nothing to use it up..."

—Tracy Smith, from *Track & Field News*

We should start with a warning:

"Caution! The sport you are about to enter may be habit-forming. Once you're hooked, your habit may escalate into an obsession. Withdrawal symptoms may result from prolonged deprivation of exercise."

We're serious. Running is addictive. In most ways, this is positive. You want to make running a habit, something to look forward to each day and to miss on a day off. This habit-forming, perhaps as much as anything else, is the key to success of an exercise program.

The habit takes some time to establish. For the first year, more or less, you may have to fight yourself to run as much or as often as you should. You find little excuses not to do it—"too tired," "too sore," "too busy."

But as the habit takes hold, you find yourself working the other way around. You know you're too tired or sore to be running, other affairs are more pressing, "but I'll squeeze in a little 15-minute jog before dinner." It stretches into an hour run as dinner grows cold.

When you miss a day, you feel guilty. When you miss two days, you feel fat and sluggish and restless. When you miss a week (the only thing that will let you miss a week at this stage is a 103-degree temperature or a cast on your leg), you're yelling at your wife and climbing the walls.

If not normal reactions, these are at least common ones among regular, long-time runners. A psychologist found this out several years ago when he tried to recruit daily exercisers for a study on the effects of sudden deprivation of exercise. When he told them they would have to quit running, cold-turkey, and not start again for a month, their refusal was unanimous. Even the offer of money didn't sway them.

When an addicted runner is forced out by injury, a substitute activity should be sought. Dr. George Sheehan writes, "While the totality of the athlete's sports experience cannot be recreated when he is injured, every effort should be made to simulate the experiences and values he was getting from that type of activity."

(See related material in "Alternatives," "How Often," "Psychology," "Quitting.")

For more information:

Bard, Bob—"New Hope for the Addicted," *RW*, Nov. 72, pp. 36-37.

"The Only Way to Lose," *Run Gently Run Long*, Booklet No. 37, July 74, pp. 6-14.

"Prolonging Running Life," 1971 *Marathon Handbook*, pp. 34-37.

"Runs That Never End," *The Complete Runner*, 1974, pp. 146-151.

"The Trauma of Resting," *Practical Running Psychology*, Booklet No. 11, May 72, pp. 45-47.

HEART

"True marathoners—those who can complete the 26.2 miles—appear to be immune to coronary heart disease. We have yet to find a marathoner of any age with fatal CHD. There is no evidence that speed protects, but mileage does..."

—Dr. Thomas Bassler, from Hospital Tribune

The controversy over whether or not running provides protection against heart disease is still far from settled—this despite Dr. Kenneth Cooper's Aerobics work and Dr. Thomas Bassler's evidence that marathon-type training provides excellent insurance.

It is agreed, though, that endurance running does change heart function in dramatic ways. And one of the best ways to monitor your own training loads and their effects is to listen to your heart. Four kinds of pulse readings have an influence in running:

1. Resting—"Normal" is in the low 70s. But trained distance runners' hearts often plod along at 40 or 50 beats per minute at rest. Expect some drop in resting pulse as you get fit. This means the heart is stronger and needs fewer beats to do its job.

2. Maximum—This is the highest the heart rate can go while you run. The typical rate of a person of 25 years is about 200 per minute. It drops by about a beat per year after that. Training won't stop that, but it will let you work safely at a higher percentage of maximum than untrained individuals might.

3. Exercising—The ideal range for aerobic running apparently is 60-75% of maximum. As you get fit, you go farther and faster while staying in this same range.

4. Recovery—If you've run at no more than 150 beats per minute, your pulse would drop back down below 100 within two minutes after you stop.

(See related material in "Checkup," "Doctors," "How Fast," "Physiology," "Testing.")

For more information:

Claremont, Alan—"Heart Rate Debate," RW, Sept. 73, pp. 4-5.

Friedman, Meyer—"Running and the Numbers Racket," RW, Sept. 71, p. 35.

"Getting to the Heart," RW, Jan. 72, pp. 19-21.

"Heart Attack Deaths," and "Heart Irregularities", Encyclopedia of Athletic Medicine, Booklet No. 12, June 72, pp. 69-73.

"New Fear in Our Hearts," RW, Jan. 74, pp. 26-28.

"Our Normal Abnormalities," RW, Feb. 74, pp. 26-27.

"Let This Be a Warning," RW, April 73, p. 3.

Mirkin, Gabe—"Exercise and the Heart," The Complete Runner, 1974m, p. 113-115.

"Run to Your Own Best Beat," RW, June 73, pp. 18-19.

Sevelius, Gunnar—"The Runner's Heart," The Complete Runner, 1974, pp. 116-120.

"Silent Heart Disease," 1973 Marathon Handbook, Booklet No. 19, pp. 19-21.

Ulliyot, Joan—"Monitoring a Marathoner," RW, June 73, pp. 20-22.

Ulliyot, Joan—"Back to the Heart," RW, Nov. 73, p.5.

HILLS

*"These high wild hills
and rough uneven ways
draw out our miles
and make them wearisome..."*

—Shakespeare, from Richard II

Dr. David Costill, author of numerous ground-breaking studies on running physiology, wrote in one of them: "Hilly terrain will significantly impair a runner's performance." Even when there is an equal amount of climbing and descending, there is a large net loss in energy compared to flat running.

This is news to no one who has run hills. They don't need a physiologist, or a poet, to tell them that hills draw out miles and make them wearisome. The feeling is right there in the wooden legs and burning chest.

Hills are a stress the raw beginner doesn't need. They put extra loads on him, inside and out, which he isn't prepared just yet to carry. Hills send pulse rates and breathing to their peaks, destroying any value in heart rate monitoring and "talk-tests," which are vital controls at this stage. Hills—both up and down—also put extra stretch and strain on legs which can't stand any more.

As a rule, stay off the hills completely until you can run long and comfortably on the flat.

After graduating to hills, give them the respect they require. A *Runner's World* article points out, "They shrink for no man, so people who run them have to do the adapting. How to adapt? The way you would if you were riding a 10-speed bicycle in the same hills. You know you can't ride in high gear all the way. You have to shift, pump, coast and brake in tune with the terrain, all the while maintaining a constant pedalling rate and energy level."

Shift to lower gears going up hills. Cut the stride length. Lean forward. Try to keep the *effort* as constant as possible, not the pace. Freewheel going down, in high gear. Lean forward to take advantage of gravity. But stay under control. Don't be too proud to lean on the brakes.

(See related material in "Surfaces," "Training Methods," "Where to Run,")

For more information:

"Gearing Yourself for Hills," RW, Oct. 73, pp. 20-21.

Higdon, Hal—"Secrets of the Hills," RW, July 74, pp. 32-34.

Higdon, Hal—"Advanced Lessons on Hills," RW, Aug. 74, pp. 14-17.

Hill, David—"Profile of a Mountain Man," RW, Sept. 74, pp. 18-19.

Lawrence, Al—"Cross-Country Technique," Guide to Distance Running, 1971, pp. 52-53.

Livingston, C. L.—"Applying Running Power," RW, March 73, pp. 24-26.

Sheehan, George—"Straining Up Hills," The Complete Runner, 1974, pp. 197-199.

"There's Speed in the Hills," RW, March, 73, pp. 22-23.

Young, Kenneth—"Hill and Trail Running," Running with the Elements, Booklet No. 35, May 74, pp. 67-72.

HOW FAR

"Runners who want to keep going shouldn't be concerned about finding how many miles the human body can tolerate, but in finding its optimum loads. Each new mile beyond the first few yields diminishing returns. Eventually, the miles begin hurting rather than helping..."

—From *Run Gently Run Long*

Informed opinion is that a run lasting 10-15 minutes is both the minimum and optimum amount. Run anything much less than 10 minutes and you get little if any "training effect" from the workout. But as you go longer than 15 minutes, you get progressively less return from each minute invested.

Kenneth Cooper, Bill Bowerman and Arthur Lydiard all recommend 10-15 minutes as a starting time. Dr. Jack Wilmore, a researcher who compared the benefits of short and long runs, concludes, "There was no statistical difference in results (fat loss, pulse reduction, oxygen uptake capacity, etc.) between the 12-minute runners and the 24-minute runners." If you go longer than 12 minutes, he seems to say, the results may not match the extra effort.

Dr. Thomas Bassler of Los Angeles, however, disagrees most vigorously with this appraisal. He's the physician who developed the run-six-miles-and-protect your heart theory. He says the best heart protection a person can have is training for marathon distances.

Dr. Bassler writes, "Professor Morris of the London School of Hygiene reported in the journal *Lancet* that vigorous exercise must exceed a 'threshold' of 30 minutes to count at all, and it must go beyond an hour to be beneficial."

Bassler tells fitness-oriented runners to work up to at least six miles on weekday runs and to 12 miles one day each weekend, with the goal of eventually completing a 26-mile marathon.

If you're intent on increasing distances, do it by small steps. Build from the bottom, by adding to the daily average rather than by extending your longest run until you collapse. Ken Young, a leading competitor, has a plan which probably applies to all runners. He calls it the "collapse-point" theory.

"Collapse-point" is the distance at which you can't go any farther without great pain and will. In most runners, "collapse" comes at about three times their average daily distance. If you run three miles a day, for instance, you'll be in trouble at nine miles.

To be safe, don't go much beyond twice the daily average (figured on a seven-day-a-week basis, even if you don't run that often). If you want to go longer, up the average.

(See related material in "Racing," "Training Methods," "Where to Run,")

For more information:

"Distance Running Scene," RW, Jan. 72, p. 14.

"How Much?" Beginning Running, Booklet No. 15, Sept. 72, pp. 19-20.

"Long Runs: Do We Need Them?" RW, June 74, p. 23.

Young, Ken—"Going Over the Wall," 1974 Marathon Handbook, Booklet No. 31, pp. 22-24.

HOW FAST

"From the results of previous studies, it appears that you can obtain a substantial 'conditioning effect' by exercising at a level which is comfortably between 60 and 80% of your capacity. Exercising at a level below 60% results in little, if any, conditioning. And above 80%, the gains are small relative to the level of work you are performing..."

—Dr. Jack Wilmore, from *Runner's World*

In the beginning stages, it's almost impossible for a runner to go too slowly. But this is a speed-conscious society, and all the impulses shout, "Hurry!" Hurry to get back into condition. Hurry to see how fast you can run that mile. Hurry to get it finished so you can get to something more pleasant.

The hurrying hurts people. They get sore from it—some so sore that they can't run any more. The pain discourages them, and many quit because of that. The sad part is, it doesn't have to be that way. Running for fitness doesn't have to be this painful.

If it's painful for you, you almost certainly should slow down and check yourself:

- **Can you talk or whistle while you're running?** Your pace should allow it if the running is "aerobic." If you're out of breath, the effort is anaerobic and isn't contributing to endurance development as effectively as it should. Slow down to the point where you can talk and whistle.

- **What is your pulse rate immediately after stopping?** Count it at your neck or on your chest for six seconds and add a zero to the total. Is it above 150? If so, you're probably laboring to breathe. You're above the most efficient aerobic running range. Slow down until the count drops below 15 (150 per minute), or less if you're older than 25.

Dr. Samuel Fox, president of the American College of Cardiology, suggests that fitness runners use this rule of thumb to determine maximum safe heart rate during exercise: subtract your age from 170. If you're 30, for example, use 140 pulse as a ceiling.

- **Do you use a stopwatch?** A watch can either be a valuable tool for measuring progress, or it can be a tyrant that demands greater and greater effort that you can't give. That effort can break you down. Use the stopwatch only if you can resist the temptation to race against it every day.

Remember that few runners ever get hurt from going too slowly. (See related material in "Breathing," "Heart," "Racing," "Training Methods.")

For more information:

"How Fast," *Beginning Running*, Booklet No. 15, Sept. 72, pp. 20-22.

"Run to Your Own Best Beat," *RW*, June 73, pp. 18-19.

"Running Gently," *Run Gently Run Long*, Booklet No. 37, July 74, pp. 49-51.

HOW OFTEN

"Results after 20 weeks (of training) showed that all running frequencies (two, three and four days a week) had a significant effect on cardiovascular function. The improvement was greater for men who ran four days a week than for those who ran two. Interestingly enough, only three- and four-day-a-week runners showed significant reductions in body weight and fat..."

—Dr. Michael Pollock, from *Runner's World*

Pianist Arthur Rubenstein once remarked, "When I take a day off (from practicing), I notice it. When I miss two days, the audience notices it."

The effect of laying off may not be as noticeable with endurance runners, but they have a similar need for regularity. Take a week away from running and see how you feel. If you're typical, you'll almost think you're beginning again.

Four days a week is often mentioned as a minimum frequency. Dr. Kenneth Cooper writes, "Four days is sufficient for just keeping yourself in shape. Six is the maximum as far as I am concerned." He thinks everyone needs at least one rest day.

Doctors in North Carolina tested runners extensively and came to the same conclusion as Cooper: run at least four days each week.

Dr. Michael Pollock, who headed the research team, reports that they put the 148 subjects (previously inactive men, ages 28-64) on a 20-week program of 30-45 minute runs, two, three and four days weekly.

During the five-month testing period, those who ran most often had a 22% increase in oxygen uptake capacity, and a 12% decrease in resting pulse rate, compared to 17% (oxygen) and 8½% (pulse) figures for those who ran least often.

However, the most dramatic differences were in weight-fat decreases. The four-day-a-week runners lost 2.2% of their weight and showed 16% less skinfold fat, while the two-day-a-week group lost just a trace of weight (0.1%) and only 5% skinfold fat.

The infrequent exercisers improved their cardiovascular efficiency—their internal fitness by significant amounts. But even though they were running up to 4½ miles per session, they weren't having any substantial effect on their outside appearance. Only more regular running—every other day or more—seemed to burn up a great deal more calories than they replaced by eating.

(See related material in "Habit," "Quitting.")

For more information:

Pollock, Michael, Miller, Henry, and Linnerud, A. C.—"Benefits of Regularity," *RW*, May 74, p. 21.

"How Often?" *Beginning Running*, Booklet No. 15, Sept. 72, pp. 22-23.

ILLNESSES

"Something seemed wrong. Everything seemed to be a great effort. Then the flu struck. It started with a sore throat and then progressed to a cough. At one point, I thought my lungs would come out inverted like an umbrella on a windy day. The fever came and with it went all interest in anything but survival..."

—Dr. George Sheehan, from *Runner's World*

Running makes some people sick—literally. A great number of colds, cases of the flu and related ailments trace back to oversteering, which is running resistance down to where you can't deal with ever-present "bugs."

Dr. George Sheehan, medical columnist for *Runner's World*, spends a large part of each day advising ailing runners. A summary of his advice for common illnesses:

● **Colds**—"I treat colds with respect. It is my feeling that they represent a breakdown in the defense system. The cold is an early warning symptom of exhaustion." Sheehan says to follow the body's warning and cut back or even cut out training for the first 1-3 days of the cold, "then resume at a slow pace for relatively short distances. However, do not wait until all symptoms subside unless there seems to be a major bronchial (i.e., sore throat) element to the infection."

● **Fever**—Usually, this is associated with the flu. "Don't run with a fever," Dr. Sheehan warns. "After that, as a rule of thumb, take two days easy for each day of fever. A week of fever and symptoms would need an additional two weeks' recovery period. Exhausting practices should be avoided at this time or recurrence is a distinct possibility."

Sheehan adds, "When you come back, it is difficult to know whether fatigue is physical or psychological. There is, however, a simple test for this. Start your runs very slowly until you reach the point where you start to sweat. This usually takes about six minutes. At this point, you should feel like running, no matter how you felt at the beginning. If you don't, and five more minutes confirms it, pack it in."

The doctor tells runners to resist the temptation to test themselves immediately, to see if they're well again. This invites a repeat of the illness cycle. Exhaustion is the common denominator in these illnesses, the primary variable in cause and treatment.

(See related material in "Breathing," "Checkup," "Diet," "Doctors," "Stress.")

For more information:

"Internal Problems," *Encyclopedia of Athletic Medicine*, Booklet No. 12, June 72, pp. 55-76.

Mirkin, Gabe—"Abdominal Pains," *The Complete Runner*, 1974, pp. 111-112.

Sheehan, George—"How to Quit Your Stitching," *RW*, Sept. 73, pp. 26.

INJURIES

"There is very little place in treatment (of running injuries) for injections, medications and manipulations. Treatment rests almost completely on the following: (1) biomechanical treatment of the foot; (2) flexibility and strengthening of the muscles..."

—Dr. George Sheehan, from *The Complete Runner*

Running isn't a violent contact sport in the mold of football, hockey or boxing. But runners do take a subtle pounding. It's a corrosive kind of pressure that results in a surprising number of injuries.

Runner's World polled its readership in 1973. The findings: (1) two-thirds of the runners had suffered an injury serious enough to interrupt training; (2) most of them had been hurt more than once. The most frequent injuries: knees (22% of the runners), achilles tendons (20%), shin splints (10%), forefoot strains and fractures (9%), heels (7%), arches (7%) and so on from the toes through the lower back.

There isn't space here to diagnose and treat each injury. Better that we talk about why they happen, in hopes of reducing this high toll. Injuries (excluding accidents like being hit by a car or bitten by a dog) occur for four main reasons:

- **Overwork**—Too much work for the muscles and limbs to handle, causing the weakest link to break.
- **Faulty equipment**—With runners, this usually means shoes, which either are inadequate or are worn out.
- **Weakness and inflexibility**—Muscles which are so overspecialized that they or weaker opposing ones give out under the slightest unusual twist.
- **Mechanical problems**—Faults in the running form, or in the way the foot meets the ground.

Injury protection comes from sensible work loads, good and well-cared-for shoes, supplemental strength-stretch exercises, and correction of deformities.

(See related material in "Alternatives," "Feet," "Exercises," "Checkup," "Doctors," "Shoes," "Stress," "Surfaces.")

For more information:

Carmen, Bob—"Solving the Blister Bugaboo," *Guide to Distance Running*, 1971, p. 26.

"It All Starts Here," "Loving Care for Feet," and "Shoes and Injuries," *Shoes for Runners*, Booklet No. 25, July 73, pp. 67-71.

"The Legacy of Achilles," *RW*, May 72, pp. 44-48.

Mirkin, Gabe—"Drugs Aren't the Answer," *RW*, May 73, p. 19.

Sheehan, George—"Structural Troubles," *The Complete Runner*, 1974, pp. 106-110.

Sheehan, George—*Encyclopedia of Athletic Medicine*, Booklet No. 12, June 72, pp. 18-54.

Sheehan, George and Subotnick, Steve—"Dealing with Sciatic Nerves," *RW*, March 74, p. 21.

Wright, Denis—"The Curse of Achilles Pain," *Guide to Distance Running*, 1971, pp. 22-24.

LYDIARD

"All the time you have been exercising, you have been placing only enough duress upon yourself to make yourself pleasantly tired. 'Pleasantly tired' is the key to jogging, and even training for competitive running. Only you can know when you are pleasantly tired. And as long as you are prepared to run this way, you will learn to enjoy running and also continue to improve your general condition..."

—Arthur Lydiard, from *Jogging the Lydiard Way*

One thing can be said of Arthur Lydiard at the outset. He doesn't lack for ego. He says in his book, *Jogging the Lydiard Way*, that jogging "began in New Zealand in 1960, soon after my return from the Rome Olympic Games and directly through the method I used to revolutionize the training of endurance athletes."

And he's not far from right. If he didn't invent jogging, he at least gave it a big push toward the status it now enjoys. The New Zealand coach convinced the world's racers that they needed longer endurance runs, and they in turn passed the lesson along to fitness runners.

Basically, Lydiard used the same methods both for competitors and joggers—simply cutting down the mileage and eliminating speedwork for the latter group. He coined two catch-phrases that belong in every runner's vocabulary: (1) "Make yourself pleasantly tired"; (2) "Train, don't strain."

Lydiard writes, "I always made my runners exercise control in training so that they always had something in reserve. I taught them to train and not strain—to enjoy their running, and this is only possible by running within your capabilities. You will not get a medal for trying to run too fast too soon. However, you could kill yourself."

"Some people say that it's necessary to raise the pulse rate to levels of 150-180 beats per minute to bring about cardiac efficiency. Don't you believe it! When a person is exercising and the pulse rate is high, the exercise will be anaerobic in nature, not aerobic, and this is not what a jogger wants to do. Even if you are just walking or running fast enough to bring your pulse up more than normal, you will start to achieve cardiac efficiency."

Lydiard starts beginners with a 15-minute run-walk. "I proved in practice that this time was sufficient to improve general cardiac efficiency and at the same time not be too testing or tiring for the average person."

(See related material in "Beginning," "Training Methods.")

For more information:

Gilmour, Garth—*Running for Your Life*, Minerva, Auckland, 1965.

"Interview: Arthur Lydiard," *RW*, July 70, pp. 8-13.

Lydiard, Arthur—"Going Lydiard's Way," *New Views of Speed Training*, Booklet No. 4, Oct. 71, pp. 18-24.

Lydiard, Arthur—*Jogging the Lydiard Way*, US Track and Field Federation, Tucson, 1970.

"Lydiard, the Evangelist," *Coaching Distance Runners*, Booklet No. 3, Sept. 71, pp. 13-14.

ORGANIZATIONS

"The worth of a running team can't be reduced to a set of scores. In a sport like this, team scores are less important than team spirit—the spirit which comes of working together and which translates into stronger personal performances for each member..."

—From Runner's World

Organized running doesn't imply joining up with a bunch of super-serious four-minute milers and 2½-hour marathoners. Organizations have things to offer runners on every level, if only to give a we're-in-this-together feeling to people who may otherwise think they're running in isolation.

Organizations, local to national, have a place for fitness runners. Affiliating with a club in your area, if one exists (or founding one if it doesn't), is a good way to start sampling the pleasures and services of team running. Hundreds of clubs are listed in the *1974 Runner's Almanac*. The booklet *Club Running* has guidelines for organizing clubs.

One nationwide body, the National Jogging Association, is set up to serve fitness-oriented runners. The NJA publishes a newsletter for members, and has an awards program based on miles run. For information, write the group's headquarters at 1910 K St., N.W., Suite 202, Washington, D.C. 20006.

Another national organization, the President's Council of Physical Fitness and Sports, also hands out awards to those who meet its running standards. The address is PCPFS, Washington, D.C. 20025.

The Road Runners Club of America has been responsible for much of the growth in low-key long distance racing over the last 15-20 years. While the RRC's emphasis is on competitive activity, it's a special type of racing where participation is more important than performance. Several dozen RRC branches are scattered across the country. Contact the national president for details: Gar Williams, 8605 Acorn Circle, Vienna, Va. 22180.

If you plan to race, even casually, you'll probably need to join the Amateur Athletic Union. The AAU sanctions most open competition. Addresses of the AAU's associations can be found in the *Almanac*.

The United States Track and Field Federation performs many of the same functions as the rival AAU, and in some states the USTFF handles the bulk of open running. Write to this organization at 1225 North 10th Ave., Tucson, Ariz. 85705.

(See related material in "Coaching," "Groups," "Racing.")

For more information:

Club Running, Booklet No. 36, June 74.

"The Ruling Groups," 1974 Runner's Almanac, Booklet No. 33, March 74, pp. 18-23.
Race Promotion, Booklet No. 22, April 73.

"The Running Club," RW, March 72, pp. 14-19.

"Where to Go," 1974 Runner's Almanac, Booklet No. 33, March 74, pp. 37-93.

PEOPLE

"The heckler is universal. Runners find him in every city of every country. The words he hurls are the same wherever he goes. Only the language changes. 'Hut, two, three, four' and 'faster, faster' by any other name sound just as obnoxious..."

—From *Running with the Elements*

It's wrong to plant the idea here that everyone on the street views the runner as a potential target for abuse, verbal or worse. Of every 100 people you pass or are passed by, one might be moved to insult you, one might say or think "hang in there," and the other 98 just don't care one way or the other.

But when you start running in public, it's normal to feel conspicuous. You think everyone's staring and pointing at your shortcomings. This feeling goes away after awhile. But at first, even the isolated hostile or sarcastic taunt can be enough to drive you back to the shelter of the track.

If you weather the early abuse, you learn to live with the universal heckler and to get in some licks of your own. Before you can do this, however, you have to understand the mentality of the heckler.

He is in a class with the dog. Some quirk in his nature turns them both mean at the sight of a runner. But there's a difference. Dogs can't help themselves. No amount of reciprocal response will change them. But humans do have a choice whether to act or not, and a carefully chosen reaction from you can cause them to think twice about bugging runners again.

Your best weapon is the fact that hecklers don't have much to say. Their taunts are limited to two or three old favorites: "Hut, two, three, four," "Faster, faster," and "Hey, you forgot your pants." Therefore, you can anticipate them and plan your answers in advance. "The secret," it says in *Running with the Elements*, "is to meet their crudities with humorous and original responses."

The next time you hear a cadence, say something like, "That's good. Now you're ready for the next four."

"To "Faster, faster," answer, "If I'd gotten here faster, I wouldn't be here now."

For "you forgot your pants," borrow a line from runner Michael Beck—"I left them with your wife."

Or simply smile, as if to say you know something he doesn't.

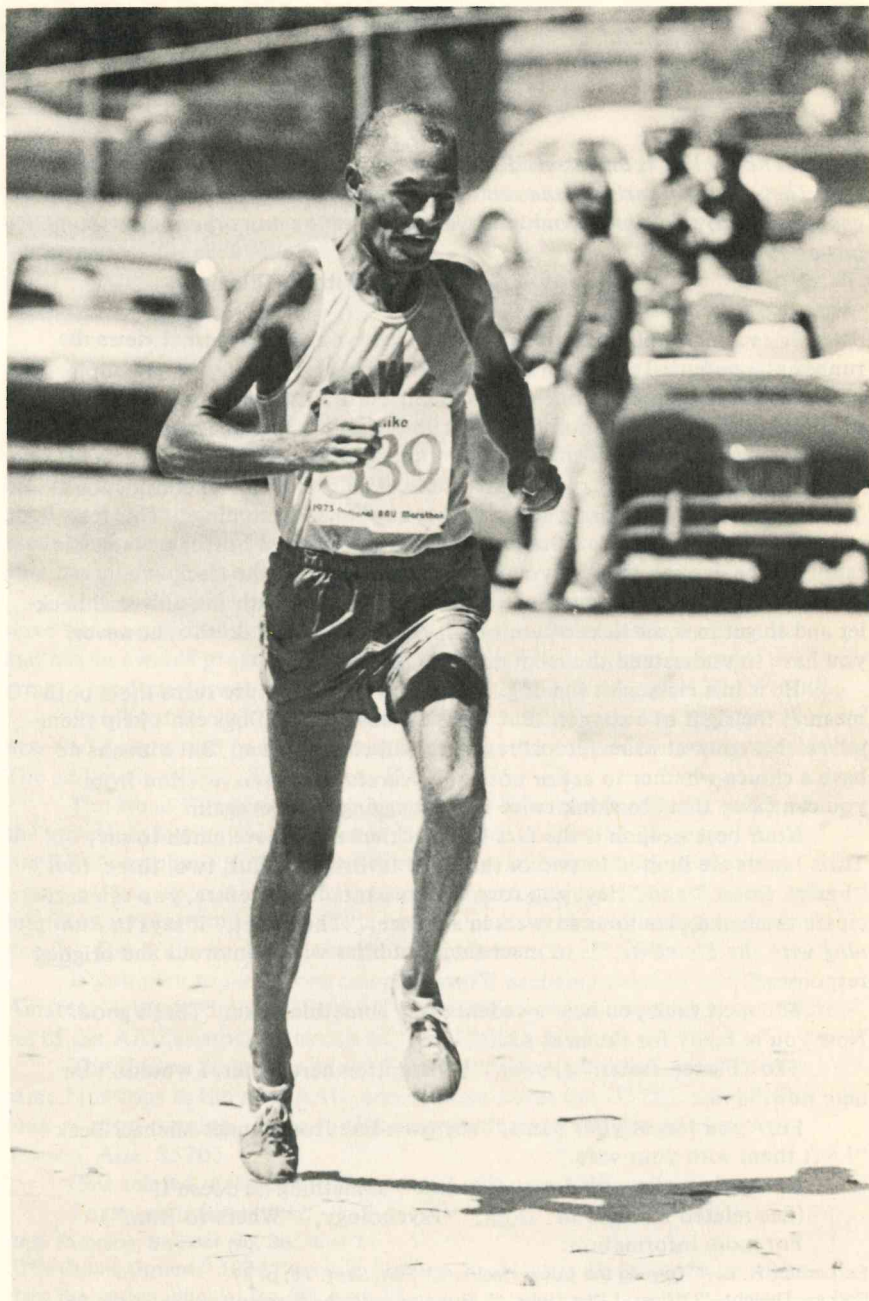
(See related material in "Dogs," "Psychology," "Where to Run.")

For more information:

Carpenter, R. L.—"Taming the Local Hecklers," *RW*, Sept. 73, p. 27.

Dalbey, Dwight—"Officer, I Was Only..." *Running with the Elements*, Booklet No. 35, May 74, pp. 88-89.

"The Universal Heckler," *Running with the Elements*, Booklet No. 35, May 74, p. 90.



"If nothing else, running encourages new awareness of what goes on inside." (Om photos)

PHYSIOLOGY

"The greatest reward of knowledge is not that it can aid us in achieving our goals, but that it can add dimension and enjoyment to what we do. Thus, the experience of running can be so much richer if we understand the subtle physiologic changes we undergo..."

—E. C. Frederick, from *The Running Body*

Physiology is the study of how the body works. Exercise physiologists study the body during *hard* work, like running. No one who runs needs to become an amateur exercise physiologist, yet no runner can help but learn more about himself than he once knew.

It's a national disgrace in America that people know more about their automobiles than about themselves, and so treat their cars with more respect. An American male, for instance, can tell you more about his carburetor than about his heart, and probably keeps the carburetor in better shape.

E. C. Frederick, author of *The Running Body*, writes in the book that cultivating a sensitivity to the body's workings is "a most difficult process. We are so practiced in the art of experiencing the outside world that learning to listen to the voices from within becomes a monumental task."

If it does nothing else, running encourages new awareness of what goes on inside. Frederick says, the easiest way to sharpen this sensitivity "is to set up a continuous flow of biological feedback. Look at yourself, look at your weight, pulse, breathing, etc., and look for signs of excessive stress or imminent breakdown.

"The daily monitoring of many of the body's functions will provide you with an objective framework in which to judge your general state of health. Without this constant feedback, however, the mind tends to distort things and force an emphasis on performance-related aspects of running."

(See related material in "Breathing," "Checkup," "Diet," "Doctors," "Heart," "Illnesses," "Injuries," "Stress," "Testing.")

For more information:

Costill, David—*What Research Tells the Coach About Distance Running*, American Association of Physical Education, Health and Recreation, Washington, 1968.

Costill, David—"Championship Material," *RW*, April 1974, pp. 26-27.

Frederick, E. C.—*The Running Body*, Booklet No. 27, Sept. 73.

Mayhew, J. L.—"Running Faster, Longer," *The Complete Runner*, 1974, pp. 94-96.

Uhrig, Henry—"Physiology of Distance Running," *Guide to Distance Running*, 1971, pp. 10-13.

"What Goes on Inside," *The Complete Runner*, 1974, pp. 65-77.

PLANNING

"Why keep a diary? There are any number of convincing reasons. But perhaps the best one of all is that it seems to make time and distance stand still. By capturing a day's efforts and putting them down on paper, they remain as black and white reminders of what was. Knowing what you have done in the past is a useful guide to what you can and should do in the future..."

—From *Runner's Training Diary*

Plans for the future grow from experiences in the past. You learn from successes and mistakes, and apply both kinds of lessons—if you can remember them. Memory alone is unreliable. It blows the good lessons out of proportion and tries to wipe away the hard ones. Yet the hard ones often can teach the most.

It's best to preserve all the runs as they really happened, in a diary that can be reviewed later. This isn't a "Dear-Diary-I-had-a-wonderful-time-last-night" kind of report (though subjective writing can become a part of it). It's mostly a collection of facts—statistics of runs and the biological feedback that results from them.

A diary might include any or all of the following features, depending on which you see as important:

- **The Run**—When? Where? Hilly or flat terrain? Hard or soft surfaces? How far? How fast? The weather.

- **Physical Feedback**—Weight, before and after. Pulse—resting, exercising, recovering rates. Problems—excessive fatigue, pains, illnesses, injuries, etc.

The instructions to the *Runner's Training Diary*, more than a hundred nearly-blank pages, say, "You write it yourself. It may be the most important booklet available." As your own daily writing progresses, you learn to make interpretations of what is happening, and from this analysis of results evolve plans and schedules.

Most runners need schedules for themselves. "Run as you feel" may sound like a good philosophy, but left with only that advice most of us would decide, "I don't feel like doing anything," and wouldn't.

Better to have a plan that you intend to follow, goals to reach or minimum standards to exceed. Combine this with "run-as-you-feel" to give the plan a necessary element of flexibility in case you feel better or worse than expected.

(See related material in "Beginning," "Habit," "How Far," "How Fast," "How Often," "Recovery," "Timing," "When to Run," "Where to Run.")

For more information:

"Guiding Principles" and "Advice to Be Ignored," *Runner's Training Guide*, Booklet No. 23, May 73, pp. 19-25.

"Introduction," *Runner's Training Diary*, 1972.

PSYCHOLOGY

"Years ago, scientists were predicting the evolution of a race of men without legs, thanks to the automobile. Nowadays, we know they were wrong. It is not our legs we are losing. It is our minds..."

—Aaron Sussman and Ruth Goode,
from the Magic of Walking

Two of the thousands of aspects of psychology are enough to explore on this one page. Those two are (1) building yourself up mentally for running, and (2) calming yourself down through it. Yes, they sound like opposites, but they're equally important in the mind of the runner.

● **Motivating**—What gets a runner started and keeps him or her going? More than anything else, it's success—aiming at success and knowing when you reach it. Everyone tells us to set goals, but what kind of goals?

Drs. Bruce Ogilvie and Thomas Tutko, America's best known sports psychologists, say, "In the reasonably healthy person, the level of aspiration is usually slightly elevated, so that in effect he is always striving or reaching—in descriptive terms, standing on his tiptoes, not off balance or in fear of tumbling, but with a ready capacity to regain his balance should he have overreached his capacity."

In other words, set goals that allow you to taste success, but not without stretching for it. Stay a little bit "hungry."

● **Tranquilizing**—Tension and self-doubts are modern epidemics with drastic physical as well as mental consequences. One cause, doctors tell us, is the lack of physical activity.

Drs. Paul Insel and Walton Roth of Stanford University have said, "The most profound muscular and mental relaxation cannot be achieved by just trying to relax. The deepest relaxation follows a period of voluntarily increased muscular tension."

After testing a number of "paunchy, sedentary, middle-aged academics" who ran themselves into condition at Purdue University, Drs. A. H. Ismail and L. E. Tractman concluded that the men "were undergoing personality changes, subtly but definitely. By the time they reached the end of the conditioning period, they seemed to be interacting more freely and to be more relaxed. Their whole demeanor seemed to us to be more even, stable and self-confident."

(See related material in "Habit," "Quitting.")

For more information:

Conolly, Joe—"Test Yourself," RW, Jan. 74, pp. 4-5.

Disley, John—"Searching for Ourselves," Guide to Distance Running, 1971, pp. 108-109.

Hannan, B. A.—"Exploring Basic Drives," Guide to Distance Running, 1971, pp. 106-107.

"Psychology," The Complete Runner, 1974, pp. 31-60.

Reich, Leonard—"Try Not to Think About It," RW, Feb. 74, p. 17.

PUBLICATIONS

"Letters come in (to RW) at the rate of two dozen a day, and the volume of calls is almost as heavy. They're almost equally divided between those asking for information and those wanting to give it. Our job is to bring the two together..."

—From 1974 Runner's Almanac

The closest most runners get to an authority who can answer their questions and solve their problems is through the magazines and books they read. Publications exist for almost all interests and specialities. The periodicals that regularly include material of practical value:

- *Athletica*—Canadian. Mostly race results, but with occasional how-to articles. Box 4981, Vancouver, B.C. V6B 4A6, Canada.
- *Athletics Weekly*—British. Mostly results, some technical features. 344 High Street, Rochester, Kent, England.
- *Condition*—German (a few articles in English). Practical advice for runners past age 40. 4 Dusseldorf, Postfach 8901, West Germany.
- *The Jogger*—Published by the National Jogging Association, exclusive-ly for fitness runners. 1910 K St., N.W., Washington, D.C. 20006.
- *Long Distance Log*—Competition-oriented, but with a few practical articles. P. O. Box 190, Tucson, Ariz. 85702.
- *Modern Athlete and Coach*—Australian. Made up entirely of material with a practical application. 70 South Terrace, Adelaide, South Australia 5000, Australia.
- *Runner's Monthly Booklet*—A different topic each month—diet, training, shoes, exercises, etc. P. O. Box 366, Mountain View, Calif. 94040.
- *Runner's World*—About 50% "how-to" articles. P. O. Box 366, Mountain View, Calif. 94040.
- *Running*—Technical journal aimed at the runner with a scientific background. P. O. Box 257, Flagstaff, Ariz. 86001.
- *Sports and Fitness Instructor*—Canadian. General-fitness publication with many useful articles. 255 Yorkland Blvd., Willowdale, Ontario M2S 1S3, Canada.
- *Track & Field News*—Emphasis on high-level men's competition, but with a rare technical piece. P. O. Box 296, Los Altos, Calif. 94022.
- *Track Technique*—The original US technical journal, all scientific-practical articles. P.O. Box 296, Los Altos, Calif. 94022.
- *Women's Track & Field World*—The *T&FN* of women's track. Mostly competitive results. Practical articles used infrequently. P. O. Box 371, Claremont, Calif. 91711.

(See related material in "Coaching," "Organizations.")

QUITTING

"Exact figures are impossible to come by. But a safe guess is that of every 10 runners who were active last New Year's Day, nine of them won't be running by this Christmas. The overall trend in running is to growth. But the dropout rates are still astonishingly high..."

—From Runner's World

Retirement is a nice word for stopping or quitting. The top competitors never "stop" or "quit," they "retire." That sounds better.

On the occasion of his retirement, one world record holder remarked, "I can now say that I hated every moment of my training." The implication was that he tolerated it only for the races it helped him win and the records it helped him set. When he quit winning, he "retired" quickly and honorably.

The fitness-runner doesn't have this semantic luxury. When he quits, he quits and there's no better word for it. Runners talk in loving detail about why they started running. But more revealing would be the reasons why they continue while others stop.

Why do runners quit? A *Runner's World* article speculates, "Some are discouraged by unfulfilled goals, some are satisfied by fulfilled ones, some are disabled by chronic injuries, and some are unable or unwilling to make room among their responsibilities for this type of activity."

"Curiously," the article adds, "it is often the 'athletes' who quit early and the 'non-athletes' who pick up the sport later and stick with it."

The traits that make a person a successful athlete don't necessarily contribute to longevity in the sport. Pursuing excellence means suffering, sacrificing and gambling. It means aiming high and risking breakdowns. Athletes who've lived this way, even those who survive unscarred, often find it hard to settle for the more sedate pace of fitness running. They've had their fill of running, so they "retire."

And with retirement the ex-stars, the hares of the running world, soon slip behind the tortoises who've kept going, in terms of fitness. Fitness thrives on modest ambitions, moderate work loads and a view that running is a *part* of everyday living, not apart from it.

(See related material in "Alternatives," "Fitness," "Habit," "Psychology.")

For more information:

"The Only Way to Lose" and "The Ideal," *Run Gently, Run Long*, Booklet No. 37, July 74, pp. 6-14 and 82-91.

"Prolonging Running Life," 1971 *Marathon Handbook*, pp. 34-37.

"Reasons for Failure," *Beginning Running*, Booklet No. 15, p. 26.

"Runs That Never End," *The Complete Runner*, 1974, pp. 146-151;

RACING

"Jogging through the forest is pleasant. Racing is another matter. The (racer's) mind is filled with an anguished fearfulness, a panic, which drives him into pain. Exploring the forest is easy. Exploring the limits of human performance is excruciating..."

—Kenny Moore, from *Racing Techniques*

Earlier, on the page about "Groups," we said a balanced runner sometimes runs by himself to get to know himself, sometimes with others to get to know them. We might add a third element that's unlike either solo or social running—speed running. It satisfies the need to explore the limits.

If you have this need, by all means race. But don't go into it with the idea that it's making you fitter. It doesn't. A race can be the most brutal strain you ever put on yourself. That, in fact, is why you do it—to see how much pressure you can stand.

Tips for beginning racers:

1. **Be prepared.** You should average at least one-third of the racing distance per day for at least the last two months. Otherwise, you'll probably go past your "collapse-point" before the race is over. If it's a short, fast race (say, a mile or less), do a bit of short, fast training so you'll know the feel of the pace.

2. **Pick your competition.** Find a race where you won't embarrass or discourage yourself. Most road races are organized on the "Fun-Run" principle of "anyone can start and anyone who finishes gets a time." People of all abilities run these, and they are a good place to start.

3. **Pace yourself.** The temptation will be to start faster than you should (meaning you'll finish a lot slower). Resist that temptation. Feel that you're holding something in reserve over the first half. You can always speed up if you've started too slowly. But you may not finish if you've started too quickly. Afterwards, compare your first and second-half "splits." If the first is significantly faster, you need (1) to slow down next time, or (2) more training. If the second part is faster, you can be confident of improving with a quicker start.

(See related material in "Groups," "How Far," "Organizations," "Recovery," "Stress," "Training Methods.")

For more information:

Corbitt, Ted—"Race and Survive," 1970 Marathon Handbook, pp. 32-35.

Dirksen, Jay—"Marathoning for Beginners," Guide to Distance Running, 1971, pp. 51-52.

"Guide to Perfect Pacing," Guide to Distance Running, 1971, pp. 56-57.

"The Race," Run Gently Run Long, Booklet No. 37, July 74, pp. 63-81.

"Racing," The Complete Runner, 1974, pp. 329-353.

Racing Techniques, Booklet No. 13, July 72.

"Taking the Plunge," 1972 Marathon Handbook, Booklet No. 7, Jan. 72, pp. 32-35.



“Most road races are organized on the ‘Fun-Run’ principle of ‘anyone can start and anyone who finishes gets a time.’ They are a good place to start.”

RECOVERY

"Recuperation periods are essential, both during a single training session and throughout the year. Rest, with consequent physical and mental relaxation, must be carefully blended with doses of exercise. A rhythmical cycle of exercise and recuperation should be established..."

—Dr. Forbes Carlile, from *Track Technique*

All work and no recovery makes you a tired, sore runner. It's a fact of physiology that work and recovery must blend for any kind of lasting benefits to come from running. Yet runners tend to get caught up in the work ethic of the sport while ignoring the other half of the equation.

Australian physiologist and coach Forbes Carlile points out, "The training load must be severe, and applied frequently enough and with enough intensity to cause the body to adapt maximally to a particular activity." But there's an important qualification: "It's at the same time true that all-out efforts should be made only sparingly."

The principle here is the harder you work one day, the more you need to recover on subsequent days.

Two well-known coaches, Arthur Lydiard and Ernst van Aaken, have formulas for balancing hard and moderate work. Lydiard says that not more than one mile in 10 should be all-out. Van Aaken puts the figure at one in 20-50.

Say you race a mile. You run it so hard you can barely stand at the end. According to Lydiard and van Aaken, you should run conservatively for at least the next 10 miles, perhaps as many as 50, before indulging in another all-out effort.

Alternate hard and easy, work and rest. This is the cornerstone of Bill Bowerman's training at the University of Oregon. One of his runners, Olympic marathoner Kenny Moore, has written:

"The basis for all training is that an organism exposed to stress will adjust (get stronger or faster) if allowed to recover. But if it never rests, it just stays tired. I'm not in this to do work. I'm trying to improve. So I'm after the optimum formula of work, rest and racing, not the most difficult I can stand. I've found a dose of one hard day and two easy brings improvement as quickly as any."

(See related material in "How Far," "How Fast," "How Often," "Racing," "Stress," "Training Methods.")

For more information:

"Got That Rundown Feeling?" RW, Sept. 71, pp. 36-37.

"Hard-Easy, Long-Short," Run Gently Run Long, Booklet No. 37, July 74, pp. 60-62.

Jackson, Ian—"The Root of All Training," The Complete Runner, 1974, pp. 282-297.

"Training Hard, the Easy Way," RW, March 71, pp. 36-37.

"The Trauma of Resting," Practical Running Psychology, Booklet No. 11, May 72, pp. 45-47.

RUNNING

"A runner can be anyone... Their special interests separate them into sub-species of 'runner.' But they remain linked by the fact that they all run. They share the joys and problems of moving themselves along the ground quickly and efficiently..."

—From *The Complete Runner*

Exercise physiologist Jack Daniels writes, "A person can either walk or run. Walking involves land locomotion on the feet, during which one foot is always on the ground. There is a phase in which both feet are in contact with the ground at the same time. Running is also land locomotion, on foot. But there is not more than one foot on the ground at one time, and there is a phase during which both feet are off the ground at the same time."

A runner can be anyone who breaks contact with the ground. A run can be anything from a shuffling amble down the driveway to fetch the newspaper to a sprint to catch the bus. Running, to be more precisely defined, must be separated into three general types:

1. Jogging—Only the running action, not the pace, separates it from walking. Daniels says a jog is "running slow enough that you could match the speed with a fast walk. If you can't walk as fast as you are running, you are not 'jogging'."

2. Training—A "training" pace is sometimes faster than a walk-jog, but slower than all-out. The most effective training is said to occur at about 10-20% slower than maximum speed. If you can blast a six-minute mile, for instance, then an ideal "training" level is 6:36-7:12.

3. Racing—You don't have to be in a formal race to be "racing." This implies running at or very near top speed, whatever the circumstances.

Racers divide their distances into four types: (1) "sprints"—up to a quarter-mile (440 yards); (2) "middle-distances"—half-mile (880 yards) to six miles; (3) "long distances"—six miles to the marathon (26.22 miles); (4) "ultra-long distances"—beyond the marathon.

Racing comes in four types: (1) outdoor track—the sprint and middle-distances on a quarter-mile track; (2) indoor track—the same distances on smaller tracks; (3) cross-country—generally the middle distances over "natural" terrain (grass, trails, etc.); (4) road racing—the long and ultra-long distances, on streets and highways.

Outdoor and indoor track, and cross-country are seasonal—spring, winter and fall, respectively, in the US. Road races go on year-round.

(See related material in "How Fast," "How Far," "Racing.")

For more information:

"About 'Runners' and 'Joggers'," RW, July 74, p. 5.

Daniels, Jack—"Defining Running," RW, Dec. 73, p. 4.

"Distances and Times," 1974 Runner's Almanac, Booklet No. 33, March 74, pp. 14-15.

SHOES

"When we talk of shoes, we're really talking of feet—how to make those feet go as fast as they're capable of going, and how to keep them from getting hurt. Of the two functions of shoes—traction with the ground and protection of the foot—protection is by far the most important..."

From Shoes for Runners

You aren't training right now to break four minutes in the mile. So speed is secondary. You want protection in your shoes, protection from injuries which inadequate shoes invite. Look for a substantial shoe with these features:

1. **Soft, non-irritating upper** (nylon or suede is softer than standard leather).
2. **Adequate toe room** (partly due to proper fit, partly to the cut of the shoe).
3. **Durable sole material** (soft enough for cushioning, but not so soft that it wears away like butter).
4. **Heel lift** (a "wedge" which raises the heel about a half-inch higher than the sole).
5. **Heel protection** (wide and stable on the bottom; rigid or semi-rigid "counter" around the back; padded and snug-fitting on top).

Lists like this usually include mention of arch supports. We'll skip that because the supports built into nearly all shoes are worthless. If you need an arch support, you need a custom-made one.

Using the criteria listed above, these are the recommended models from the major shoe companies doing business in the US:

- **Adidas SL-72.** Blue nylon upper. High padded back. Extra-rigid heel counter. Rounded heel with a thick wedge.
- **New Balance Trackster III.** Black suede upper. Ripple sole. The only major brand to come in variable widths.
- **Nike Deluxe Cortez.** Blue suede upper. High padded back. The multi-layer sole is one of the thickest available.
- **Puma 9190.** Blue, red or yellow suede upper. High padded back. Extra-rigid heel counter. Rounded heel with thick wedge.
- **Tiger Montreal.** Blue nylon upper. Rigid heel counter and padded back. Sole similar to the Cortez.

(See related material in "Feet," "Injuries.")

For more information:

- All About Distance Running Shoes, Booklet No. 1, July 71.
"Footwear," The Complete Runner, 1974, pp. 205-228.
"Happiness is a Warm Gun," RW, Nov. 73, pp. 14-15.
Shoes for Runners, Booklet No. 25, July 73.

STRESS

"The goal is certainly not to avoid stress. Stress is part of life. It is a natural by-product of all our activities. There is no more justification for avoiding stress than for shunning food, exercise or love. But in order to express yourself fully, you must find your optimum stress level..."

Dr. Hans Selye, from *The Stress of Life*

Dr. Hans Selye is the author of the G.A.S. theory—the "general adaptation syndrome" explanation of stress and its effects on people. Stress, Selye says, "is essentially the wear and tear on the body caused by life at any one time."

Living is being exposed to stresses: work stresses, emotional ones, social, environmental, dietary, etc. In simplest terms, Selye's G.A.S. theory states that a person exposed to stress throws up defenses to counteract it. If the stress comes in small enough quantities and regularly, the body absorbs it. But if the doses are too heavy, the body can't cope. In the "exhausted" state, resistance to illness and injury is depleted.

For a runner, the implication here is, "Train enough to stimulate adaptation, but not so much that you exhaust your limited supply of 'adaptation energy.'"

Adaptation energy, Selye says, is like "a special kind of bank account which you can use up by withdrawals but cannot increase by deposits." The warning here for the runner is, "Don't dip too often or too deeply into your irreplaceable reserves. Heed the body's early warnings that you are exhausting yourself."

The most concise list of warnings is the one by Tom Osler in the *Encyclopedia of Athletic Medicine*:

- "1. Mild leg soreness.
- "2. Lowered general resistance (evidenced by sniffles, headaches, fever blisters, etc.)
- "3. Washed-out feeling and I-don't-care-attitude.
- "4. Poor coordination (evidence by general clumsiness, tripping, stubbing one's feet, poor auto driving, etc.)
- "5. 'Hangover' (lingering fatigue) from previous run."

Dr. George Sheehan advises, "The next time you run out of G.A.S., fill your tank with rest."

(See related material in "Illness," "Injuries," "Recovery,")

For more information:

"Causes and Prevention," *Encyclopedia of Athletic Medicine*, Booklet No. 12, June 72, pp. 5-22.

"Got That Rundown Feeling?" RW, Sept. 71, pp. 36-37.

Jackson, Ian—"The Root of All Training," *The Complete Runner*, 1974, pp. 288-297.

"Pushing Only So Far," *Practical Running Psychology*, Booklet 11, May 72, pp. 47-48.

SURFACES

"The human foot wasn't made to run over perfectly even, hard surfaces. It was made to roll and twist, to compensate for changing terrain, not to run in an every-step-the-same pattern..."

—Dr. Steve Subotnick,
from *Run Gently Run Long*

Dr. George Sheehan has written, "The worst thing that ever happened to feet was shoes—or perhaps the second worst, after concrete. These two products of urban civilization have finally conquered the human foot, which in its primitive state crossed continents, pursued wild game and danced for days on end."

We'd all be better off going barefoot on soft ground all the time. But our shoes and surfaces—not to mention social conventions—won't allow it.

It's ironic. Shoes are made to protect us against hard surfaces and sharp objects. But wearing them leaves the feet so weak and tender we can't stand to walk or run barefoot on soft surfaces, even when we can find them. So we wear shoes on soft ground, or worse, combine shoes and concrete.

The feet need shoes, and shod feet can't avoid concrete. And we suffer for it. The "Injury" page told of the high toll. It's impossible to calculate how much our surfaces contribute to it, but the amount must be considerable.

Statistics are misleading on this score. A *Runner's World* survey indicated grass-dirt runners got hurt just as often as those who ran entirely on asphalt-concrete. But the figures ignore one fact: the minor aches and pains from constant pounding are clearly greater on hard road surfaces. Softer surfaces are kindest to the feet and legs, and are more pleasant places to be than out in traffic.

The hardness of roads is one problem. A related one is the smoothness. As Dr. Subotnick notes above, the feet and legs need a full range of exercise—bending, rolling, twisting. They stay strong and balanced this way. Smooth roads don't give that kind of workout. They are made for car tires, not human feet.

Run on the hard roads if you must. But give your feet a break as often as you can by putting them back in touch with the soft earth they used to caress when they were so healthy. Run some place where you could run barefoot if you dared.

(See related material in "Feet," "Injuries," "Shoes," "Where to Run.")

For more information:

"Getting Down to Earth," Shoes for Runners, Booklet No. 25, July 73, pp. 77-78.

Sheehan, George,—*"From the Ground Up,"* Encyclopedia of Athletic Medicine, Booklet No. 12, July 73, pp. 25-26.

"Surfaces and Terrains," Running with the Elements, Booklet No. 35, May 74, pp. 65-66.

"Solo Running," Run Gently Run Long, Booklet No. 37, July 74, pp. 45-48.



**Dr. George Sheehan: "The worst thing that ever happened to feet was shoes—or perhaps the second worst, after concrete."
(Stan Pantovic photo)**

TESTING

"Runners are self-testing every time they run. It's them against time. The most obvious and reliable test is how well you, the runner, run the distance you choose. Timed distances put the whole system on trial..."

—From Runner's World

If you're an endurance runner, the main thing you want to know is "maximal oxygen consumption rate." This is a measure of the body's ability to take in and use oxygen, and this ability improves with training. Dr. Kenneth Cooper uses an oxygen uptake capacity of 35-45 (milliliters per kilogram of weight per minute) as an indication of "good" aerobic fitness.

Cooper found that results in his 12-minute run correlated closely with laboratory findings. A young man covering 1½ miles in 12 minutes, for instance, would normally have an oxygen uptake capacity above 40. Men who go 1¾ miles or more in that time could figure to have an oxygen reading of 50 or more—"excellent" fitness. Competitive distance runners frequently record in the 70s or even the 80s.

Before Dr. Cooper devised his formula, exercise physiologist Bruno Balke was using a similar one. His involved a 15-minute or two-mile run. His chart of distances (on a quarter-mile track) vs. aerobic levels.

Laps	Max. O ₂	Laps	Max. O ₂
5	34	9	52
5½	37	9¼	53
6	39	9½	54
6½	41	10	56
7	43	10½	58
7½	45	11	60
8	47	11¼	61

Balke lists 5½ laps as "fair" aerobic fitness, 7½ laps as "good," 8½ as "competition level," 9½ as "excellent," and 11¼ as "superior."

With the two-mile run, a time of 22 minutes is fair, 16 minutes is good, 14 minutes is competition level, 13 minutes is excellent and below 11 minutes is superior.

(See related material in "Aerobics," "Breathing," "Check-up," "Doctors," "Heart," "Physiology," "Timing," "Weight.")

For more information:

Cooper, Kenneth—The New Aerobics, M. Evans and Co., New York, 1968.

Costill, David—"Championship Material," RW, April 74, pp. 26-27.

Frederick, E. C.—"Measuring Fitness," The Running Body, Booklet No. 27, Sept. 73, pp. 39-44.

"More Self-Tests," RW, March 73, p. 5.

"Oxygen Testing," RW, April 73, p. 4.

"Simplified Self-Testing," RW, Feb. 73, pp. 18-21.

"Testing," Exercises for Runners, Booklet No. 29, Nov. 73, pp. 5-11.

TIMING

"Comparative times give every runner meaningful personal standards. He doesn't have to beat anyone to reach them; only to control himself. No matter how many other runners finish before him, he has won if he has met his own standards..."

—From *Racing Techniques*

The mathematical perfection of distances and times gives running a special character not found in most sporting activities. The distances and times themselves are the challenges. A runner doesn't have to measure himself against anyone else or against an arbitrary scoring system.

Any runner can practice self-competition, recording his own results and watching them improve. He can see improvement without ever meeting another runner head-on or going to a race. And if he chooses to race, he can "win" while finishing back in the pack.

If you're the competitive sort, time yourself, record the times and learn to evaluate them. A number of different evaluations can be made:

- **Predictions**—Assuming conditions and efforts are similar, times slow down at a regular rate as distances get longer. Your personal best for 10 miles is X amount slower per mile than your time for a single mile. By plotting your best times on graph paper, you can reliably predict performances at distances you've never run—like 6.25 miles. Simple graphs with curving lines will work fine for this purpose. But "log-log" paper is easier to use. Potential times fall along a straight line, and times don't need to be interpolated from pacer-mile.

- **Relative values**—The mathematical nature of slowdown allows the formulation of scoring tables which weigh the merits of times at different distances. These are available in the books *Computerized Running Training Programs*, *Portuguese Scoring Tables* and *IAAF Scoring Tables*. However, all of these have the limitation of being based on world-class performances, making the comparisons less than perfect for runners of average ability.

- **Age-grading**—Ken Young devised the age-graded scoring tables, which attempt to equalize marks according to the runner's age. A 50-year-old, for instance, wouldn't be likely to best a 20-year-old in a mile. But the older runner can outscore the younger one by coming within a half-minute of the youth's time.

(See related material in "How Fast," "Planning," "Racing," "Testing.")

For more information:

"Comparing Times," *Racing Techniques*, Booklet No. 13, July 72, pp. 39-47.

"Finding Meaning in Times," *Guide to Distance Running*, 1971, pp. 58-59.

Gardner, Jim, and Purdy, Gerry—*Computerized Running Training Program*, Tafnews Press, Los Altos, 1970.

Hyten, Bob—"It Helps to Know the Score," *RW*, Dec. 73, pp. 28-29.

Lightsey, P. A.—"Double-Timing," *RW*, May 74, p. 6.

Young Kenneth—"Age-Graded Scoring," *Age of the Runner*, Booklet No. 39.

TRAFFIC

"Under stress, any person's judgment can become impaired. When it comes down to the last few miles of a long distance workout, it becomes irritating to have to move over when approached by a speeding car. Yet consider the alternative if we don't move..."

—Hal Higdon, from *Runner's World*

Streets and roads are convenient places to run. They have smooth surfaces that are runnable in any weather. In town, the streets are lighted for early-morning and late-evening running. Eventually, every runner hits the roads for the convenience, and in doing so courts their dangers.

Look at the odds. The runner is maybe 150 pounds of soft flesh, traveling 7-10 miles an hour. The automobile weighs more than 10 times as much and goes up to 10 times as fast, and is made of hard metal. When the runner and the car meet, it's obvious what happens.

It happens dozens of times a year. Runners are killed and maimed in traffic, yet other runners don't recognize how serious a threat it is. They worry about the heat and their hearts, but ignore the cars hurtling along two feet from their elbows.

Rules of the road:

1. Use sidewalks or bike paths that are separated from the roadway by something solid, like a curb. Settle for streets and roads with wide shoulders only under the best of traffic, lighting and weather conditions. Stay away from busy streets without these "safety zones."
2. Run facing traffic, on the left side of the road. It helps to see what's trying to hit you. Before venturing out into the apparently empty driving lane, look behind. A car may be passing on your side.
3. Maintain two-way visibility. See and be seen. The biggest threats to your vision are the setting sun and car headlights. Wear a cap with a bill for these conditions. Wear bright colors to be seen during daylight running (golden yellow is most visible) and reflective materials (tape, bicycle reflectors sewn on clothing, etc.) at night.
4. Don't trust anyone. Practice defensive running, expecting no one to watch out for you except yourself. Wherever rights-of-way are in question, let the driver have them.

Dr. James Lytle, a run-and-hit victim, points out, "The idea that the pedestrian has the right-of-way is strictly a legal principle, and doesn't mean much when hard metal meets soft skin."

(See related material in "Air," "Where to Run.")

For more information:

"Finding Room to Road," *Running with the Elements*, Booklet No. 35, May 74, pp. 73-74.

Higdon, Hal—"Dangers of the Highways," *The Complete Runner*, 1974, pp. 200-204.

"The Main Danger," *RW*, Jan. 73, p. 57.

"Running for Your Life," *1973 Marathon Handbook*, Booklet No. 19, Jan. 73, pp. 15-16.

TRAINING METHODS

"Training, by definition, is practicing to perfect a skill. It is reaching for something better in the future than what you have now. In running, the object is training is learning to go farther, faster in races. Standing in the way are distance and time, effort and pain. Training allows runners small but often significant victories over these..."

—From Runner's Training Guide

In the broadest sense of the word, every step you take is "training." But here, let's limit the discussion to preparing for actual competition. The things a runner must do while getting ready to race don't necessarily contribute to basic aerobic fitness. Sometimes, they work against it.

When you race, you push to the edge of exhaustion. And out there lie injuries. But if you want to race at maximum pace, you occasionally have to train there, too. The stress in training must be similar to that of racing. Otherwise, there is little or no improvement. Training for races means taking chances with your health.

Any number of training options are available to would-be racers. Entire books are available on each one. Basically, however, training comes in two types, each type with an informal-relaxed side and a structured-rigorous one.

- **Continuous running**—At a steady pace for the entire distance. This family is subdivided into "slow distance" and "fast distance." Slow distances (often called LSD) are done at a comfortable pace, with little emphasis on time. Pulse rates generally go no higher than 75% of maximum. Pace is at least a minute per mile slower than all-out. Fast distance runs are modified time trials, usually above 75% pulse and within a half-minute or so per mile of race pace.

- **Interrupted running**—Fast, short runs broken by easier running, walking or rest. This family includes "fartlek" and "intervals." In fartlek, spurts are taken whenever the runner is moved to accelerate. Rarely is the track or stopwatch used. Intervals follow a more formalized plan, with distances, times and recovery breaks strictly controlled.

Most racers employ some combination of these methods.

(See related material in "How Much," "How Fast," "How Often," "Racing.")

For more information:

Corbitt, Ted—"Getting Behind the Times," Guide to Distance Running, 1971, pp. 76-82.

Costes, Nick—Interval Training, Booklet No. 16, Oct. 72.

New Views of Speed Training, Booklet No. 4, Oct. 71.

Osler, Tom—The Conditioning of Distance Runners, Long Distance Log, Woodbury, N.J., 1967.

Run Gently Run Long, Booklet No. 37, July 74.

Runner's Training Guide, Booklet No. 23, May 73.

"Training," The Complete Runner, 1974, pp. 287-328.

"Training to Compete," RW, Sept. 73, pp. 8-14.

VAN AAKEN

"Training on the 'pure endurance method' means daily endurance training with an average pulse frequency of 130 per minute. This is achieved by long runs, first with breaks (interval principle) and later on consistently..."

—Dr. Ernst van Aaken, from *Runner's World*

Ernst van Aaken approaches running from a number of different perspectives that together give him a unique view of the sport. He is a practicing physician in West Germany, an ex-pole vaulter who turned to long distance running rather late in life, a coach of world class athletes and an advisor to fitness runners.

This combination of exposures has formed ideas in him that decades of rejection couldn't shake. Only in the last few years has the running world caught up with him and accepted what he has said since the 1920s, '30s and '40s.

- The largest and most lasting endurance gains come from running long distances at paces slow enough to allow normal breathing.
- The runner should reduce his weight to 20% below normal, and subsist on a 2000-calorie diet.
- Women and children are natural endurance runners and should have every opportunity to practice distance running as opposed to sprinting.

Van Aaken first became convinced of the value of slow, continuous running when he watched Paavo Nurmi warm up for two full hours at the 1928 Olympic Games. The doctor has preached this as the way to fitness ever since, but to few listeners until recently.

Van Aaken thinks all runners should train the same way, with only the amount and intensity separating talented runners from the others.

"The runner of the future," he says, "will not train differently from anyone else. All will run just playfully in a state of respiratory balance. There must always be—even after hours of training—the desire for and a joy in running faster, and the ability to do so."

Van Aaken emphasizes distance, not speed. Concentrate, he says, on going longer, even if you have to walk. "Even a beginning runner at any age must be able to cover about 10 kilometers daily, as soon as possible. To reach this level, one must insert many walking breaks at the beginning, perhaps for a minute every 400 meters."

(See related material in "Heart," "How Fast," "How Far," "Training Methods.")

For more information:

"LSD With a German Flavor," *Guide to Distance Running*, 1971, pp. 94-96.

Steffny, Manfred—"Ernst van Aaken," *Runner's Training Guide*, Booklet No. 23, May 73, pp. 72-74.

Van Aaken, Ernst—"Winterized Running Training," *RW*, Jan. 74, pp. 32-33.

WEATHER

"A runner doesn't need a weatherman to know which way the wind blows. He lives with the elements. If he lives anywhere but on the western and southern fringes of the United States, he tastes the extremes of heat and cold as each year flows through its seasonal cycles..."

—From **Running With The Elements**

An early lesson in dealing with the elements is learning there is a great difference between standing outside in the heat and cold and running under these same conditions. Heat is worse for running than it might seem, cold isn't so bad.

● **Heat**—A stroll on a hot day doubles the body's heat production. A sprint briefly increases it a hundred-fold. The endurance runner is closer to the stroller than the sprinter in this regard, but he still is plenty hot. A nice day for tanning beside the pool may be a disastrous one for running.

As internal heat goes up, the body compensates by sweating. Sweat has to be replaced with water and other chemicals. If more than 3% of the weight is lost by sweating, performance is affected. If much more than that is lost, health itself is threatened. Check the percentage by weighing yourself before and after hot-weather runs. Drink before, during and after.

Sweat cools you as it evaporates. If the humidity is high, sweat doesn't evaporate well. That's why humid days feel hotter. Consider both temperature and humidity when planning runs.

● **Cold**—The body's heating mechanism that makes you miserable on hot days can make running pleasant on cold ones. At all but the extremes of cold, you warm up and stay comfortable if you've dressed well. On typical winter days, there is little danger of frostbite if you keep moving and have your hands and ears covered. There is *no* danger of "freezing the lungs" from breathing icy air.

Humidity makes summer unbearable. In winter, it's the wind. Wind makes temperatures feel colder than the thermometer shows. Each mile per hour of wind drops the wind-chill reading by about one degree. Chill temperatures below minus-20 carry "increasing danger" of frostbite. Those below minus-70 have "great danger."

(See related material in "Air," "Diet," "Clothing," "Weight.")

For more information:

- Costill, David—"Heat's Burden on Runners," Guide to Distance Running, 1971, pp. 32-33.
Daws, Ron—"When It's Hot, You're Not," RW, July 73, pp. 18-19.
Hurd, Fred—"Keeping Heat from Killing," Guide to Distance Running, 1971, pp. 34-35.
Lanin, Pat—"Living with Winter Weather," Guide to Distance Running, 1971, p. 36.
"When It's Cold," Running with the Elements, Booklet No. 35, May 74, pp. 34-46.
"When It's Hot," Running with the Elements, Booklet No. 35, May 74, pp. 12-13.
Young, Kenneth—"Patterns of Climate," Running with the Elements, Booklet No. 35, May 74, pp. 8-11.



“Long-term running combined with diet control is effective in reducing weight. And low weight is an essential feature of endurance fitness.” (Om photos)

WEIGHT

"The big problem in running nutrition is not deficiency but overabundance—in this case too much eating leading to too much weight. Fat is the main limit on fitness in our overfed society, and in a real sense runners are what they don't eat..."

—From The Runner's Diet

If you're going into running to lose weight, you have a long ways to go. A mile of running burns up only about 100 calories, and using up 3500 calories takes off but one pound. It takes a lot of miles to work off a piece of cherry pie or a chocolate milk shake.

Long-term running combined with diet control, however, is effective in reducing weight. And low weight is an essential feature of endurance fitness. How low? A couple of 10 percents are ideals:

- **10% or more below "normal" for your height.** Normal for men over 25, according to diet writer Dr. Irwin Stillman, is 110 pounds plus 5½ pounds for each inch over five feet. (A man 5'10" tall, for instance, is "normal" if he weighs 165 pounds.) Women start with 100 pounds and add five pounds for each inch over five feet. If you're a runner, try to reduce yourself to 10% below these norms.

- **10% or less body fat.** The calculations above are rough at best. They work fairly well for people with average builds, but can be way off for extremely thin or heavily muscled individuals. The only way to know for sure how much fat you carry (and, therefore, how much you should weigh) is to be checked in a fitness laboratory. This involves being weighed in water or having skin fat measured with calipers.

All runners, fat or not, should watch their weight. It's one of the most sensitive indicators of fitness. Sudden gains, Dr. Stillman says, should be treated as if they are serious diseases. Sudden losses are indications of trouble: overwork, dehydration, etc.

Watch your weight. Take it under constant conditions (first thing each morning, for instance). It shouldn't vary more than a pound from day to day. Lose weight gradually. If it drops more than 2-3 pounds in one day, you've almost certainly dehydrated yourself and need to restore the water balance immediately.

(See related material in "Diet," "Fitness.")

For more information:

"The Body's Weight," The Runner's Diet, Booklet No. 14, Aug. 72, pp. 69-79.

"Controlling Weight," Encyclopedia of Athletic Medicine, Booklet No. 12, June 72, pp. 66-68.

"First Water, Then Salts," Running With the Elements, Booklet No. 35, pp. 30-31.

Frederick, E. C.—"Measuring Fitness," The Running Body, Booklet No. 27, Sept. 73, pp. 39-44.

"Runners' Weights," Encyclopedia of Athletic Medicine, Booklet No. 12, June 72, p. 65.

WHEN TO RUN

"Anytime, or almost anytime. There are two qualifications here. Allow time enough so you don't have to hurry. Even if it's just a 10-15 minute exercise, give yourself an hour's time for the whole process of preparing, running, showering and recovering. And don't run immediately after eating. There's enough discomfort at the start without adding this burden..."

—From **Beginning Running**

"But I'm busy. I don't have any time to run."

Everyone's busy enough to fall back on this excuse for not running. No one has the time to run if he doesn't want to make the time. If you want to run, you find the time and stick to that time.

Morning, noon or night, the effects are the same. When you do it depends on your schedule and your "body time."

If you awake bright-eyed, get up a little earlier. Morning running is the most practical because seldom do you have anything else to do at that hour except sleep. Showering and dressing are part of the routine, anyway. Traffic is light. The air is its coolest and cleanest at dawn.

Noontime running is good if you have a long lunch break and a nearby place to exercise and clean up. It gives the triple benefit of a workout in the daylight, a change-of-pace in the workday and a chance to avoid heavy lunches.

Evening runs are easiest to skip. You come home tired and hungry. The mind rebels at the thought of working out and postponing dinner. But once you get going, you find it's a relaxing way to end the day.

If you really want to save time, do as Senator William Proxmire does. He commutes on foot from his home in Washington to Capitol Hill.

Proxmire says, "I work it into my schedule so that it takes far less time than if I went out and set aside a certain time to run. I run to work. Of course, I'd have to come to work, anyway, and if I go by car during rush hour it would probably take me 25 minutes. I run that five miles in 35 minutes. So the only cost is a 35-minute, good, hard, tough aerobic workout. Then at night I run-walk home. I have to go home, too, so it works out very nicely."

Proxmire says that if you don't live within running range of work "park on the outskirts (of town) and just get out and run the remaining two, three, four or five miles, whatever you want to run. You can fit it into your day that way."

(See related material in "Habit," "How Often.")

For more information:

"It's Off to Work We Go," RW, July 74, pp. 20-21.

"When," Beginning Running, Booklet No. 15, Sept. 72, pp. 23-24.

"Working It All Out," RW, May 72, pp. 38-40.

WHERE TO RUN

"Jogging country is everywhere. Open your door and you're in business. Jog right out the door, jog in a schoolyard, on a city street, at the beach, on a country road, or in a vacant lot. Jog down a bicycle path, on a school track, around a golf course, through a park, in your backyard, in a gymnasium, in a supermarket parking lot—anywhere..."

—Bill Bowerman, from *Jogging*

"But I don't have any place to run." That's the second most common complaint of beginners, after "I don't have any time."

Look around you. You may not have what seems to be an ideal place to run—like a track specially built for running—but there are always plenty of places. The streets, if nowhere else. If they're safe enough for walking, they're good enough for running.

To save time, find places to run that are near home, school or work—the nearer the better. It's best if you can start and finish most runs at the back door.

Map out routes that avoid congested areas as much as possible and are pleasant to run through. If you're interested in timing yourself, measure the routes. Accuracy of measurement depends on the methods used:

- **Auto odometer**—this is the easiest way to check a road course, and also the least reliable short of stepping off the distance. Cars almost always give short readings, and they can't go into parks or along trails.

- **Bicycle counter**—Simple revolution-counting devices that fit on a bike's front wheel correct the car's shortcomings. These counters can be calibrated to an accuracy of 10 yards in 25 miles, and the bike can go almost anywhere. (A device of this type is available for about \$10 from Alan Jones, 3717 Wildwood Dr., Endwell, N.Y. 13760.)

- **Topographic maps**—The US Geological Survey maps show surface details not found on standard road maps—for instance, grade of hills, landmarks, trails. And the accuracy of the topo maps is such that you can make quite close measurements of courses directly from them. (The maps are 75 cents each, from the USGS Distribution Section, Washington, D.C. 20242 for states east of the Mississippi, or Denver, Colo. 80225 for western states.)

(See related material in "Hills," "How Far," "Surfaces.")

For more information:

Bard, Bob—"Maps with the Answers," *Running with the Elements*, Booklet No. 35, May 74, pp. 75-79.

Buckner, R. B.—"Taking the Measure of Courtesy" *RW*, Sept. 74, pp. 28-29.

"Finding Room to Roam," *Running with the Elements*, Booklet No. 35, May 74, pp. 73-74.

"How Road Courses Measure Up," *RW*, May 73, p. 50.

"A Measure of Success," *Guide to Distance Running*, 1971, pp. 47-48.

"Where," *Beginning Running*, Booklet No. 15, Sept. 72, p. 23.

The Varied World of Cross-Country, Booklet No. 2, Aug. 71.

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FIRST STEPS TO FITNESS

So you're starting to run? If you've already started, you'll be glad to know that the biggest step toward fitness is behind you. There are lots of little ones to come, but none as long as the one that took you from non-runner to beginning runner.

Whether you've been running for seven days or seven months, you know what the road to fitness looks like. It has an uphill tilt and no end in sight. The road will always be somewhat uphill. Running is work, at any level. But you can take comfort in knowing that the steepest part comes at the start, and the slope gets gentler once the running habit is fixed.

First Steps to Fitness concentrates on the roadblocks, the problems and pains, that prevent a runner from establishing the running habit. One sad fact of the sport is this: at the time you most need advice and support, you're least likely to find it. This booklet is written with that information gap in mind.

It's intended to take the place of running friends and coaches when none are around, and to cover the questions other publications don't have space to cover. It's an encyclopedia of facts on running fitness.

Topics (50 of them, which answer hundreds of questions) are organized alphabetically, and are cross-referenced for quick checking. The advice (on subjects ranging from "Aerobics" to "Where to Run") is straightforward and quickly read.

This is an introduction to running from the endurance fitness point of view. And establishing basic endurance is the first step to fitness.

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