Discovering Orienteering

Skills, Techniques, and Activities

Orienteering USA

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Charles Ferguson
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We dedicate *Discovering Orienteering* to all desiring to learn and improve using a systematic approach to the art of navigation. We commend it to everyone with the patience, drive, and commitment to acquire, develop, or improve their navigation skills and abilities. Also, we thank all those coaches, teachers, orienteers, and especially the students in our classes, who taught us along the way. Finally, we especially appreciate our wives, Jo and Linda, for their patience and support in our many orienteering endeavors leading to this book.

Preface

Discover orienteering—a navigational sport that challenges your mind as much as your body. The book you hold is based on years of effort by top trainers from Orienteering USA who have created a simple plan for quickly developing the navigational skills that some take years to acquire. Bob Turbyfill, former Orienteering USA team coach, USA Champion, and North American Orienteering Champion, has been sharing this system with beginners, competitors, and coaches for decades and has now partnered with retired military orienteer and past Orienteering USA President Chuck Ferguson to bring this system to a wider audience. A foundation in the basic skills, techniques, and processes presented in this book can rapidly prepare someone with no previous navigational experience to be successful at intermediate-level land navigation and orienteering. Experienced orienteers and land navigators will find a wealth of assistance, too.

Orienteering is a sport for the 21st century. The modern world faces a variety of new challenges. Health issues are at the forefront of modern discourse, and the National Physical Activity Initiative aims to increase fitness levels across the United States. Stewardship of our natural resources will be increasingly important in the years to come. The sport of orienteering provides an excellent foray into the outdoors and develops a deeper appreciation and understanding of environmental issues in addition to providing excellent physical conditioning. Orienteering also requires critical-thinking and problem-solving skills, which are in high demand in our technologically advanced society. The confidence one develops by completing a course independently is a priceless resource for adults and children alike. Perhaps most importantly, orienteering is a lot of fun! It's a chance to exercise your mind and body, run off-trail, and test yourself against the land, the map, and yourself.

For those who get hooked on the sport, orienteering provides opportunities for exciting competition, from local events all the way up to world championships. Orienteers enjoy traveling to the wide variety of terrains used for such competitions and meeting fellow orienteers from all over the country and even around the world. Orienteering is a sport for everyone, with participants ranging in age from under 10 to over 80. Some compete seriously and are elite athletes, while others enjoy the chance for a unique recreational experience with friends or family. The older demographic benefits from the combined physical and mental challenges, both of which have been shown to increase the quality of life at advanced age.

A wide audience can benefit from the sport and the techniques presented. Learning orienteering and land navigation skills can be useful to those in the military and to search-and-rescue personnel. Anyone participating in an outdoor sport, such as hiking or hunting, should know the basic navigational methods used by orienteers. Anyone who relies on map information, such as drivers or delivery people, can benefit from improving their navigational skills. GPS systems have been known to send those ignorant of the map into dangerous situations. These techniques are equally useful for anyone competing in sports involving a navigational component, including both wild and urban adventure races. Experienced orienteers or coaches unfamiliar with this system will find it easy to understand and teach to others. Those with no previous orienteering experience will find that the method presented makes it easy to quickly become successful at cross-country navigation. If you have access to a local orienteering club, however, it is recommended that you use them as an additional resource to the book to get the most professional orienteering experiences.

ORGANIZATION

Chapter 1 introduces the basics of orienteering, and it establishes some historical perspective on the sport. This is especially important for beginners who have no frame of reference for the activities. Chapter 2 discusses fitness, nutrition, and safety practices pertaining to navigational sports. Chapter 3 details orienteering tools and equipment. The meat of the book is in chapters 4 through 6, which focus on orienteering skills, techniques, and processes. These chapters address the standard methodology used by Orienteering USA for

teaching and coaching the sport of orienteering. The authors have spent many years developing and honing this system with a variety of audiences. It distills the sport into a small set of easy-to-remember skills and techniques that can be practiced through a variety of training exercises. Chapter 7 addresses sportsmanship and ethics in orienteering. Chapters 8 through 10 take a participant through the event experience, including preparation and postevent analysis. Appendix A presents activities in a simple lesson-plan format indicating the skills and techniques developed by the exercise, the expertise level of the intended audience, and the equipment needed for each activity. Appendix B provides reproducible forms in the preferred format for tracking the results of a series of competitions, which allow the coach to get a picture of competitive-weakness trends. With this trend sheet, any coach will be better equipped to make intelligent decisions about the type and quality of training needed to overcome weaknesses and bolster strengths.

This book has been developed in conjunction with Orienteering USA to address the methods, techniques, and types of orienteering that are commonly found throughout North America. The authors are highly experienced orienteers with expertise both as trainers and as elite competitors. Orienteering USA is excited to be a part of this book and to help bring the sport of orienteering to a new 21st-century audience prepared to tackle physical and environmental challenges. We hope you have as much fun learning and teaching orienteering as we do.

Clare Durand
Former President
Orienteering USA

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Contents

CHAPTER

1

Introduction to Orienteering

This chapter introduces a wonderful sport, orienteering, which is largely done outdoors. It explains the relevance of orienteering and how the sport is for anyone of any age or ability who has a desire to get off the roads and trails and experience nature up close or who wants to get from one place to another using navigational skills and techniques. Orienteering is both a skill and an art, as you will learn as you read this book. Although normally done individually, orienteering can also be a team sport, giving participants team-building experiences and fostering the full development of leadership and communication skills.

WHAT IS ORIENTEERING?

Orienteering consists of using a map, usually assisted by a compass, to move from one location or place on the map to others. The start is marked by a triangle. Other locations are marked by circles on the map and the finish is marked by a double circle. More details will be presented as you move deeper into the book, and you will see how the skills, techniques, and processes learned in orienteering can help you navigate almost anywhere under almost any conditions, whether you are in the woods, on urban streets, or in a classroom. However, the basics are that orienteering events are staged on a map using specific locations, are timed, and require you to navigate, whether you are walking, running, canoeing, mountain biking, riding a horse, or moving down a trail in a wheelchair.

Orienteering can be done recreationally for fun or competitively at local, national, and international levels. It requires decision making, which may have to be done under conditions of competitive stress and fatigue. Teachers love the way it stretches and challenges the mind and can complement almost any academic discipline. For business leaders, it hones mental agility and decision-making ability. Soldiers, Marines, and Navy Seals find it great training for combat skills. Coaches appreciate how it tones the body, improving fitness. Parents find it a wholesome, confidence-building activity for their kids. And green thinkers are enchanted by its gentle impact on the environment and its capacity to pull more of us into the great outdoors.

WHY LEARN TO ORIENTEER?

There are so many reasons to learn orienteering: As an individual, you may want to be a more fit, confident, and adventurous person who gets off the beaten path. As an orienteer, you may never have learned some of the basics or you may have forgotten them, slowing you down. For the teacher, orienteering is a fun sport that students can master at their own pace with little equipment and in almost any area. For the recreation or youth leader, orienteering is a sport that adds another dimension to the usual activities and is fun and continually teaches vital lessons in integrity and fairness in games and life. For adventure racers, expert navigation is the key to winning. For the Marine, the Navy Seal, the soldier, the park ranger, the smoke jumper, and the expert in search and rescue, orienteering hones the vital navigational skills of the profession. For the truck or car driver and helicopter or airplane pilot, the ability to run through the woods with a map and compass and do it well translates directly into finding one's way in the countryside, in the city, or in the air. For the hiker, trekker, hunter, bird-watcher, and fisher, the ability to use a map and a compass is an abiding need.

Having a Global Positioning System (GPS) unit can make navigation easy—until it doesn't! Recall the Rhodes family's reliance in 2009 on their GPS programmed to find the shortest route, which ultimately stranded them for three days in December in a snowy Oregon forest. That overreliance on GPS technology could have easily cost the couple their lives. The GPS unit cannot think, but you can, and your brain is always with you. You'll be far faster in the woods and better at route choice than any unthinking, GPS-dependent companion that relies, as one Marine colonel put it, "on two failing batteries and three wobbly satellites!"

Orienteering success builds confidence, parlaying fear of the outdoors into joyful appreciation. Success does not require winning against others, unless that is your motivation as you take part in competitive orienteering; it is more often determined by your mastery of the sport so that you can complete the course. Repeated success builds self-esteem, and perhaps the most important result is the lesson that failure is a temporary state, banished by analysis, smart training, and

continued practice. In addition, orienteering is that rare discipline where studying your work (going over your maps and how you navigated through the woods and fields) is actually *fun*. Finally, as with few other sports, orienteering can be a lifelong, healthy obsession. The oldest competitive age groups in the United States and Canada are over 80 years old! Can 90 be far behind?

If you begin orienteering using the systematic instructions presented in this book, which have been developed, improved, and expanded over more than 20 years, you can become a competent orienteer and land navigator in mere months. If you already orienteer, this book will help you learn and prioritize new skills and techniques, recall forgotten ones, and train to overcome specific weaknesses.

Besides building navigation skills, orienteering gives the thrill of problem solving on your own and the excitement of off-trail running. It also provides many opportunities to participate in events (or even create them) and to meet new people.

BASICS OF ORIENTEERING

At its most basic level, orienteering is a sport with many variations that is centered on navigating on a map by translating the map symbols into what you see around you, or as orienteers say, *reading the ground*. Canadian and European orienteers might say *reading the terrain* or *interpreting the terrain*. Regardless, you are using the map to find your way. Chapter 3 explains the terms *ground* and *terrain* in depth.

In orienteering, not only do you follow your map, but you may also double-check your direction by occasionally glancing at your compass. Orienteers seek specific locations such as human-made or terrain features that are marked on their maps and easily identifiable upon arrival. These locations are called *controls* and are normally marked by control bags (or markers) of orange and white (see figure 1.1). Because there may be beginner, intermediate, and advanced courses at the same event, each control marker has a unique identifier, such as a three-digit number. You will know the identifier for each of your controls before you begin.

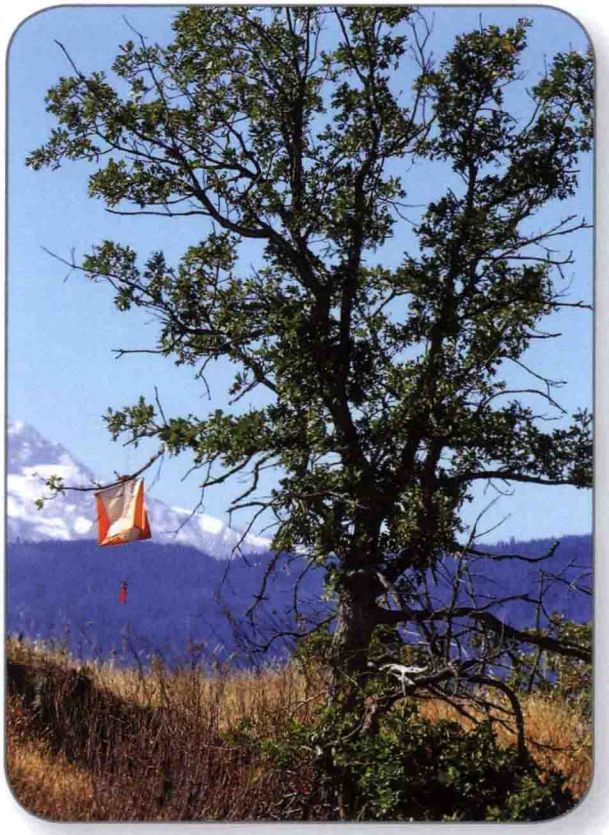

Figure 1.1 Control bags are orange and white, and they are designed to be seen from a distance. They signify locations marked on the map.

Competitors record their finding of each control by writing it on a scorecard, electronically recording it on a finger chip (called an *e-punch*), or using a variation such as writing down a specific fact, as in urban orienteering. Orienteering is most frequently done in parks and recreation areas, but it also works beautifully in buildings, classrooms, and streets and at playgrounds, rivers, and lakes. Following are various types of orienteering:

- Automobile or ATV
- Bicycle or motorcycle
- Canoe or other watercraft
- Cross-country
- Geocaching
- Horseback
- Line
- Relay
- Rogaine
- Running or walking
- Score
- Skiing or snowshoeing
- Snowmobile
- Trail
- Wheelchair

Two Orienteering Essentials

Two essentials are necessary in order to teach or learn orienteering. First is expertise, as provided by this book, and second is a useable map for both teaching and competing. You can start with almost any map, but as you progress, eventually you will require good maps created specifically for orienteering. Fortunately, acquiring those may not be as difficult as you think.

When first learning to orienteer, beginners move slowly and carefully. At the other end of the competitive spectrum, world-class competitors run faster than 6 minutes per kilometer (orienteering uses the metric system), or 10 minutes per mile. Running just under 10 minutes per mile will seem slow to road racers, but orienteering competitors are flying through the woods. And, despite their speed, world-class competitors are also moving carefully. They cannot afford the loss of time by even minimally going off in the wrong direction.

Orienteering Maps

Early orienteering in the United States relied primarily on the readily available 1:24,000 U.S. Geological Survey (USGS) maps, often simply photocopied in black and white. The USGS has mapped the entire United States, and its maps can be purchased in many outdoor stores or downloaded online. USGS maps are the maps most frequently used in search and rescue and are well suited for hiking, hunting, and fishing (see figure 1.2*a*). They can be used to start orienteering instruction if no better maps are available. Orienteering maps cover a much smaller area and are therefore easier to interpret, greatly helping the learning process (see figure 1.2*b*). As you see the larger orienteering map, outlined in black, fits easily within the smaller 1:24,000 USGS map of the same area. In general, orienteering maps will be newer and more up to date. See, for example, the road beside the water tanks to the north on each map. It has obviously been rerouted since the smaller map was created. Remember, because scales are fractions, a "larger" map shows a smaller area of the terrain and a "smaller" map includes more area. Later chapters will point you to resources where you can learn to make your own maps, which has double value in that making maps improves your orienteering.

Orienteering Versus Land Navigation

Though similar, orienteering and land navigation are not the same. Orienteering builds on land navigation techniques to improve speed, skill, and confidence. Some basic skills and techniques are the same for both, but orienteering develops those skills and techniques well beyond land navigation. *Military land navigation*, as the U.S. Marines and Army call it, is useful to hikers, backpackers, bird-watchers, hunters, and fishers. Land navigation is obviously essential to members of the military and adventure racers, but it also finds a ready audience in college Reserve Officers' Training Corps (ROTC) units and high school Junior ROTC (JROTC) students. Park rangers and search-and-rescue personnel also use land navigation skills in their daily work and can hone those skills greatly through orienteering. Land navigation skills and techniques that have been further refined and practiced through orienteering benefit everyone described thus far, as illustrated in the sidebar.

As you may know, the United States Military Academy (USMA, commonly called *West Point*) has a collegiate orienteering team. Soon after graduating from West Point, one brand-new second lieutenant deployed with her entire brigade, dropped in place by helicopters somewhere in the National Training Center at Fort Irwin, California. The staff huddled around the colonel. All looked desperately at the maps that just did not seem to match up with the surrounding countryside. Finally, a call went out: "Find that lieutenant who was on the West Point orienteering team and get her up here!" She ran all the way, studied the maps for several minutes, and then, placing her finger well away from where the brigade should have landed, she said, "We are here." And they were. Everyone involved, including the helicopter pilots, knew land navigation, but she had orienteered.

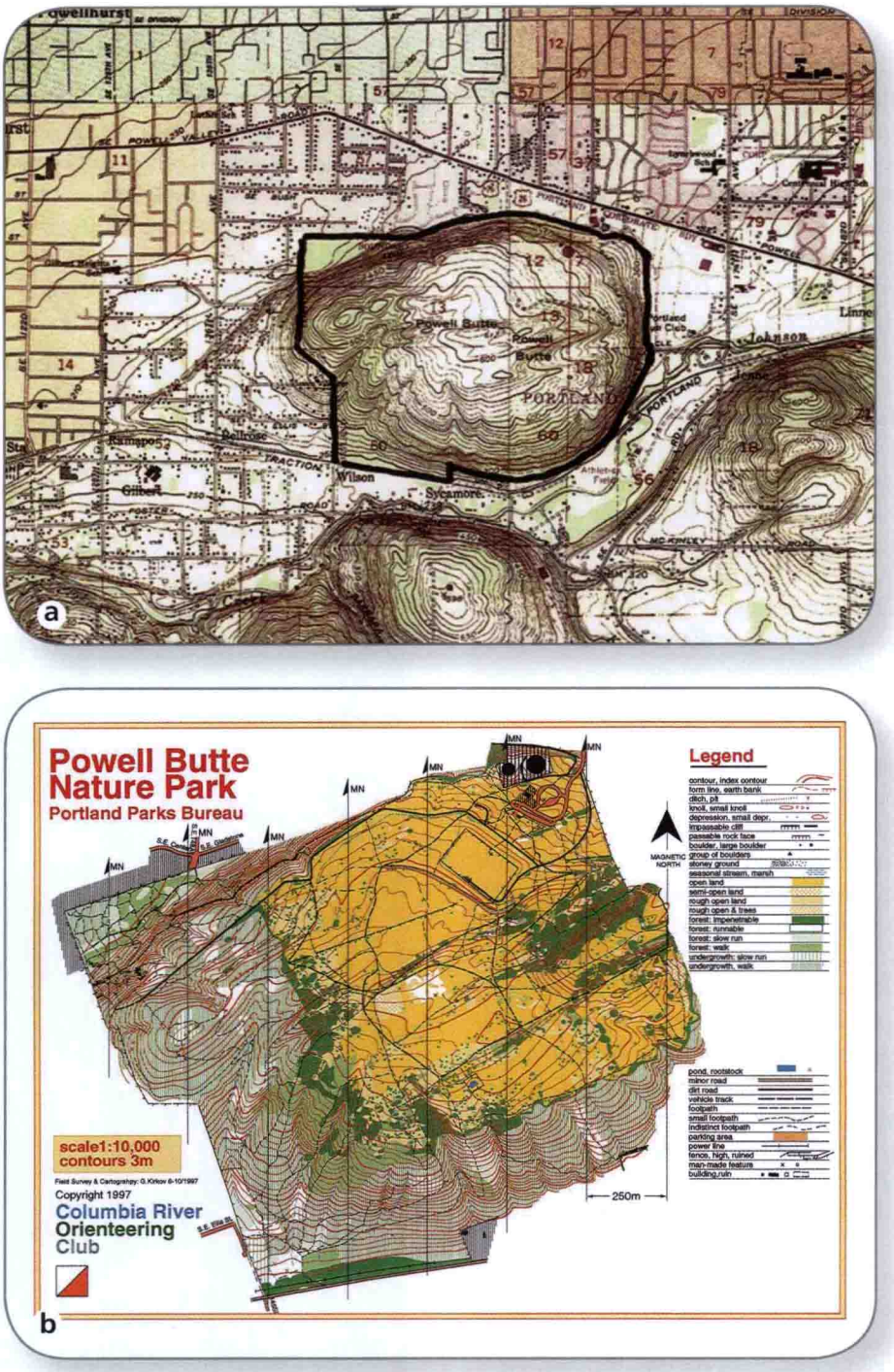

Figure 1.2 Maps of Powell Butte Nature Park in Portland, Oregon. Notice the difference between (*a*) the USGS map and (*b*) the orienteering map of the same terrain.

Courtesy of Les Stark of Columbia River Orienteering.

Scoring

As noted earlier, orienteering is a timed event. Participants compete against each other in categories based on gender, age, and experience (e.g., a beginner competes against other beginners). They score by visiting all of the orienteering controls in the correct sequence and crossing the finish line. In the cross-country or point-to-point format, each participant is assigned a start time. Start times are staggered so that orienteers are not often approaching the controls at the same time. This also helps prevent participants from following others (that is, following someone rather than navigating on your own), which is not allowed. To determine your score, your start time is subtracted from your finish time, and the fastest time on your course and in your category determines the winner. Everyone else scores in sequence based on each person's total time. In short, you score based on how quickly you complete the course against your peers. Most meets have a 3-hour time limit to complete a course, so it is possible to be disqualified for being overtime.

You keep track of the controls you visit in several ways, usually either manually (by punching a scorecard, sometimes called a *punch card*) or electronically (by inserting a data collection stick, called an *e-punch*, into a receptacle at each location). If using the manual system, each control has a plastic puncher (referred to as a *punch*) that resembles a small stapler. The competitor arrives at the control, places the scorecard into the open end of the punch, and presses the two sides together, just as you would press a stapler. Tiny pins on one side punch holes in a pattern on the scorecard in a box numbered for the appropriate control. The pattern differs at each control. At the finish, if the pattern on your scorecard is correct for each of the controls and if the punches are all in the correct boxes for the correct controls, then you have proof that you visited the controls. Take care not to lose your scorecard. If you fail to present your scorecard, you get no credit for finishing the course and the event never happened for you—true heartbreak!

In an electronic system, at each control the competitor inserts the data memory stick (the *e-punch* or more rarely called a *dibber*) into an electronic receptacle that records the time onto the data memory stick and usually beeps and flashes a small light to announce the successful recording of your arrival. At the finish line, there is a final receptacle, and then you proceed to the download area and insert your e-punch one more time in order to print your splits (how long you took between each control) as well as your total time. Be careful not to lose your e-punch or you will have the same sad result as if you had lost your scorecard, but worse—e-punches are a lot more expensive to lose!

Both of these scoring systems are explained thoroughly in later chapters. A third system often used in urban (or street) orienteering involves writing down something on your scorecard to prove that you visited the correct location, such as the name on a monument. You are more likely to encounter manual systems at smaller events and e-punching at larger events, especially events associated with orienteering clubs. E-punches can normally be rented at the latter.

The many variations of orienteering allow almost everyone to participate regardless of special interests or needs, including people who use wheelchairs, mountain bikers, skiers, horseback riders, people in automobiles or canoes, and, of course, in the largest numbers, walkers and runners. Probably the most unusual event in my experience was when armored personnel carriers at Fort Benning, Georgia, tore around pine-tree-lined

Off to the next control! Before moving to the beginner course, kids learn basic skills and have fun with string orienteering.

tracts and roads, madly searching their maps for controls at road junctions, nearby fields, and small hills. The soldiers had so much fun that they hardly realized they were training!

Older adults who like to jog or walk claim that orienteering keeps the mind fit as well as the body. The mental challenge of answering the question, "Where is that control and how do I get there?", backs up the claim that orienteering is the thinking sport. Simply getting to each control enhances fitness and challenges the intellect. Not only do mature adults benefit from orienteering, but much younger people do as well. For example, string orienteering includes children as young as four or five.

BENEFITS OF ORIENTEERING

Orienteering offers many benefits, but its real attraction is that it is fun! It is a joy to walk and run through forests and fields. If you like competing, there are many age and skill-level groups to fulfill that wish. The ultimate quest for the orienteer is to find the balance between mental and physical exertion, to know how fast you can go and still be able to interpret the terrain around you and execute your route choice successfully.

Orienteering is a lifetime fitness sport that challenges the mind. It offers the obvious development of individual skills in navigating while problem solving to locate each control. Decision making is paramount: Should I go left or right? Should I climb that hill or go the long way around it? These decisions that constantly arise require thinking more than quick reactions or instinct; again, that is why orienteering is called the thinking sport. And remember, these decisions are being made under competitive stress and increasing fatigue, helping you to become mentally tougher in other stressful situations. Orienteers learn to be self-reliant since most orienteering is individual, and even in the team and mass-start versions, teammates usually practice individually to improve.

Orienteering builds self-esteem; it takes courage to forge ahead by oneself through unknown areas, particularly in the forests that are not familiar to those who live in cities. So many easily reachable, beautiful outdoor areas exist in the United States, Canada, and the rest of the world that feeling comfortable in the outdoors triples the pleasure of being there. Every time you locate a control or relocate yourself from being temporarily misdirected, your confidence grows. Spatial relationships become more meaningful as the orienteer has to plan how to get from one place to another and figure out whether the chosen route goes uphill or downhill and when and how far. Good orienteers learn to stay aware of their surroundings as they plan what they will see along the route to the control, a talent that is useful whether you are driving to your grandmother's or trying to find your way back from a classroom on your first day of college. How can you plan what you will see? The map symbols and contours will describe it for your imagination. Orienteers learn to recognize and use new resources, whether they are the map and compass, the park or playground, or the more personal resources of fitness and mental agility.

Not only is it thoroughly enjoyable to get out into parks and forests and off the paths to experience nature while orienteering, but also being a trained and experienced navigator can be plainly useful or even lifesaving. On a simple level, you need never be lost again. A complete definition of *lost* has two parts. First, you do not know where you are located. Second, you do not know how to get to a known location. Even if they are temporarily mislocated, orienteers have the skills and techniques to relocate themselves and to continue on to their destination. Orienteers fully understand the L.L. Bean T-shirt that quotes its founder: "If you get lost, come straight back to camp." Even if you do not know where you are, if you know how to get back to camp, then you are not lost. You can toss the word *lost* right out of your vocabulary, because as an orienteer you won't ever need it again!

Another important outcome of orienteering is increased confidence. You may be timid but would like to build your confidence and become better at a sport than anyone around you, or perhaps you simply wish to be more comfortable in the outdoors. Gaining the skills and techniques to be able always to find your way out of the woods builds confidence in all aspects of your life.

Athletes who are tired of running circles on a track or slogging along paved roads find running cross country to be refreshing while at the same time good for building endurance and muscle. Outside of Florida and parts of Texas, most orienteering areas tend to be hilly, not flat. Undulations in the terrain provide the right environment for athletes and nonathletes alike to develop strong hearts, legs, and lungs.

Teachers have found that orienteering relates to every academic discipline, from math to history to environmental awareness to public policy, and it does so in new and interesting ways. Orienteering at Valley