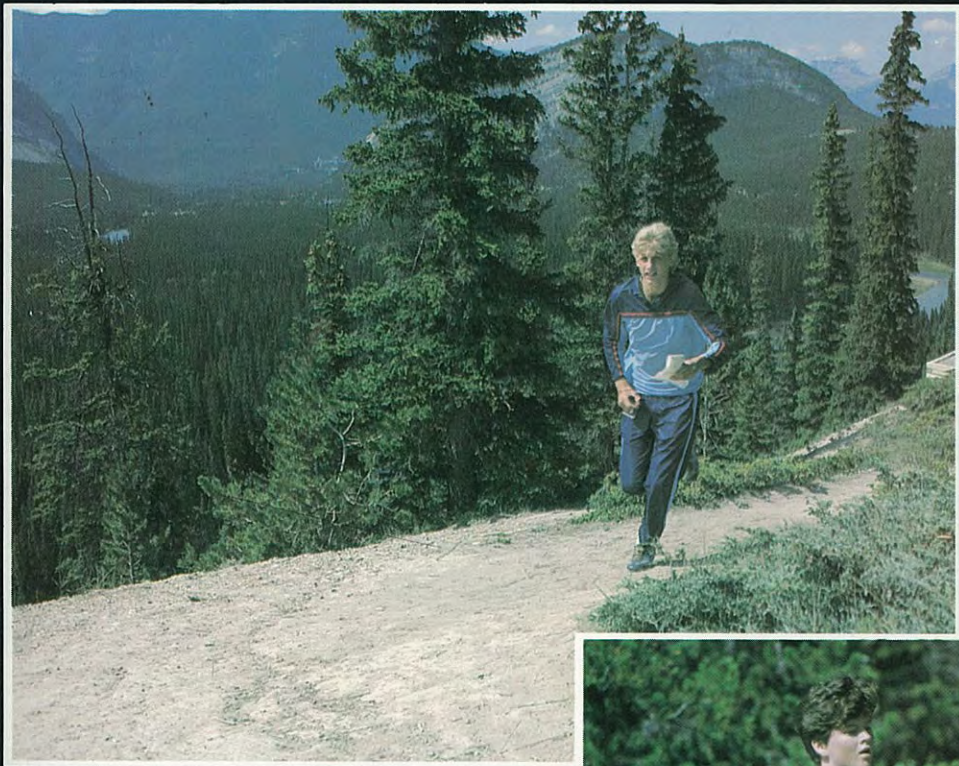
ORIENTEERING

SKILLS AND STRATEGIES



Ron Lowry and
Ken Sidney

ORIENTEERING

SKILLS AND STRATEGIES

Ron Lowry and
Ken Sidney

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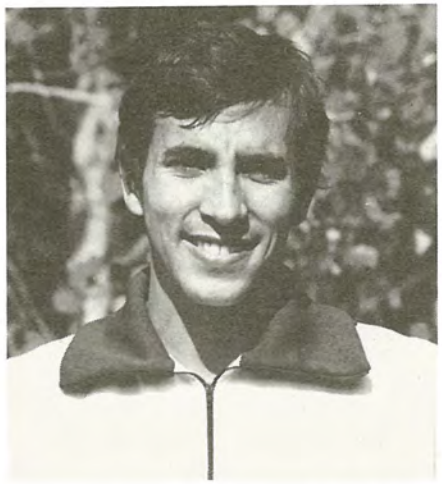
About The Authors



Ron Lowry has coached many orienteers to national championships, and has coached members of the Canadian National Team since 1979. As an athlete he has competed internationally since 1971, and has represented Canada in seven World Championships. Still active coaching, Ron has published many articles on training and wrote the Level II Technical Manual for the Coaching Association of Canada. Ron works in the computer and health industries. He lives in Hamilton, Canada with his wife and son.

Ken Sidney is a professor of exercise physiology in the Faculty of Human Movement at Laurentian University in Sudbury, Canada. He has coached nordic skiing at the university level and the Canadian National Orienteering Team in 1980. As an athlete he represented Canada at the 1981 and 1983 World Orienteering Championships. In addition, Ken has competed successfully as a masters athlete at Canadian and World Masters Skiing and Orienteering Championships. Ken has published widely on exercise physiology, including articles on training for orienteering, and has worked with the Coaching Association of Canada on the preparation of technical coaching manuals. Ken lives in Sudbury with his wife and two children.

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- Henry Lam who charged full-steam into the project, pulling us along with him. His direction and persistence are responsible for the realization of this finished product.
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- Marguerite Morgan and Brad Sokol for typing and word processing part of the manuscript.
- Marko Zarkovic for the cartoons and Eugene Mlynczyk for the illustrations.
- John Sheng for the layout concept and Cindy Mersky for the cover design.

It has taken an entire team effort to produce this book and we are grateful to have worked with such a competent and enthusiastic group.

Orienteering Ontario expresses sincere appreciation to:

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- Henry Lam for recognizing the need for a self-coaching book, and instigating and facilitating its production.
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- Employment and Immigration Canada for the '85 SEED Program which made possible the employment of a cartoonist to illustrate the book.

From The Authors

After many years of training, self-coaching and coaching athletes, it was obvious that for individuals who want to improve there is only limited coaching information and coaches to help them. Whether you are a newcomer to the sport, a recreational athlete intent on improving yourself, or a serious athlete aspiring for championship titles, there just aren't enough coaches, and while information on how to execute skills and techniques can be obtained from books, the specifics of how to improve are not detailed.

What all these individuals need is the kind of know-how that comes only after years of trial and error, frustration and triumph. Therefore, we've written this book. It shows you what is required to perform well, how to learn and practice the necessary skills and strategies, including important competition tips. It condenses the experience of years of training and coaching so that you can progress from the level you are at now right up to the elite level. And you can do it by yourself - you are your own coach.

This book is dedicated to our families, our friends and our rivals who have all helped inspire us to train for fun, fitness and better performances.

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1

Orienteering: The Adventure Sport

Of all the outdoor sports activities we know, none can match orienteering for its unique combination of fun, fitness and mental challenge.

It is one of the toughest of international sports, where athletes compete against themselves and the terrain, using equal parts of speed, endurance, decision-making and navigational skills. Yet it loses nothing of its excitement as a recreational event, enjoyed by people from seven to 70 around the world.

The appeal lies in the sport's tremendous variety. It is, first and always, an outdoor adventure, appealing to environmentalists and to anyone who enjoys a day in the woods. To the beauties of nature, add the technical challenge of map and compass reading, and the pressures — if you choose to accept them — of competing under mental and physical stress that makes problem-solving increasingly difficult throughout the event.

Orienteers decide themselves what they want to get from the sport, adjusting their sights on competition, wilderness skills, recreation, fitness training or friendship.

Because the physical and mental demands of the sport are about equally important, orienteers strong in running ability are often overtaken by less fit rivals with better technical skills. As a competitor loses physical speed with age, he or she can usually make up for the loss in increased experience and skill, making orienteering one of the truly competitive lifetime sports.

That's certainly the case in Scandinavia, where orienteering began close to 100 years ago. The annual five-day O-Ringen event in Sweden draws over 26,000 participants of every age and at every level of competition.

The challenge of orienteering is as varied as the changing face of nature itself. Skills and techniques used in the rolling woodlands of southern Ontario differ markedly from those needed in the rugged forest and marsh of the Canadian Shield, or on the steep alpine slopes of Europe. Rain, heat, cold, good visibility on an early spring leafless run, thick vegetation at mid-summer. . . each has its own approach. Perhaps the orienteer's deepest enjoyment lies in the sense of oneness with nature that comes with this intense concentration on weather, terrain and season.

But even if you don't plan to become a competitive orienteer, you will probably enjoy your outing more, and stay with the activity longer, if you study some of the basics of the event. Whether you're improving your fitness for another sport, or just out for a leisurely stroll with your family, understanding skills and strategy will increase your fun.
Later in the book, we'll look at some of the skills and strategies you'll use to adapt to different terrains and situations. But first, let's review what happens in an actual orienteering event.

- The goal in orienteering is to find the fastest route between a series of features in the terrain, using a simple compass and map as navigational aids.

- Orienteering events are usually held in wooded or open country, with some obvious land use features such as fences, trails and fields.

- Participants do not know what their course will be before a competition. When they reach the start, they are given a special orienteering map of the area showing the series of features they must find in the order specified.

- Courses vary depending on the participant's age, sex, fitness level and experience. Beginners, advanced beginners, intermediate and advanced competitors run a different set of control features, on different lengths of courses. (A recent innovation has been the introduction of shorter courses for older, advanced competitors. These allow for the reduced physical abilities of athletes in their late 30's, 40's and 50's, but compensate with an added degree of technical challenge.)

(photo by Vida Radovanoviz) ►

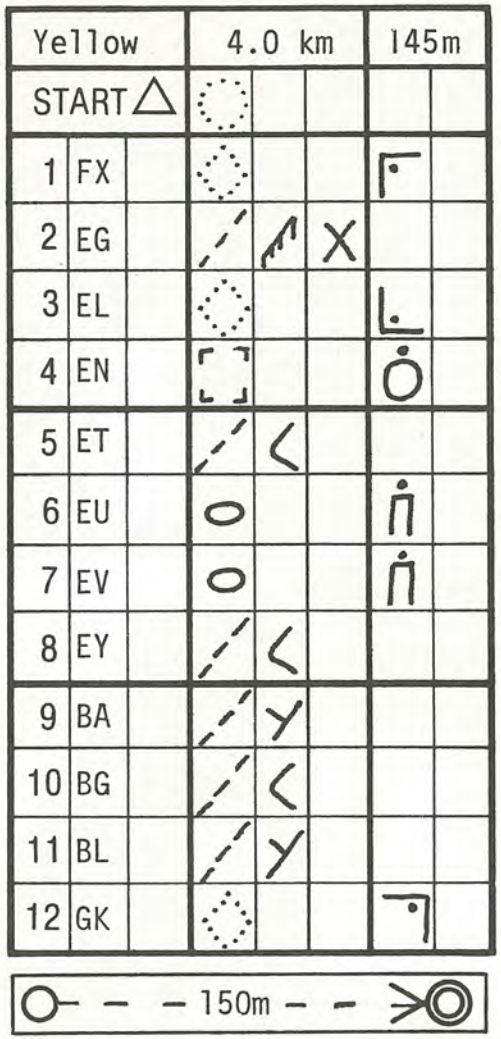
- For major events, the area used for the day's competition and the map are also usually new to the orienteer. He or she does often know, however, what to expect in general terms: the length of the course, perhaps the number of controls, the amount of vertical climb, the degree of technical difficulty, and the physical characteristics of the terrain, either from information provided by the meet organizers or from previous experience in the same or similar terrain.

- As in cross-country ski racing, orienteers use an interval start. Each competitor is assigned a start time at the registration table. A usual first start time is 11:00 a.m. A competitor with the start number 22 would begin at 11:22, a time of 68 would be 12:08, and so on.

- The start area is usually located within a 5 to 20 minute walk from the event centre, along a path marked by coloured streamers. Several minutes before their individual start times, orienteers are summoned to the first of three start lines. At the minute whistle, they move to the second line for one minute, then to the final line where their course maps are waiting. At the start whistle, the orienteer takes the map and begins orienteering.

- Attached to each map is a description sheet with the details of the location of each control to be visited. Controls are identified by codes, either letters (AE, FG) or numbers (26, 242), which also appear on the control flags attached to each control feature. The code is the orienteer's check that he or she has found the right control.

- Beginners' descriptions are written in English. On intermediate and advanced courses, however, IOF (International Orienteering Federation) symbols are used. The illustration shows how to read the description sheets.



Safety bearing: 180° south

IOF symbols for control descriptions ▲

Written control descriptions ►

YELLOW (4.0 km, Max climb 145m)

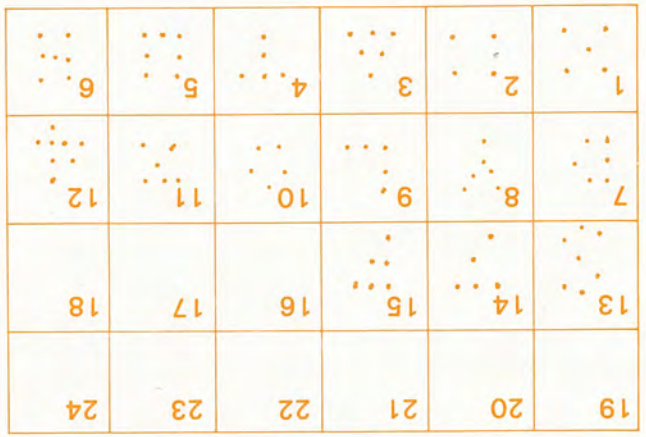
no.	code	control description
1	FX	semi-open area, N.W. corner, inside
2	EG	trail and fence crossing
3	EL	semi-open area, S.W. corner, inside
4	EN	ruin, N. side
5	ET	trail bend
6	EU	hill, top of
7	EV	hill, top of
8	EY	trail bend
9	BA	trail junction
10	BG	trail bend
11	BL	trail junction
12	GK	semi-open area, N.E. corner, inside

Follow marked route to FINISH---150 metres

Safety bearing: 180° south

- A control card with the orienteer's name and event category is also attached to the map. Map, description sheet, and control card are carried in a rain- and tear-proof plastic case.

- If the control features are not already circled on the map, orienteers spend several minutes carefully marking their course from a master map at the start.



orienteering control card

NAME Ted de St. Croix		CLUB Loup Garou				
NO	FINISH	2	0	1	0	0
CLASS M21	START	1	1	2	0	0
DAY 1	TIME		8	9	0	0

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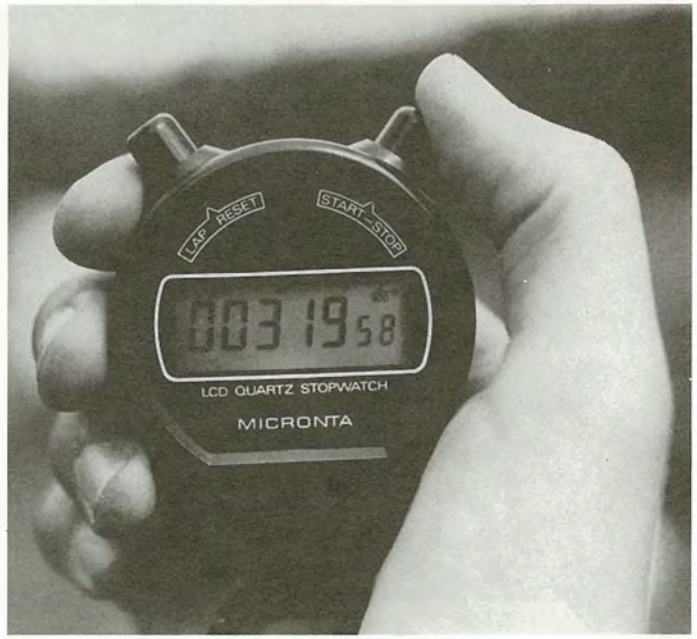
- Orienteers use a simple compass and a detailed orienteering map as their only navigational aids. Knowing where you are at all times is the secret to successfully completing the course, and good map reading skills are essential.

- After leaving the start, the orienteer plots a fast, safe route to the first control. Unlike cross-country ski racing and most other outdoor distance events, orienteering does not dictate the participant's route. Route selection, in fact, is the key to the sport and a major part of its unique appeal.

- At each control, the orienteer punches in, first checking that the codes on the map and control flag match. Controls must be taken in the correct order; an orienteer who stumbles on control number 3 while looking for number 2 must not punch in until 2 has been found.



- After completing the series of controls, the orienteer follows a streamered route to the finish.

- As the orienteer crosses the finish line, his or her finish time is recorded, and the officials calculate the elapsed time from the start time marked on the map. The control card is checked to make sure the individual controls punched are in the right boxes. The final result is posted in the finish area.

As we mentioned in the event description, the route for an orienteering event, unlike those for cross-country ski racing and running, is not laid out in advance by the organizers. It is up to each participant to choose a route that suits his or her fitness, experience, and skill. But even though it appears that orienteers are allowed to take short cuts, the best route may not always be the shortest in terms of distance. Rather, it's the one that lets the orienteer move from one control to the next as fast as possible — without getting lost.

The winning orienteer is the one who can quickly evaluate the relative merits of a fast but perhaps risky route versus a slower, safer approach, and then execute that decision. 'Why' and 'How To' select appropriate techniques, wise routes, and winning race strategies and tactics are the subject of the following chapters.

Competitors compare results ▲
Orienteers discuss route choices after the race ►
Prize presentation at the '85 Canadian Championships ►

2

Map Reading

The orienteering map gives you all the most important information for successful navigation and route selection - the topography of the terrain and vegetation cover. Good map reading is the essential skill for orienteering.

THE ORIENTEERING MAP

The orienteering map is a detailed representation of the landforms and vegetation in a particular area. Features such as boulders, streambeds, small depressions and subtle vegetation changes not contained on other everyday maps are accurately plotted on orienteering maps. They provide you with the pertinent information to successfully navigate between control points.

The scale of the orienteering map is usually 1:15,000 and an 8 1/2 x 11 inch map depicts about 10 square kilometres of terrain. Larger scale maps, 1:5,000 and 1:10,000, show even more detail. They are often used by beginners. By comparison the 1:50,000 series of topographic maps, designed for hikers and outdoors people, provide only coarse details of the terrain and are unsuitable for orienteering. Orienteering maps are carefully prepared through extensive field checking of the terrain details by a trained map maker.

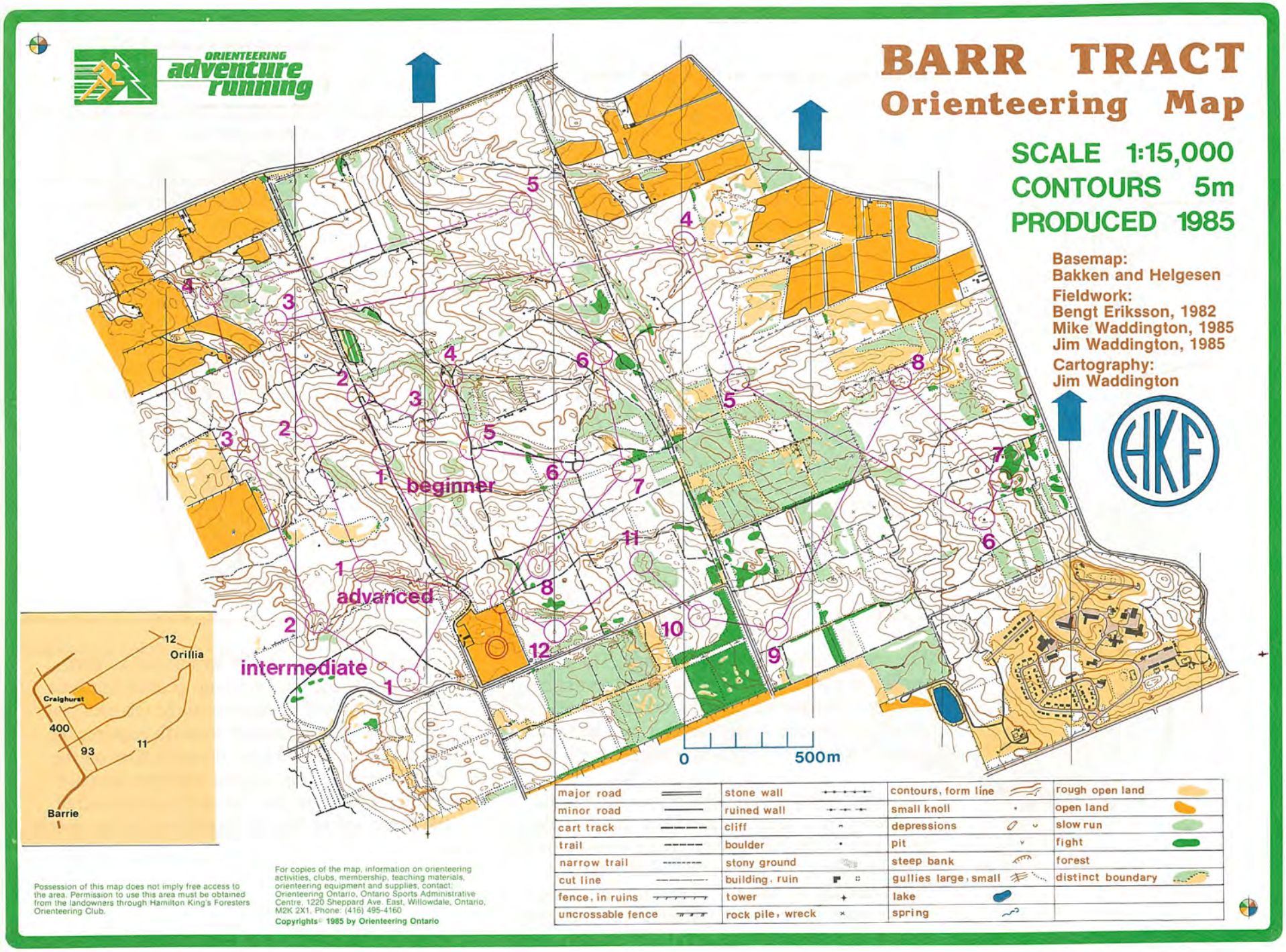
The orienteering map uses five colours and various symbols to represent the different features of the terrain. The symbols are explained in the legend printed on each map.

- Black is used for trails, roads, rock detail and buildings.

- Brown, for topography and contours (hills, ridges, valleys and depressions).
- Orange, for open fields and semi-open areas.
- White indicates forest.
- Green represents dense vegetation.
- Blue shows the water details (ponds and streams).

Magnetic north is indicated on the map by parallel "meridian" lines. Modern orienteering maps are drawn to international specifications and maps throughout the world use the same colours and symbols.

The map is enclosed in plastic (map case) to protect against tearing and from rain, ground water and sweat. Orienteering events are held throughout the year, and your map will need all-weather protection.



Possession of this map does not imply free access to the area. Permission to use this area must be obtained from the landowners through Hamilton King's Foresters Orienteering Club.

For copies of the map, information on orienteering activities, clubs, membership, teaching materials, orienteering equipment and supplies, contact: Orienteering Ontario, Ontario Sports Administrative Centre, 1220 Sheppard Ave. East, Willowdale, Ontario, M2K 2X1. Phone: (416) 495-4160

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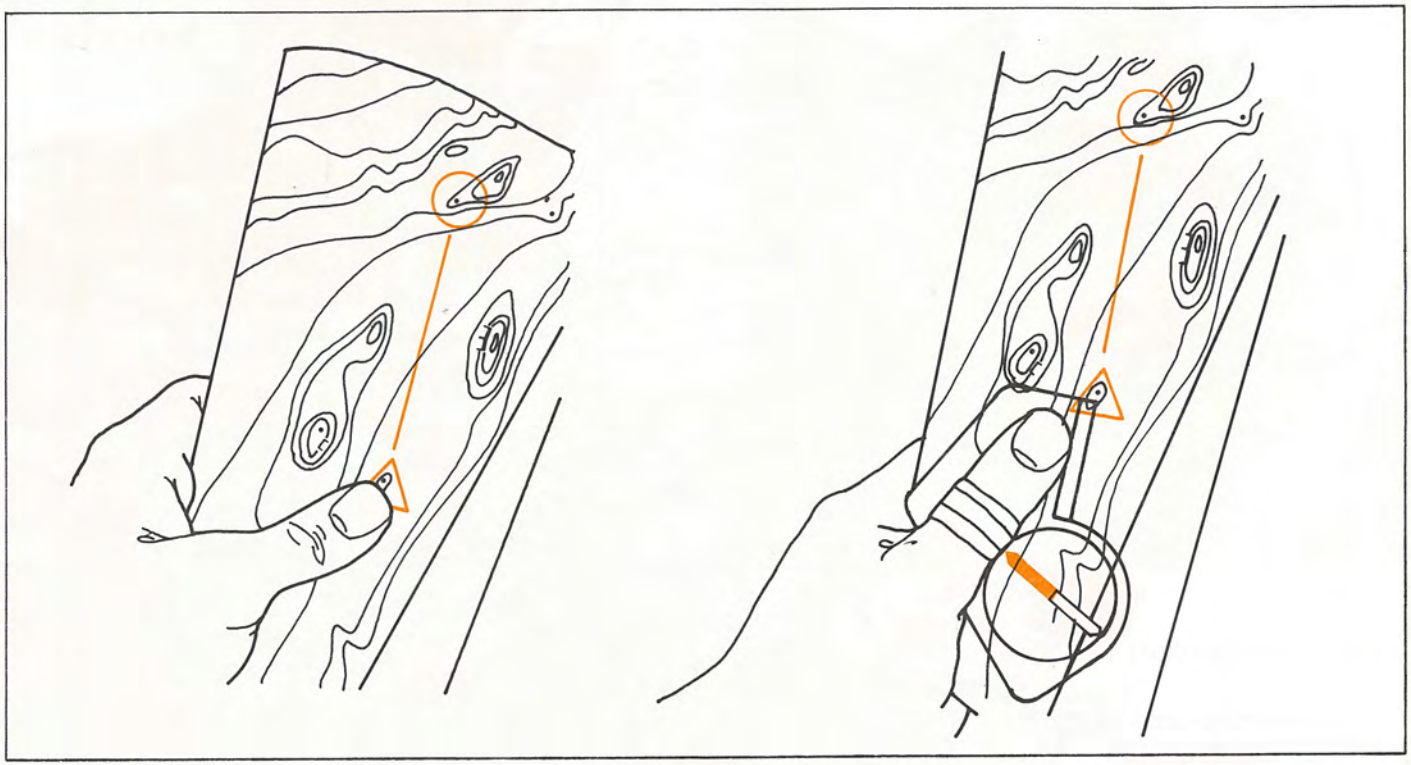
HOW TO MAP READ

Hold the map as shown in the figure below:



- The map is usually folded once only. The fold is parallel to your direction of travel, to permit easy reading of the terrain details around your selected route. (If the map is very large, it may be folded two or three times, depending on the size).

- Your thumb (or, if you use a NorCompass, the compass tip) is used to mark your position. As you move in the terrain, you move your thumb to each new location on the map. This is called "map reading by thumb". Your thumb should always mark your position. Even if you fall, keep a good grip on your map, and your location.

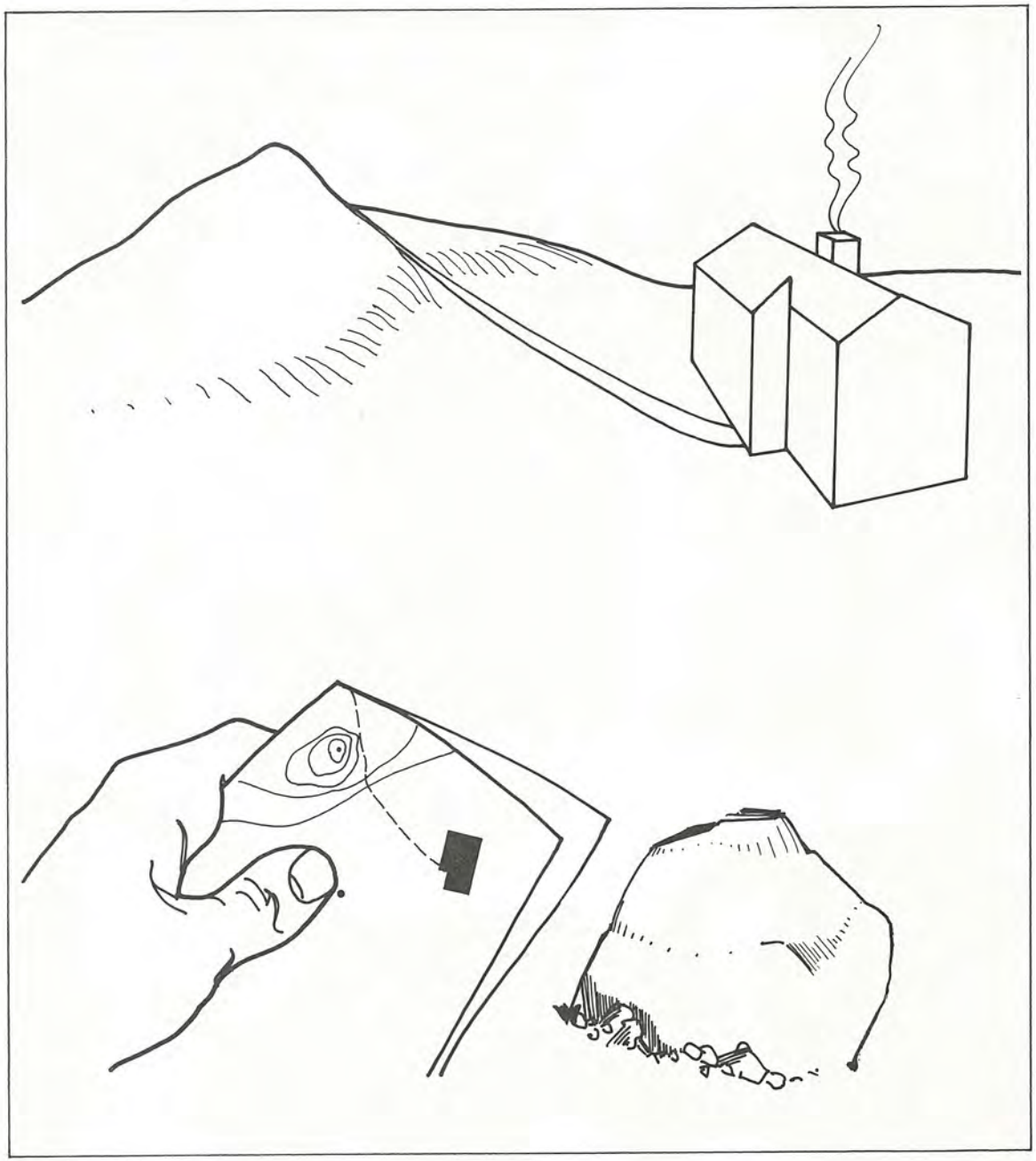
- "Orient your map" to the terrain and to north. Orienting to the terrain means positioning your map and yourself in relation to the features you see around you. Orienting to north requires the use of a compass. The north-south lines on the map (meridians) are aligned with the compass needle. Make sure you match the north end of the meridians to the red (north) end of the needle.

- It is important to know how to use both methods of orienting a map properly and quickly.

- Orienting the map usually involves both procedures. In terrain with distinct features, you can easily orient the map with only the terrain. In terrain with limited visibility (dense vegetation) or few features (flat terrain), you'll likely have to use the compass to orient to north.

- In the beginning, you will use the compass to orient the map until you develop your map reading skills to the point that you can easily identify map details and features in the terrain.

- Your goal is be able to orient your map with terrain features with only minimal use of the compass.



Orienting to the terrain ►

HOME STUDY

One of orienteering's most attractive features is that you can sharpen many of your skills through practice at home. In fact, home study is an important part of every orienteer's training program. The following will help you improve your map reading skills through home study.

- Sit comfortably in a quiet room with no distractions. Have several orienteering maps and the standard map legend ready. Study the map details - symbols, colours, direction (magnetic north). (Maps are available from your local orienteering clubs or regional associations).

- Study different maps - as many types and from as many different orienteering areas as possible.

- When you look at the maps, try to picture how the various features and symbols would appear in the terrain.

- Study maps as often as you can, a minimum of every other day for 15 minutes or longer. Put maps in the same places as your favourite magazines, where they'll be handy for study, even if only for a few minutes at a time.

TERRAIN STUDY

Home study will help you become familiar with different kinds of maps and the various symbols, but the best way to learn how to map read is to go out into the field. This depends on the availability of orienteering terrain and maps near you. To learn the symbols and features, you should progress through the following stages.

1. Walk along easily travelled trails and open fields. Read the map, taking special note of the features around you as you walk.

Look "in the terrain" as far as possible. This means taking a careful look at all the features around you, as far as you can see, in a 180 degree semi-circle. But don't neglect features near you either. Look around in the terrain often. Keep the map oriented. Read it frequently, but only briefly. Don't let it hypnotize you.

Progress to the next level when you can:
- focus on the map and know where you are at all times
- map read by thumb
- keep the map oriented
- refold the map and maintain position
- look around in the terrain and see distant features
- move smoothly, and feel confident and comfortable map reading

If you find yourself continually stopping to read the map, you need more practice.

2. After you can successfully walk and map read, progress to a walk-jog.

3. When you've mastered that level, progress to slow jogging and then running along the trails and fields.

4. The final progressions are walking, jogging, and then running in more difficult terrain, map reading at the same time. Get off major trails and try map reading along minor trails. Next move to open forests, then to forests with denser growth. Use the criteria for progression listed above. Don't attempt a new skill level until you're fully comfortable with the last one.

- On difficult terrain, your success will depend on your level of fitness. If it's low, these progressions will prove difficult because you'll become fatigued easily and won't be able to concentrate on your map reading.

- Similarly, your skill at running in the terrain also affects your learning of map reading skills. Having to concentrate on every foot placement interferes with map reading. As you increase your fitness and agility, your map reading skills will also improve.

PRACTICING MAP READING

HOME PRACTICE

Appropriately called 'armchair orienteering', home practice is an effective method of training map reading. So pull up your favourite armchair. For effective practice

- Study maps with courses on them. The courses should be at the level you compete at or the next level up. If you have blank maps, draw your own courses or have a friend draw some for you.

- Review the courses you have completed at events. Study the map carefully to determine what terrain details and map symbols you should have seen and read. Compare them to what you actually saw and read. Be critical. You should have seen all the large features and most of the small details close to the routes you took (within 50 to 100 metres, depending on visibility).

- Picture what the terrain looks like. Then picture the terrain for different weather conditions and seasons.

- Study other orienteers' maps and courses. Ask yourself the following questions: What did they see to find their way? What features did they read and use? What features and map details would you have used?

- Here are a couple of map games you can do by yourself.

MAP PUZZLE
Take two copies of an orienteering map and cut one map into pieces, like a puzzle. Mix the pieces up. Then match each piece to the other

copy of the map until the map puzzle is complete. Look carefully at the colours and symbols to make sure they're identical. As an added challenge, time yourself.

SPEED READING

Sit at a table and place a map with a course drawn on it in front of you. Look at a leg (section of the course between two controls), part of a leg or a section of the map for a specified period of time. Then cover it with your hand or a sheet of paper. Try to picture the map features you just read. If you can't remember them, look at the map again. Start with 30-second looks at the map and gradually decrease the time required to absorb the same amount of information (30-25-20-15-12-10-5-4-3-2 seconds). When you can look at a map for only 2 to 5 seconds and read enough information for successful navigation, you'll be well on your way to becoming a very good map reader.

TERRAIN PRACTICE

Map Walk
Walk or hike in the terrain with a map. Study the different features and symbols to determine how the map maker has interpreted the terrain. This type of practice is particularly helpful

- when you are first learning to orienteer
- when you are practicing for a new and different type of terrain, and
- when you first go out in the spring to begin the season.

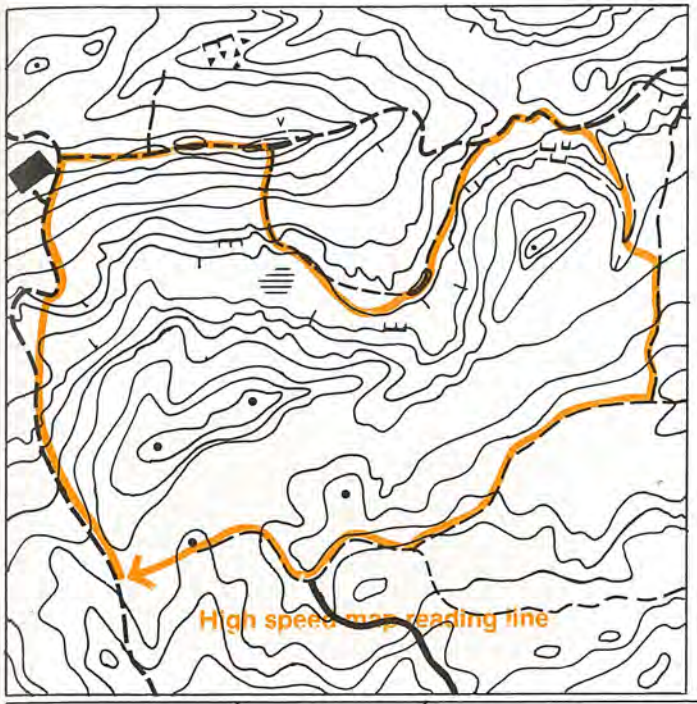
Map walks are used by the world's best orienteers as training. So when you're out there, you're in good company.

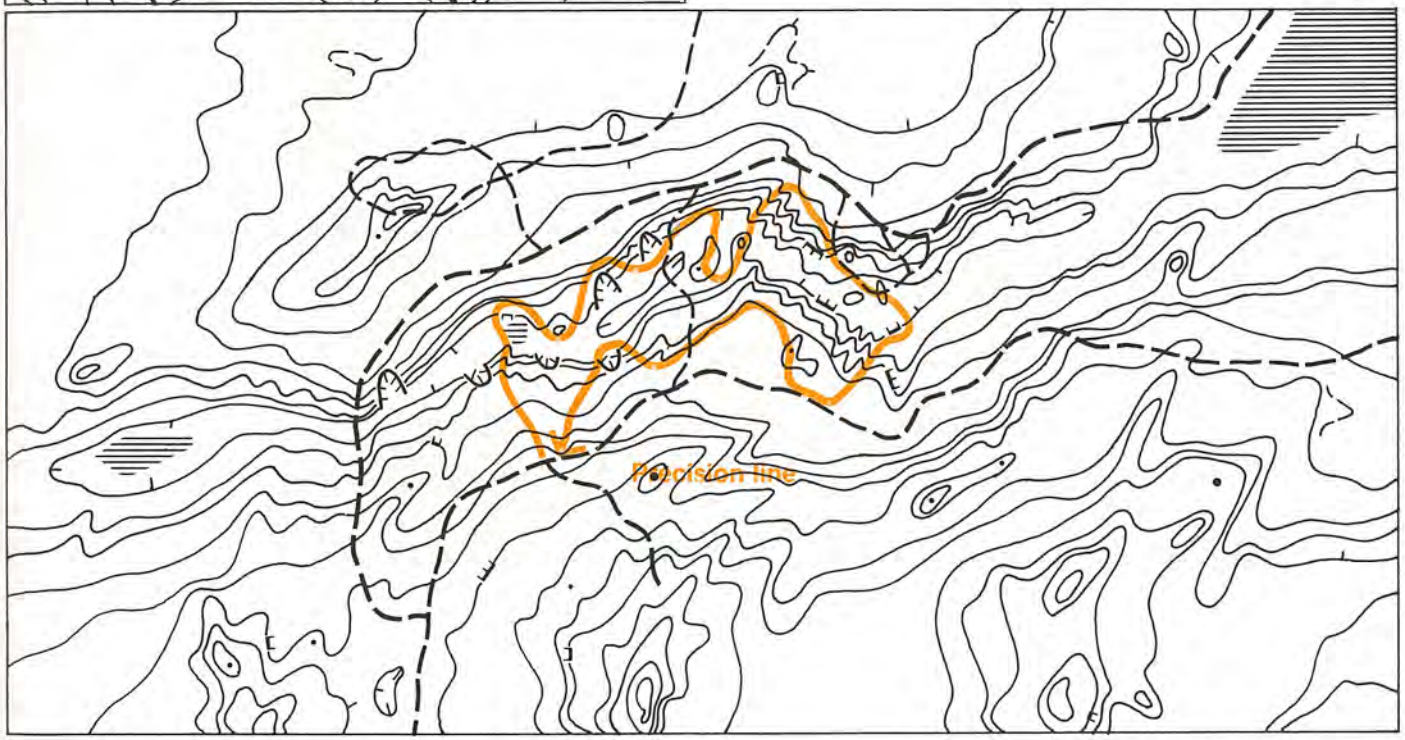
A good map walk usually lasts one to two hours. Start with a 30-minute walk, and progress to two hours, or go for as long as you're enjoying it!

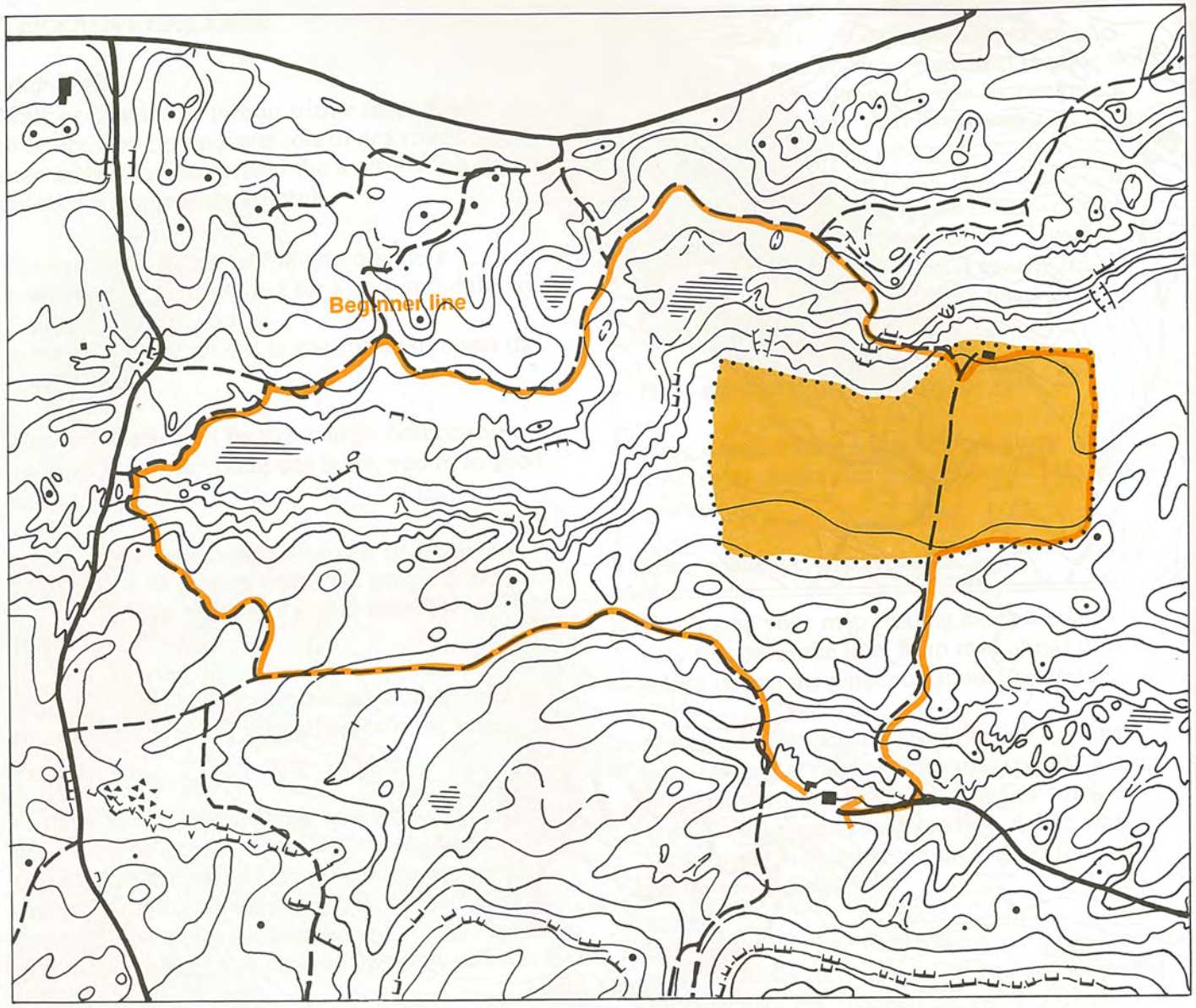
Line Orienteering
This is a popular form of training used to practice many different skills, depending how the line is drawn.

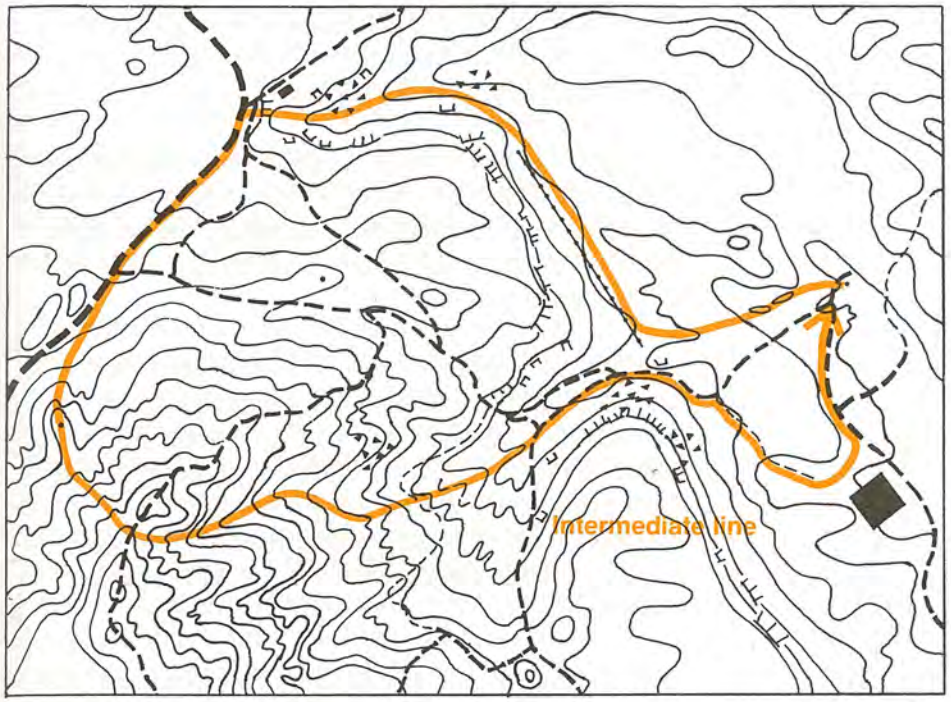
Draw a line on a map in the area where you want to practice. Use a red pen and try not to obscure any details. The line should wind through the terrain along and past significant features. Go to the terrain and orienteer along the line. Follow the line route as well as possible. If you commit an error, go back to where you left the line.

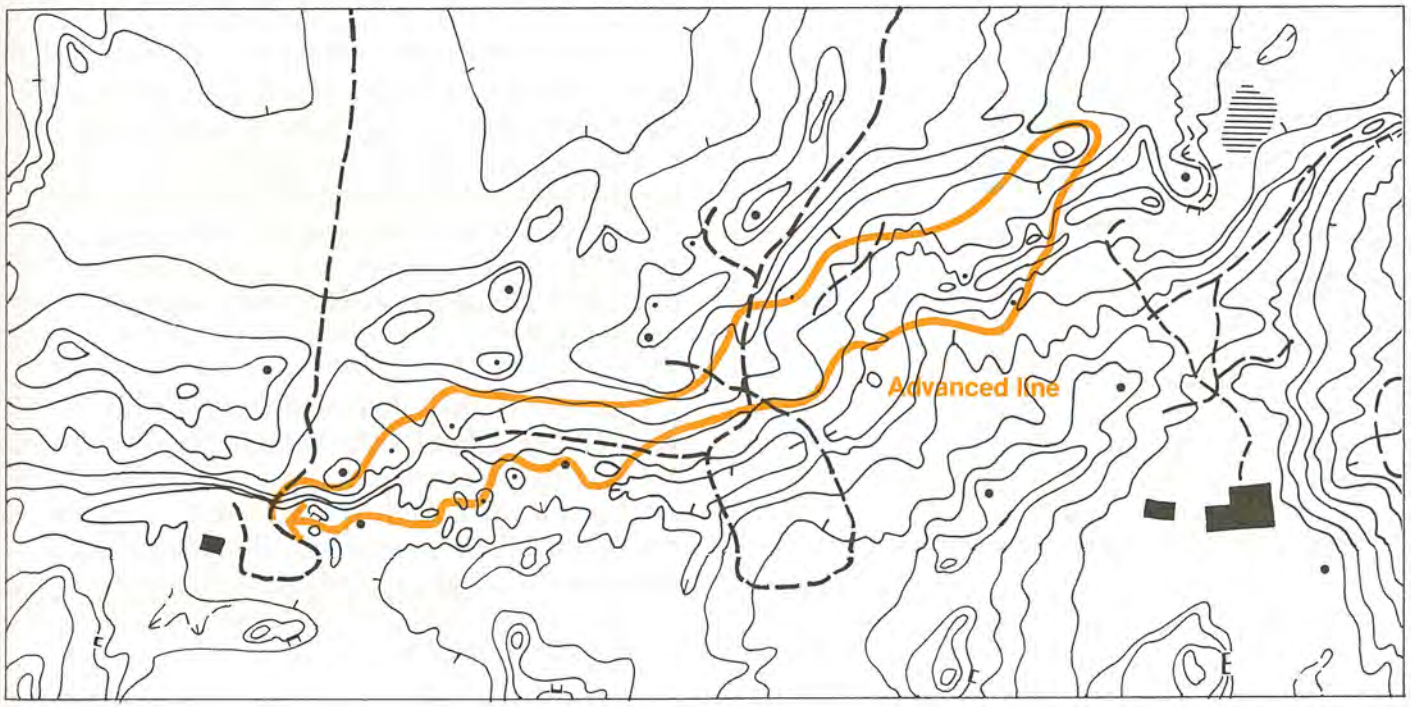
- The length and difficulty of the line should reflect your skill and fitness level. Every kilometre of line usually takes 15 to 30 minutes to orienteer, so don't get carried away.
- Begin with an easy line that follows trails and fields, and doesn't change direction often or abruptly. As you improve your map reading skills, increase the difficulty of the line by drawing it through forest rather than along trails and fields. This intermediate line may have more changes in direction but it follows major linear features in the terrain. Once you've mastered the intermediate line, try a more advanced line. This line can go anywhere on the map, but it usually travels through detailed terrain and has many changes of direction.
- Have a friend draw your line for you.
- Have a friend hang a few ribbons along your line to serve as checks that you orienteered the line successfully.
- For a challenge, time yourself.
- Don't stop your map reading along a relatively easy section of the line. Map read ahead of yourself to determine what you should be seeing.
- Once you've improved, vary the line to practice map reading at different running speeds. A long line following handrails and with few turns is used for high speed map reading. A line with many turns in detailed terrain is good for precision map reading.
- Progressions in line orienteering are a function of time and difficulty. The faster you can map read and navigate the line, and the more difficult the line you can orienteer, the better you will be.

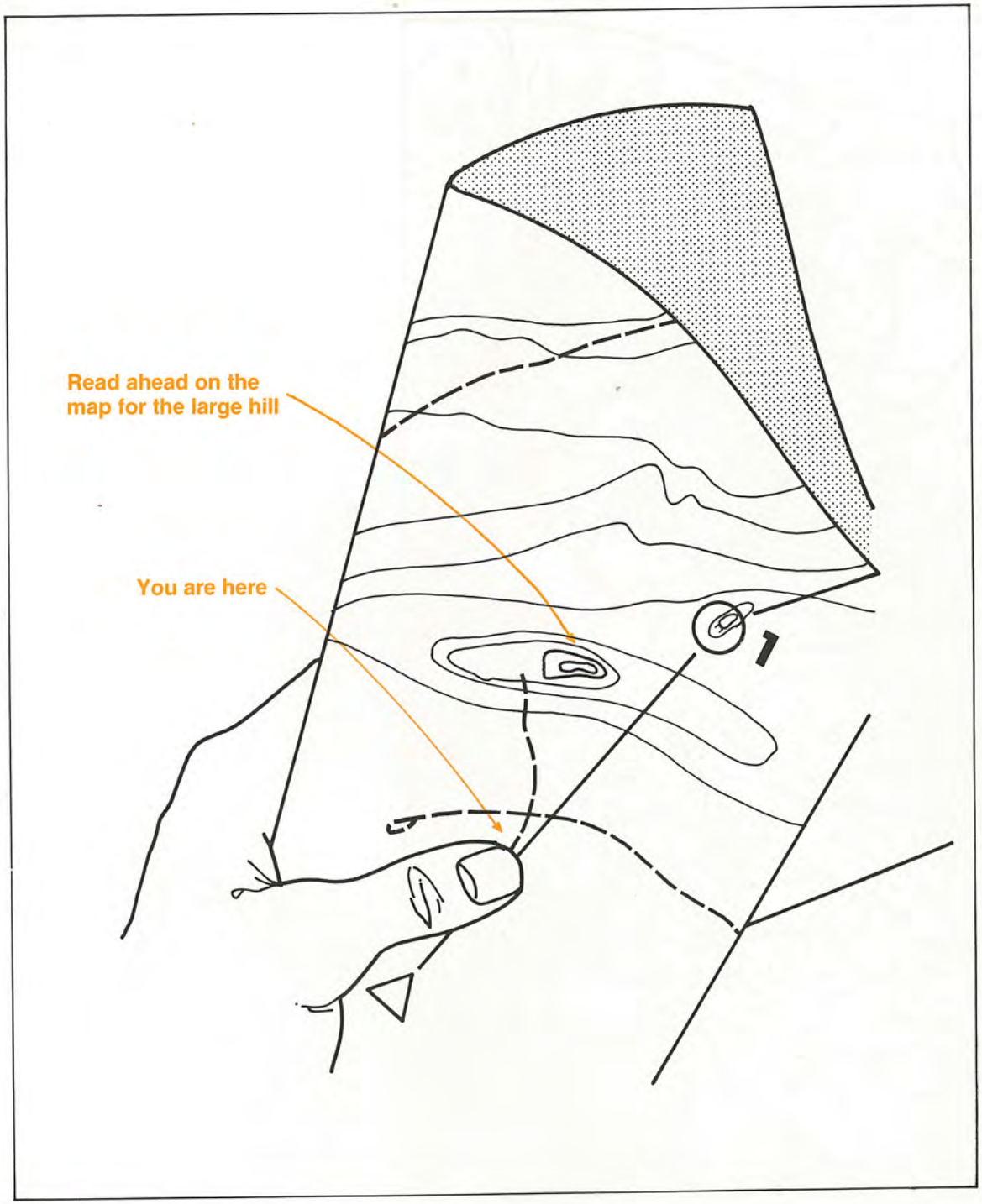

High speed map reading line


Precision line


Beginner line


Intermediate line


Advanced line



To be a good orienteer, you must be a good map reader. Pay special attention to learning and perfecting your map reading skills.

Map read on the move. A good map reader stops to read the map only when a change in the terrain or race tactics demands it. Otherwise, the orienteer reads the map on the move. This takes a great deal of long-term practice.

Map read frequently. Try to look at your map about six times a minute. During practice, use a watch with a second hand and time yourself to read the map every 10 seconds. This is probably more often than you presently map read, but you'll be surprised at how much more effective your map reading becomes when you use quick, frequent checks.

You may not run as fast as an elite orienteer, but you can train yourself to orienteer and map read just as well.

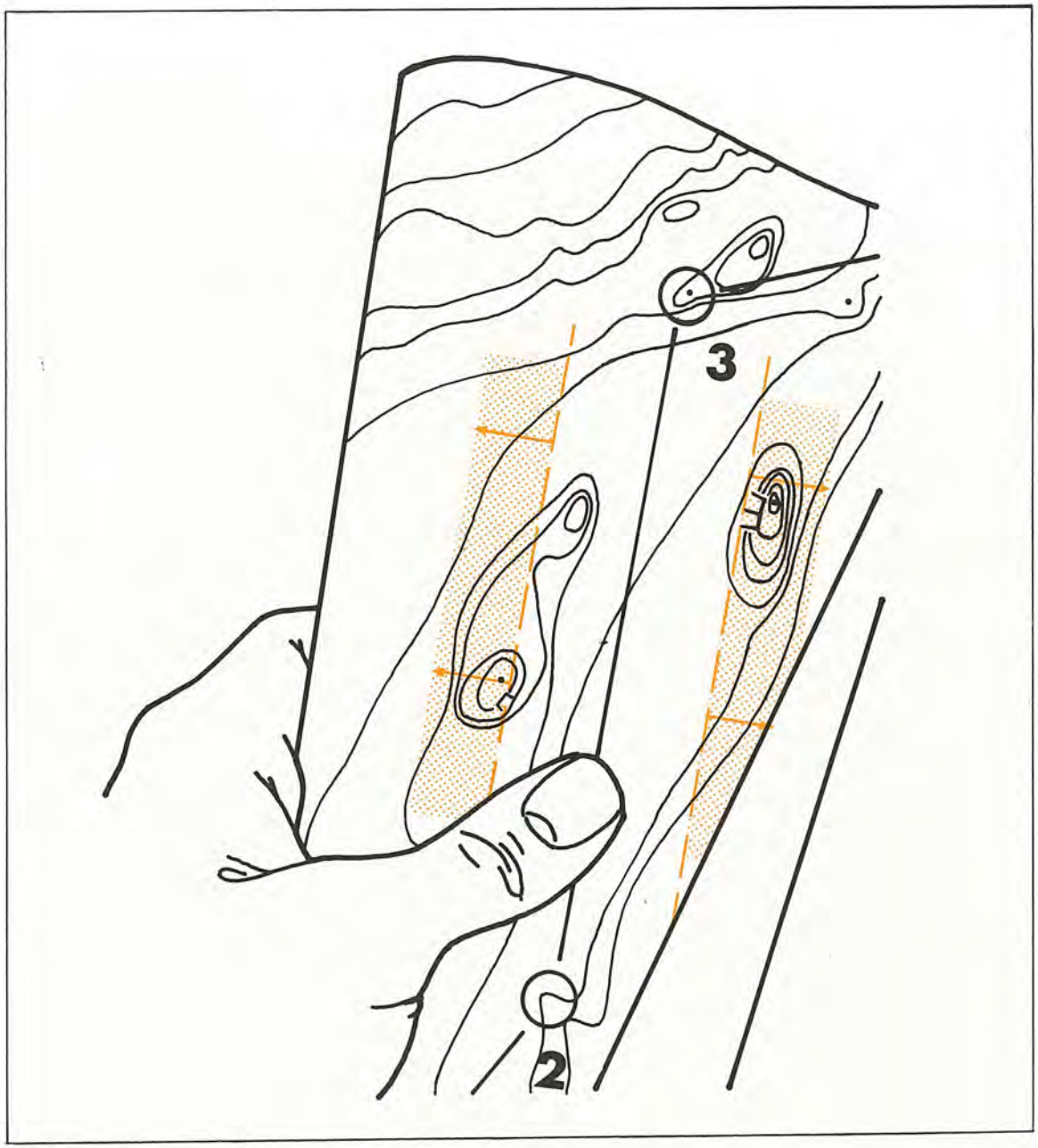
Look around in the terrain. Your field of vision should be as broad as the terrain permits. You must look around you - forward, to both sides and even behind sometimes. Without this information (what you see around you), your understanding of the map will always be too limited. This is a common problem with many orienteers and is referred to as "tunnel vision".

Read ahead. Once you can successfully mark your location and map read the terrain near you as you orienteer, start reading ahead. This means looking at the map to determine what features and details you will be approaching. By map reading ahead, you'll be prepared for the terrain features coming up next. And that will make your progress through the terrain faster.

Don't restrict your map reading to the 50 to 100 metres on either side of your line of travel. Read the map in excess of 200 to 300 metres along both sides of your line of travel. The further you look, the more you see. The more you map read, the more information you have to continually mark your location and make decisions about your strategies and tactics.

Memory orienteering. Try to remember the features you've read. This will help you orienteer more quickly since you won't have to stop or slow down to clarify your position. You must find a balance between what you can remember about the map from glances and how much information is required to navigate successfully. As a rule, when in doubt, read the map. It's safer than memory orienteering and always works if done properly. To be a good map reader, you don't have to be proficient at memory orienteering.

Map reading in its advanced form is a continuous series of glances at the map, as opposed to an intense single look. The glances last only for a second or two, but because they are frequent they constitute intense lengthy study - the same section of the leg and map is read repetitively as you move along to the next overlapping section. When you are first learning, lengthy looks at the map are required, and in fact, you may have to stop frequently in order to read the map. This improves with practice. There are no hard rules, but try to read the map for only 10 to 15 seconds at one time, even when first learning. As you improve, decrease the time per look at the map.



Map read beside your line of travel ►

When map reading on the move, hold the map steady and close enough to focus on. Be careful not to run into anything. Look ahead in the direction you are running to make sure the way is clear before you look at your map.

If you have trouble keeping your thumb on your location on the map, check to make sure the map is folded correctly and you are holding it properly.

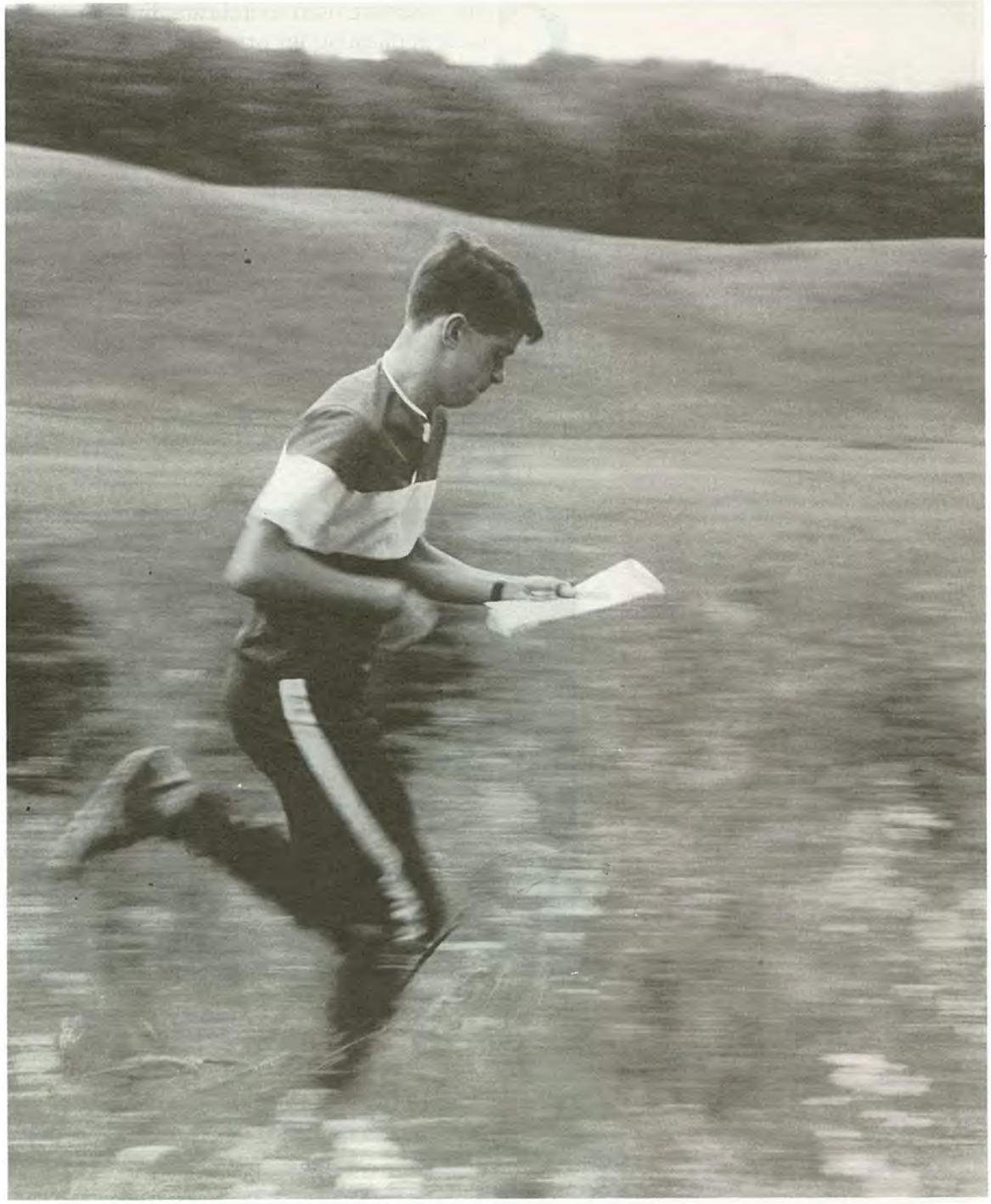
If your eyesight is poor, you may require some magnification to read all the details on the map. Special headsets are available with magnifying lenses that can be flipped down for reading and flipped back up for running. Many compasses also have magnifying lenses, or you can carry a small magnifying lens if you wish.

Map reading skills will seem confusing if you try to do them all at once. Practice the different skills separately, and when you feel comfortable with one, add another. Be patient, your skills will improve with practice.

If you're having problems map reading, check your basic skills: orienting the map with the terrain and magnetic north, map reading by thumb, and looking around in the terrain. Be critical of your basic skills. They're the key to success.

SUMMARY

1. Good map reading is essential for successful orienteering.
2. Orienteering maps are detailed representations of terrain. They are drawn to international specifications using standard colours and symbols. The usual scale is 1:15,000.
3. Home study and terrain study of maps are excellent ways to learn and practice map reading.
4. The learning progression for map reading is to increase the pace (walk - jog - run) and difficulty of the terrain (trails/fields - forested terrain - complex terrain).
5. To be a successful map reader requires proper execution of the basic skills: folding the map, reading by thumb, looking around in the terrain, and orienting the map to the terrain and to north.
6. Armchair orienteering, the study of orienteering maps and courses, is an excellent method of practicing map reading at home.
7. The map walk, a method of training map reading, is used by orienteers of all levels, beginner to advanced.
8. Line orienteering is a popular and effective training for map reading. The terrain and type of line are adjusted to the level of the orienteer.
9. Difficulties with map reading usually result from poor execution of the basic skills.
10. "Tunnel vision", narrowed vision when looking around in the terrain, is a common affliction of orienteers.
11. Reading ahead provides a wealth of information that makes orienteering quicker.
12. Remembering map details is a bonus, but not essential. You can map read as often as you need to.



3

Compass

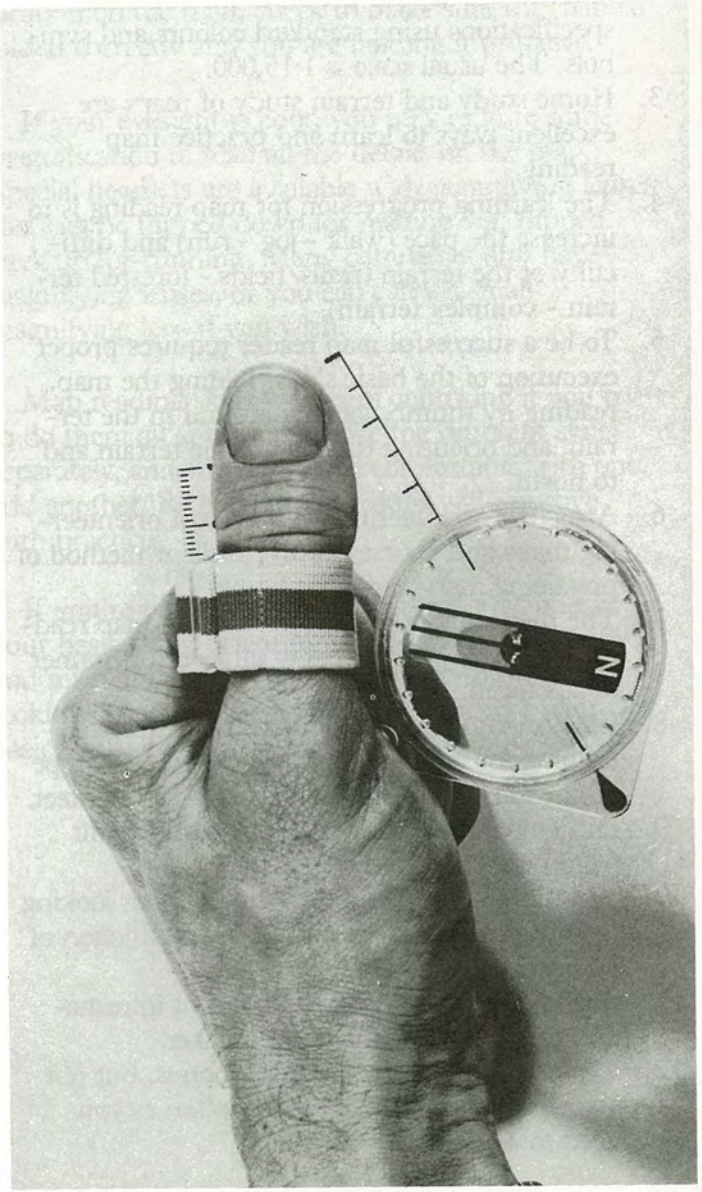
Compasses are used to indicate direction, but their application for orienteering is limited compared to the importance of map reading. The compass is a navigational aid, not a crystal ball, and is only as good as the orienteer using it.

THE ORIENTEERING COMPASS

Orienteers generally use one of two types of compasses.

- Protractor compass
- NorCompass or thumb compass

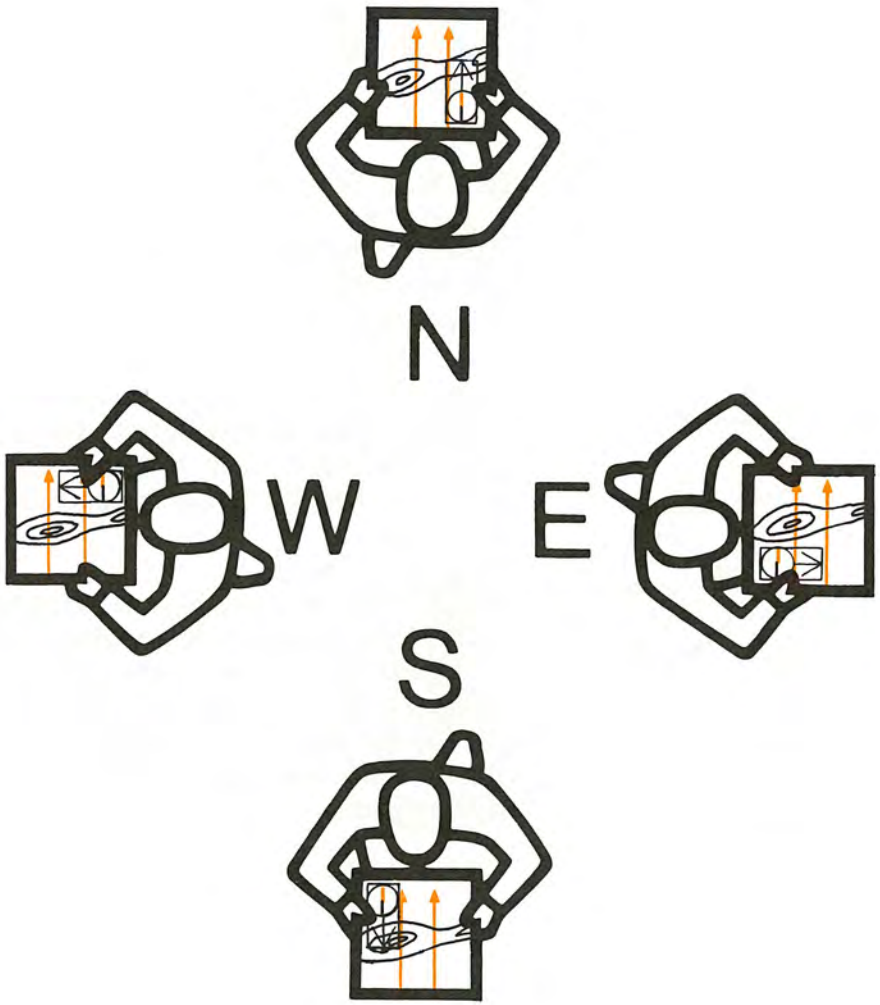
Both have a compass housing with a needle that points to magnetic north. A direction of travel arrow indicates the direction you want to take. Hold your compass at waist level in front of your body, with the direction of travel arrow facing away from you. Let the needle settle before reading the compass.



ORIENTING TO NORTH

The very first thing you want to do with your orienteering compass is to find north. The map must always be "oriented to north" for map reading. When the north end of the map's meridians are aligned with the red (north) end of the compass needle, the map is oriented. The compass is always held in the same position relative to your body, as described previously. The map, however, is always held in relation to north. That means if you change the direction you face, you must move your body around the map. This is accomplished by changing your grasp on the map, keeping it oriented to north the whole time.

Beginner courses are designed to minimize the use of the compass, except for orienting the map. Once the map is oriented, north in the terrain and north on the map are aligned.



The map should always be oriented to north ►

TAKING A BEARING

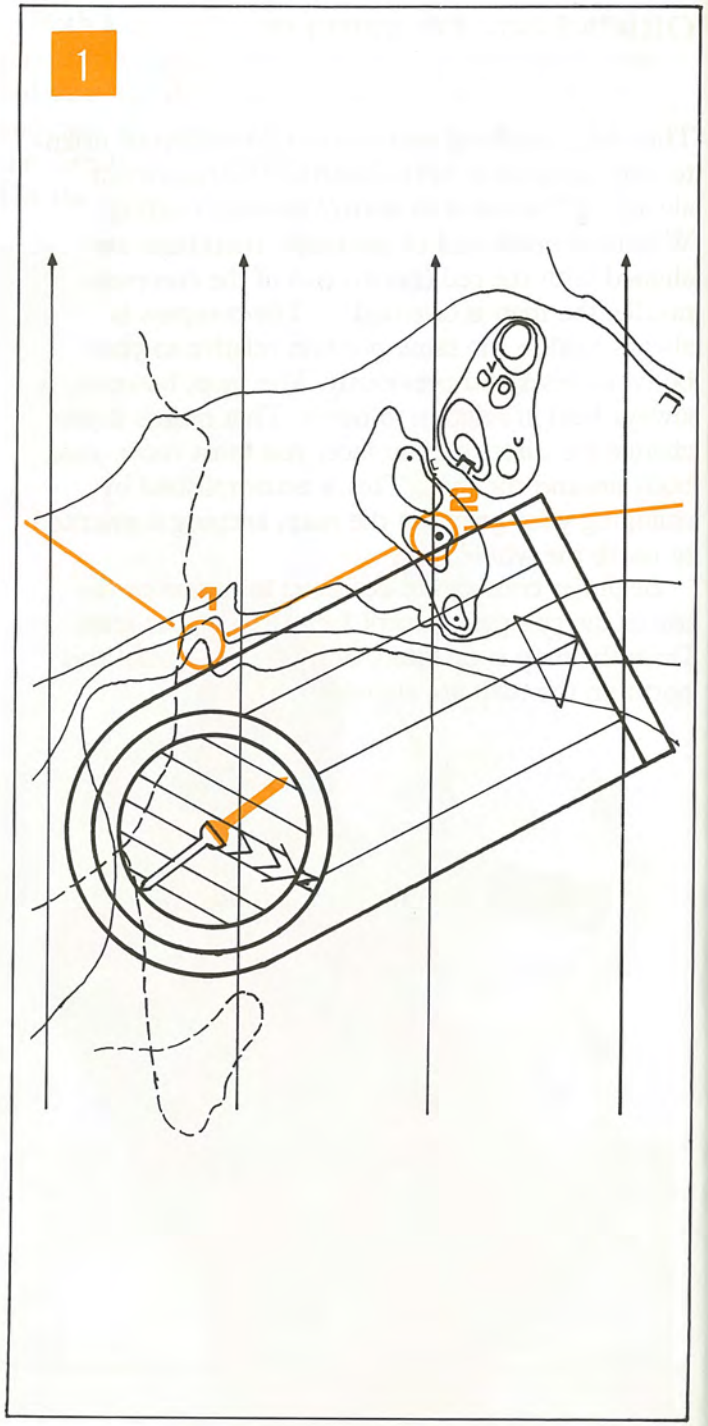
After you have mastered orienting your map with your compass, the next skill to learn is how to take a bearing. This is a more advanced compass skill, used to determine and then follow a direction taken from the map.

PROTRACTOR COMPASS

Step 1. Place the compass on the map and align the base plate (direction of travel lines) with the desired direction of travel.

Step 2. Turn the compass house until the lines in the house align with the meridian lines (north-south lines) on the map. Ensure that the north end of the housing lines and meridians correspond.

Step 3. Hold the compass level, waist high in front of you at your body's midline. Turn your body until the compass needle aligns with the housing lines. Make sure the red end of the needle and the north end of the housing lines correspond. Follow the direction of travel arrow, straight ahead.



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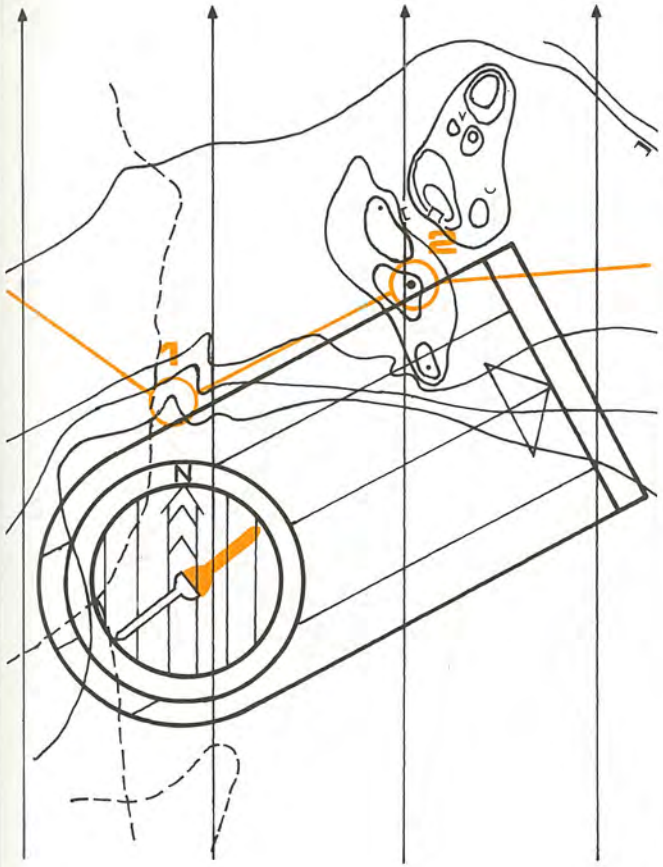

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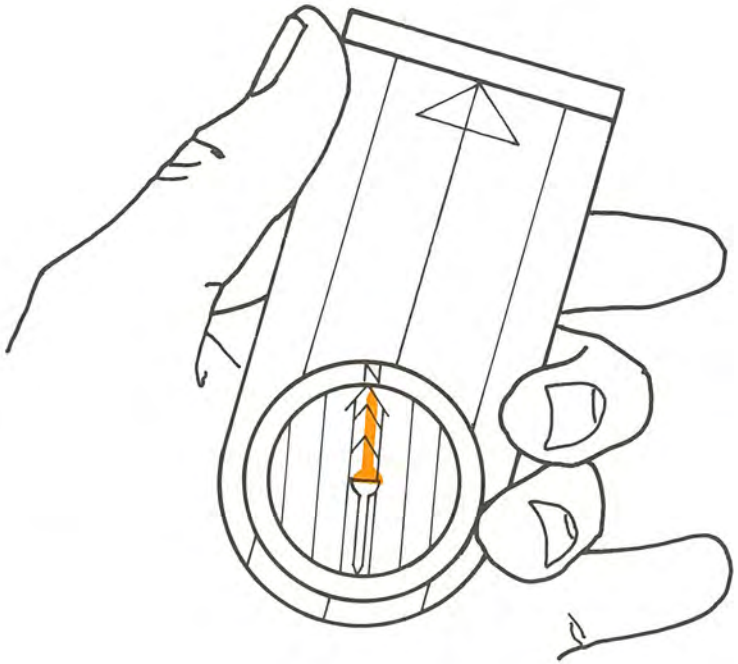
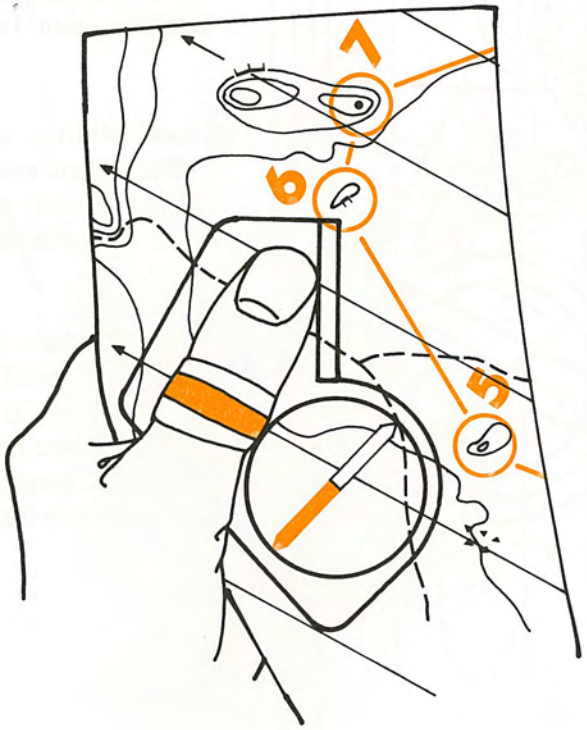


NORCOMPASS

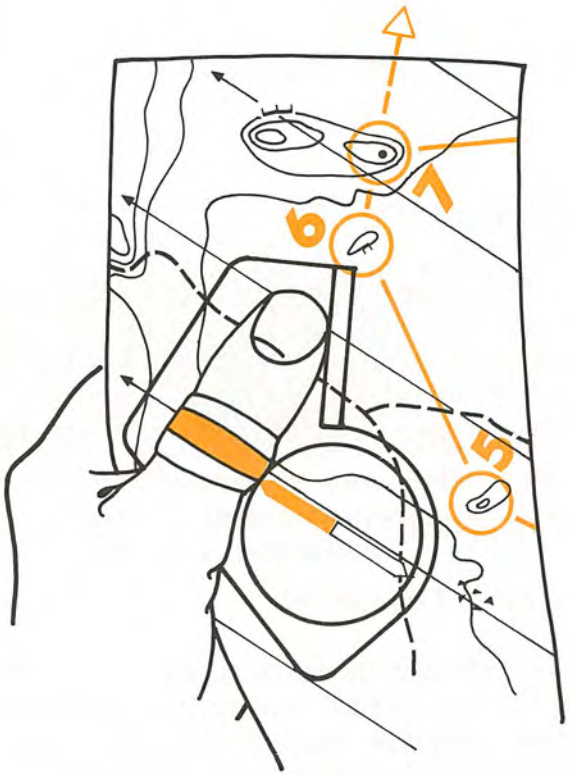
Step 1. Place the tip of the NorCompass on your present position, pointing in the direction on the map where you want to go.

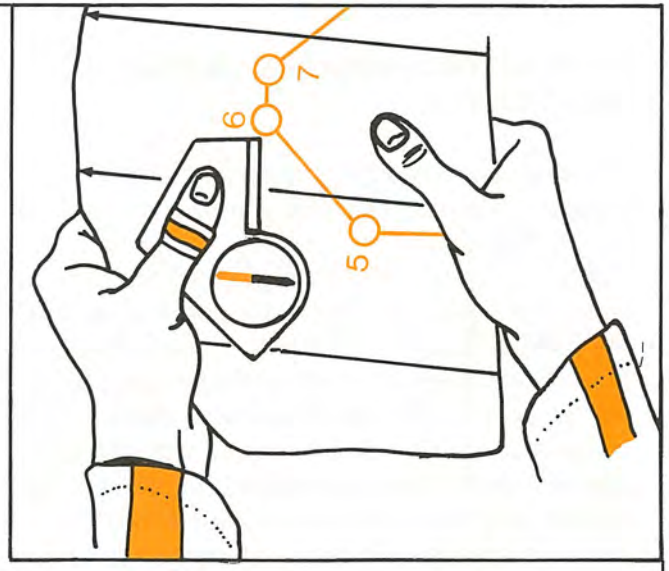
1



Step 2. Hold the compass level and turn your body until the compass needle aligns with the meridians. Make sure the red end of the needle and the north end of the meridians correspond. Follow the direction of travel arrow, straight ahead.

2





▲ **You can use your free hand to grasp the map and "steer" (like driving a car) until you are pointed in the right direction**

WHICH COMPASS IS BEST FOR YOU?

There are advantages and disadvantages to each compass, but both provide good direction if used properly.

PROTRACTOR COMPASS VS THE NORCOMPASS

- *Orienting map to north* - Easy using either compass, but the protractor compass requires the use of both hands.
- *Taking a bearing* - More complicated and time-consuming using the protractor compass, requiring good dexterity, particularly when running. Needle orienteering is a simplified version of taking the bearing. It is as simple with the protractor compass as with the NorCompass with the exception that both hands are required to orienteer by needle. (See the section on simplification). Taking a bearing with the NorCompass is very quick, with the map and compass used together as a unit. A couple of steps required for the standard compass are eliminated.

- *Rough bearing accuracy* - Equivalent for both compasses.
- *Precision bearing accuracy* - The protractor compass is more accurate, but more time-consuming. The thumb compass can slip and it obscures detail when taking a bearing.
- *Map reading* - The protractor compass permits good map reading by thumb. The tip of the NorCompass is used to map read by thumb, but may obscure map details, if not used properly.

Some orienteers find the NorCompass cumbersome, complaining of an awkward grip. In addition, the NorCompass is presently available only for the left hand. Other orienteers are uncomfortable taking and following a bearing with a protractor compass. A good feature of the NorCompass is that is allows you to keep one hand free for grasping things in the terrain, such as trees on a steep uphill. The protractor compass requires both hands, one for the compass and the other for the map. Try both, and use the one you find most comfortable and easiest to operate. Choice of compass is a personal thing. Most important, you must be confident using it.

PRACTICING YOUR COMPASS SKILLS

HOME PRACTICE

Take a stack of maps with courses, find north, and orient each map. Then take a bearing for each leg. Emphasize the steps required for each skill. Learning must be completed in the terrain, however, where the accuracy of the bearings can be evaluated.

TERRAIN PRACTICE

ORIENTING TO NORTH

Begin by walking in the terrain, using your compass to keep the map oriented to north. The first terrain you choose should be easily travelled trails, roads and fields that do not impede your movement. Progress to orienting the map while jogging and finally while running. Increase the difficulty by changing the terrain. Go off the major trails and fields, and traverse open woodland. Next, go on to difficult terrain.

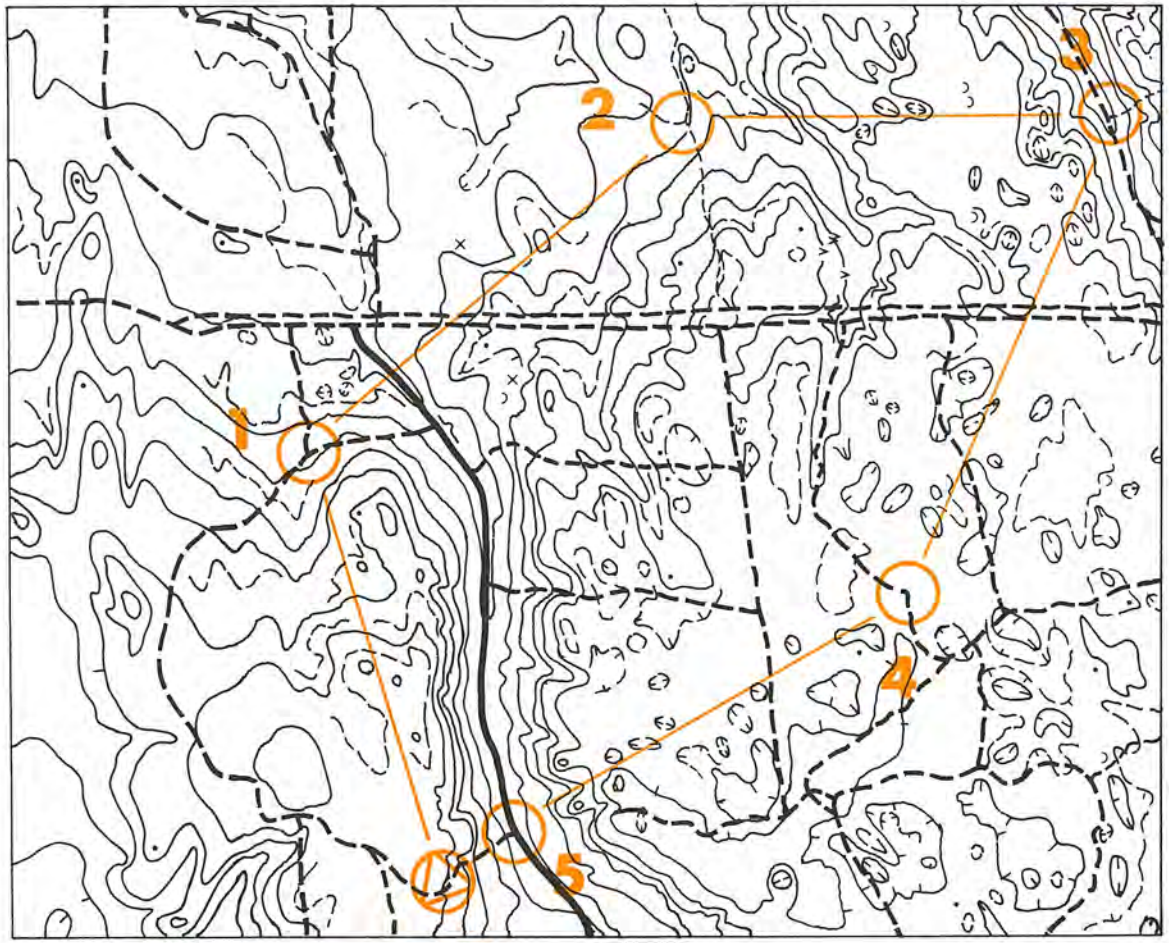
traverse open woodland. Next, go on to difficult terrain.

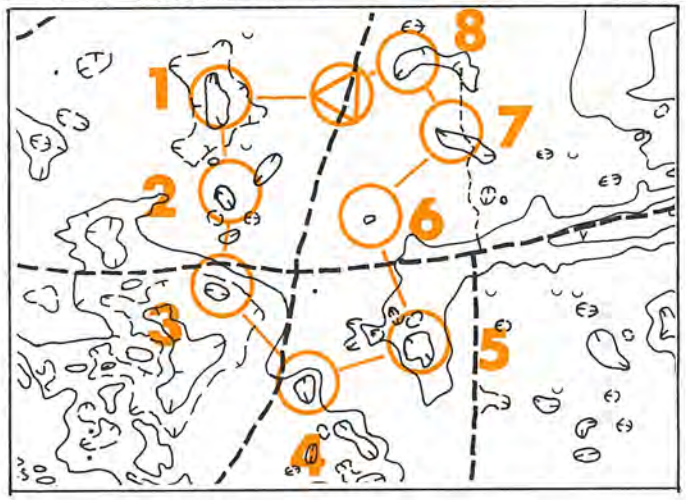
Line orienteering is excellent compass practice, because it forces you to keep the map oriented. Beginner lines have very few directional changes and traverse open, easy terrain along major handrails (trails, fences, fields). Intermediate and advanced lines introduce many directional changes and increased terrain difficulty. To measure how well you are doing, determine your kilometre time (length over time taken) for your training sessions. Be careful not to rush the progressions. Be able to execute each skill well before attempting the next in the series.

TAKING A BEARING

Follow the walk, jog, run progression guidelines for the following courses:

- *Rough compass:* long legs (500 to 1000 metres). The controls are at beginner level of difficulty, with large *catching features* such as trail bends and junctions. Routes have no handrails, thereby placing the emphasis on compass skills.
- *Precision compass:* short legs (less than 300 metres); small features for controls; direct routes with few details. Beginner courses use controls placed on large catching features.

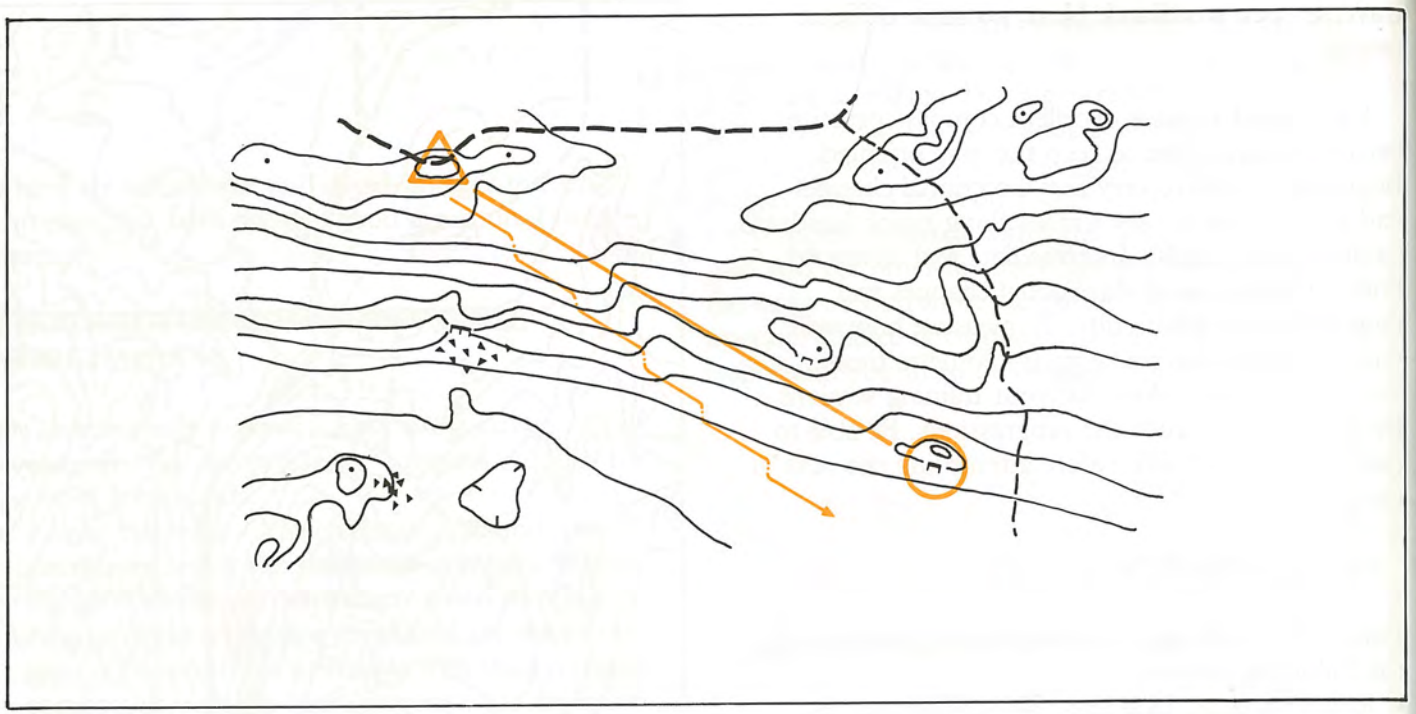




Rough compass course ►

Precision compass course ►

Falling down the slope on a bearing ►



TIPS

The best measure of your competence is how quickly you find the features. If you find them directly you are doing very well.

- Make sure you hold the compass directly in front of your body, at the midline. Holding it to either side may result in an error in reading the needle.
- Hold the compass level and let the needle settle a few seconds before you look at it. This will reduce the time spent looking at the compass, and provide more accurate direction. It also prevents you from running into trees and other objects while watching the needle settle.
- Do not rely too heavily on your compass. Remember that the compass is only as good as the person using it. Whenever possible, read the map first.
- Attach the protractor compass securely to your wrist with a cord. The NorCompass is attached to the thumb. Put an extra cord to the wrist to be safe.
- Be very careful using the compass on a slope. It is amazingly easy to 'fall down' the slope but still remain on the same direction line. This results in being off to one side when near your destination.

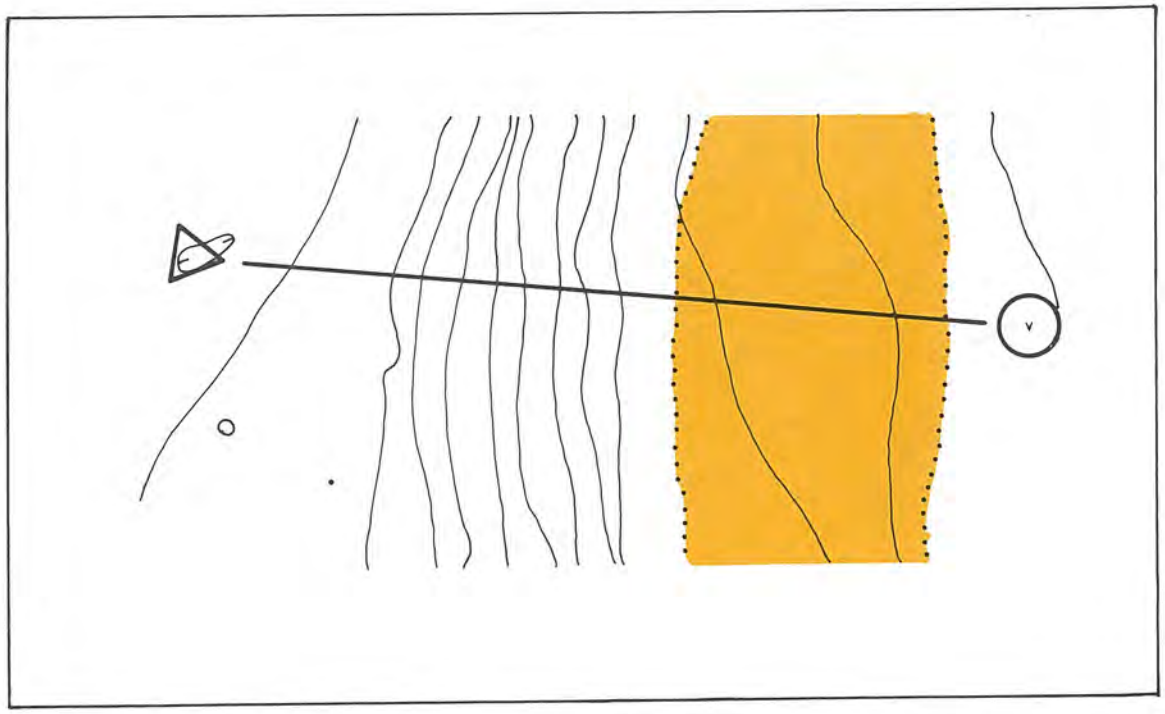
USING THE MAP AND COMPASS TOGETHER

You can orient to the terrain and orienteer an entire course using only a map. You can't do the same with a compass. Any time you use the the compass, you must support it with map reading. If you follow this guideline, you'll have no difficulty using your compass and orienteering. Problems arise when orienteers attempt to navigate solely with the compass, without regard to map reading and tactics. Studies with advanced orienteers have shown that the most proficient performers of compass skills were significantly inaccurate in their bearings when using the compass only.

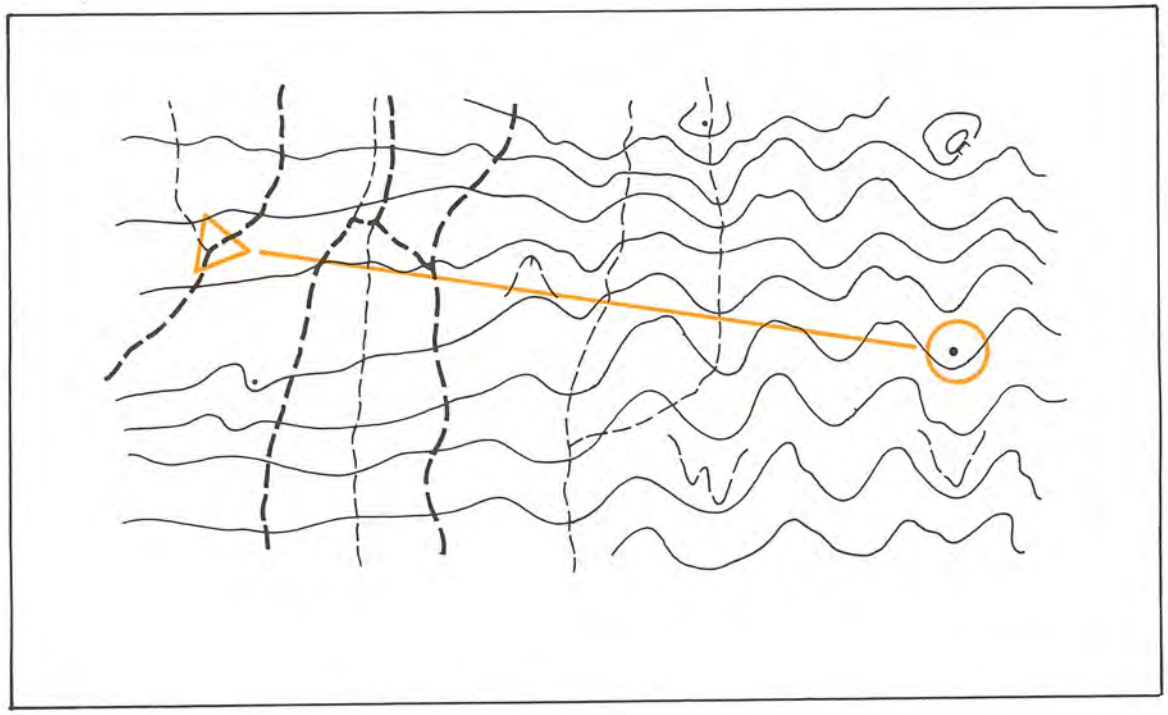
WHEN TO USE THE COMPASS

Use the compass

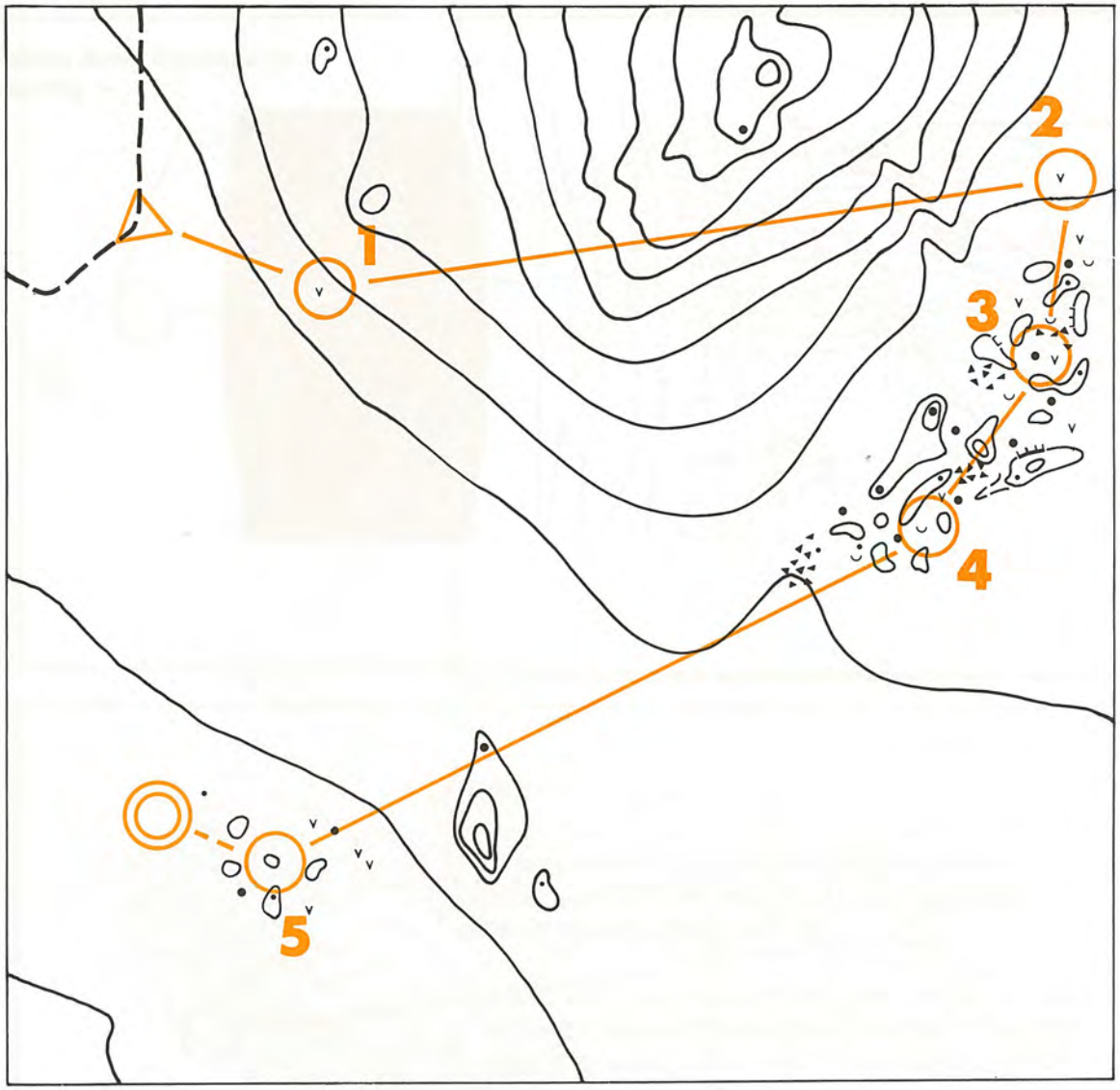
- If your map reading skills are weak and you need good direction to keep you on the right course.
- If the terrain has few features and handrails: for example, in fields, flat terrain, and on long gradual slopes and fields.
- If visibility is restricted because of dense vegetation, poor weather (fog or rain) or darkness in the forest on cloudy days.
- On long legs that cross similar features (trails, spurs, re-entrants) you do not want to have to slow down and read every feature, so you use the compass to orienteer across the terrain quickly.



Few features or handrails ►



Long legs and similar features ►



Precision compass ▲

- On short legs or the last part of a leg from a distinct feature (attack point) to the control feature, when (a) there are few map details, and you need good direction, or (b) there are too many details, and your orienteering would be slowed if you read everything.

- To keep the map oriented. Check your direction frequently; it is easy to start running off in the wrong direction.

- Along trails to make sure you're on the right trail and going in the right direction.

- When you cross distinct features in the terrain, to double check the direction.

WHEN TO MAP READ

All the time. Read your map to get the information necessary to make decisions and select strategies. Using the compass is one of your strategies.

Frequent map reading increases your contact with the map. You will always know where you are if you map read all the time. Checking the compass for direction is a good back-up procedure even if the map reading is going well. Check the direction at least once every minute as a beginner. You'll need less frequent checks as your skill improves.

TESTING YOUR MAP READING AND COMPASS SKILLS

(a) Your times for orienteering courses are a good measure of your skill level. Calculate your kilometre times in minutes:seconds (length of course divided by time taken for completion).

(b) Use a test course. Test courses are planned as follows:

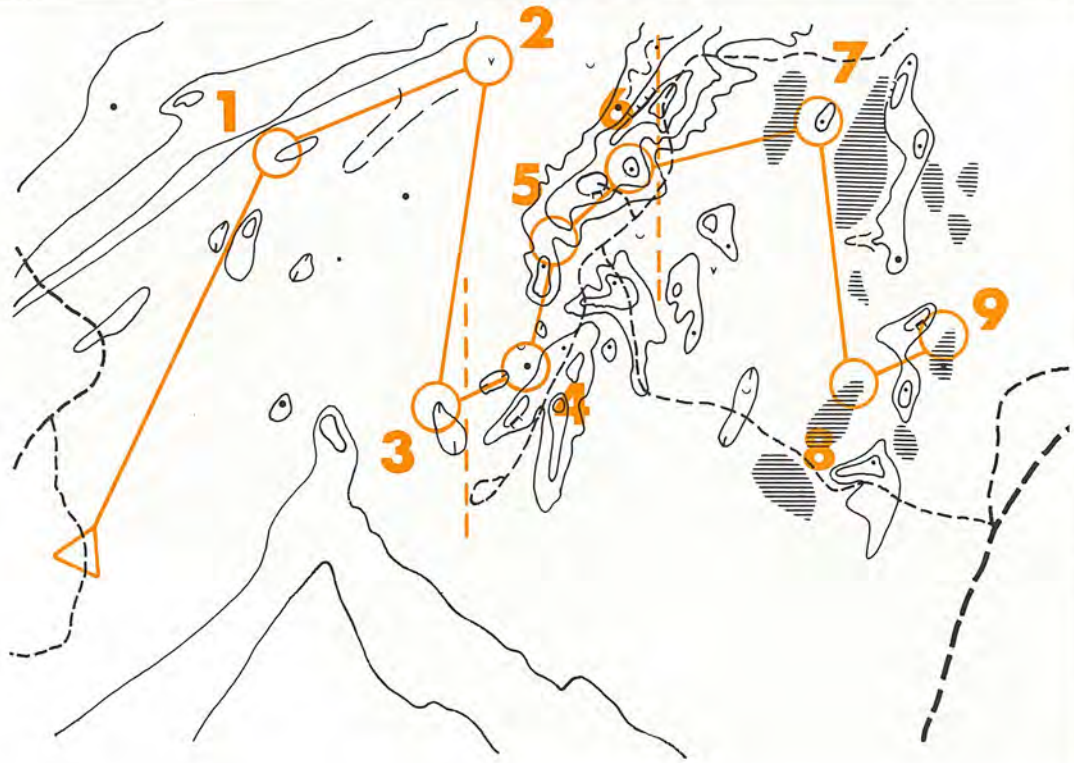
- featureless terrain - long legs
- featureless terrain - short legs
- detailed terrain - long legs
- detailed terrain - short legs
- low visibility (green) - long legs
- low visibility (green) - short legs
- slopes

Run a test course with one element or several. Make sure you record your time.

- If you find you lose direction in dense terrain, use more precision, taking your bearings and following the direction carefully. You may have to slow everything down because your visibility is reduced, or because of obstructions to the use of the compass (branches or thick vegetation).

- If you use your compass religiously on every leg and make few errors, but find that your times are slower than someone who did not use a compass at all, it may be that the features were so clear that the legs required minimal or no compass for successful navigation.

Test course ►



Terrain	length	time	time/km
long leg featureless			
short legs detailed			
short and long legs low visibility			

- If you always miss to one side when on a bearing, you may be doing one of two things:
  - misreading the compass because you hold it off to one side instead of directly in front of you. Correct by holding the compass in the proper position.
  - always veering to the same side around an obstruction you encounter in the terrain (a thicket, for example). Correct by alternating the route you choose around an obstruction, or by being especially careful to return to the direct line of travel after skirting an obstruction.

- If you run rough compass well, but your precision is poor near the control, you may be so anxious to find the control that you don't take enough time with your precision compass. Adjust your speed and compass work for the precision orienteering required.

- Following a compass bearing across an open field is difficult, because there are usually few map details to confirm your position. As soon as you enter the field, look across on your bearing to the other side and select a unique feature (such as a break in the trees) that you can use as a target when crossing. This technique will allow you to orienteer more quickly, and can help minimize the need for your compass.

SUMMARY

1. The compass is an important navigational aid for orienteering, but must always be supported by map reading.
2. Orienteers use the protractor compass and Nor-Compass. Your choice depends on personal preference.
3. The compass is used to orient the map to north and to determine the direction of the selected route by taking a bearing.
4. Home study, map walks, line orienteering and compass courses offer good training for compass skills.
5. The compass is held level, in front of the body (midline) at waist height.
6. Let the needle settle a few moments prior to looking at the compass. This permits quicker orienteering and prevents running into obstacles.
7. Compass use is particularly important in featureless terrain, terrain that all looks the same, and when visibility is reduced.
8. The key to successful map reading and orienteering is good direction and map orientation. The compass is useful for both purposes.
9. Map read frequently and use the compass consistently as a navigational aid to check direction.

N

4

Simplification

Simplification is exactly what the term implies: the breaking down of complex orienteering problems to simple ones. A comment you'll hear often from orienteers who have not mastered simplification is how complex the sport is. So much to think about and so many decisions. With practice, you can learn to simplify almost any orienteering problem so that you can handle it with the skills and strategies you've developed. Your goal is to reduce the challenge to one that lets you maintain accuracy, while orienteering as quickly as possible. Simplification is at the heart of orienteering speed.

Simplification in orienteering can apply to the map, compass or terrain.

SIMPLIFYING THE MAP

Reading all the details on a map will slow your orienteering dramatically, particularly if you don't need them for navigation. Instead of reading all the details, read only the large features that tell you you're on course.

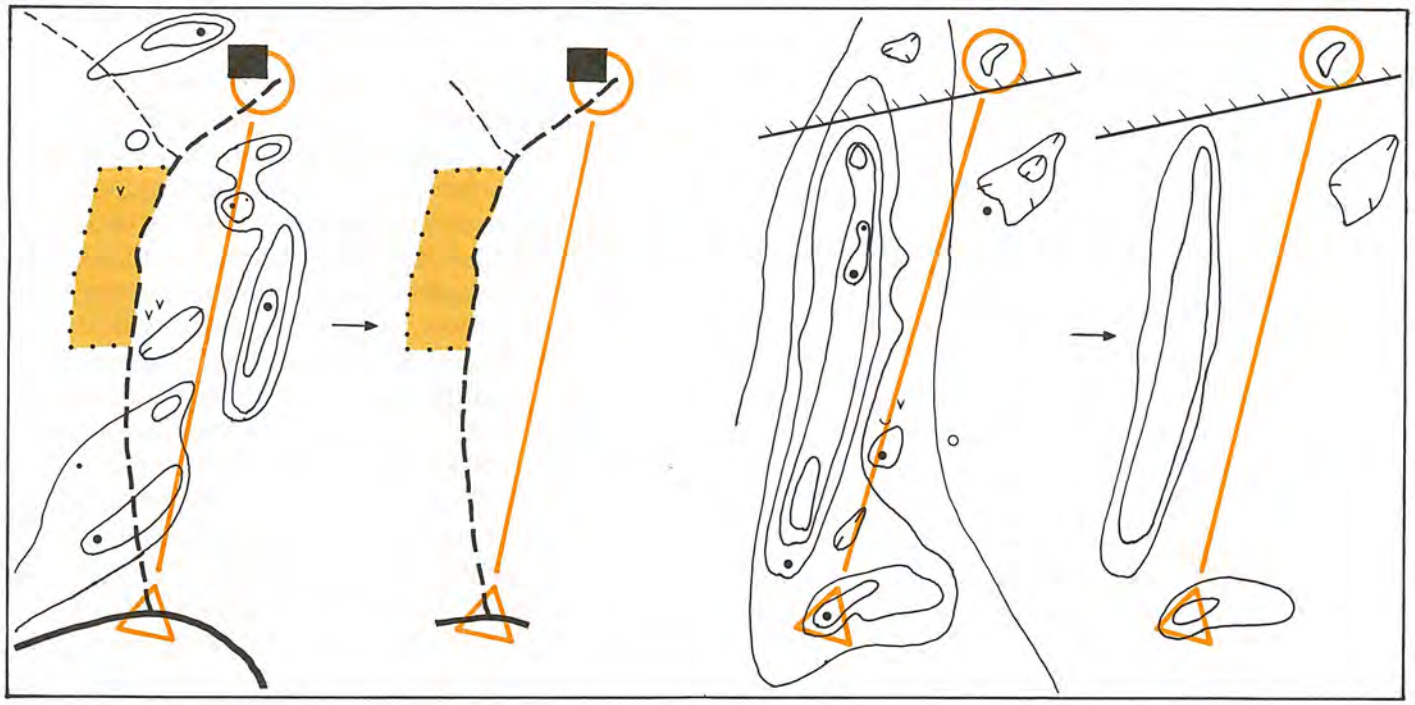
The level of course difficulty and your map reading skills dictate the specifics of map simplification.

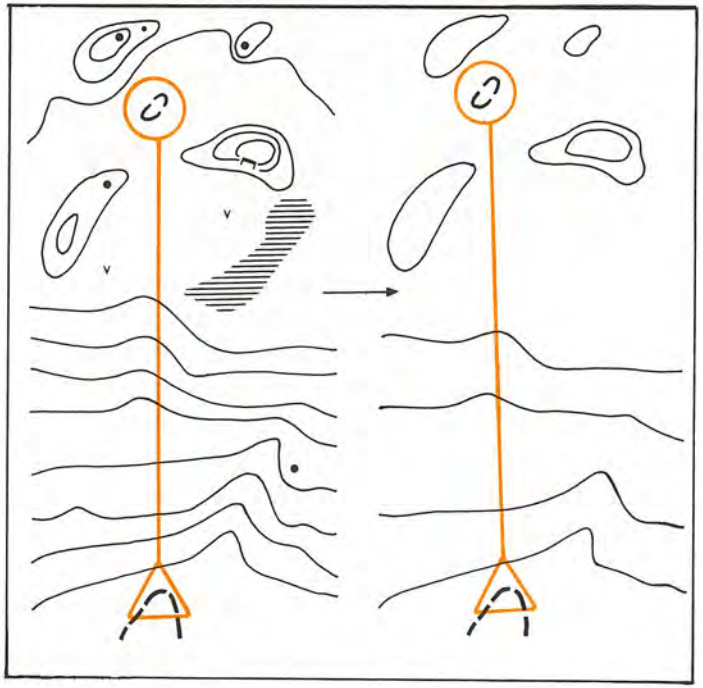
If you're a beginning orienteer, you simplify by reading the large handrails -the major trails, streams, fences, fields, and the large catching features - buildings, trail junctions, large hills and depressions. Ignore almost all small details unless they are unique features that may pinpoint your location. A good example is a lone boulder beside a major trail. Contour detail is usually of little significance, unless of course large hills or depressions are used as catching features.

As an intermediate orienteer, you simplify again by reading only the large handrails and catching features in the terrain. In intermediate courses, handrails are usually large knolls, hillsides, valleys and re-entrants. Large catching features on intermediate courses usually include large hills, fences or streams you may cross on your way to the control.

Advanced orienteers must also simplify the map, so they can move quickly through the terrain despite the difficult nature of their orienteering problems. Instead of using a lot of handrails and catching features, you'll look for the most significant features to guide you quickly to the next control. These are unique features easily seen in the terrain, and include distinct re-entrants, knolls, marshes, cliffs, and large boulders or groups of boulders.

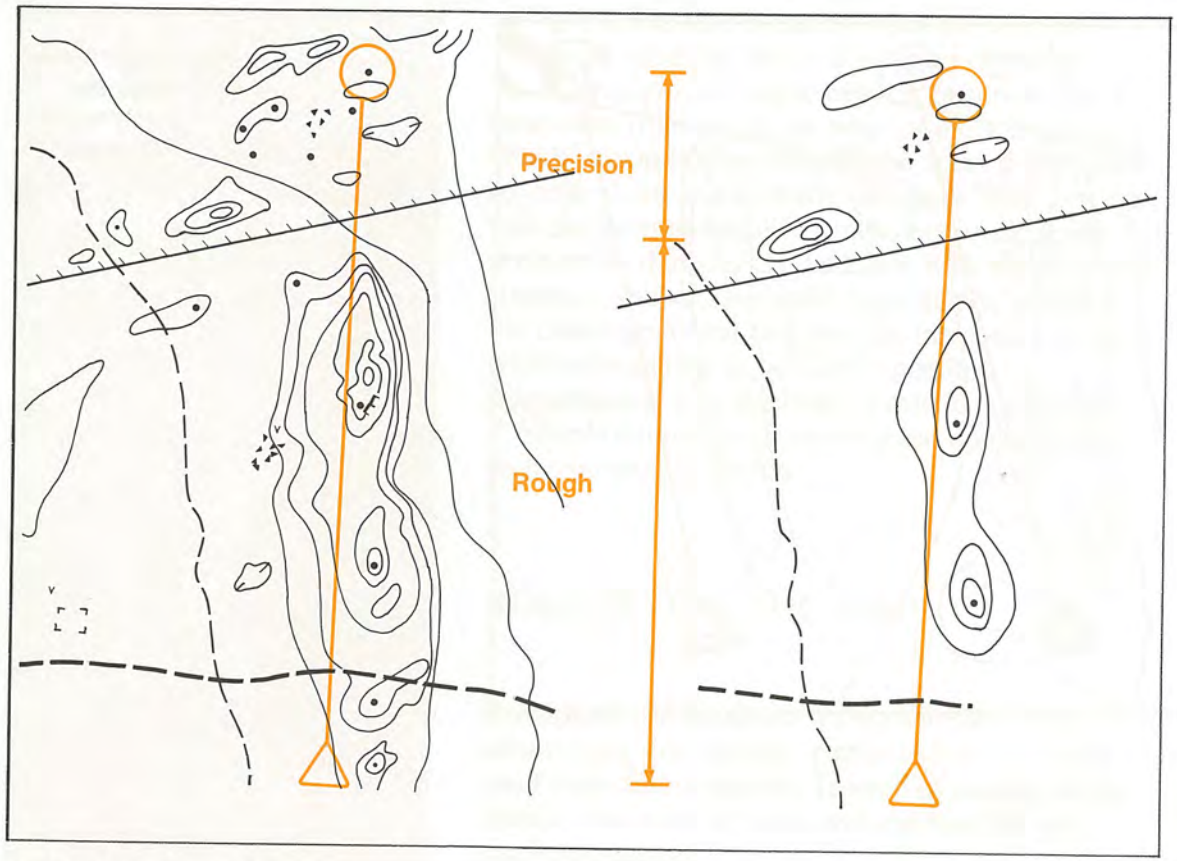
The following illustrations show how to simplify the map for beginner, intermediate and advanced orienteering.





Map simplification

- Beginner
- Intermediate
- Advanced



▲ Rough and precision map simplification

ROUGH AND PRECISION MAP READING

Map simplification occurs at two levels: rough map reading and precision map reading. For the beginner, simplification does not involve any distinction between rough and precision map reading. Beginners use rough map reading almost exclusively to find those large features that lead directly to the control. The distinction between rough and precision map reading begins with the intermediate orienteer who must usually navigate through detailed terrain in the area near the control.

Rough map reading in itself is actually a form of simplification. It is used predominantly in the first three-quarters of most legs, where you usually need to read only the large details. The map detail just before the control feature requires more precise map reading to find your way to the centre of the circle and the control marker. This is precision map reading.

The illustration shows the typical breakdown between rough and precision map reading. The simplification depicts what you should read. For rough map reading, only the large district features are read. All the other map details are information you don't require. Even for precision map reading, simplification is important. Although you read the map more often and look for smaller details, you still don't need to read everything. Only the most significant and distinct small details are necessary.

The advanced orienteer simplifies rough and precision map reading in the same manner as the intermediate orienteer. Again, the emphasis is on speed. The difference lies in the level of map reading. Advanced orienteers can recognize and use smaller features because their map reading skills are usually better.

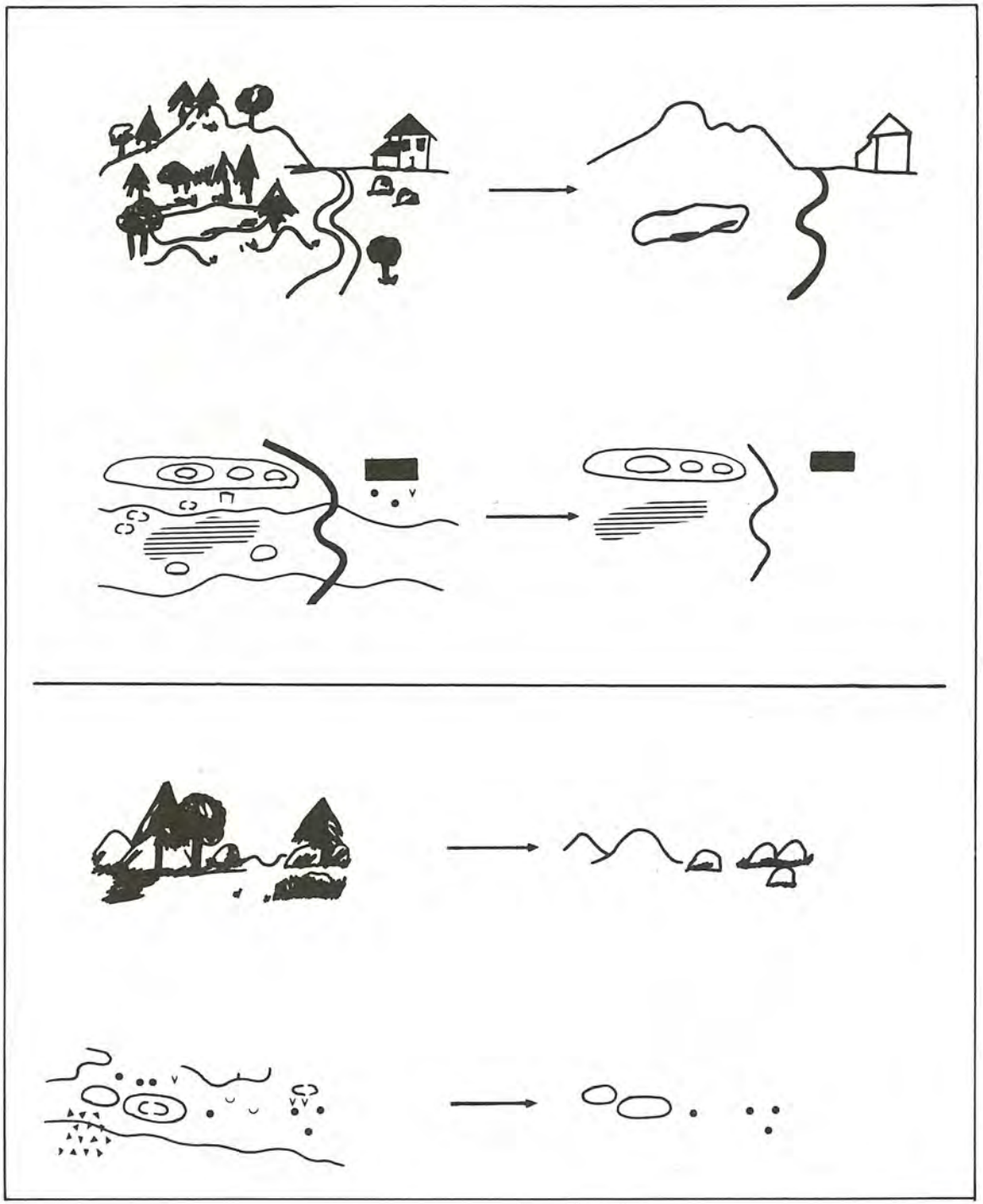
SIMPLIFYING THE TERRAIN

The terrain contains a wealth of information, landforms and types of vegetations. Every place you orienteer is a little different from any place else. Do you have to notice everything in the terrain to orienteer? The answer is no. Furthermore, you couldn't possibly notice everything, even if you stood in one spot for a whole day. What you mustn't miss, however, are the significant features and vegetation changes that were interpreted by the map maker who did the field check of the terrain.

Look at the simplification of the following picture of the terrain.

The accompanying map simplification shows what you should be looking for on the map. The picture shows what you actually see, and the picture simplification shows all you really need to see. This example shows the kind of terrain simplification a beginner would do. In the same terrain, however, an intermediate or advanced orienteer would simplify in exactly the same manner.

The principle is the same at any level: look for significant features. In the more difficult terrain of intermediate and advanced courses, features may be hidden among other, similar details, or disguised by thick vegetation, depending on the season.



Terrain simplification ►

Advanced terrain simplification ►

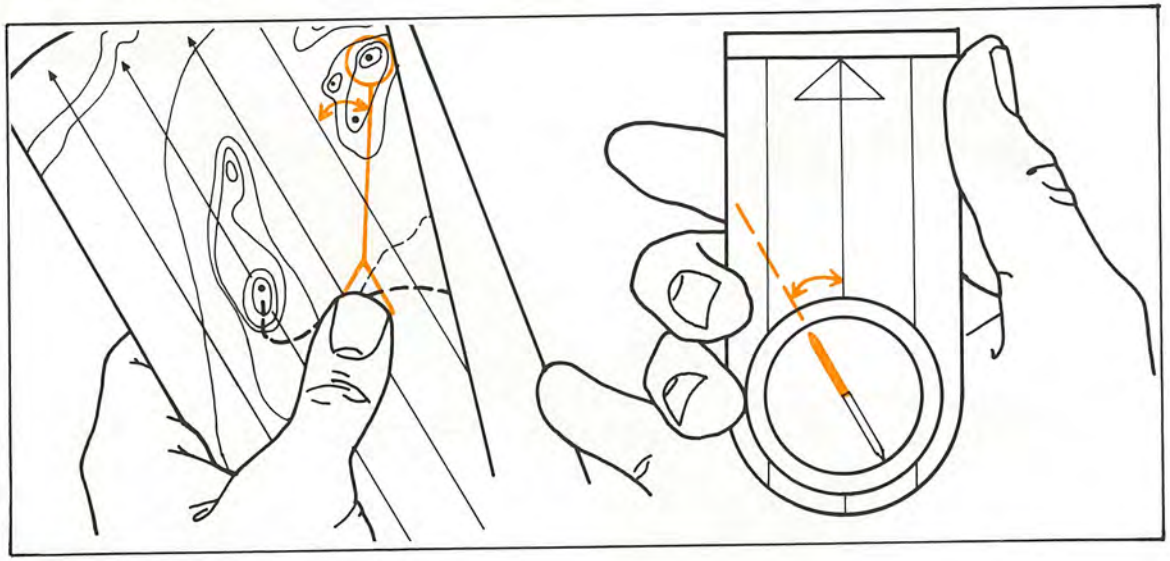
SIMPLIFYING THE COMPASS

The compass is a precision instrument requiring careful operation for effective use. Taking a bearing with a protractor compass can be difficult to master. The NorCompass on the other hand has a simplification factor built right in. Instead of taking a bearing from the map, compass and map are held together, thereby eliminating several steps from the traditional method of taking a bearing.

The use of the protractor compass can also be simplified, although this is an advanced skill. Instead of going through all the steps of taking a bearing, you "orienteer by the needle". This is done in a manner similar to the beginner's use of a compass to orient the map to north, but it requires a great deal of practice for proper execution.

If you keep the map oriented with the compass needle at all times, you'll always run in the right direction. To simplify, match the angle formed on the map between your selected route and the meridians, with the angle formed between the compass's direction of travel arrow and the compass needle.

▼ **Orienteering by needle**



PRACTICING SIMPLIFICATION

A great deal of simplification skill comes from hours spent out on a course. But if you're short on experience, don't despair. Here are several ways to improve your simplification skills.

MAP SIMPLIFICATION

HOME PRACTICE

Use the exercises described in the map reading section, but this time try to eliminate all but the significant features necessary to orienteer. Select courses appropriate to your skill level.

Beginners should study maps with beginner courses. Larger scale maps, in 1:5,000 or 1:10,000, are preferable because of the larger detail compared with 1:15,000 scale maps. Emphasize selecting the entire route to the control making no distinction between rough and precision map reading. Look for distinct handrails and catching features.

Intermediate and advanced orienteers should practice simplification for both rough and precision map reading. This is particularly necessary for the intermediate orienteer, who has just been introduced to the two basic kinds of orienteering.

Advanced orienteers study maps with a slightly different approach. Because the orienteering is more difficult, specific attention is paid to simplification near the control where races are frequently won or lost. When you can simplify the map reading and orienteering near the control, you will have mastered one of the major requirements of advanced orienteering.

A map simplification exercise, useful for all levels of orienteering, goes as follows. Study a course leg or small section of terrain on a map. Then draw your simplified version on a blank piece of paper. For an added challenge, do the speed reading exercise described in the map reading section, and draw your simplification from timed looks at the map.

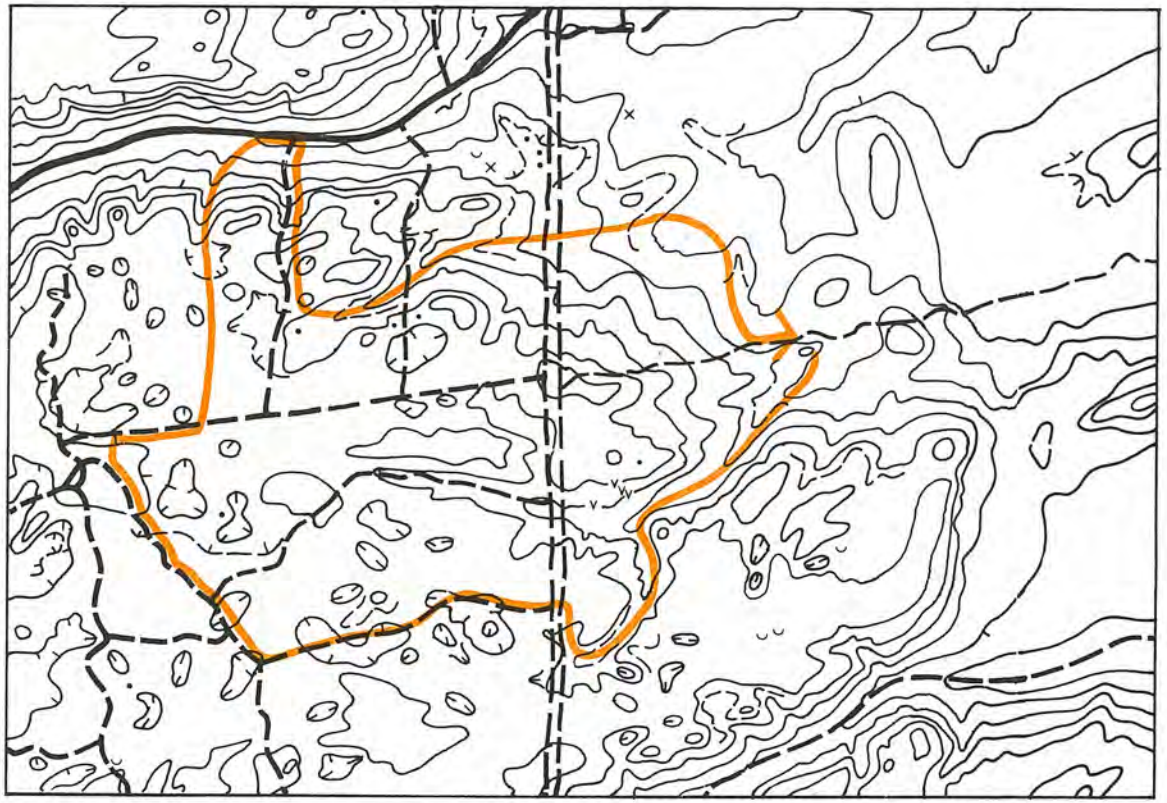
TERRAIN PRACTICE

Map walks are an excellent way to practice map simplification. Read the map carefully, concentrating on significant details you would use to orienteer.

Line orienteering is also excellent training.

- *Beginner lines* are drawn along distinct trails and fields, between large features. Simplify and select your route carefully before you go to the terrain.
- *Intermediate lines* are drawn across detailed terrain you want to navigate quickly. Simplification details here are large handrails and catching features.
- *Advanced lines* drawn in detailed terrain call for careful selection of only the distinct small features for navigation.

Line orienteering is also excellent for improving the simplification skills you'll use in easy terrain. Training lines are drawn along simplified large handrails that permit easy, fast navigation. The resulting increase in speed is especially helpful for intermediate and advanced courses.

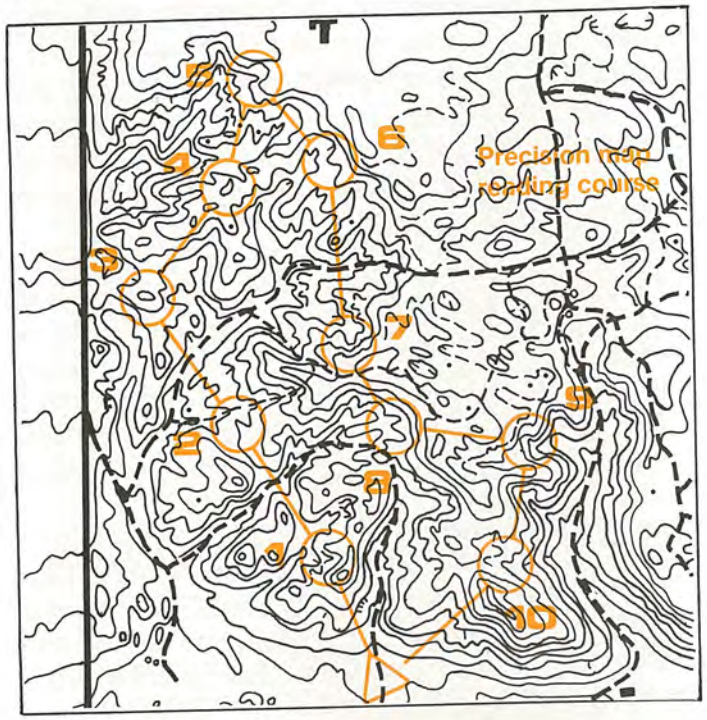


Line training — simplification for speed ►

Rough map reading and precision map reading courses are good training for the intermediate and advanced orienteer.

Rough map reading courses consist of long legs (500 to 1000 metres), with controls located on large, distinct features and routes between controls with handrails and collecting features.

Precision map reading courses consist of many short legs (300 metres or less), with controls on small features and routes that traverse detailed terrain.



TIPS

- To test yourself, with emphasis on simplification, time your courses and lines, and try to complete them as quickly as possible. Time in orienteering is a function of simplification.

- If you often find yourself confused by map details and simplification seems difficult, the problem may be that you are trying to simplify basic skills you haven't yet learned well enough. You must be competent at map reading (or any other skill) before you can simplify it.

- Colour maps frequently obscure the information you need for simplification. Contour detail (brown) is particularly difficult to see when covered with green, orange or black. Look through the colours to the detail you need.

- On maps with few details, you may find simplification confusing. These types of maps are usually already simplified.

- Do not oversimplify. You must have enough information to orienteer accurately. If you don't, you'll be forced to stop and read the map further along the leg or course, which is exactly the kind of holdup you're trying to avoid.

TERRAIN SIMPLIFICATION

HOME PRACTICE

Review maps and courses, trying to picture the terrain. This is particularly effective if the course is one you have recently completed. Be critical. What features did you see during the course? Did you pay too much or too little attention to certain features? Did you get enough information?

TERRAIN PRACTICE

Map walks are also an excellent way to practice terrain simplification. Pick out the terrain details and information you would need to orienteer. For beginners, this means walking along major trails, looking in the terrain for distinct and large features. Intermediate and advanced orienteers look at terrain features and minimize the detail associated with them. For example, a slope can be described as

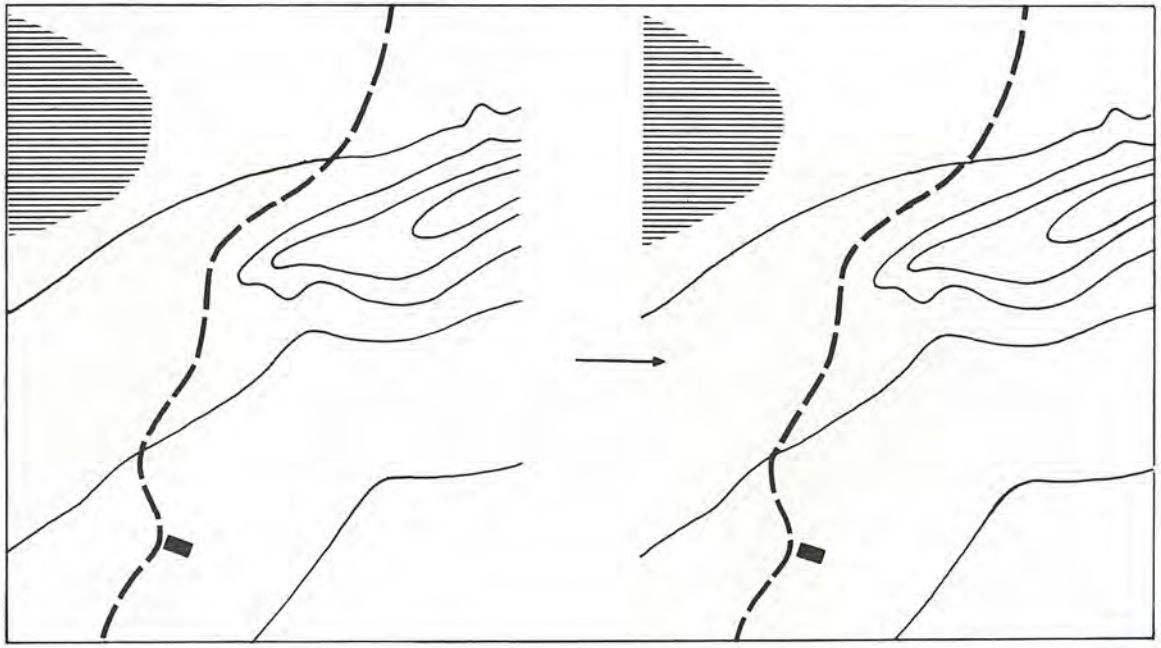
(a) a slope with many small re-entrants, fallen logs, dense brambles, pine trees and rocky footing or
(b) the slope I must climb

The description is relative to the navigational importance of the feature.

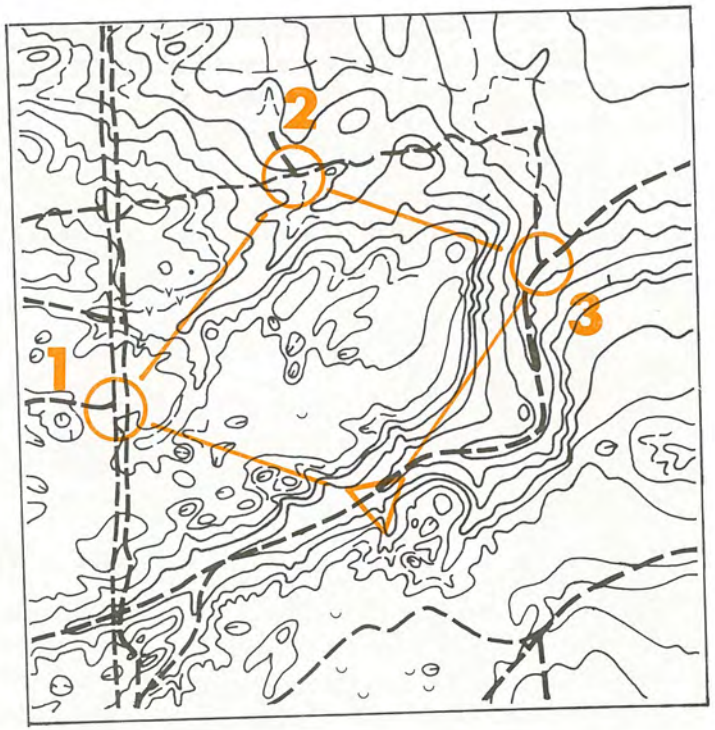
Running in the terrain (with or without a map) is also a good training method. Be sure to look in the terrain for the significant features. (This is not recommended for beginners).

- If you still find terrain simplification confusing and your orienteering performances have been poor, the difficulty may not be with terrain simplification at all. You may be forgetting to keep a constant lookout in the terrain around you. Stay alert and be looking all the time.

Map already simplified — no need to simplify further ▼



Needle orienteering course ►



COMPASS SIMPLIFICATION

HOME PRACTICE

To practice at home, you need a stack of maps with courses. Do the following with each leg: With the protractor compass, match the angles on the compass and map. With the NorCompass, take a bearing, turning your body to face the direction of desired travel. Repeat for as many legs/courses/maps as you have. Do the courses backward. Draw on new legs and courses. To provide additional challenge, time yourself.

TERRAIN PRACTICE

NEEDLE COURSE (PROTRACTOR COMPASS ONLY)

This is an advanced skill and should not be attempted by intermediate or beginning orienteers. Use a rough compass course from the compass section, but orienteer by needle only. First, walk the course and practice the technique. Hold the compass steady and match the angles. When you feel comfortable with the technique, progress to a jog, then to a run. A specific needle course uses controls on distinct line features. You'll be able to judge your accuracy by where you hit the line feature on a bearing, relative to the target point.

- If you are always missing your target when you try to simplify the compass, you may be oversimplifying. Simplify the procedures, but don't sacrifice accuracy.

SUMMARY

1. Simplification is the reduction of complex orienteering challenges to easily executed tasks.

2. Simplification applied to map reading, the terrain and the compass, will significantly improve your orienteering times.

3. Map simplification occurs at two levels:
   - rough map reading - reading only the large details until the area just before the control
   - precision map reading - simplified to read only the significant small details, and used near the control

4. Terrain simplification means eliminating all but the most significant features in the terrain.

5. Compass simplification involves the use of a NorCompass or "needle orienteering" with the protractor compass.

6. Reviewing your maps and courses at home is an excellent way to practice the simplification skills. Practice in the terrain is still the best method however.

7. To simplify successfully, you must first be competent at the skill to be simplified.

8. Oversimplification actually increases the difficulty of the orienteering.

9. Very often, simplification of map details is made more difficult by the colours (particularly orange and green), which obscure details and distract attention.

5
Route Selection

Now that you have mastered the basic tools of the sport, you're ready to move on to the strategies and skills you'll need to enjoy, and win, events.

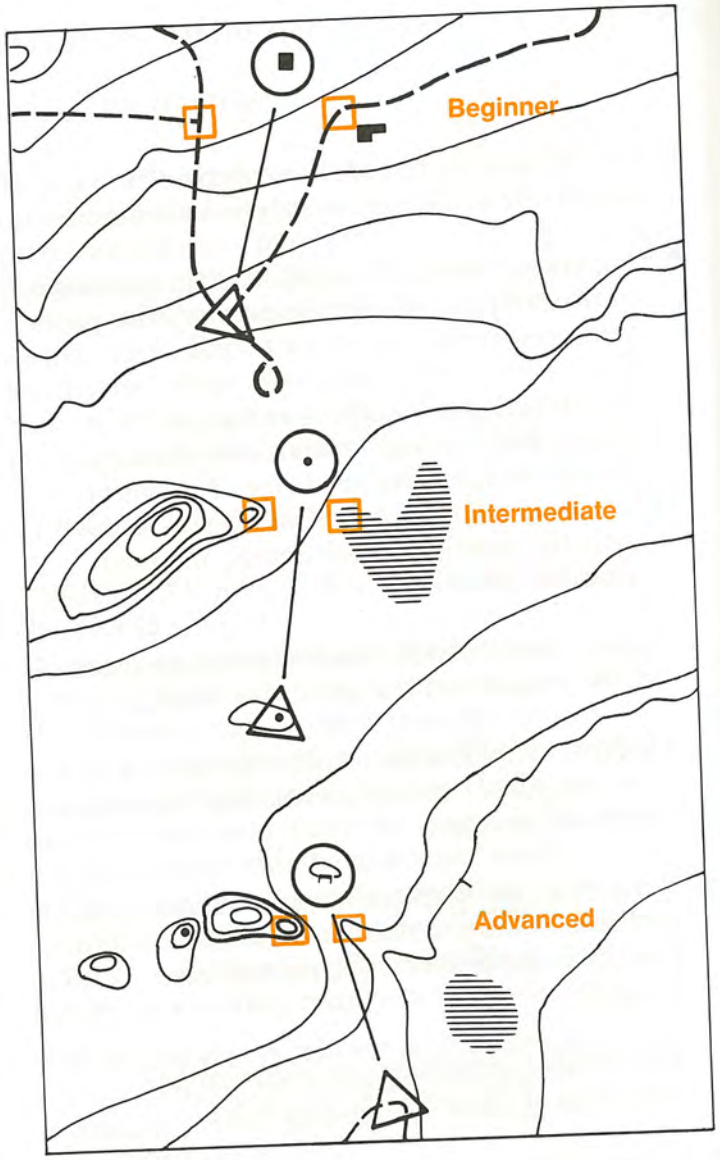
In orienteering the greatest danger lies in getting lost, or getting tired too quickly. All your skills and strategies will be devoted to making accurate assessments of your position and route direction, and following those routes quickly and efficiently to your goal.

The first step is choosing your route.

In orienteering, navigation decisions are influenced by a great many variables: map, terrain, vegetation, weather, course difficulty, and your level of fatigue. In all cases, however, two simple rules apply.

1. Select an attack point
2. Choose a safe route.

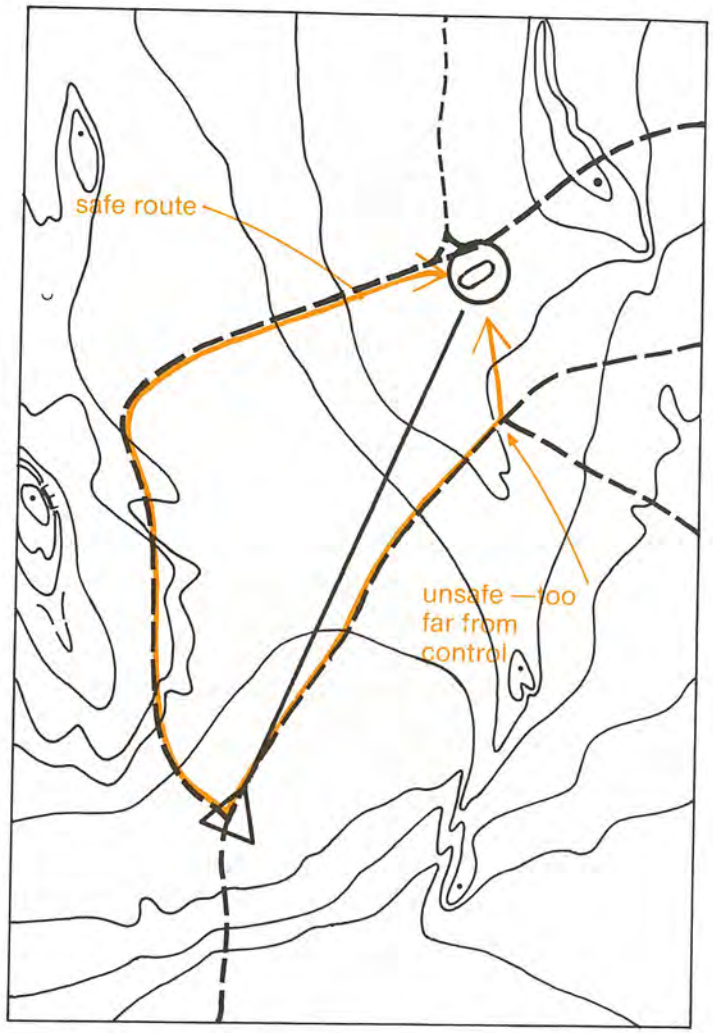
1. *Select an attack point.* This is a distinct, easily found feature, usually within 200 metres of the control.
   Beginners on the white (novice) course don't need an attack point because controls are hung on obvious features and the routes between controls follow well-marked trails or fields.
   Beginners on the yellow course use trail junctions, distinct trails, bends or field corners as attack points.
   Intermediate competitors also use trail junctions, trail bends and field corners as attack points. More frequently, however, they look for terrain features such as hills, re-entrants and marshes, because their courses cut through the terrain more directly and use fewer trails.
   Advanced orienteers' skill levels allow them to take a more direct route, using a variety of smaller, though still distinct, features that an intermediate competitor might not find easily.



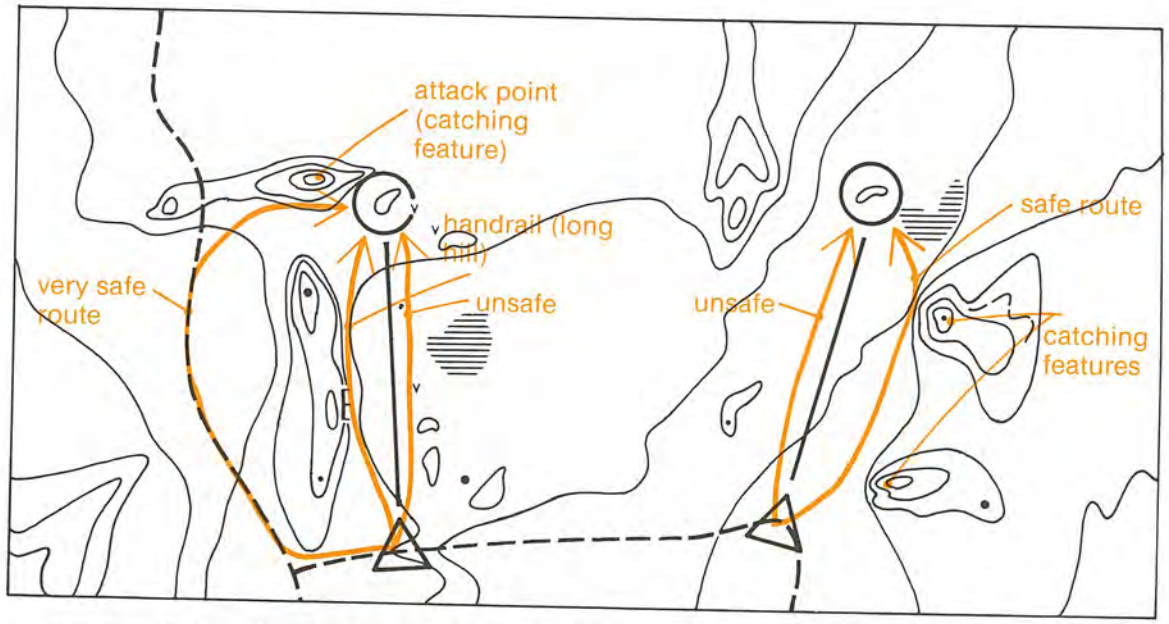
Attack points ▲

2. *Choose a safe route.* The adage is particularly relevant for orienteers, beginner and intermediate participants especially. The degree of safety is directly related to your skill level. A route that is safe for one orienteer may be unrealistic and extremely unsafe for another.

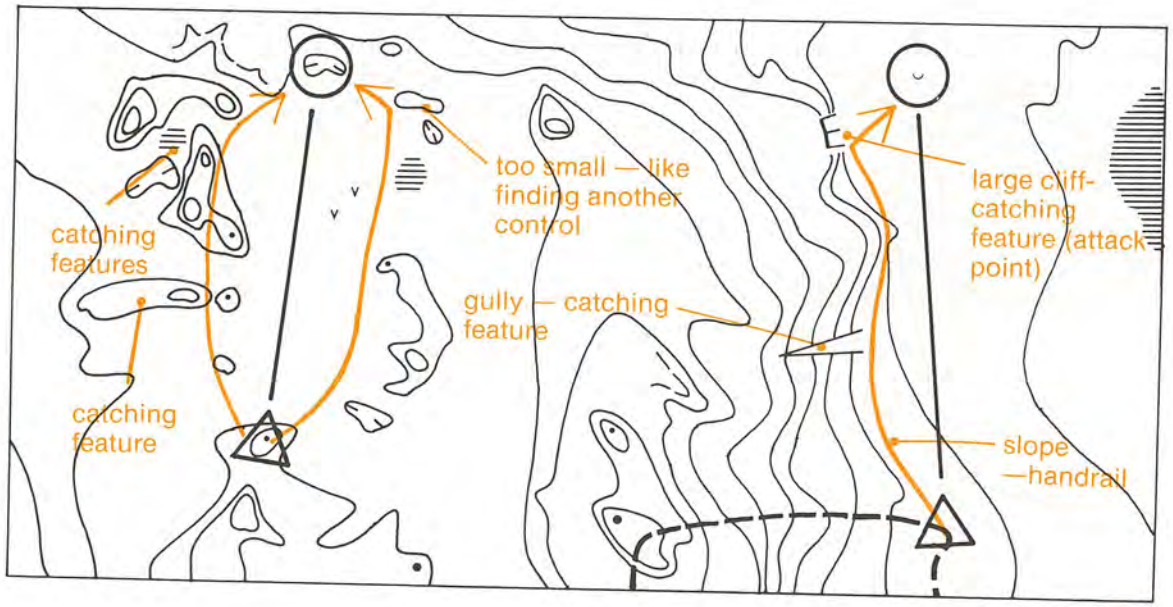
- Beginner Safety - Stay on well travelled fields and trails. Go out of your way to be safe.



- Intermediate - Use distinct handrails and catching features to orienteer.



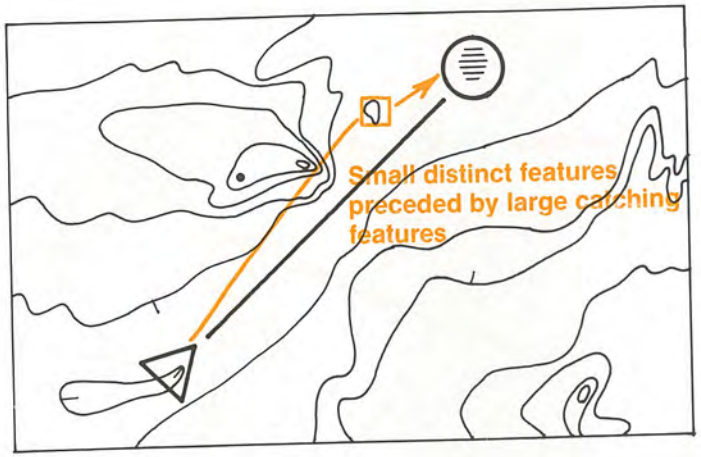
- Advanced - Use handrails if available, but more often, you'll use catching features.

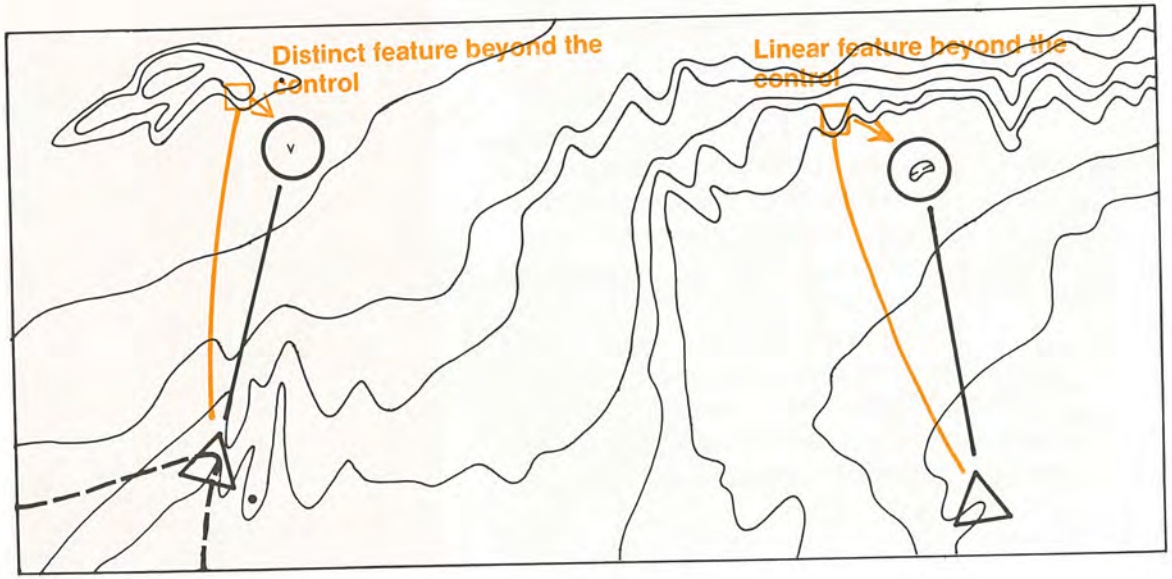


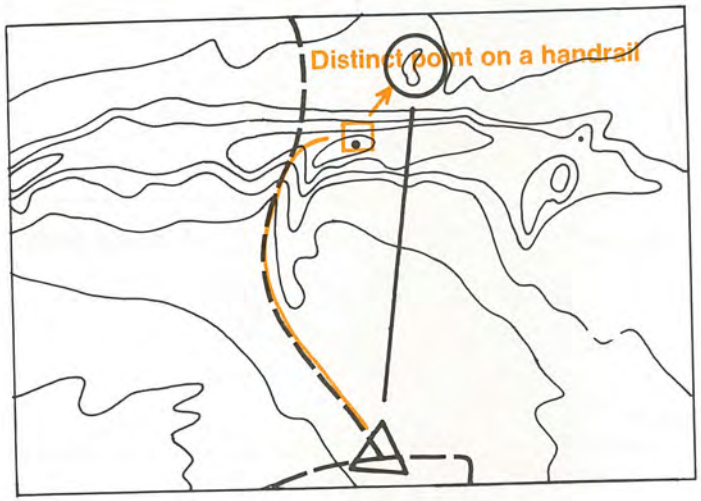
GOOD ATTACK POINTS

A good attack point is a feature you can find easily and from which you can find the control easily. As described above, the features themselves are different for different skill levels. Good attack points share some common characteristics however.

- There may be several good attack points near a control. Choose the one that offers the safest route.
- The attack point should be as close as possible to the control. If farther than 200 to 300 metres, it becomes increasingly difficult to find the control from it.
- Use distinct features. Trail ends are not distinct, for example. Neither are small details such as boulders, knolls, and pits.
- Select attack points that permit the best view of the terrain to the control. If the control is on a slope, if possible, select an attack point above the control.
- Attack points can be distinct features beyond the control. Or they can be linear features beyond the control.
- Use handrails and catching features as much as possible. They make orienteering a lot easier. Remember to use simplification.
- Attack points can be small, easily found features preceded by distinct catching features or handrails.







LEARNING AND PRACTICING ROUTE SELECTION

HOME PRACTICE

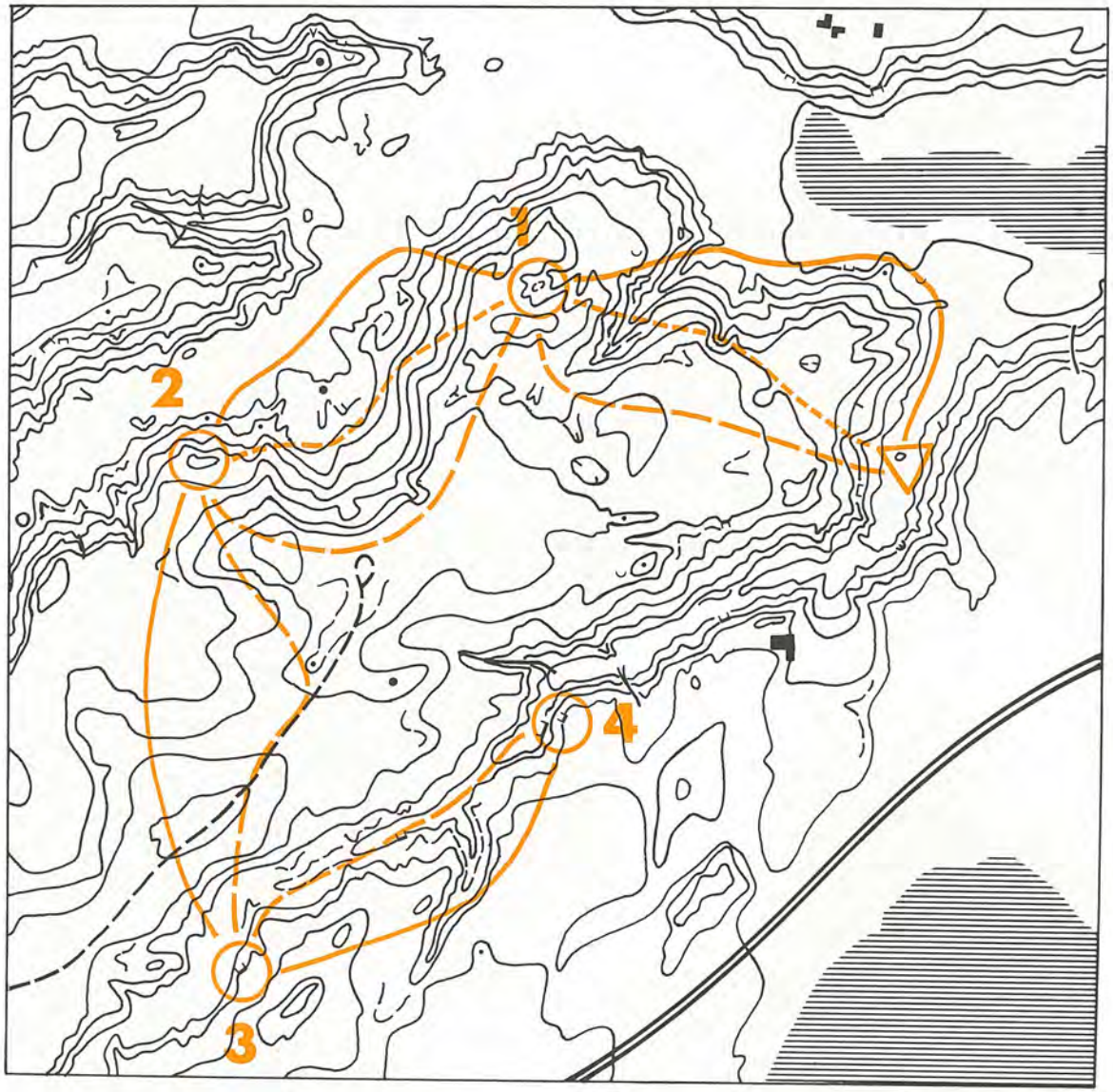
Study courses you have completed at events, courses you have planned on maps, and courses from friends. Pay attention to the proper procedure for route selection — attack point and then safe route.

Timed study. Using the same or other courses, time your study of each leg, cover with your hand or sheet of paper and visualize the attack point and safe route. Start with 30 seconds of study and progress to 5 seconds.

Consult better orienteers. This is an excellent way of increasing your knowledge of all aspects of the sport, route selection included.

TERRAIN PRACTICE

Orienteer a pre-determined course, one to three kilometres long consisting of three to five legs. Run the same legs two to three times, each time along different routes. Time each route for each leg and note your errors, strengths and weaknesses executing each route.



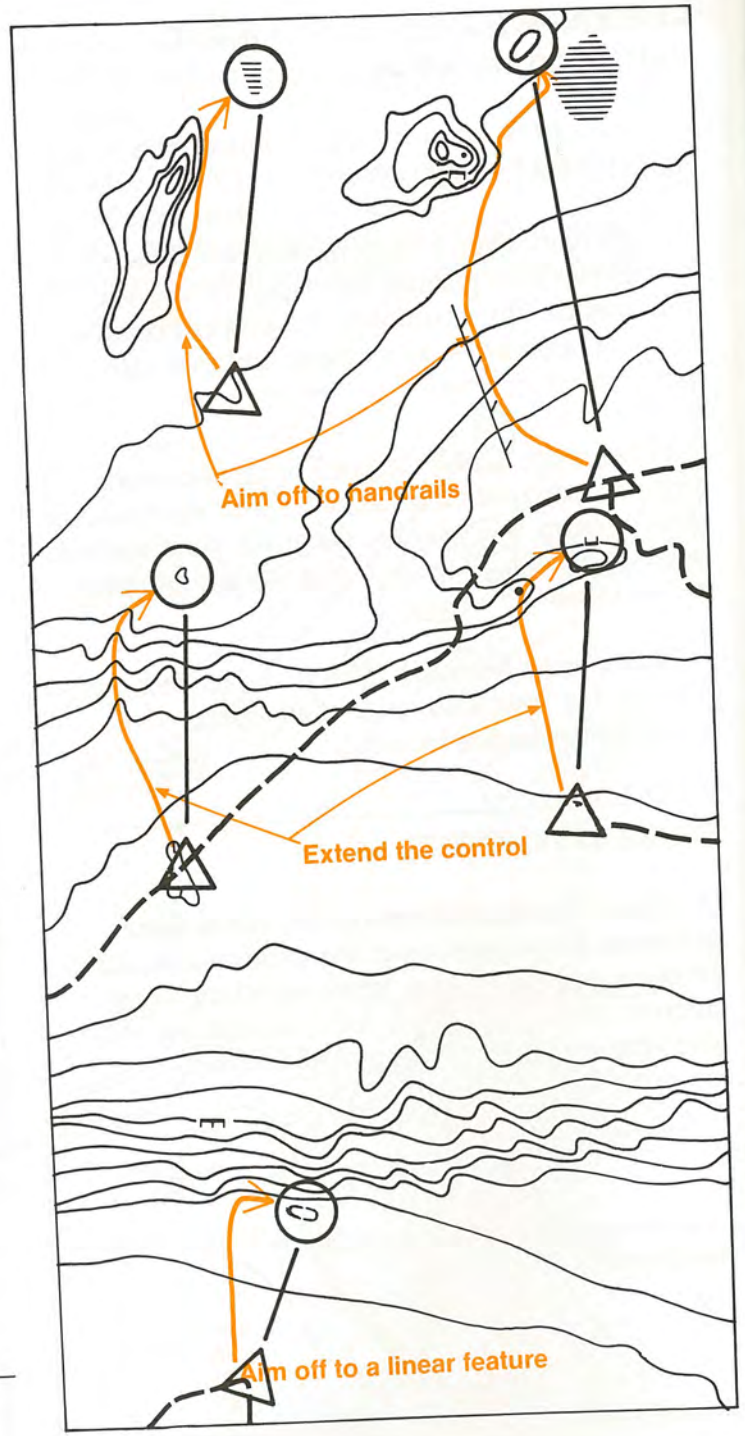
Route course ►

Intermediate and advanced level orienteers use the following techniques and tactics to minimize errors and conserve strength on their routes between controls.

AIMING OFF

This technique is used to simplify your orienteering and give you a surer route to the control. Aiming off refers to the selection of a route to one side of the direct route to the control. If you took the direct route and missed the control, you wouldn't know in which direction to turn to find it. By aiming purposely to one side, you are sure of your direction once you've reached the catching feature.

1. *Along the route:* Select a large handrail or catching feature to one side of the direct route. Both map reading and orienteering are simplified.
2. *Extend the Control:* Aiming off to a distinct linear feature that can lead you into the control extends the area of the control, making it larger and easier to find. You can orienteer more quickly.
3. *Behind the control:* Select a large catching feature behind the control. In the example, aiming off to the left means you know to turn right to find the control.



Aiming off ►

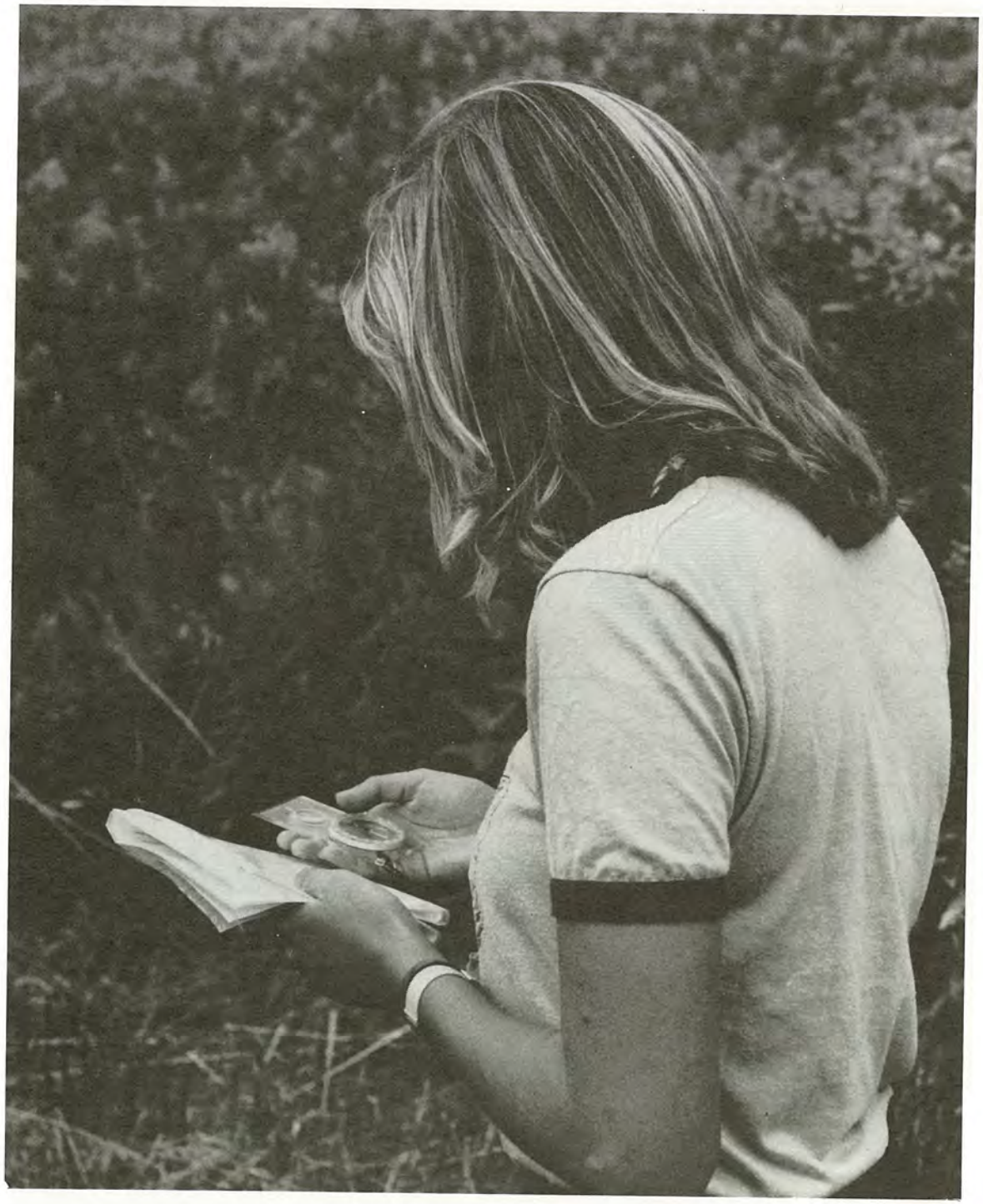
PRACTICE

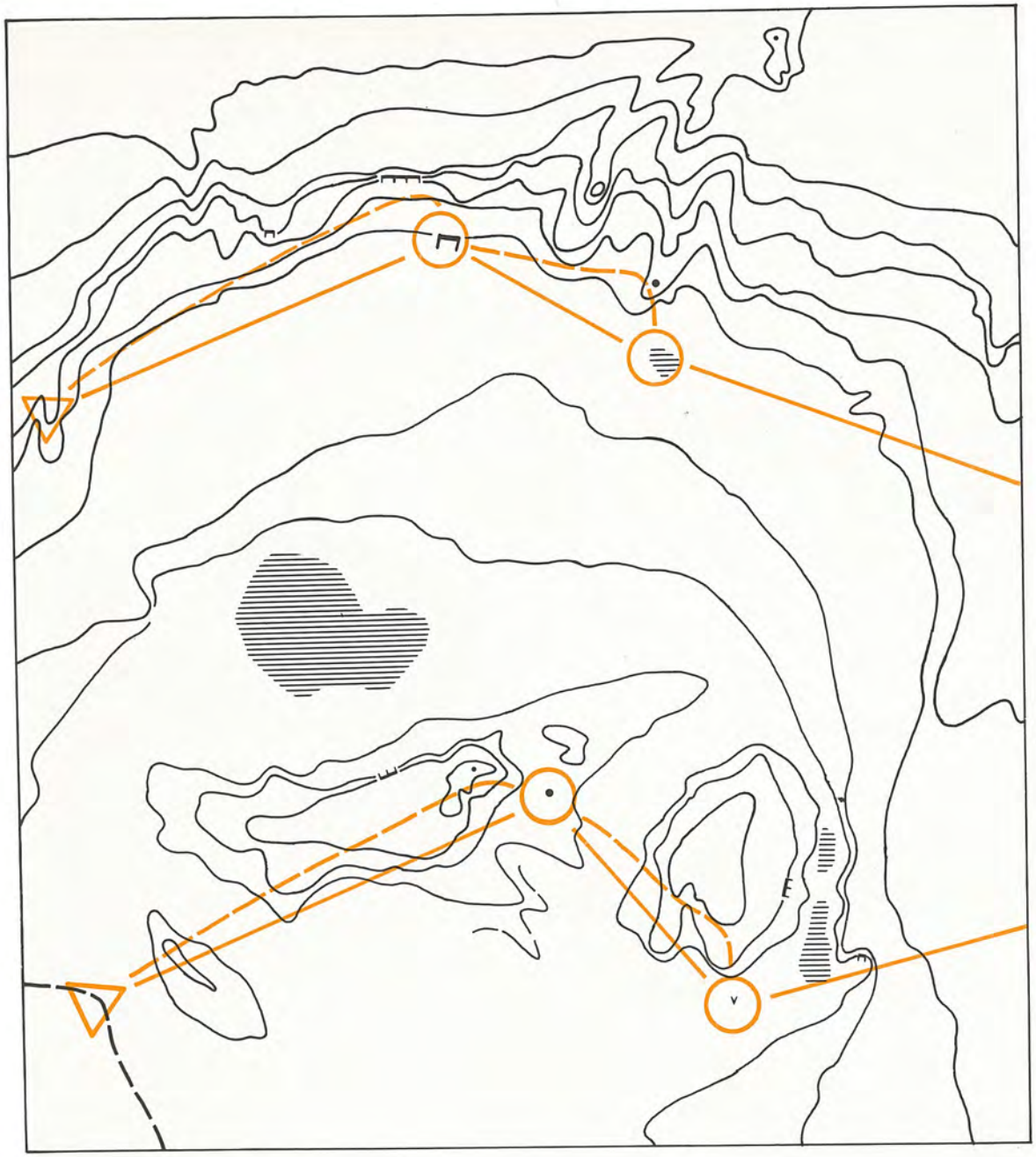
To practice aiming off, use a training course with the following design. Legs are moderate in length (400 to 500 metres); controls are distinct features; the terrain has many handrails and catching features that funnel the orienteer toward the controls.

- Aim off to the side that represents the least travel. This is a function of extending the control or route by aiming off to the feature that will lead you to the control. You don't want to aim off to the wrong side and come back to the control.

- If you find yourself performing this skill poorly, you may be exaggerating your aim. You do not want to make more work for yourself by going too far astray from your desired route; aiming 50 to 100 metres to one side should give you plenty of room for good orienteering.

- Another reason for poor performance may be that you are too loose with your aim. Aiming off is a precision technique. Tighten up your aim and you'll save yourself unnecessary kilometres.





ATTACK FROM ABOVE

When controls are located on slopes or the sides of hills, the best approach is usually from above. This gives you the widest field of vision, something you always want to achieve when orienteering. You'll see the control feature and the features around it better. You can also usually pick out the route you'll travel to the next control. Catching sight of another orienteer at or near the control is an added bonus.

When you come down into a control you are also fresher than if you had just climbed up into it. Your execution of the precision work to locate the control will be better and your head clearer for selecting the next route.

Attacking from above is not limited to steep slopes or hillsides, however. It's also used in rolling terrain with moderately sized hills. The fatigue factor is insignificant compared to the increased field of vision you gain. Whenever possible, put yourself in the best position to see as much as you can.

PRACTICE

To practice attacking from above, a course along slopes and hillsides is ideal. The legs should be moderate in length (400 metres), and attack points should be obvious.

◄ **Attack from above**

CLIMB IN THE BEGINNING

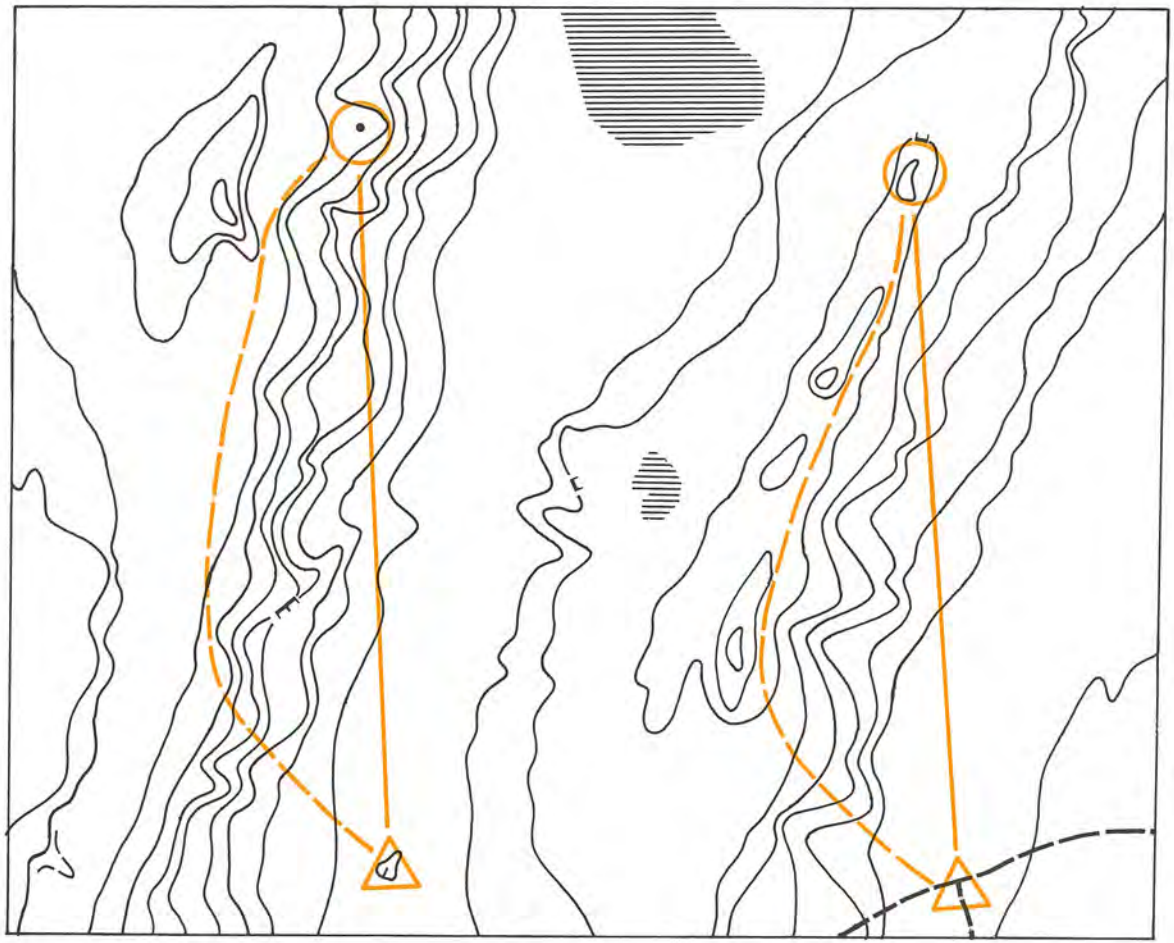
If the control is on the side of a slope or at the top of a hill, you may have the choice between two routes. You can either orienteer along the flat and then climb up into the control, or you can climb up the slope or hill in the beginning of the leg and then attack the control from above.

Generally, the best strategy is the latter: climb in the beginning rather than at the end.

Climbing in the beginning means you will attack the control from above, with all the inherent advantages that offers. If the control is on a hilltop, you still reap the advantage of not being fatigued as you near the control, since you've had time to recover from your earlier effort. In addition, you avoid the slow uphill attack to the control.

Whether you use this technique depends a great deal on your skill and fitness levels. Intermediate level orienteers should select this route at every opportunity. As your skills and fitness improve and you become an advanced orienteer, however, climbing in the beginning may not be the fastest route. You may have other options because you are very fit and have the skills to take the control from below.

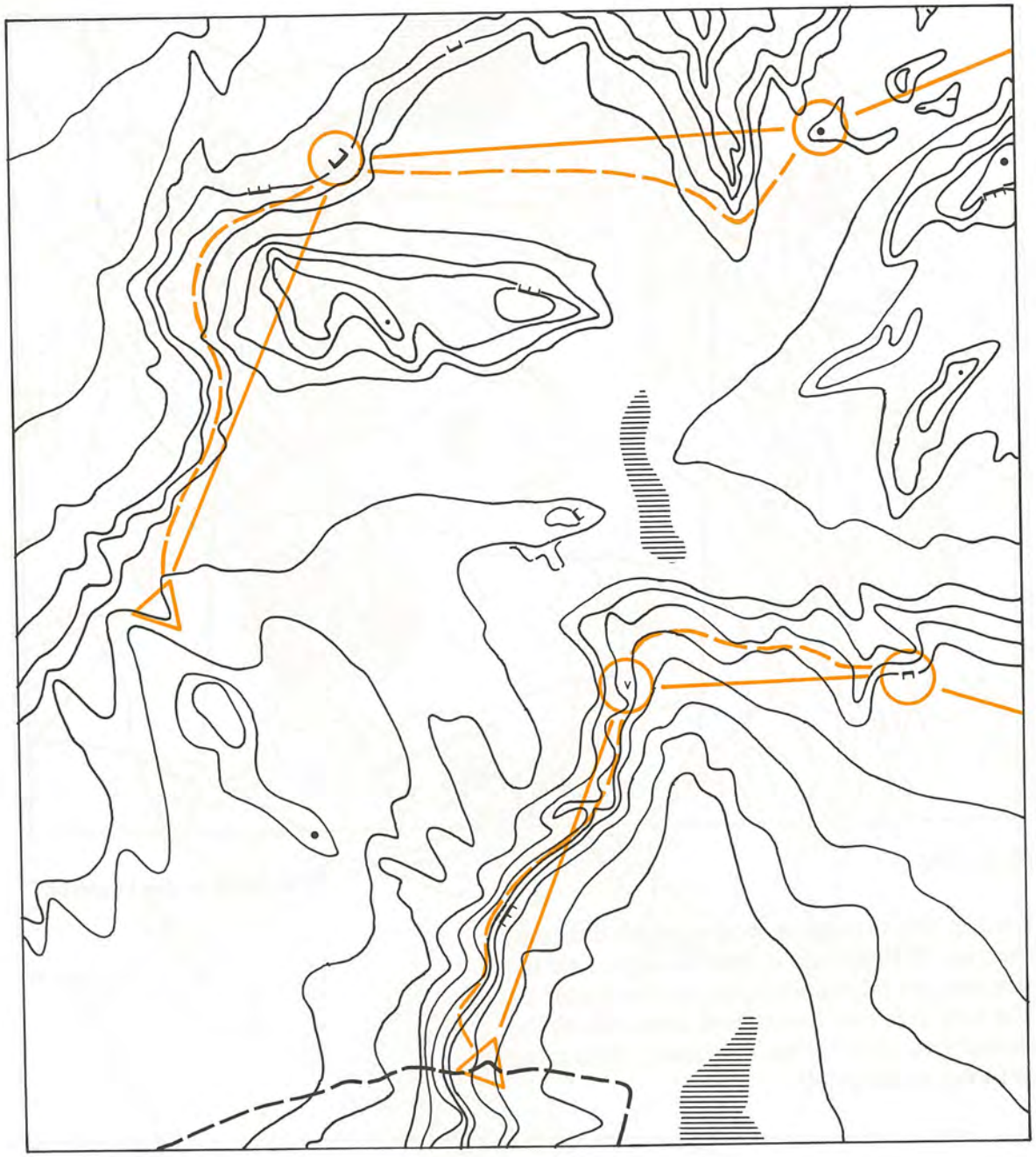
Another factor affecting your decision is how far along you are in the event. If the choice occurs in the beginning when you are fresh, you may elect to climb at the end. If the choice occurs near the end of the course when you are tired and want to orienteer more safely, the climb in the beginning is probably more appropriate.



▲ **Climb in the beginning**

PRACTICE

Practice this strategy on a course with this route selection. Hilly terrain is best. To appreciate this selection, we recommend you run the course twice. The first time take the controls from below; the second time climb in the beginning. Remember to use good attack points.



Contouring ▲

CONTOURING

Contouring is a way of saving yourself a steep climb and descent when a significant landform obstructs your path to the control - either a very large hill or a deep valley. To run over and down, or down and up, would consume enormous amounts of time and energy. A better route choice may be to run around the feature - "contouring" it. The term comes from contour lines on a map, and means staying on the same elevation.

The lower your level of fitness, the greater the importance of running around difficult landforms. Advanced orienteers may be able to sustain the climb without losing any time, but even they should look for this alternative.

A general rule is that for every 10 metres climbed, you can run 100 metres on a flat contour line in the same time. Therefore, a climb must be formidable indeed before you choose to run around it. The tendency among advanced orienteers especially is to run over whatever is in the way between controls, unless the landform is a truly great obstacle.

PRACTICE

To practice contouring, you don't have to run a course in the mountains. Once this route selection has been made, its execution is straightforward. Take a map of your training area, select a contour that runs through the map, and trace it with a red pen. Go to the terrain and follow the contour. Contouring takes good map reading skills and the ability to maintain good direction. Concentrate on staying at the same height. There is a natural tendency to run up or "fall down" a slope.

PLAN AHEAD

One final word on route selection:
Always plan ahead. Plan where you want to go, what you should see in the terrain on the way, and strategies you will use to find the control. This is especially critical when first selecting a route.

Moving before you have a good idea of where you're going is sure to cause errors sooner or later. This is a difficult skill to master because of the constant pressure not to lose time. Not having a proper plan, however, will invariably cost you more time than it takes to make one.

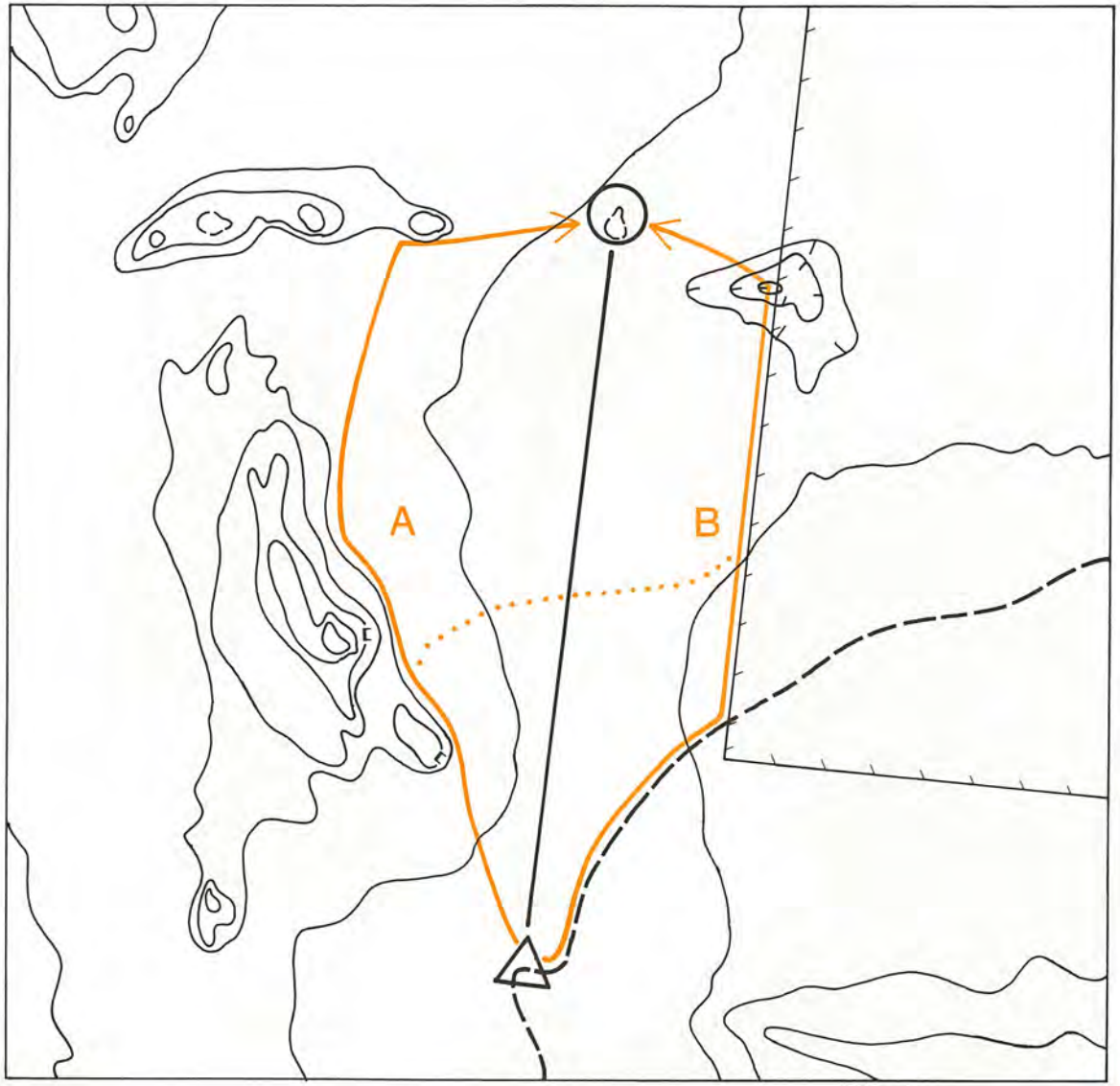
PRACTICE

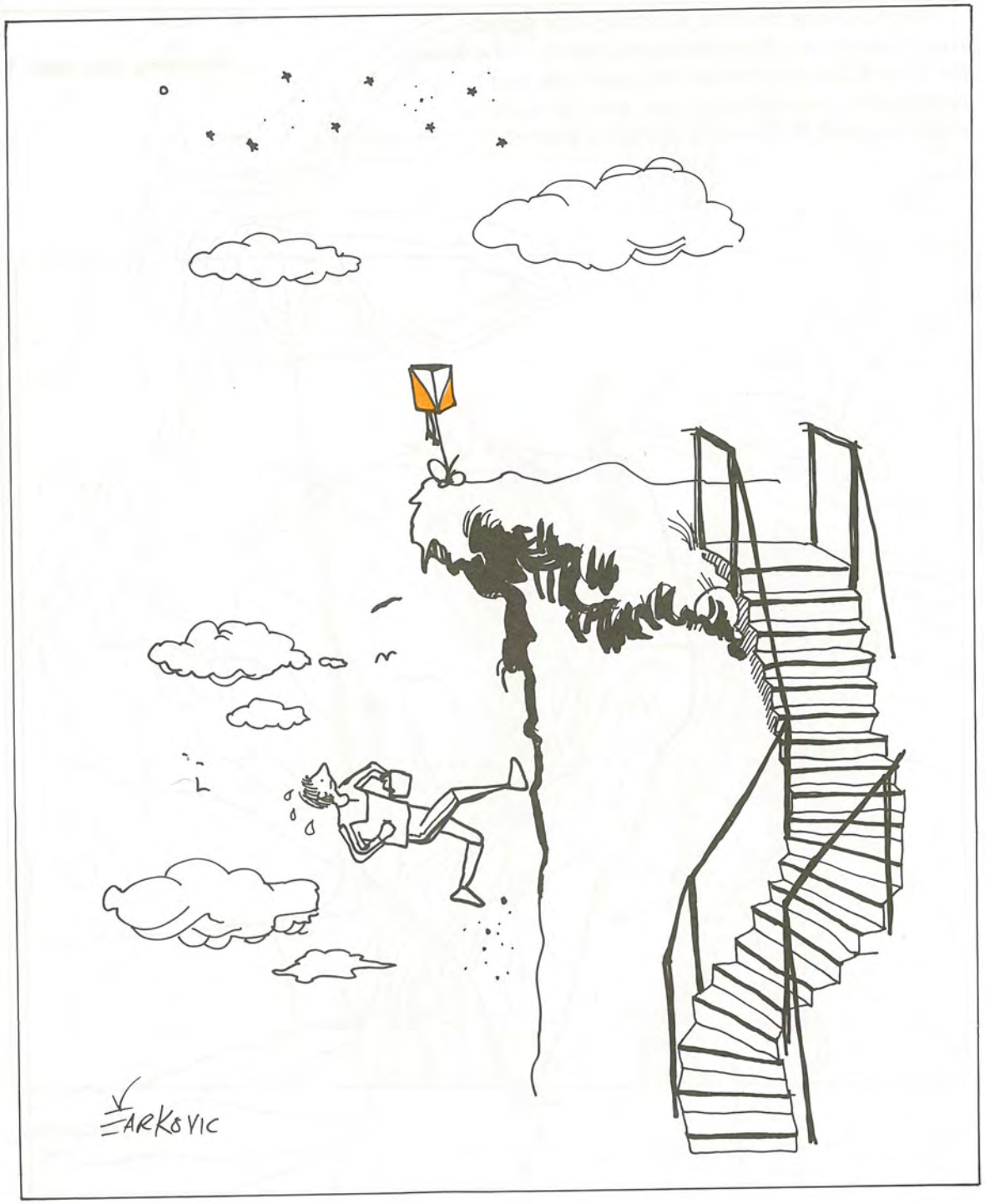
Practice planning ahead and route selection together. To know whether you are planning properly, check the execution of your plan. Do you have difficulty finding your way? Do you have to stop all the time because you are unsure of your location? Are you surprised by significant features in the terrain? If the answer to these questions is 'yes', you probably aren't planning before you move.

Don't plan to perfection. Do make a sensible plan, thorough enough to afford you control over your orienteering. The rules of simplification apply here too. Deciding on a simple, sensible plan to the next control takes 30 seconds to one minute (maximum). As you improve, you'll be able to plan in a few seconds.

Once you've planned your route and strategy, try to follow it. If the plan seems inappropriate after you've orienteered part of it, stop and make a new one before continuing. Don't keep jumping from one plan to another though. Follow through as much as possible. Modify or abandon the plan only if you feel there is a much better way.

The following example illustrates this general rule. Plans A and B are both good. Even if the forest for plan A turns out to be less open than you anticipated, you still don't have enough cause to switch to plan B. Better to complete plan A.





SUMMARY

1. Successful orienteering requires the use of skills and strategies that maximize your abilities to find the controls and minimize your errors.
2. To select a route, first select an attack point, a distinct feature near the control from which you can find the control easily. Second, select a safe route to the attack point.
3. Good attack points are distinct, easy to find features, close to the control (within 200 to 300 metres), and afford the best possible view of the terrain.
4. Aiming off is a strategy used to simplify a route by purposely selecting a route to one side of your goal so that you are sure of the direction of your turn.
5. Attacking the control from above gives you the best view of both the control and best approach to it.
6. Climbing in the beginning of a leg lessens the probability of error caused by poor field of vision and fatigue that comes with climbing at the end of the leg.
7. Contouring around large hills and deep valleys saves time and energy.
8. Plan where you want to go, what you should see in the terrain and what strategies you will use to find the control.
9. Follow your plan, unless it becomes inappropriate because of the map or terrain, at which time you should select a new plan.

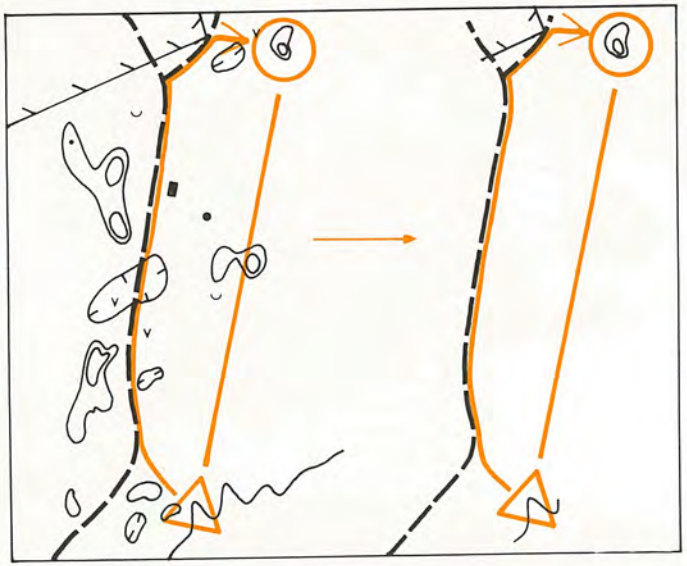
6 Running A Route

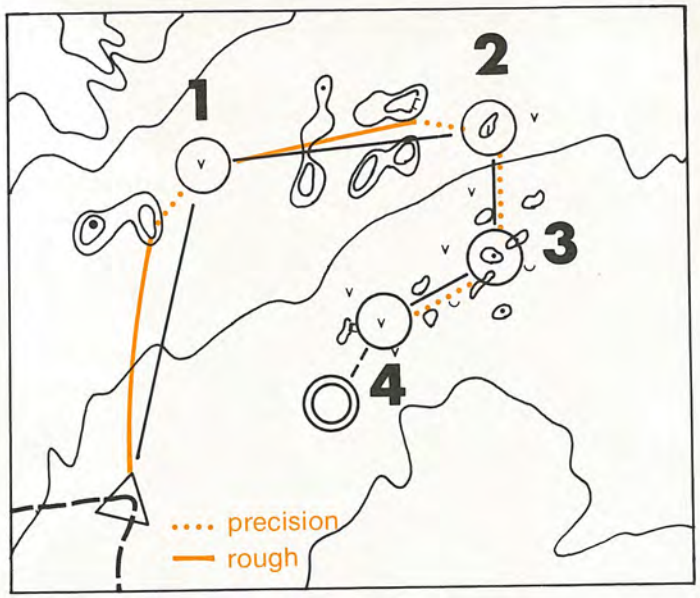
Once you have selected a route to the control, orienteer it to the best of your ability. This involves selecting the correct techniques and adjusting your speed to match your skill level and the difficulty of the orienteering. This is much easier to learn in theory than to put into practice.

ROUGH ORIENTEERING

"Rough" orienteering is knowing your approximate location in the terrain and on the map. (As a rule of thumb, knowing "approximate location" means that if you stopped, you would be able to pinpoint your exact location within a few seconds.) It lets you navigate as quickly as possible, usually across the terrain to a large distinct feature, especially from the start or control to the attack point of the first or next control. Rough orienteering involves rough map reading and, when necessary, rough compass.

Simplification is essential to proper rough orienteering, using only distinct handrails and catching features for navigation. Small details are usually ignored.





PRECISION ORIENTEERING

Precision orienteering is knowing your exact location in the terrain and on the map. It is based on precision map reading and, when necessary, precision compass.

Precision orienteering is used

- from the attack point to the control
- on short legs (where one control becomes the attack point for the next control)
- in thick vegetation requiring precise navigation
- in areas rich in similar detail

You use precision orienteering when you must know precisely where you are and where you are going, usually during critical parts of the course. Your speed is reduced to read the map and to navigate more carefully. A balance between speed and navigation accuracy is essential.

▲ **Precision and rough orienteering**

◄ **Rough orienteering simplification**

SPEED JUDGMENT

Orienteering has been described as the ability to know when to run fast and when to slow down. Many factors affect speed judgment: fitness, skills, weather, season, terrain, orienteering difficulty, other participants, fatigue, anxiety and confidence levels. This section concentrates on the factors directly associated with orienteering difficulty and how you should adjust your speed to accommodate unexpected changes in the terrain, on the map and during the course.

Rough orienteering is the time for quick running, but several variables will affect your exact speed.

1. If you can't keep enough contact with the map to continually mark your location, either slow down to read the map or chose another, less difficult route.

2. If you encounter thicker vegetation than indicated on the map you have a couple of alternatives.
   - Run at high speed on a compass bearing. Be certain you have good catching features to relocate yourself once you clear the thick growth.
   - Slow down, orienteer and read the map more carefully, and continually mark your approximate location. The selection of strategy depends on the leg and the terrain features.

3. If the terrain is too complex to allow you to run quickly across to a distinct catching feature, slow down and read the map more carefully or you'll lose your way. This is actually a switch to precision orienteering. A change in the terrain can occur at anytime, and may last for 100 metres or an entire leg. Regardless of the general breakdown of rough and precision orienteering, you must always know where you are on the map even if it means slowing down.

Precision orienteering usually requires a reduction in speed, so you can read small details and find controls. If the precision orienteering is relatively simple or you have simplified the orienteering, you can run faster.

If the orienteering is very difficult, you may have to walk. This may seem an extreme adjustment in your speed, but remember that your objective is to minimize errors and find the controls quickly. If that means you need to walk, then you walk.

This is an important point for the intermediate orienteer who is learning precision orienteering and wants to find the controls as quickly as possible. Too often, the tendency is not to slow down enough and errors result. In very difficult terrain, advanced orienteers have been known to run at high speed for 5 to 10 minutes, then come to a complete stop and walk the last 100 metres into the control. They don't want to miss.

If you are running too fast to navigate properly, you'll lose time through errors. If, on the the other hand, you are too careful and spend too much time on navigational skills, when you already have all the information you need and should be running as fast as possible, you will lose precious time. Knowing when to run fast and when to go slow - speed judgment - is considered by many advanced orienteers as the optimum strategy.

PRACTICE

MAP STUDY

Map study is an effective method of practicing rough and precision orienteering and speed judgment. A specific exercise is timed interval looks at legs. This mimics the time frame for decision-making that occurs during the competition. Indicate the attack point, the distinct features (handrails, catching features) you will read to navigate to the attack point, and then the small details you will read to find the control. Also indicate where you will run fast and where slow.

TERRAIN PRACTICE

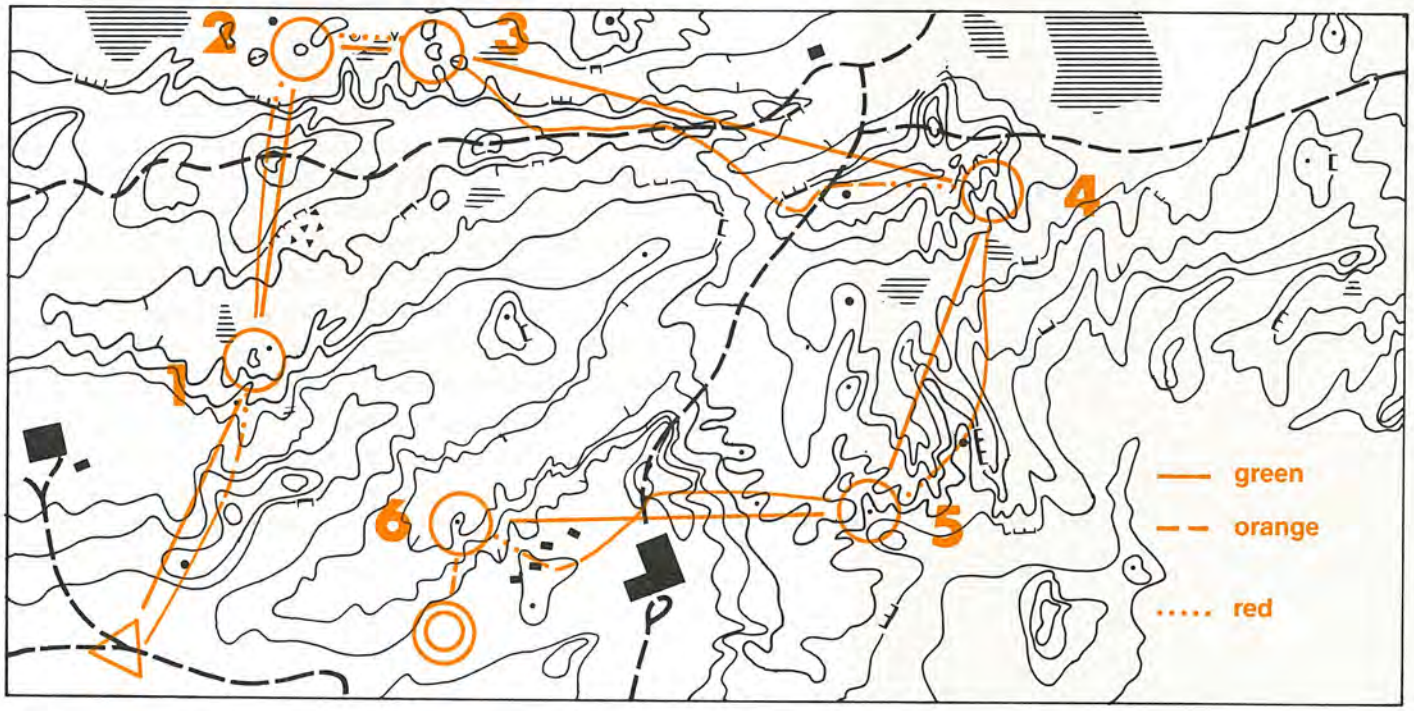
1. Practice rough and precision orienteering using the rough and precision map reading and compass courses described in previous sections.

2. Organized club courses planned for your level of orienteering are good training for rough and precision. Be sure to concentrate on the techniques when running these courses.

3. Running the same course twice along the same route is an excellent means of testing whether you are using the right amount of information (map and terrain). The first time, run at your usual rhythm. The second time, be aware of what you are seeing and be critical of your orienteering. Do I need to read these map details? Am I looking at only the large features? Where does that feature appear on the map?

4. "Stoplight" orienteering. Use a regular course appropriate to your skill level. Indicate the route and speed required for each leg with coloured pens. Green for high speed, orange for moderate and red for slow. If you don't have coloured pens use a solid line, dashes and dots. Run the course at the speeds indicated.

◄ Course emphasis on rough and precision



◄ Stoplight orienteering

TIPS

- Rough and precision orienteering and speed judgment techniques must be tailored to your style and skill level. The descriptions should serve as a guide.

- The transition from rough to precision orienteering is difficult. Suppress the urge to find the control quickly in favour of the most sensible strategy - slow down and orienteer precisely. To assist in the transition, come to a complete stop at the attack point before proceeding with your precision.

- The greater the visibility and "runnability" of the terrain, the faster you must run and orienteer when rough and precision orienteering. This may appear to be easier. But it is often more difficult because you are forced to think more quickly when more fatigued (from the quicker running). Use caution!

- Don't be pulled along by other orienteers near the control, unless you are prepared to adjust your speed and orienteering technique just when you need to be most sure of them. Several orienteers rushing into the control area together don't always find the control more quickly than the single orienteer using proper speed and precision.

CORRIDOR AND POINT TO POINT ORIENTEERING

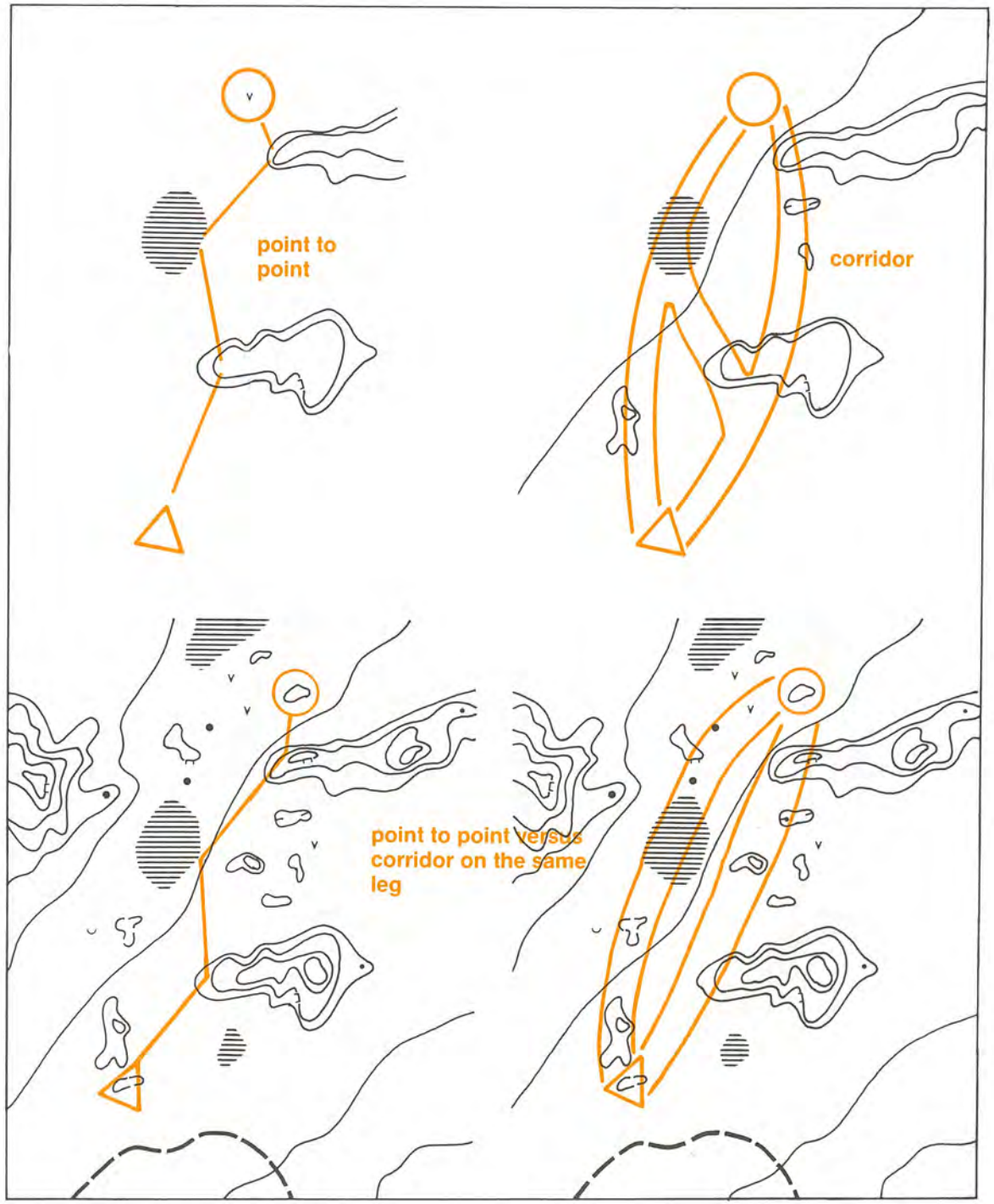
There are essentially two ways to run a route: corridor and point to point. As a beginner, you complete a course by following large handrails to controls on large catching features along a well-defined route.

But as you improve and orienteer more difficult courses, you are required to orienteer in the forest. To find the controls you move from one major feature to the next, and then to the control. This is referred to as the "point to point" method.

Each "point" is a distinct catching feature that serves as a checkpoint along the way to the control. Since your map reading skills are not yet perfected, you rely more on maintaining good direction for navigation. Consequently, you orienteer from point to point using the compass as a major source of direction. This gives you the opportunity to enjoy the sport while developing your map reading skills.

After your map reading skills have improved, you rely less on the compass and more on the map. You can map read more details and you don't have to rely on distinct checkpoint features as your major source of navigation. You orienteer in a specified area of terrain or "corridor" between the control points. Direction is still important, but the emphasis is now on map reading.

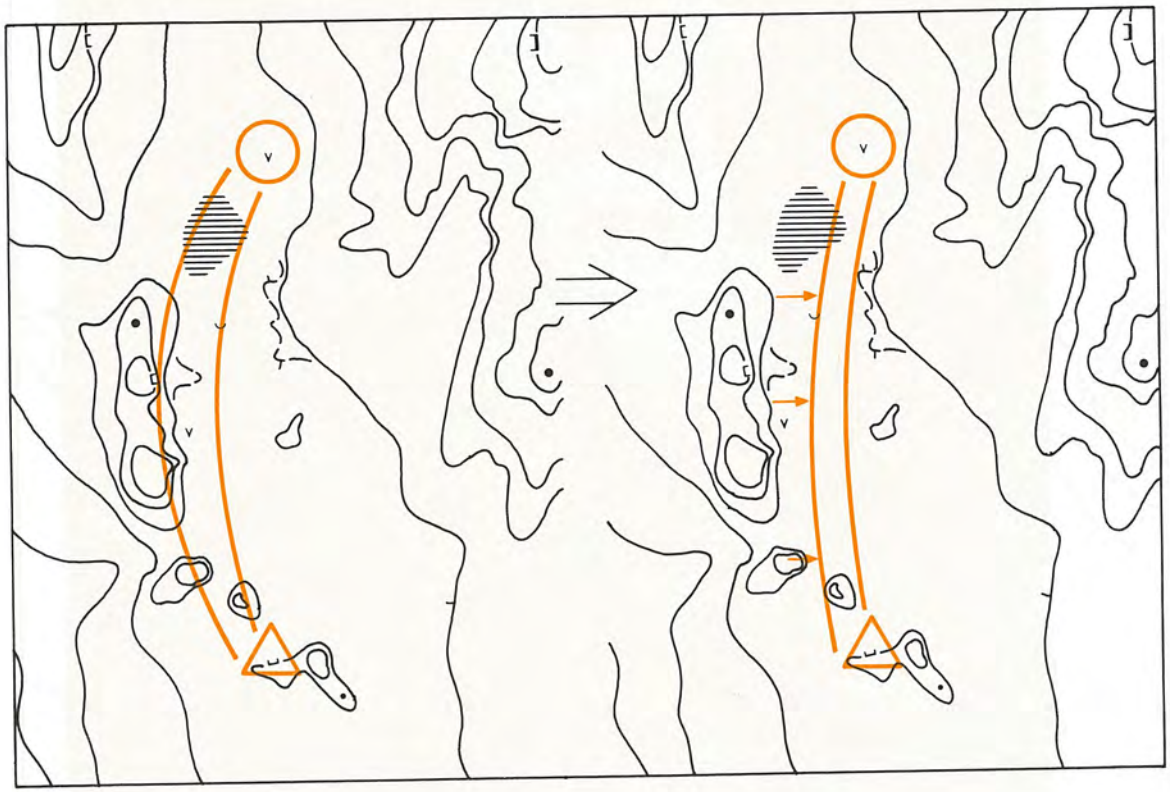
This is the progression to the corridor method used by advanced orienteers. Your route selection is not to orienteer between major checkpoints (although this is still possible), but to have a smooth flow between controls by running in a corridor that passes distinct features, and uses handrails and attack points.



At the advanced level, it isn't necessary to orienteer directly to the features and bounce off them. Instead you sight features at a distance and maintain your relative position. The following illustration shows how to smooth the corridor line of an intermediate level course.

Because the emphasis in corridor orienteering is on map reading, there is less chance of error. When you orienteer each part of a leg with the only purpose being to find the next checkpoint, and you miss that checkpoint, you have a problem. With frequent map reading you have a better idea where you are in the terrain at all times.

Smoothing the corridor ▼

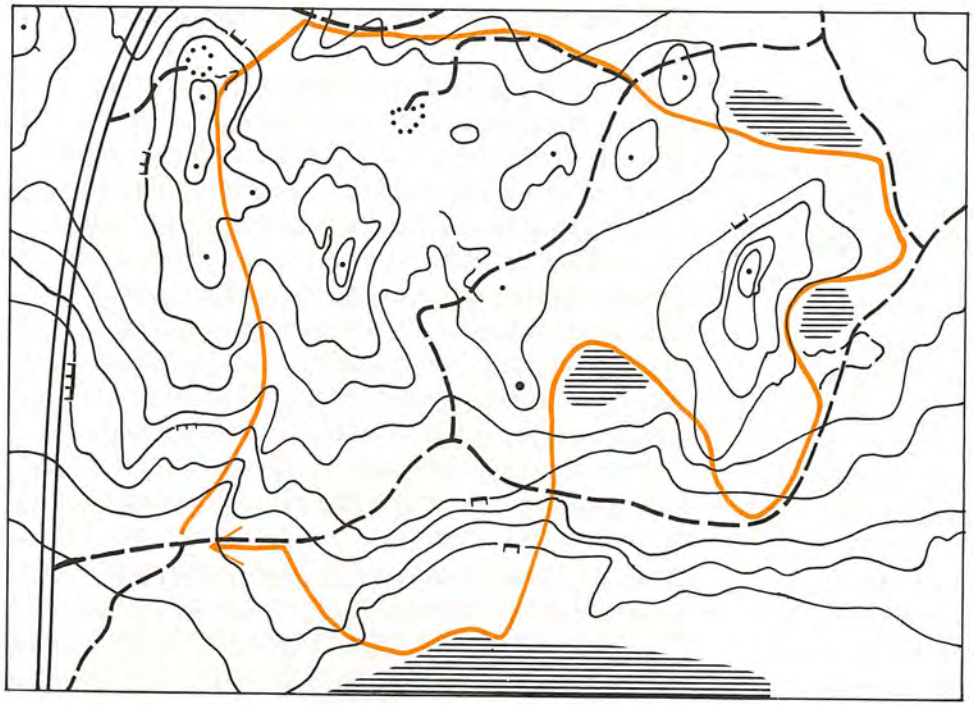


PRACTICE

Practice corridor orienteering with the following training exercises:

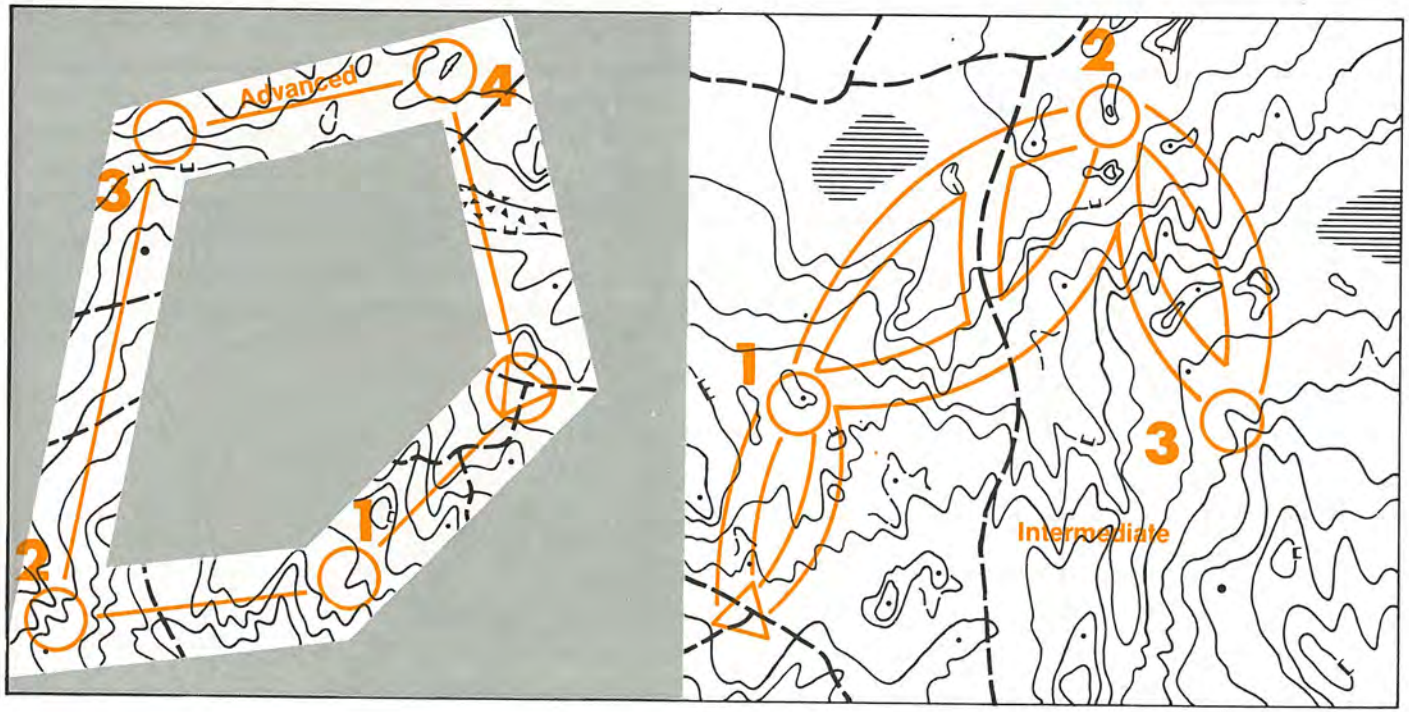
- *Line orienteering* - Orienteer a line that follows handrails and catching features. Intermediate level orienteers should use very distinct features they can follow quickly, thereby mimicking event conditions.

- *Corridor orienteering* - Similar to line orienteering, in that a corridor 50 to 100 metres wide is drawn on the map. To duplicate an event, use a regular course and draw the corridor between the controls where you would normally orienteer. To increase the difficulty, blacken the map beside the corridor.



◄ Line practice

◄ Corridor practice courses



DISTANCE JUDGMENT

An important skill to develop is the ability to judge how far you have orienteered. In terrain with many catching features and map details to read, you can always mark your location and calculate the distance you have travelled. But in situations where there are only a few details to read and you must still orienteer as quickly as possible (for example, when rough and precision orienteering) some type of distance judgment becomes invaluable.

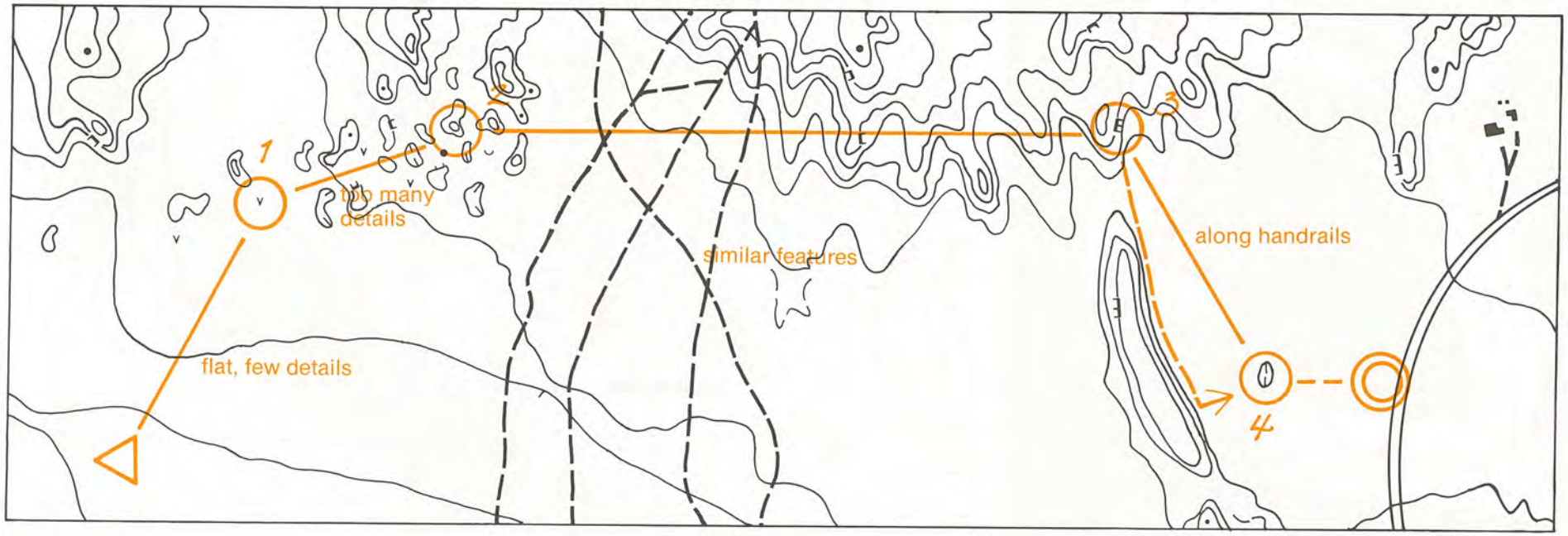
Developing a sense of distance travelled is largely a result of experience, but you can help it along. As a beginner, make a note of the time required to orienteer each leg or section of a leg. You will gradually begin to associate the amount of time elapsed and the distance travelled on the map.

Once you've improved to the intermediate level, you're ready to try pace counting. We recommend you do not attempt this structured form of distance judgment until you have mastered the basic beginner's skills.

To measure your distance with pace counting, count every second step - every time your left or right leg strikes the ground. To determine your pace count, go to a sports field with a measured track (usually 400 metres). Count your double paces for the distance, and after several trials, determine your average number of paces per 100 metres. Determine your pace count for different speeds -walking jogging, running. For example, your double pace for walking should be approximately 60 to 70 per 100 metres, and for running 30 to 40 per 100 metres.

Practice your pace count on the track, until you feel comfortable counting and running. Then go to the terrain and determine your pace count per 100 metres of forest. Measure the distance for a specific section of the forest and average your pace count after several trials. Your pace count should be approximately 40 to 60 double paces per 100 metres of forest.

Pace counting ▼



Use pace counting

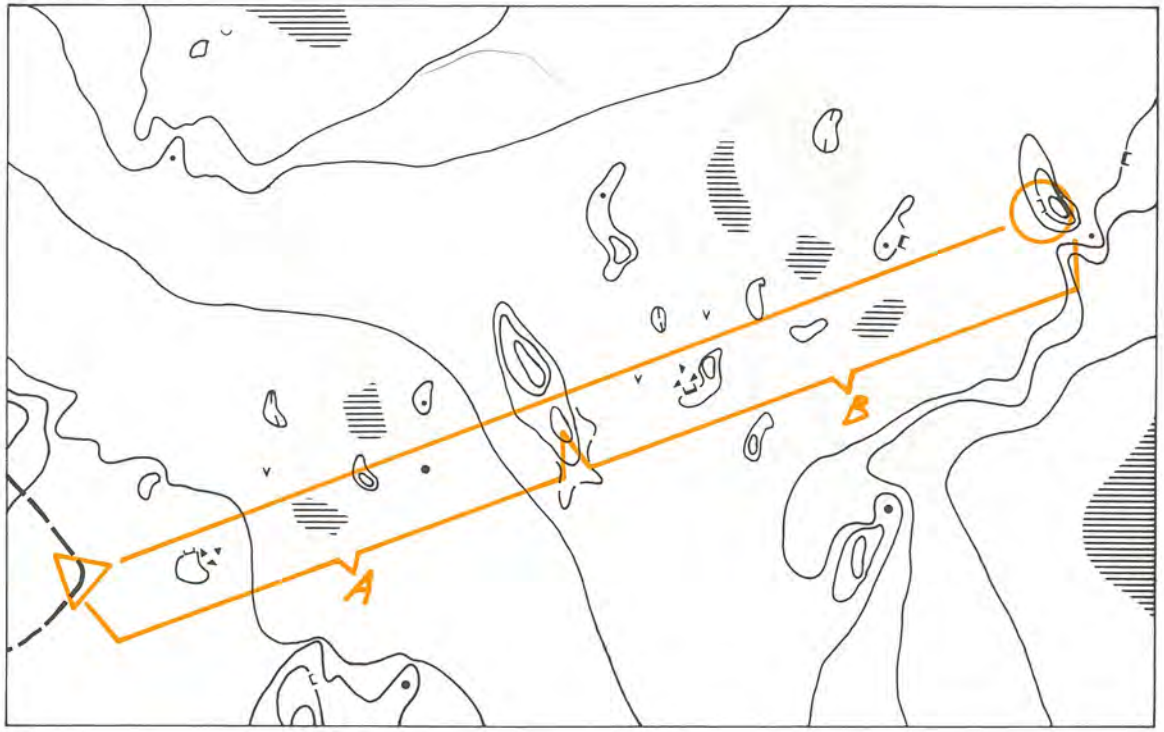
- in flat areas with few details
- in very detailed areas with too much to read
- in terrain with many similar features (trails, re-entrants, spurs)
- along handrails to points from which you continue your route or attack the control.

To use pace counting, measure the distance on your map and translate that to pace counts. For example, 150 metres on the map is approximately 75 double paces (if you are 50 paces per 100 metres).

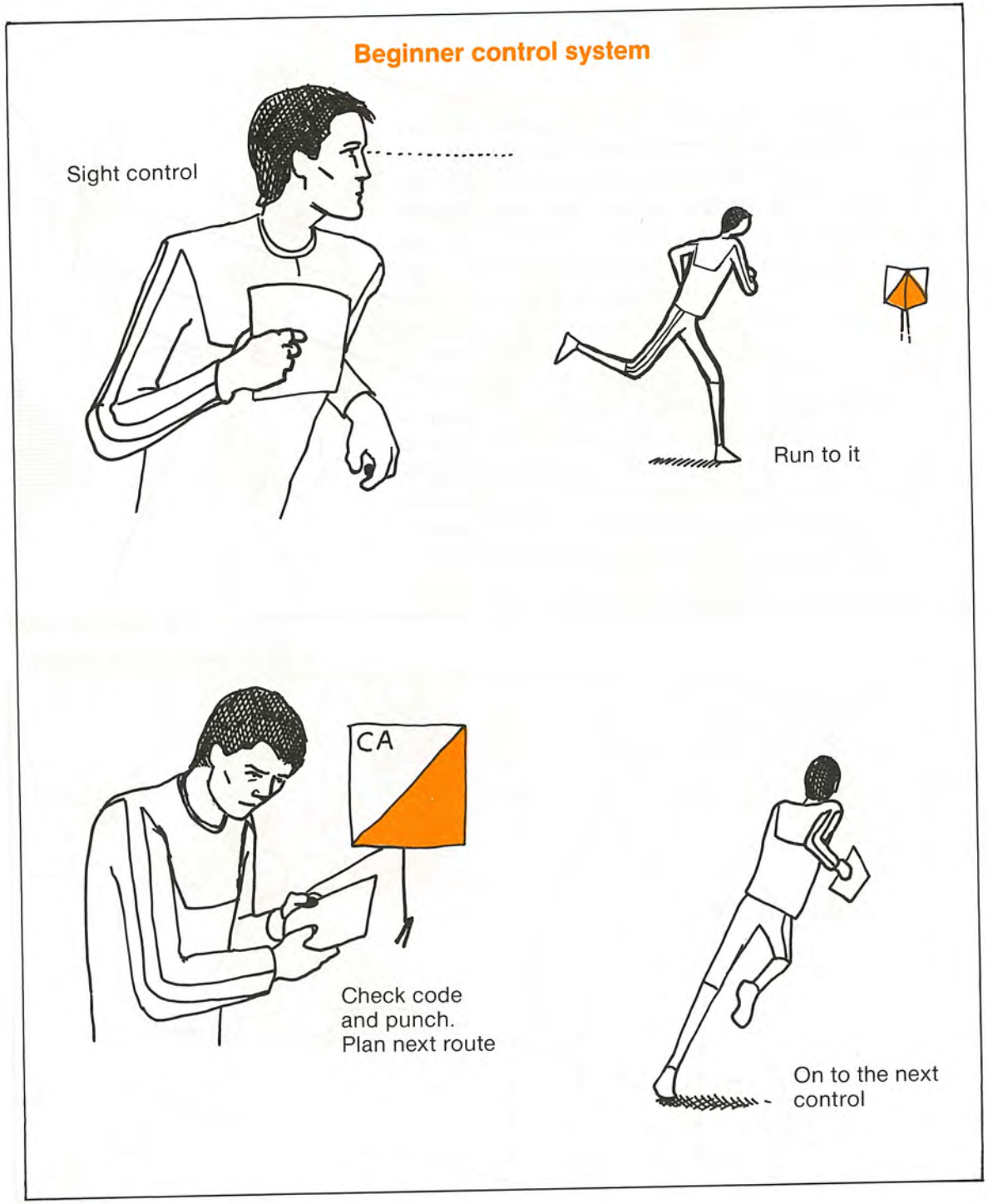
An alternative is to construct a pacing scale that automatically measures in paces from the map, eliminating the mental calculation from metres to paces.

An advanced use that eliminates measuring is to pace count a section of a leg and then use that same pace count for a similar section of the leg that requires that you know your distance. The following illustration shows that the pace count for section A is the same as the pace count required for section B.

The difficulty with pace counting is that it is not particularly reliable, especially when running around obstacles, in thick vegetation, on slopes, or up and down hills. In addition, unless you practice until the counting is almost subconscious, it can interfere with other skills. Pace counting does have a contribution to make to your success. But you should always select tactics and use skills that minimize its importance.



▲ **Pace count similar sections**



TECHNIQUE AT THE CONTROL

At the advanced level, competitions are often won or lost at the control. But no matter what your level, you can improve your time by developing good technique. For example, there are an average of 10 controls on a course. If it takes you between 30 and 60 seconds to punch each control and continue, you spend 5 to 10 minutes at controls every event. Compare this time to the 2.5 minutes (15 seconds per control) of an intermediate orienteer and 50 seconds (5 seconds per control) of an advanced orienteer. The differences are staggering, so pay special attention to this area if you want to better your performance overall.

Eventually, you'll develop a control system you feel comfortable with and which suits your orienteering style. Here are the typical progressions of systems you can adopt or modify for your own use.

BEGINNER

As a beginner, you need to develop a basic sequence of actions at controls. Your goal is to ensure that the marker you've found is the right one, that you record it properly, and that you are ready to continue as quickly as possible.

1. You sight the control flag and are overcome with joy.
2. Stop at the flag.
3. Check that the control code on the description sheet and the one on the control marker are the same.
4. Punch your control card in the appropriate box.
5. Plan your next leg.
6. Leave the control.

Refrain from rushing into the control, punching too quickly, or rushing madly away.

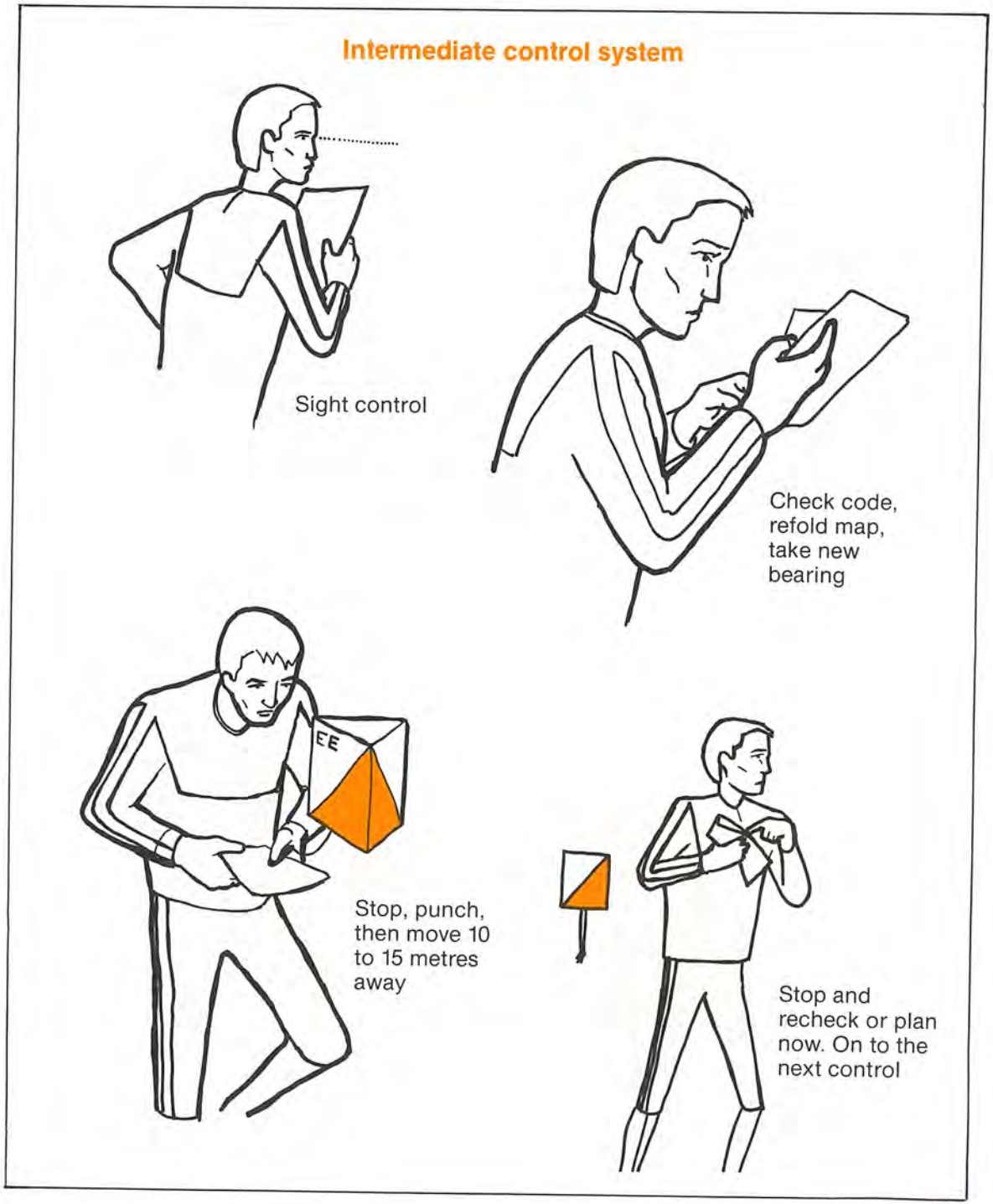
INTERMEDIATE

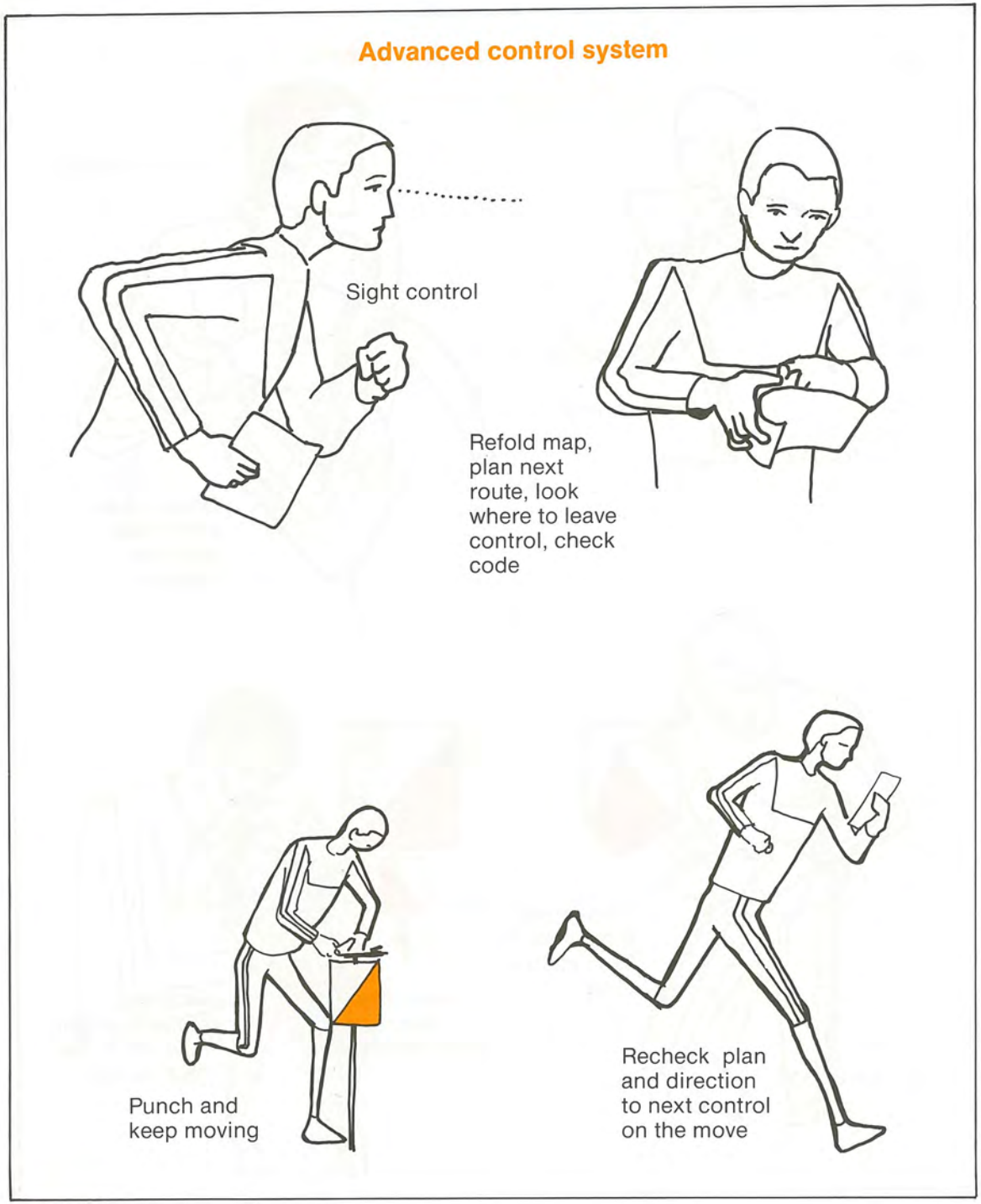
As an intermediate competitor, your control system changes to a deliberate plan to move as quickly as possible through the control area.

1. Sight the control feature or flag. (You don't have to see the flag itself. You recognize the feature and know the control marker is hanging on or near it.)
2. Check the control code on the description sheet.
3. Read the map to plan the next route. Refold your map and take a new bearing for direction.
4. Stop at the control and punch your control card.
5. Move 10 to 15 metres away from the control in the direction of the next control and stop.
6. If you were unable to plan your route and direction to the next control before punching, do it now. Refold your map.
7. Leave the control area. But don't rush off. Slowly increase your speed, checking your direction and map reading as you go. Make sure you know exactly where you are heading. This part of the leg is still more precision than rough orienteering, until you reach your high speed rhythm again.

If you were able to plan your route and direction prior to punching the control, you don't have to move away from the control and stop. Do move away from the control slowly though, and recheck your planned route and direction.

If the route to the next control is simple and you can move quickly to a large handrail such as a trail, you might be tempted to rush to the trail first and recheck and plan the leg from there. But if you leave the control too quickly, you may err in your direction. Turning out of the control in the wrong direction is more common than you might think.





ADVANCED

The advanced system involves preplanning your exit from the control, and then execution of a smooth departure.

1. Sight the control feature or flag. Don't sprint to the flag. Take your time and execute the rest of the control system smoothly.
2. Roughly plan the next route if you haven't already done so.
3. Refold the map for the next leg.
4. Look in the terrain for distinct features to guide you out of the control and on your way to the next control.
5. Check the control code.
6. Punch your control card. Don't stop for more than a few seconds.
7. Leave the control in the direction you have predetermined. Recheck your plan and direction while moving.

Take it easy when you leave the control. Be careful that you are travelling in the direction of your selected route. If there is a way to move quickly to a distinct handrail or catching feature, take advantage of it. Since you preplanned your exit from the control, you should be able to find the distinct feature without difficulty.

Your ability to develop a good control system depends on other skills: map reading, direction (compass), peripheral vision (looking around in the terrain), route selection, planning and map handling.

Proper map handling is essential. You already know how to fold the map for map reading, as described in the map reading section. Once you can fold the map and read by thumb properly, the progression for the control technique comes naturally. To read the descriptions on the backside of the map, or to punch the control card which is usually on the backside, turn your wrist to flip the map over. Keep your thumb on your location. This is an easy progression if you fold the map properly. You'll have constant map contact and quicker orienteering at the control.

TIPS

- When you sight the control flag or feature, do not sprint to it. Take the time to plan ahead and look where you should run after you punch your control card.
- Do not rush your control technique. Be careful, slow and smooth.
- Perfecting your control system takes time. Keep working at it.
- A common error is turning the wrong way out of controls. To make certain you are orienteering in the right direction, slow or stop 50 to 100 metres from the control and recheck your map and compass.
- No two controls are the same, and you'll find yourself adjusting and modifying your control system slightly every time. Don't be discouraged if you feel you're using what seems to be a different system at each control. Try to follow the procedure, but leave room for adjustment.
- Proper map handling is essential for good execution.

PRACTICE

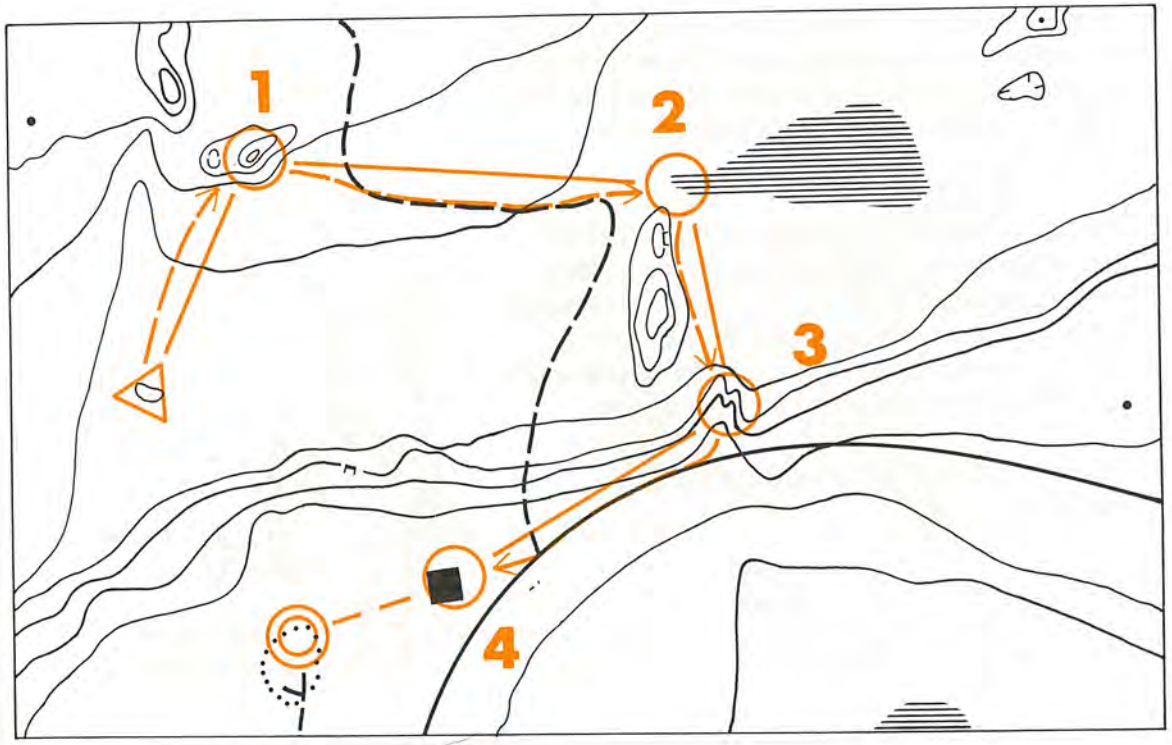
The best way to learn your control system is to repeat it often. Here are a few suggestions for other practice.

1. Walk through your control system, making certain you're performing and co-ordinating each step correctly.

2. Begin in "runnable" terrain, preferably in an open park. You don't want poor visibility or obstructions interfering with your learning. You should be familiar with the terrain and feel comfortable and confident orienteering there.

3. Use large control features and easy control exit routes along major handrails.

Practice course — large control features and easy exit ▼



4. Break down the learning and practice of the system into parts as described. Practice the first part and add on other parts as you feel comfortable until your control system is complete. An effective twist to the learning process is to reverse the sequence. Start with the last part of the system (leaving the control), then add the others in a reverse order.

5. Practice next in open woodland with more details. Increase the difficulty by practicing in terrain with more details and reduced visibility.

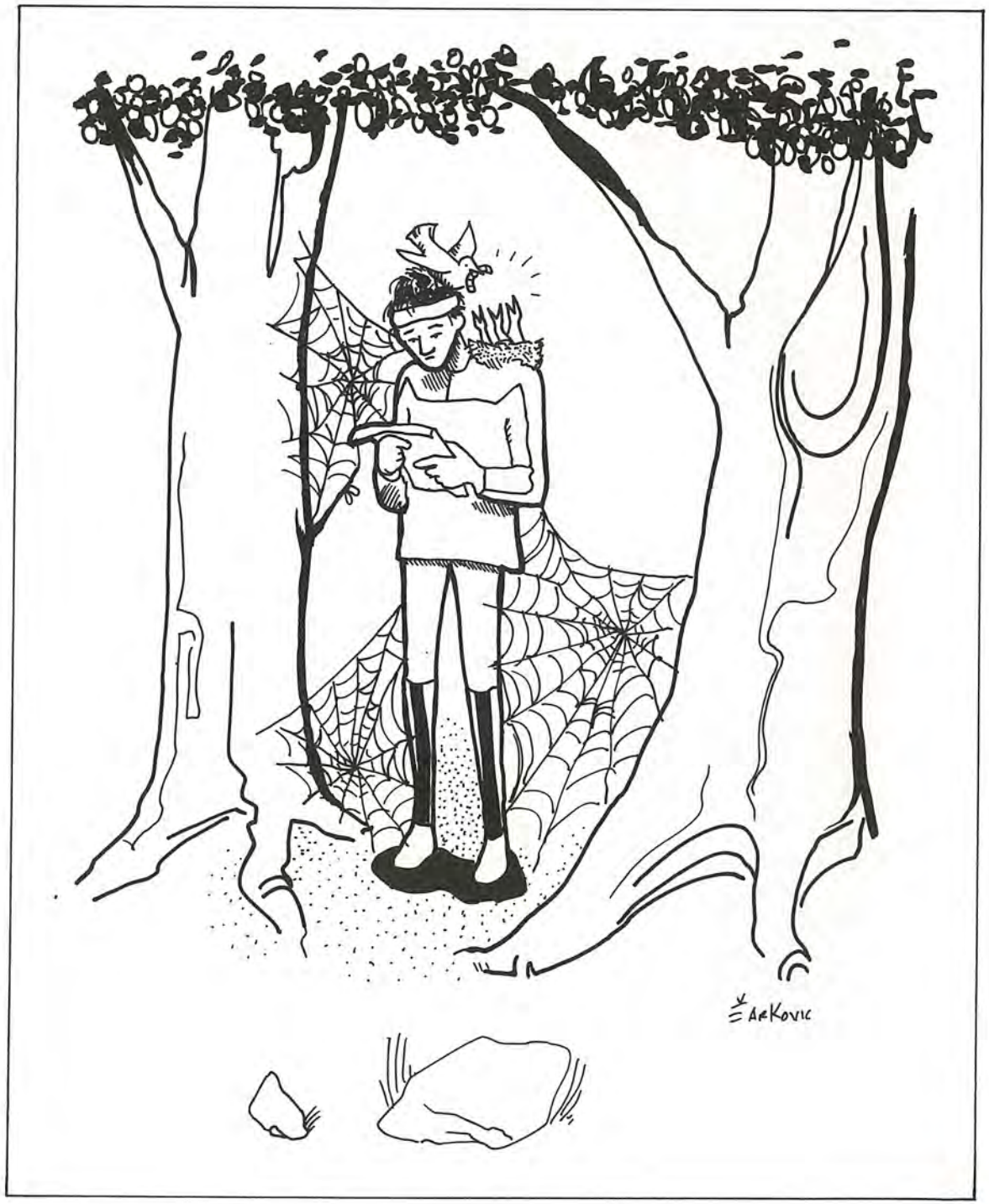
6. The best training course for practicing a control system is a control picking course. This is a course with many controls (often 20 or more) and short legs, where one control becomes the attack point for the next. Ideally, there would be control flags and punches at every control location. This may prove unrealistic, and a ribbon and punch may be all that is available. If you don't have punches, use inexpensive colouring crayons on strings. To set up the course, define an area about one kilometre square and hang 50 ribbons. Join the controls in any sequence, for as many training sessions as possible before you become too familiar with the area. Then move to another square-kilometre area.

7. As a beginner, you should not be too concerned about progressing your control system too quickly. The prerequisites are many and you must be able to execute the map reading and compass skills well before you can make significant gains with the control system.

8. If you are finding it difficult to learn the control system, you may not be performing the prerequisite skills well enough. If so, practice those skills individually until they improve sufficiently to be used in the control system.

SUMMARY

1. Rough orienteering is the simplification skill of reading only the large distinct features (rough map reading) to navigate primarily to the attack point. Rough compass is used when required.
2. Precision orienteering combines precision map reading and, when required, precision compass to orienteer from the attack point to the control, on short legs, in thick vegetation, and in terrain rich in similar detail.
3. Speed judgment, knowing when to run fast and when to slow down, is the most important strategy for successful orienteering. Running too fast often leads to error, and running too slow at the wrong time results in time lost.
4. Stoplight orienteering is an excellent training method for rough and precision orienteering, and for speed judgment.
5. Point to point route running is used primarily by beginner and intermediate level orienteers. It involves orienteering from one distinct feature to another along the route to the control. The emphasis is on direction (compass skills).
6. Corridor orienteering emphasizes the map reading of details in a corridor or specified area of the terrain between controls. Direction is still important, but frequent map reading is more important. This is the skill used by advanced orienteers.
7. Distance judgment, developing a sense of how far you have travelled, improves with the practice of pace counting.
8. A great deal of time can be saved through proper execution of technique at the control. It is essential to develop a sequence of skills (control system) to orienteer through the controls as quickly and accurately as possible.



7

Error Prevention And Correction

Heaven forbid that you should ever make an error, but if it happens, you should know how to correct it quickly. First, however, you should know what caused it. Some of the major reasons why errors occur are

1. Fatigue
You're tired, and your thinking slows. Fatigue often hits
- after climbing a large hill
- after running fast for part of a leg
- near the end of the course.

2. Poor execution of skills
You are careless about performing basic skills. If problems persist, re-learn and practice the skills involved.

3. Poor strategy and poor selection of skills
You choose a strategy inappropriate for the orienteering problem or beyond your skill level. Typical examples are selecting routes that are too difficult or unsafe, and inability to slow down when necessary, such as near the control.

4. Loss of concentration
Distraction by others and fatigue are contributing factors to losing concentration. Or, you may simply stop thinking about what you are doing.

5. Previous error
Errors usually occur in pairs. After one error, your level of concentration is lower and anxiety higher. A second error often results.

COMMON ERRORS

Here are some of the commonest errors, with tips on how to prevent and correct them.

1. PARALLEL ERROR

This is the confusion of one part of the map or terrain with another similar section. This error usually occurs short of your anticipated location.

Prevention lies in studying the map carefully for parallel features that may be present along the leg.

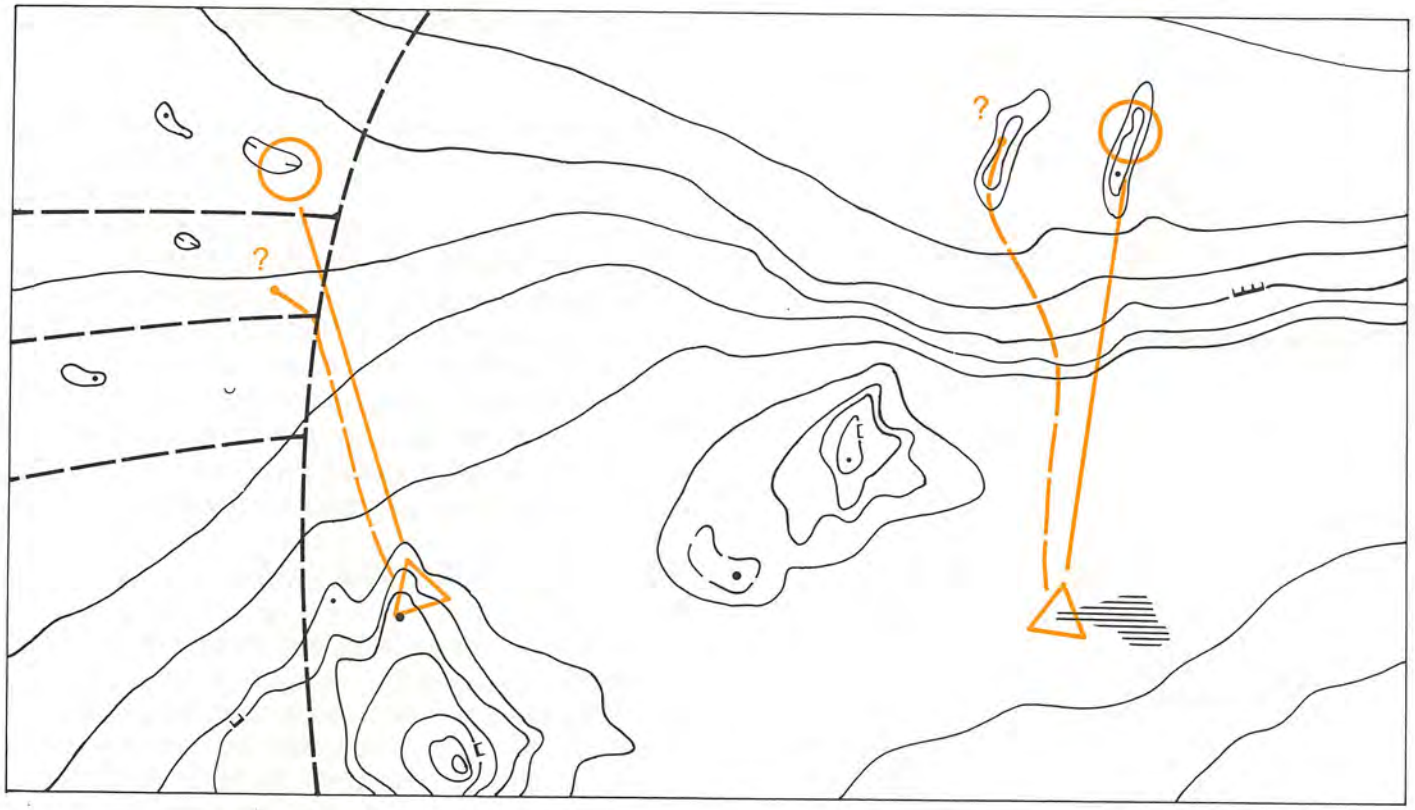
Many parallel errors occur near the control. If you don't find the control immediately, or if there are no other orienteers around, you've probably made a parallel error. To correct it, reconstruct your orienteering prior to the attack point or significant features where you last knew your location. Relocate and continue.

2. SPEED JUDGMENT ERROR

Moving too fast can lead to overrunning features and controls. The result is disorientation, because you didn't keep track of your location on the map. You are further along your route than you thought.

Running too slow for the terrain or your skill level is also an error.

Both errors involve speed judgment. You can prevent them by selecting sensible strategies and following these guidelines:
- Rough Orienteering - do not run so fast that you do not know your approximate location on the map.
- Precision Orienteering - do not run so fast that you do not know your exact location on the map. Balance your speed with your skills.



◄ Parallel error

After a speed judgment error carefully note the direction in which you've been running, estimate how far you've run and try to remember what you've seen along the way. Relocate and continue.

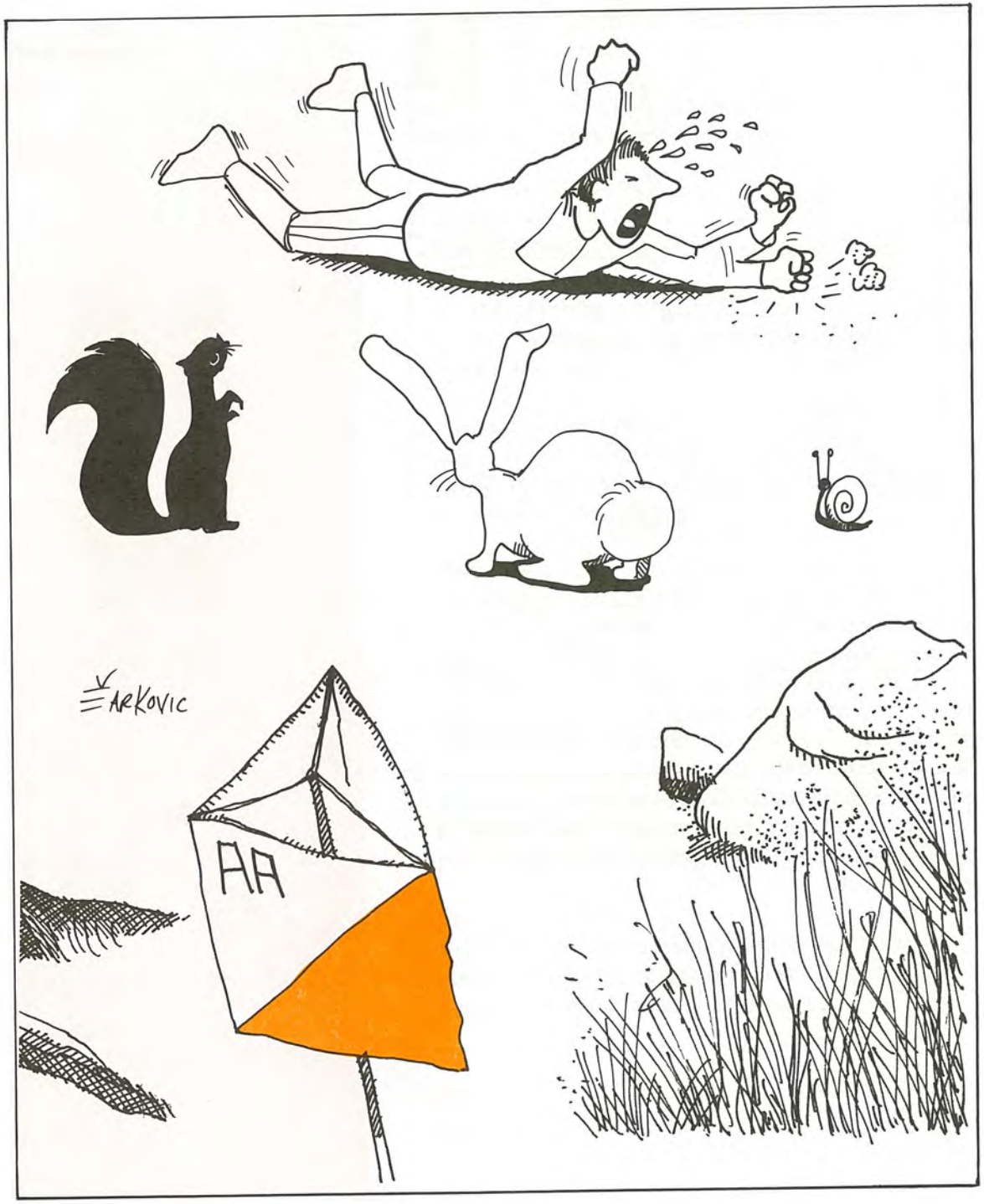
3. SEARCHING FOR CONTROLS

You spend too long looking for the control once inside the control circle on the map. This results when

- you don't read the control description and you're looking on the wrong feature(s).
- your precision orienteering from the attack point is poor.

Prevent this error by reading your control descriptions and orienteering carefully from the attack point. It is very disturbing to orienteer well at good speed to the attack point, and then lose several minutes on the last 100 metres.

Correct this error by returning to your attack point or last known position and trying again, more carefully.



4. LOSING YOUR LOCATION ALONG THE ROUTE

This usually results from insufficient or poor map reading, poor direction or poor map reading by thumb.

Prevent these losses of location by maintaining good map contact. Map read frequently and check your direction often. You may also have selected a route that is too difficult for your skill level. Be careful to select routes you can handle.

To correct you must relocate. Don't be afraid to return to your last known position, continue along your route to a catching feature, or turn off your desired route to a catching feature.

5. MISSING THE FIRST CONTROL

This usually results from poor preparation and poor start procedures.

Prevent these errors with proper preparation and procedures (see the section on starts). Be very careful correcting this error. At the beginning of the course, your anxiety level is probably very high because you haven't found your orienteering rhythm. Use the following procedures:

- Relocate. If you can't, go back to the start and try again. Walk if necessary.
- Don't rush off blindly, even after you relocate. You cannot make up lost time.
- Stay calm and orienteer very carefully until you establish your rhythm. Your rhythm is not necessarily in place even after you find the first control. Exercise restraint and continue careful orienteering until you feel confident and comfortable.

6. TURNING THE WRONG WAY OUT OF THE CONTROL

The degree of error is skill-specific. For example, a 180 degree error (orienteering in the exact opposite direction) results from an improper compass bearing or having the map upside down. An error slightly to the left or right of the desired direction can be poor compass and map reading, or it may simply be rushing out of the control too quickly.

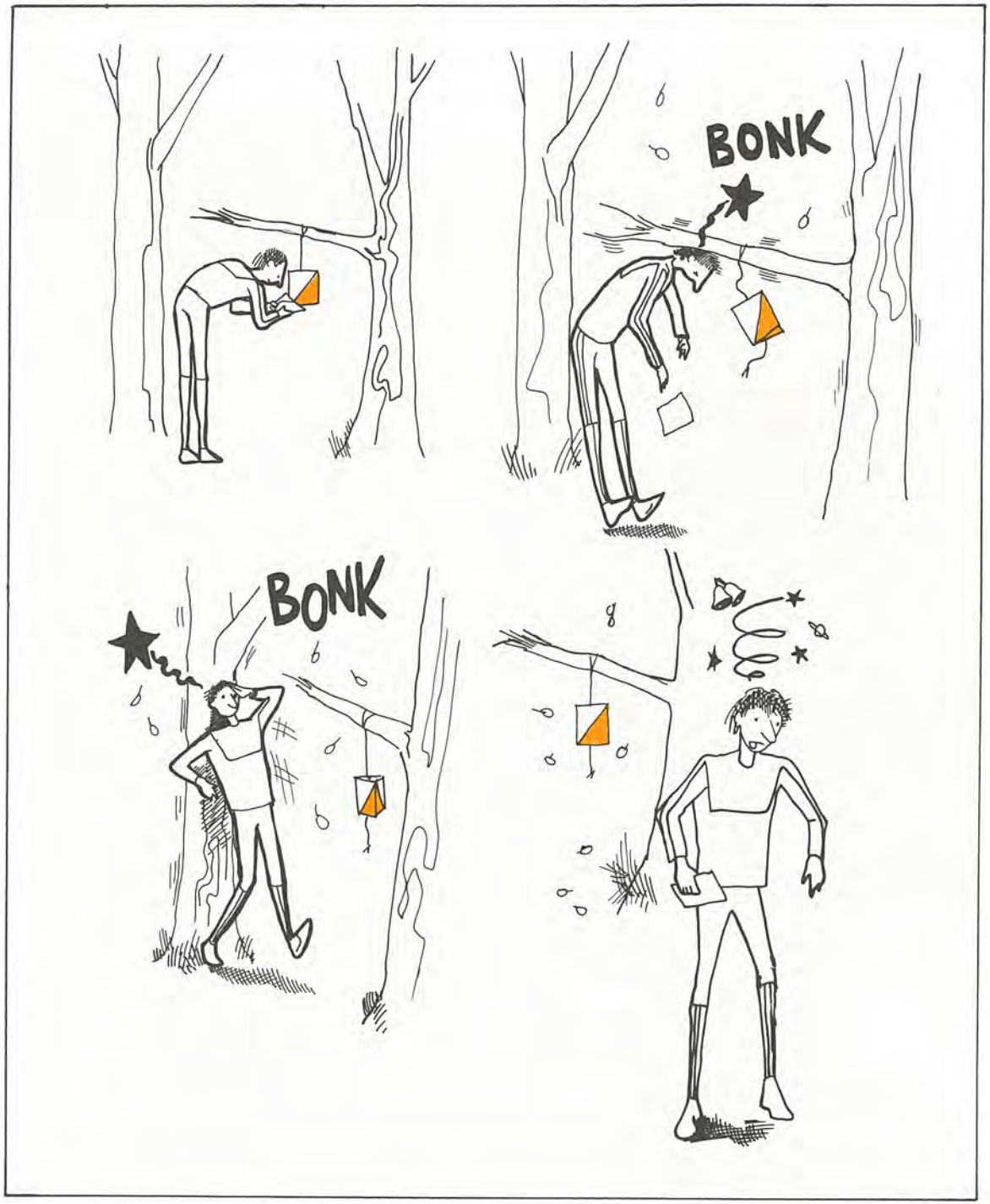
The best form of prevention is to follow and execute your control system to the best of your abilities. If you sense that things are not going well, stop before the error gets out of hand.

To correct this error, relocate and continue carefully until you regain your rhythm. This type of error usually leaves you disoriented and confused, because you are not sure where you expect to be on the map. If you are unable to relocate, return to the control and begin again.

7. POOR DISTANCE JUDGMENT

This invariably results in your being short of your destination on the map. You are reading the map ahead of your location in the terrain, or, occasionally, behind your location.

The key to prevention is to mark your position carefully at all times. Correction requires relocation. This is a tough error to correct, because you are disoriented and your position on the map and in the terrain do not correspond. After you have relocated your position, slowly orienteer up to rhythm.



8. POOR OR NO ATTACK POINT

This is part of the route selection, and usually results when you take a chance and decide that you can find the control from an unsuitable attack point or without an attack point. Without an attack point the probability of finding the control quickly is reduced and may result in searching. In addition, the route may be inferior or too difficult and many minutes are lost.

To prevent this error, always select a good attack point. To correct the error, relocate. This usually involves going off the line of your chosen route to distinct catching features and handrails.

PRACTICE

Map study of courses with routes is an excellent means of learning error correction techniques. Look at your routes and those of your fellow orienteers to determine what type of errors were made, why and how they were corrected.

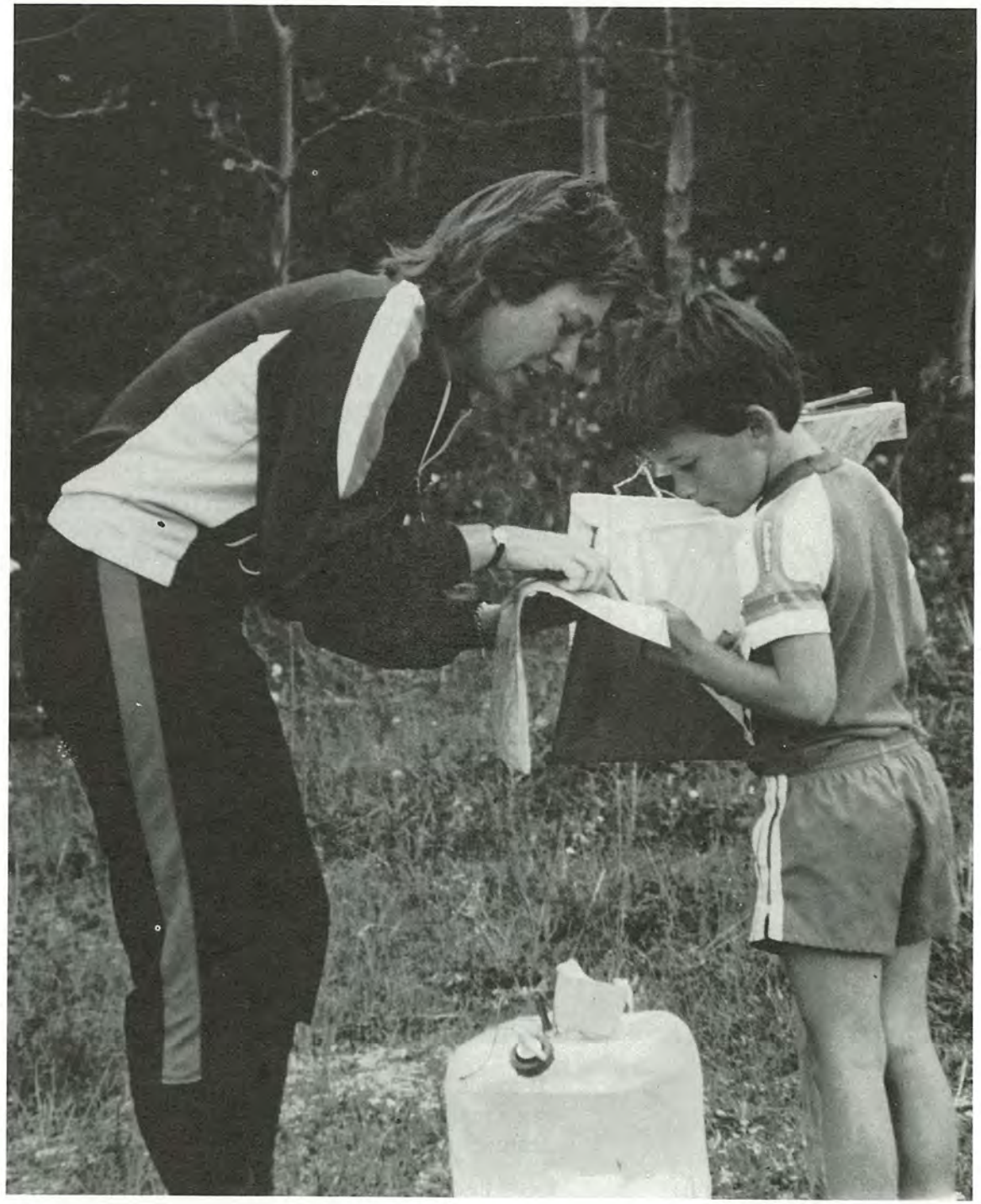
In the terrain, practice on courses above your present skill level. The increased difficulty will cause you to make errors that you then correct.

TIPS

- The best time to correct an error is when it is small. This requires early recognition of errors. When your orienteering doesn't feel just right, stop and re-check your map and direction.

- The best way to prevent errors is to know when they are most likely to occur. Be extra careful

  - in similar looking sections of the map and terrain
  - when tired
  - after leaving the start and near the finish
  - if you've just made an error
  - when short of anticipated location
  - near other participants
  - on hot days
  - after long, fast, easy sections
  - leaving the control
  - in dense vegetation
  - on slopes
  - crossing large fields and semi-open areas.



RECOVERY

Once you have made an error, there is little you can do to recover lost time. You can, however, learn recovery techniques that will put you back in the race quickly and smoothly.

A basic recovery procedure used by orienteers at all levels goes as follows.

1. When you first sense that you are not where you should be, or that you are making an error, stop or slow down.

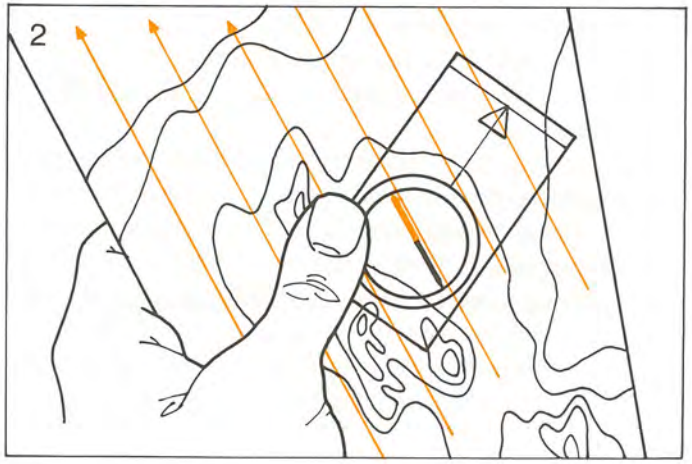
2. Orient the map with your compass.

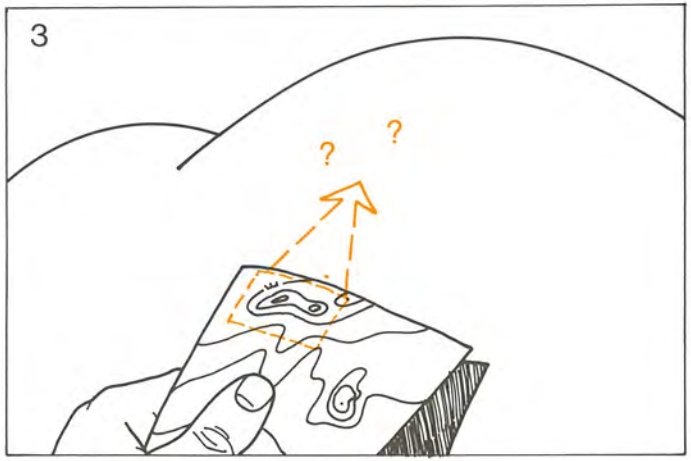
3. Establish your position. This is called relocation. Look at your map first and then try to find the features in the terrain. (Don't first look at the terrain and try to find the features on the map. This often results in transforming the map reading to suit the terrain you see and your error increases.)

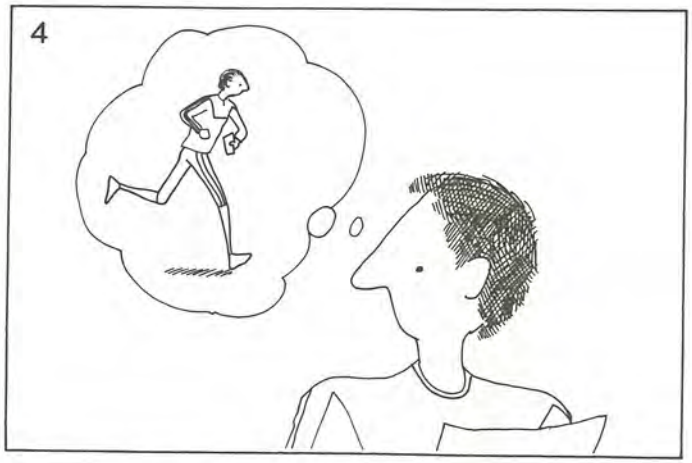
4. If you are unable to relocate immediately, reconstruct your orienteering from your last known position. For example, what features did you see, what direction have you been orienteering, how far have you orienteered, what strategies have you used? This information will help you determine your present position.

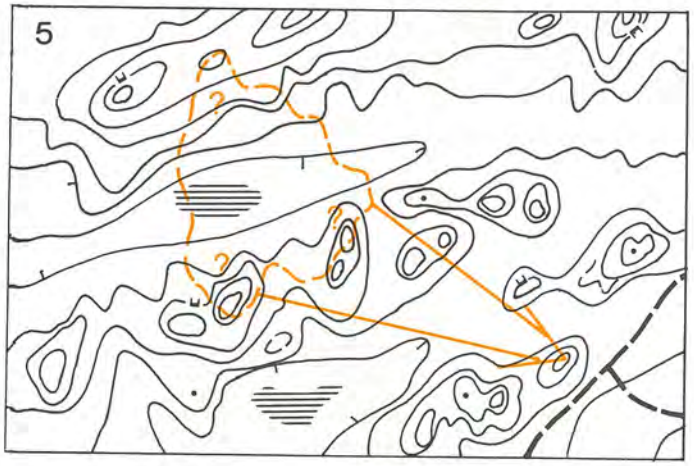
5. If you are still unable to determine your position, return to your last known position (the last feature in the terrain that you positively identified).

   If this is impossible or unrealistic (i) continue in your present direction until you reach a catching feature on the map in the direction of your









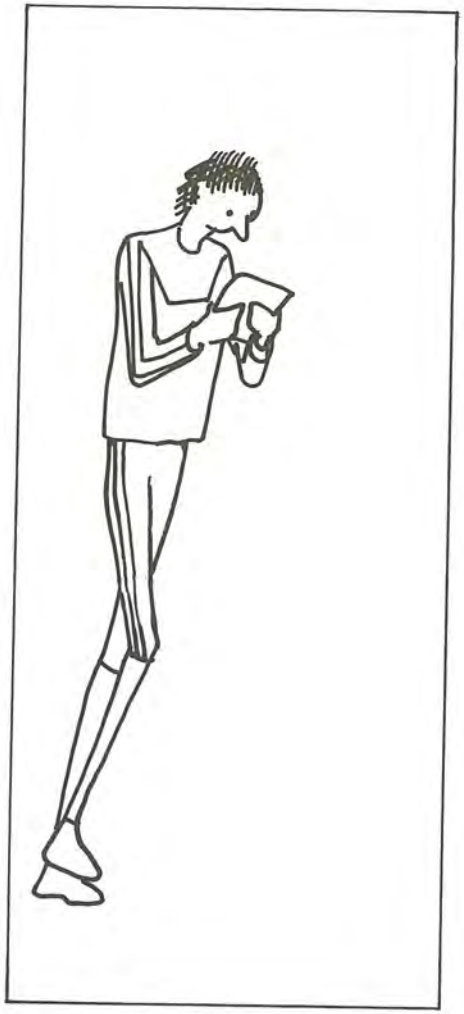
intended route or (ii) go off your intended route to a catching feature.

6. After you have relocated on a feature, be very careful until you regain your rhythm. This means slow, methodical orienteering, checking and double checking your position and direction until you are confident that everything is going well again. Remember that errors often occur one after another because your concentration is broken and your anxiety increased by the previous error.

Beginners usually err by running down the wrong trail, going off the wrong field corner, or missing the fence junction. Direction is most important here, since most of the orienteering involves the use of handrails. Therefore, when you make an error, check the direction. If it is wrong, retrace your steps to your last known position.

A difficulty with most beginners is that they lack the map reading skills for relocation. The standard procedure is to stop, orient the map, check direction, look on the map and then in the terrain for your position, remember what you just passed and reconstruct. There is a tendency to want to run quickly and recover time. Resist it. Take the time to get back on track before you rush to the next control.

If you are totally disoriented and have no idea what happened, retrace your steps to the previous control or start. If this is not possible, use the safety bearing on your description sheet to take you out to a major road where you can be directed back to the competition centre.



▲ **Beginners should always stop to recover**

Intermediate level orienteers should be able to perform the outlined procedure for recovery fairly well. The difficulty arises when your skills are not up to a technical standard that lets you relocate easily. Try to follow the guidelines and develop your skills simultaneously.

Advanced level orienteers add time guidelines to the recovery procedure. Intermediate level orienteers should try to complete the relocation as quickly as possible, but they should not feel too pressured for time, lest they make more errors. Advanced level orienteers have mastered the relocation procedures, and time and efficiency are now the most important factors. The time frame is as follows: Relocate at present location within 30 seconds. If not possible, return, continue or go off line to a distinct feature and relocate within 2 minutes. As an advanced level orienteer, you should be able to correct any error within 2 to 3 minutes.

TIPS

- Deciding to return to your last known position or go off your chosen route to a catching feature is always difficult. Moving away from your destination, especially backward, may not seem like the most efficient way to recover from an error. Unfortunately it usually is.

- When you sense that you've made an error, don't get excited. Stay calm and get to work correcting it. This is easier said than done. To help yourself accomplish this (i) take deep breaths, as many as you need to relax, (ii) talk out loud to yourself about how to correct the error.

PRACTICE

Relocation, the most important skill for recovery, will improve with the following training exercises.

1. Follow John. Ask a friend to help you do this exercise. One partner takes the lead and the map, and runs through the terrain for 2 to 5 minutes. The lead partner stops and hands the map to the following orienteer who relocates.

   You can do this exercise on your own. Put your map in your pocket and run in the terrain for the specified time; stop and relocate.

2. Orienteer a course that is too difficult for your skill level. Run at your normal speed, and you will make errors. Relocate.

SUMMARY

1. Errors occur because you are tired, distracted by others, execute skills poorly, have poor strategy, lose your concentration or have just made a previous error.
2. The parallel error, the confusion of one part of the map or terrain with another similar section, is a common error.
3. The key to preventing many errors is to know when they are likely to occur. Particular orienteering problems and terrain present a greater probability of error. Recognizing these factors enables you to be on your guard.
4. Mistakes are part of the sport. Accentuate your recovery. Avoid trying to make up for lost time.
5. Recovery from an error should follow a practiced procedure: stop; orient your map; try to relocate; reconstruct since the last known position; return to your last known position, continue along your present direction or go off your route to a catching feature; proceed carefully after relocation on a feature.
6. Taking a few deep breaths and talking out loud will help you direct your energy toward making a good recovery.

8

The Successful Start

Once you have participated in a few events, and have become familiar with the organization and procedures of an event, you can progress to the intermediate and advanced preparation procedures for a successful start. Your actions before the start prepare you for the event, and the start and first one or two controls set the stage for the rest of your course. What you do prior to the start greatly affects your success at orienteering.

START PREPARATION

Once you are fully dressed for the event (at least 30 minutes prior to your start time), check yourself and your equipment to make sure everything is in order - compass clean and functioning well, laces taped. If the weather is cold put on a sweatsuit to keep warm. Whether you are a beginner or an elite athlete, you should warm up. The length and intensity of the warm-up will vary, but the components are similar: (1) walk-jog to increase the body temperature and temperatures of the working muscles; (2) stretching to increase the mobility of the joints and muscles; (3) increased intensity of activity to walk/jog or jog/run in preparation for the activity. The following are examples of warm-up routines:

Beginner	Intermediate	Advanced
(1) Walk 3-5 min	Walk/jog 5-7 min	Walk/jog 10 min
(2) stretching 5 min	Stretch 5-10 min	Stretch 10-15 min
(3) Brisk walk or jog 3 min	Jog or run 5 min	Run 10 min

To prepare your mind, think about what you want to do today on the course: make no errors, practice your map reading, always orient the map. Selecting one or two objectives (goals) will give you something to think about and have you better prepared for the course. As a beginner, you may not want to think about anything and just go to the start. That's fine, have fun! As an intermediate orienteer you should try to mentally prepare yourself. You've been practicing your skills and you want to be ready to participate. Therefore, it is important to know how to prepare yourself mentally. The objective of your mental preparation is to narrow your focus of attention from the everyday distractions that surround you to the task of orienteering. During your warm-up organize your thoughts as follows: orienteering — your skills —today's orienteering event — skills needed today —the skills you will concentrate on today. Narrow your thoughts throughout and in conjunction with the warm-up. Stay warm during the warm-up by wearing extra clothing if it is cold. Drink extra fluid if required for a hot day. Relax but concentrate your thoughts on your orienteering and the upcoming event.

START PROCEDURE

As you wait to be called into the start, look carefully around the start. Make a mental note of the features and vegetation, area, the direction you will be facing. Picture in your mind how the map will look. If it is possible to see where other participants on your course have left the start, note their directions. This information reduces the difficulty of decision making when you get your first look at the map.

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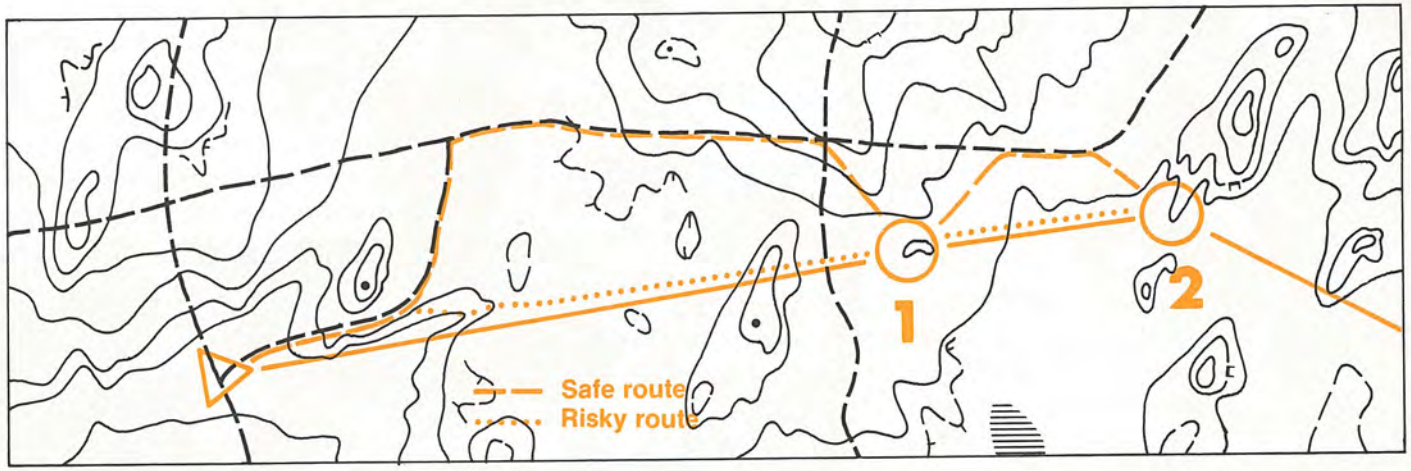


FIRST FEW CONTROLS

An important rule for successful orienteering is to find the first control without making any mistakes. Before you leave the start make certain you know exactly where you're going, what you're going to see, and how you're going to navigate to and find the first control. Be careful. This is your first exposure to the map, terrain and course. A good beginning will give you confidence to successfully orienteer the remainder of the course. Select a route to the first control that is on the safe side, perhaps a little slower. Safety first - speed second.

- Do not overwhelm yourself with new information and new skills during the preparation, warm-up and at the start. Use only practiced skills and strategies during an event, unless you are using it as training.
- If you are anxious, do a longer warm-up with more activity. Activity reduces and eliminates anxiety.
- At registration find out (1) the distance to the start, (2) the time needed to walk to the start, (3) if extra clothing can be left at the start, (4) if the event will start on time, and (5) the start procedure.
- Time your arrival at the start so that you only have 5 to 10 minutes before you are called to the first start line.
- You can use the walk/jog/run to the start as part of your warm-up.
- In cold and/or wet weather stay as dry and warm as possible.
- The maximum time between the end of your warm-up and your start time should be 15 minutes.

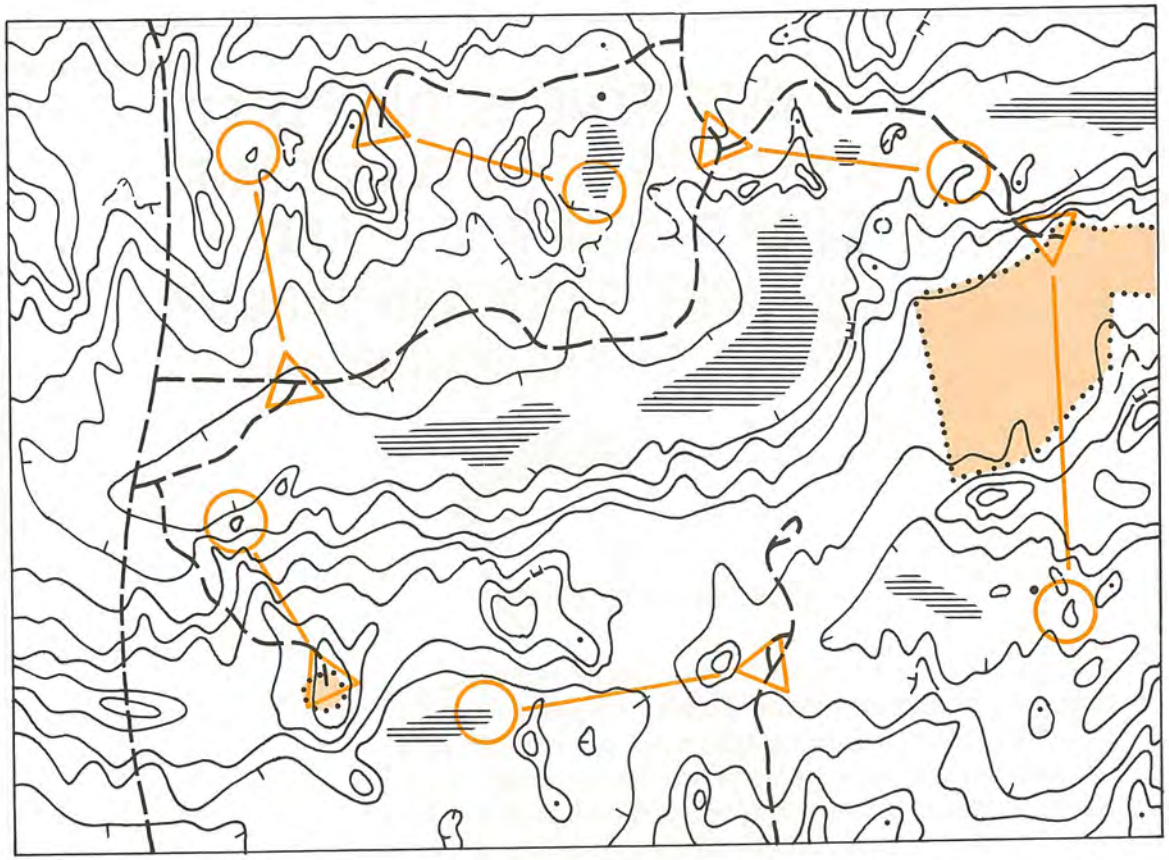
PREPARATION CHECKLIST

Familiarization with event organization occurs with experience, but proper preparation is a matter of training. To assist you with your preparation, compile a list of the most important factors to serve as a reminder. Your list should look something like this:

- How far is the start from the centre?
- How is the way to the start marked?
- Where is the washroom?
- Can I leave my warm-up clothing at the start? Will someone bring it back to the finish?
- Warm up: Walk 5 minutes, jog 5 minutes, stretch 5 minutes, run 5 minutes. Think about your goals for this event.
- Am I dressed properly for the terrain and weather conditions? Have I had enough fluid?
- What time is the first start? Is it on time?
- Are my laces tied tightly and taped?
- Is my compass functioning?
- What does the area near the start look like - terrain, vegetation?
- Which direction is the start facing? Where are others on my course going?
- What is the start procedure?

Modify and add to your list as you develop your preparation strategy. It is different for every person, so don't be afraid to experiment.

Specific parts of your preparation can be practiced. Your warm-up should be done before your regular practice sessions if time permits. Find the right combination of activity, physical and mental, to prepare yourself for the event. Practice the warm-up until you can do it automatically.



Start course ▲

PRACTICE

As with many other orienteering skills with a mental component, you can practice at home. Review your events to see if you selected the best route to the first control and if you executed it properly. Study other maps with courses and other participant's events, and look for the best way to orienteer to the first control(s).

Practice in the terrain is more difficult, because it requires simulation of an event. Technically this is possible, but the anxiety and mental aspects are tough to duplicate. Use the following:

1. When you begin every technical practice, use the first leg as a practice of the start to the first control.
2. A special start course consisting of first legs can be used specifically to train the start procedure. Use each new leg as the start of a new event. After you find a control you go to the next start triangle.

- Despite your efforts and intentions, you may still consistently miss the first one or two controls. If you are anxious, perform a longer physical warm-up. Be more careful, even if it means walking to the first control until you get your orienteering rhythm.
- Ideally, the physical warm-up and mental focusing should have you adequately prepared to begin in a good orienteering rhythm.
- If you are often confused at the start, and feel rushed or pressured to leave, don't. Stay at the start until you know exactly what you are doing and where you are going. Don't just run off, be smart.
- If you find yourself stiff and sore after the event, did you warm-up and cool down properly? Make certain that you stretch, particularly after the event. A low level of fitness can also leave you aching. If the events are your principal source of activity, take part in some fitness training during the week to improve your fitness level.

SUMMARY

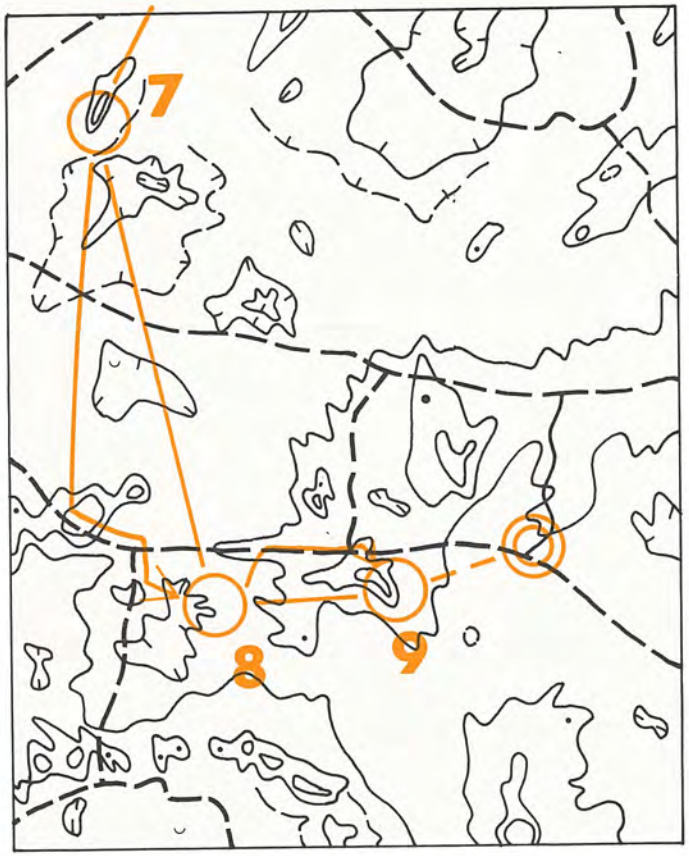
1. A physical warm-up is necessary to prepare the body for activity. A mental warm-up helps prepare your mind for orienteering.
2. An important rule is find the first control without any mistakes. A successful beginning is a confidence builder for the rest of the course.
3. Select a safe, sure route to the first control. Do not leave the start until you know exactly what you are doing and where you are going.
4. If you are anxious at the start, do a longer warm-up. Activity reduces and eliminates anxiety.

9

The Finish

After the first one or two controls, which you orienteered carefully, you reached your orienteering rhythm that helped you find the next controls on the course. Now as you near the finish and there are several controls left to find, it is time to be more attentive to your orienteering. You have been orienteering for close to an hour, and you are probably a little fatigued mentally and physically. To find the last few controls

- stay calm and cool
- concentrate on your orienteering skills and tactics
- don't take chances.

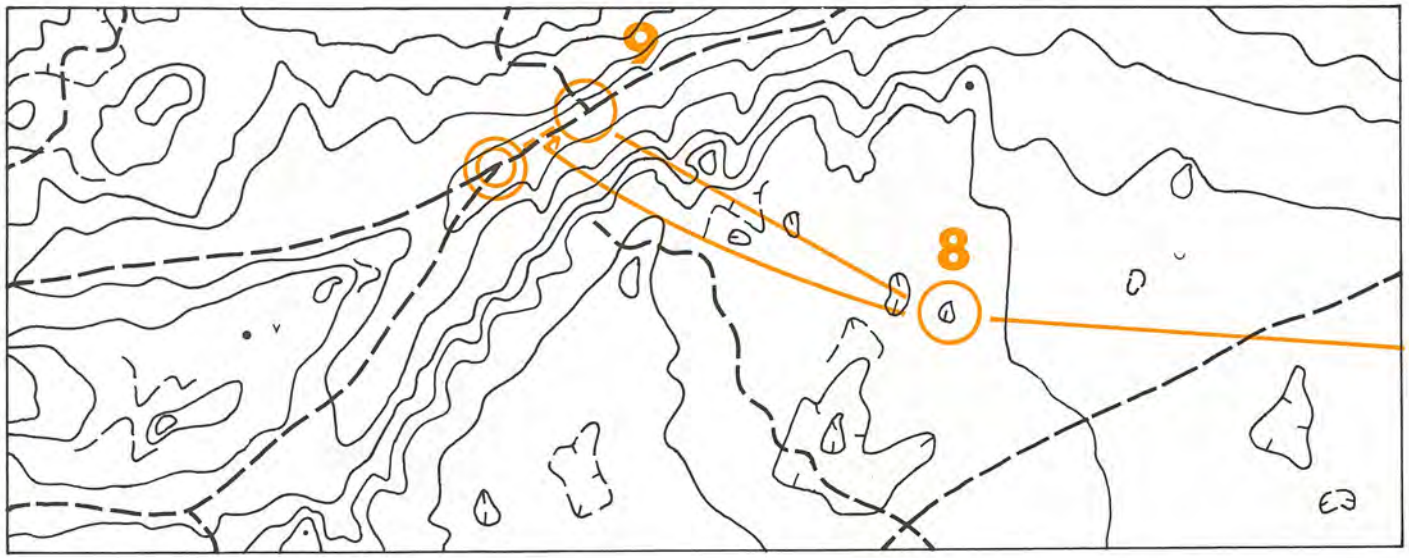


As you near the finish area, you will likely see many other participants. They may be running your course or other courses. Since all courses converge at the finish, there are usually several controls near each other, and you must be more careful. Don't let other orienteers distract you. Remain calm and do your own orienteering.

- If possible, prior to your start go to the finish area and familiarize yourself with the area and finish chute. Look to see where you will be coming from (last control).
- Use other participants, if possible, to find your controls. Often they are looking for the same controls. Keep them under observation, but you must concentrate on your own orienteering at the same time.
- Look at the descriptions for the last few controls and remember their identification codes. Then, if you do find other controls in the vicinity, you will know immediately that they are not your controls.
- If the last control appears difficult, try to use the streamers from the finish to the last control to find the last control, or as a safety measure to make certain you will find the control.
  In the example illustration, it is better to be to the left of the direct route than to be direct or to the right. If you miss the control to the left, you will be stopped by the streamers. You turn right at the streamers and follow them back to the last control.

- The last few controls require good peripheral vision to see other participants, features and controls. The last control can often be seen from a distance because there are usually streamers leading away from it, other orienteers punching at it, sometimes officials or the press at it.

◄ **Taking sure, safe routes to the last few controls**



◄ **Finding the last control from the finish streamers**

- If there is a loudspeaker in the finish area, do not be overwhelmed by the noise. Concentrate on your orienteering.
- Be very careful to check the control codes. You've orienteered your course very well and do not want to mispunch and be disqualified in the last 500 metres.

PRACTICE

Review your events, other participant's events and maps with courses to study the best orienteering for the last control(s).

The last control(s) are also difficult to practice in the terrain. A start course practices the similar route selection - safe and sure. However, it is difficult to mimic the physical and mental fatigue associated with the last control(s) in an event. One way to practice this is to do your regular fitness training, and then follow it with some orienteering practice on a course with short to medium length legs (200 to 400 metres).

SUMMARY

Be careful near the finish. Select safe routes to the last control(s). Mental and physical fatigue impair execution of skills. Concentrate.

10

Other Participants — To Follow Or Not To Follow

The rule concerning following is specific — don't. It is an honour system. You are supposed to do your own orienteering and not follow another competitor and benefit from his or her orienteering. The relay is an exception. Intentional following is frowned upon, but since many competitors must run the same course at the same time, running together is allowed. Most relay courses are designed to minimize following by having a splitting system for the controls.

Despite the timed interval start, you will invariably encounter other orienteers in the terrain. They may be competing on the same or different courses. You will only encounter other participants for a good reason. This is the key to how to use them effectively.

If they are on other courses with routes that cross your path, they're of little use to you. If they are running the same or a similar leg, they can be used as a second opinion on your direction. But, since you're not certain where they're going you must be careful to do your own orienteering, because they may disappear at any moment.

If you are sure they're on the same course, you may have caught up to them, because you are a better orienteer or are having a better day than they are, or they have caught up to you, for the same reasons.

The second category is the orienteer who catches up to you. If they are better orienteers than you, you may want to try to stay with them for one or two legs until they pull away. They can pull you along, but you must know what you are doing. If they pull away quickly, you'll be forced to relocate and possibly lose time.

If you think the orienteers are of the same ability as you, you can run together if your routes are similar. Two or more orienteers running together are usually faster than one running alone.

If they are of lesser ability than you, you may be faced with a situation where they will want to keep in contact with you.

If you are being followed and want to lose the person, you have a variety of options.

1. Stop and let the orienteer run by you.
2. Run very quickly to outdistance a lesser orienteer.
3. Stop at the next control, let the other orienteer leave first and then take a different route.
4. Run into a very complex section of the terrain, feign disorientation, let the other orienteer relocate while you slip away on your desired route.

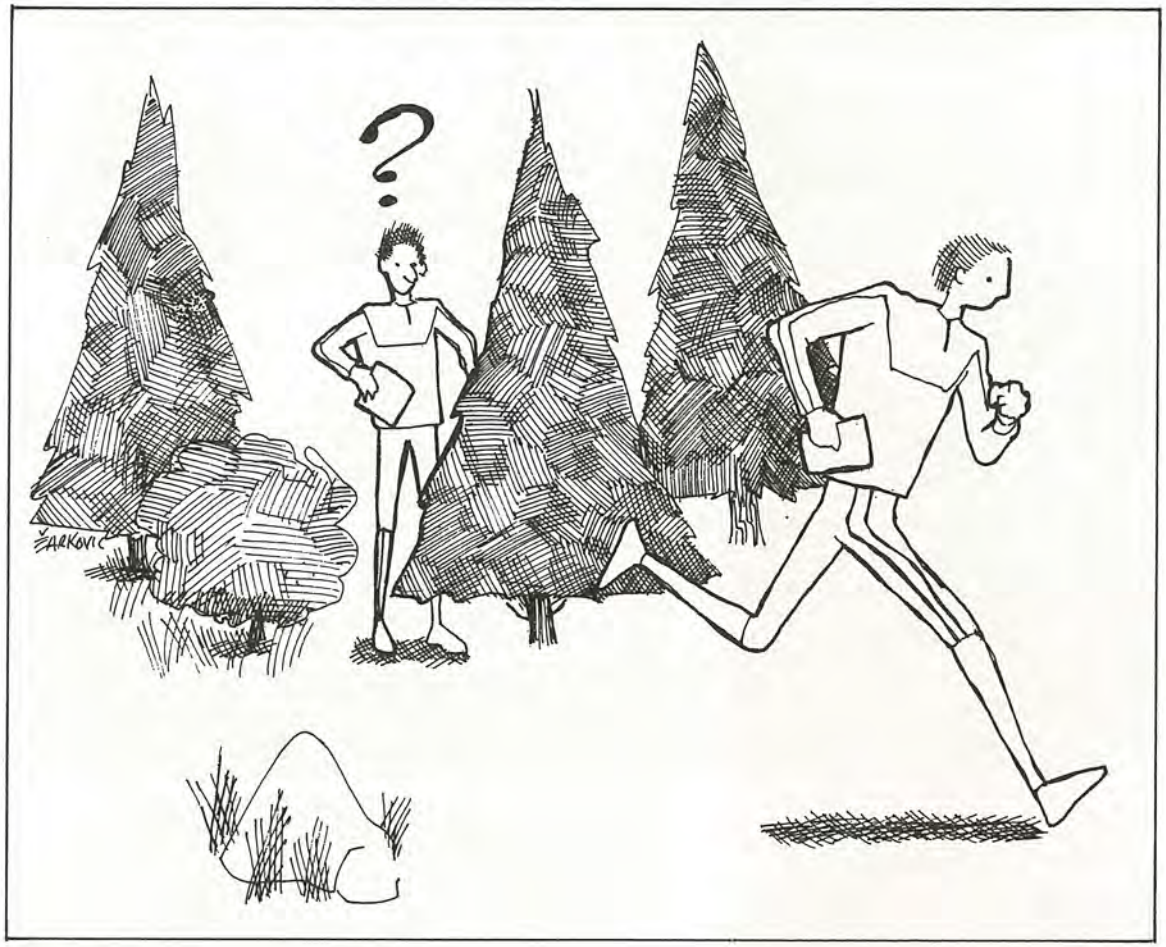
If you are catching up to someone and want to get ahead, or you want to get away from an orienteer of equal ability, the following method is effective. Follow the orienteer. Let him or her do the orienteering on the leg while you plan the exit from the next control and the next route. When the two of you sight the control, sprint ahead of the orienteer, punch quickly and exit the control immediately along your pre-planned route.

Here are a few other suggestions for using other orienteers effectively.

1. When you are near the control, look for other orienteers. They may be standing at or near the control, or en route to the next control.
2. If you are with another orienteer and nearing the control, that orienteer can be used as a safety valve. Taking the control from a slightly different attack point or direction will result in the two of you converging on the control.
3. Anticipate orienteers leaving the control and thereby make that control easier to find. This involves selecting a route and strategy (aiming off) such that you attack the control from the direction of the next leg.

Using other orienteers is a delicate business. You must constantly be aware of your own orienteering, and their orienteering too. A question you must ask yourself is, who is using whom?

If you find your orienteering results are erratic, it may be that you are relying too heavily on other orienteers and not doing enough of your own orienteering. You cannot become a first rate orienteer if you always 'consult' with other competitors when the going gets tough.



SUMMARY

1. Following another competitor is not allowed.
2. Other participants are especially useful near controls where they may help indicate the location of the marker.
3. You cannot become an excellent orienteer by constantly relying upon other participants to help you.

11

Equipment And Clothing

The only special equipment required for orienteering is the compass and a safety whistle. When you go to your first event go prepared for activity (loose fitting trousers and shirt (blouse), and if needed, a jacket). Beginner courses follow well defined trails and fields. If you plan to walk or hike the course, wear well supported shoes, hiking boots or good quality running shoes. If you plan to run, a good pair of running shoes is recommended, and a running outfit such as a jogging suit is usually most comfortable.

At the event, the typical orienteer is wearing a special outfit. It consists of a nylon suit (long sleeve top and bottoms). They come in different colours, and each club has its own distinguishing combination. The nylon suit is designed to be lightweight, breathable for exercise, and to ward off any branches or burrs in the terrain. Special gaitors are worn to protect the lower legs. They are made from durable nylon or cotton, and have a stiff shield (usually plastic) that guards the shin. There are many different styles of orienteering shoes, but most have plastic uppers with rubber studded soles.

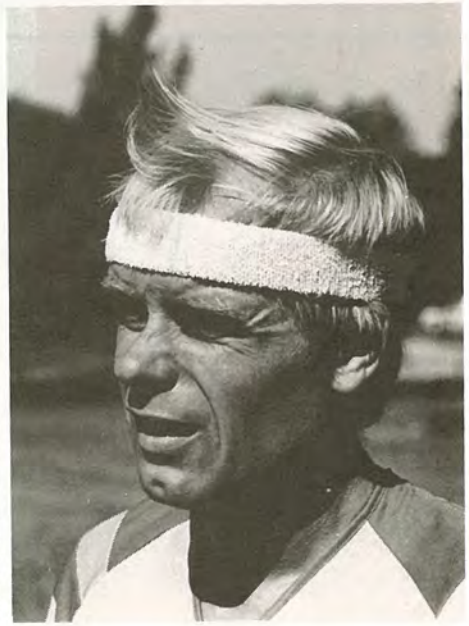
Many variations exist depending on personal preference and weather. In cold weather, polypropylene underwear is worn under the suit, and perhaps a hat and fingerless gloves. In hot weather, long sleeved, light coloured, cotton T-shirts are cooler. Full body cover is the rule, and short sleeve T- shirts and shorts are not permitted.

Advanced orienteers often wear spiked shoes for additional grip. This footwear consists of a nylon upper and toe spikes; no heel spikes. You will have to practice running in spikes, particularly downhill running. They are not recommended for beginner and most intermediate level orienteers.

This equipment is all readily available from retailers at the events, and some sport merchandise stores. To really feel like you are part of the sport, an orienteering suit is a must. They are comfortable and made specifically for running in the terrain.

SUMMARY

1. Comfortable outdoor wear is fine for recreational orienteering, but nylon orienteering suits (shirt and pants), gaitors and shoes are the normal attire for competition.
2. A safety whistle is mandatory in all events.



12

Orienteering In Different Seasons And Terrains

The technical and equipment requirements for different terrains and seasons are one of the most interesting aspects of orienteering. While the organization of events and the fundamentals of orienteering remain consistent, different situations demand variations and adaptations. The following summary indicates some of the modifications required for specific circumstances.

ORIENTEERING SEASONS

SPRING

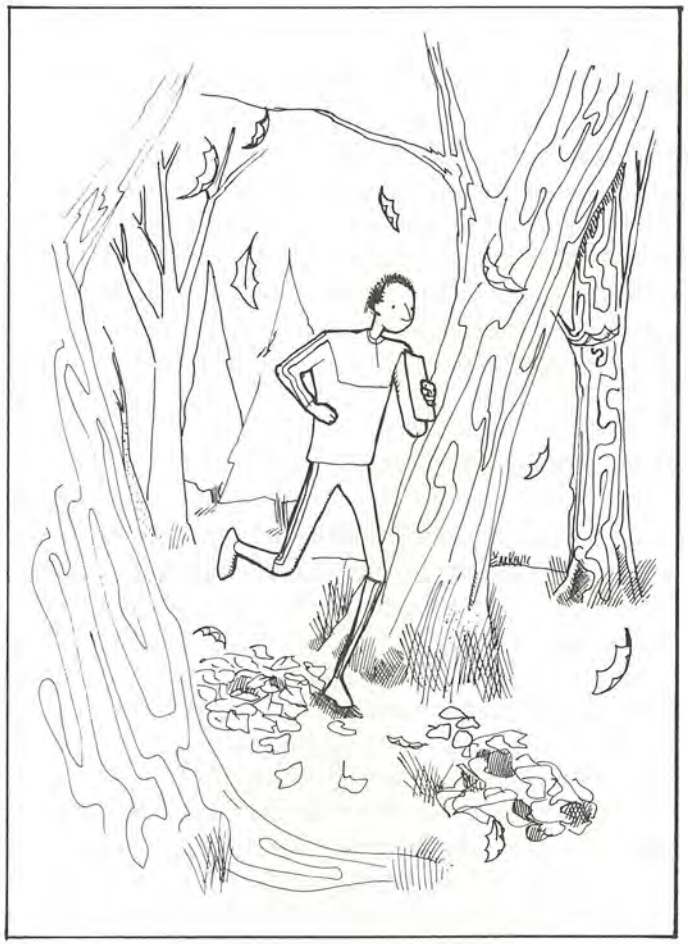
The spring season has an accentuation of water features owing to the spring runoff. Marshes appear as ponds, streams as rivers, some depressions fill with water, and some small trails become streams. The foliage is non-existent or minimal, so visibility is good, and many dense areas may be runnable. The weather is usually cool, and there is a greater chance for cold rain. Also, be alert for unseasonably hot days; these can be dangerous, especially for the less fit and elderly since your body has not acclimatized to heat.

If the weather holds, the orienteering is terrific. Map reading skills and looking as far as possible into the terrain are at a premium. Route choices tend to be more direct since green areas are often runnable (terrain permitting). Equipment requirements may include underwear for the cold, gloves and perhaps a hat. The footing is often muddy, and advanced orienteers may elect to wear spikes.

SUMMER

The foliage is in full bloom and green areas are very green. Visibility is reduced, thereby placing emphasis on direction and map reading skills. If it has been very hot, the water features may be reduced with dry ponds and marshes appearing as low depressions. If this is the case, they are usually excellent for running and definitely affect route choice. Many fields are cultivated or have very high grass or weeds. Both deter your orienteering speed if selected as possible routes.

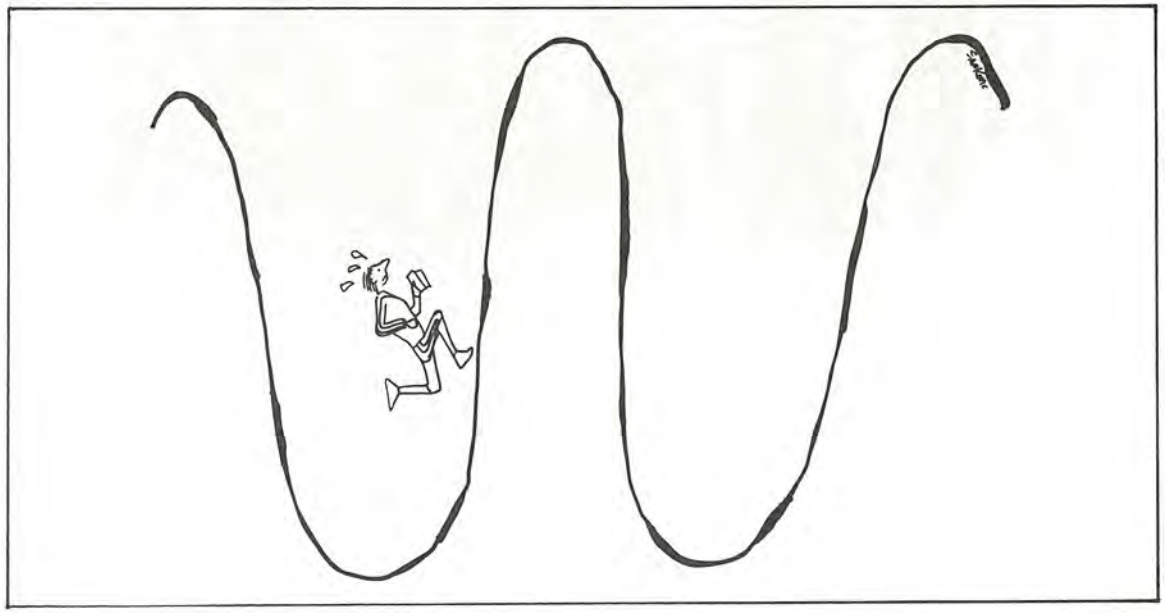
Hot, humid weather can be dangerous if you are not well hydrated. Drink lots of water when training and competing. Equipment may include light coloured orienteering suits or light-coloured long sleeved T-shirts.



STEEP, HILLY TERRAIN

The most important strategies here are contouring, attack from above, climb in the beginning, and careful direction on slopes to avoid falling down or up the slope. Look to unique features such as vegetation, rock and topographic details for navigation. Route choice is more important and there may be many routes that go around the landforms. Be wary of fatigue and resulting poor decisions owing to the increased physical component. A thumb compass gives you a free hand for grasping trees when climbing uphill.

Footwear with good heel and arch supports is recommended. The advanced orienteer might wear spikes. If you are susceptible to blisters, tape your feet. This terrain is also tough on ankles, so tape them if they're weak.



AUTUMN

The foliage is reduced and visibility improves, but many green areas are still dense. Route choice must reflect this improved visibility, and orienteering speed increases. The weather is usually very pleasant and orienteering is excellent. Equipment requirements are standard.

FLAT TERRAIN

Direction and distance judgment are very important here. Look for distinct vegetation, trails, water details and small unique details (pits, boulders, knolls) as features for navigation. Aiming off is important. Errors result from being too short of your destination or, if the terrain is very open, running too far. Route choice is as direct as possible, vegetation permitting. Running flats are good if the footing is good. Excellent terrain for spikes.

DENSE VEGETATION

Route choice is a major consideration. Running speed is reduced significantly in dense vegetation, so avoid it if possible. This may result in route choices that go away from the direct route and out and around. Try to find trails, sections of open forest and fields. Linear details such as fences are useful for following if the vegetation is navigable and your route choice must go through the green.

Greater precision is required in dense areas. Some dense vegetation is very distinct and can be used as features for navigation. An extra pair of orienteering pants over your normal suit will deflect brambles, and gaitors are suitable here. Laces should be securely tied; taping is recommended.

GRADUAL SLOPES WITH FEW DETAILS

Attacking from above and aiming off are key considerations here. Direct routes are the norm. The strategy is to put yourself in a position where, if you miss, you can recover quickly. Small, unique details on the slope become the distinct catching features. Greater precision is required, especially with the compass.

ROCKY TERRAIN

With many rock features, the map maker is likely to put only the most distinct rock detail on the map. Features that appear on other maps may be ignored in favour of only the largest boulders and cliffs. Controls hung on cliffs are usually at the foot of the cliff. Sometimes, however, they are located at the top or between two cliffs. Check your descriptions.

If there is a tremendous amount of confusing rock detail, map read the contours hidden under the black for distinct topographic features. Route choice can be circuitous if the cliffs are formidable and better avoided. Be cautious on the descent of a steep hillside with cliffs: footing is usually poor. Be careful of your ankles; taping is recommended. Spikes can be dangerous, but some advanced orienteers find them suitable.

OPEN TERRAIN

The orienteering is usually straight to the controls. Map reading and looking in the terrain are emphasized. Fatigue may result from the faster pace of running, so be wary of mistakes. Even small errors may be significant here; the probability of error is reduced because of the greater visibility.

Direction should be noted continually. Corridor orienteering and aiming off are modified such that you do not orienteer as near to the handrails and catching features, which are visible at a distance. A note of caution - there is a tendency to be careless with techniques and skills in open terrain. Don't be sloppy.

SUMMARY

1. For every season and terrain there are specific skills, strategies and equipment to help you orienteer at your best.
2. Hot weather requires adequate hydration (drink lots of water) and light-coloured clothing. Cold weather may necessitate underwear, gloves and a hat.
3. When the forest has less vegetation in spring and fall, the routes are usually more direct (depending upon the terrain of course).
4. Direction is more important in dense vegetation and flat terrain.
5. Open terrain and slopes require precision to avoid error.

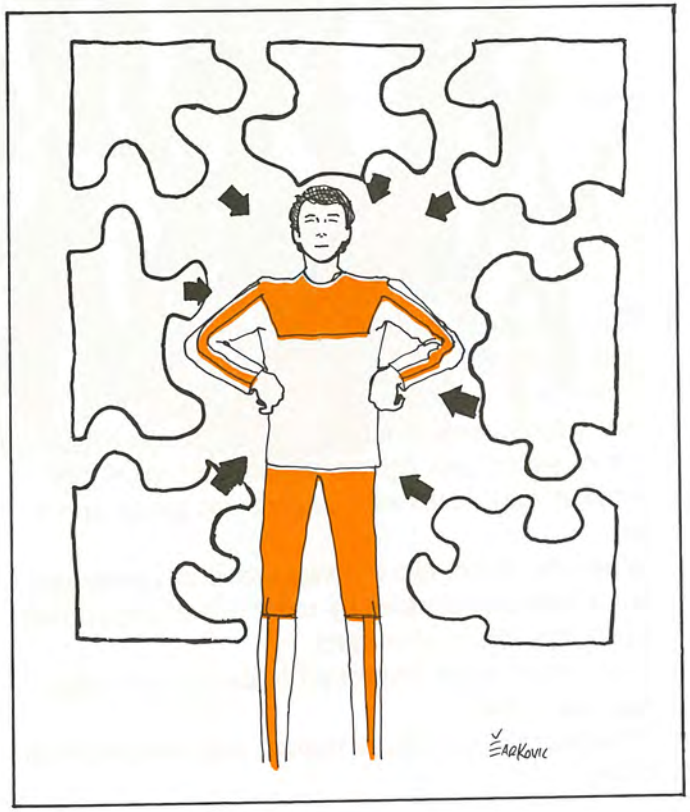
13

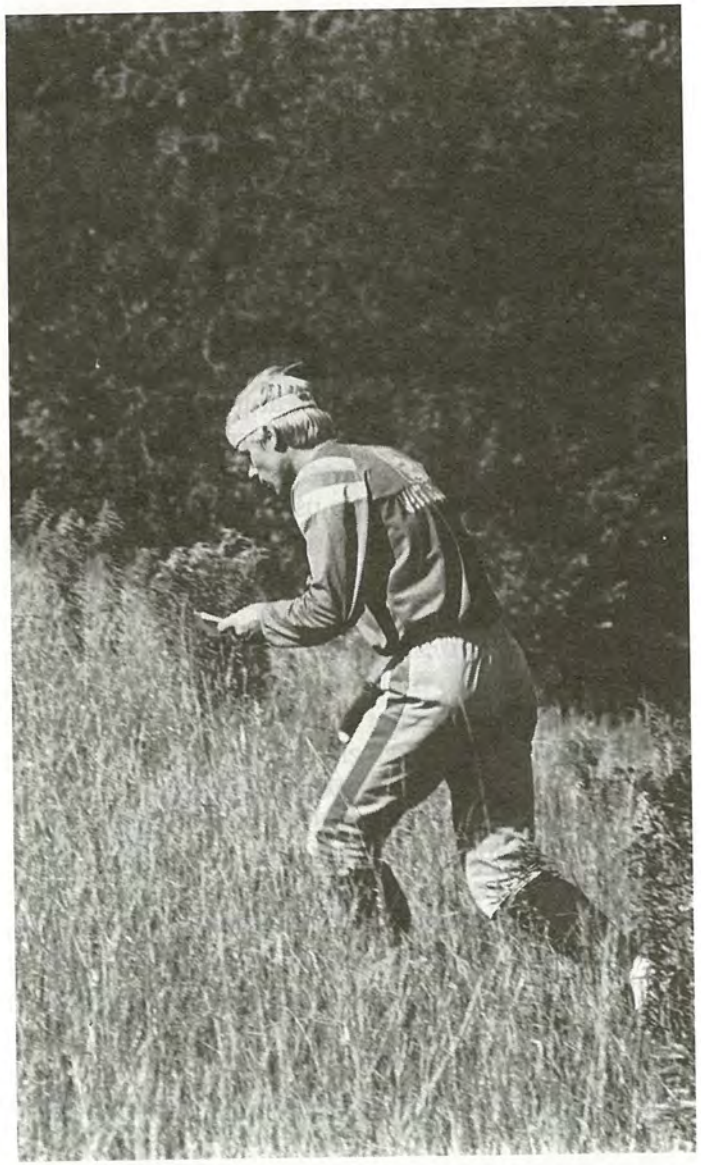
Putting It All Together

It is one thing to perform all the different skills, strategies and techniques in isolation, but the real measure of a competitor is the ability to put it all together, and put it all together when it counts, during the event.

There is a tendency among athletes from all sports to do too much too soon. This is particularly true in orienteering given the complexity of the skills and techniques required for performance. If you overload yourself with new or partially learned skills, you will encounter difficulty. You will wonder why you can't do it and become frustrated. The miracle cure for all that ails you is PRACTICE.

You'll know you've mastered a skill when you have done it successfully at least 100 times, preferably several hundred. This means practice. There is no short cut to successful performance.





To put all your skills together into that dynamic orienteer you can be, you have to add one skill at a time. Following the progressions of skills as they are presented in this manual is a good start. Map reading is the backbone of orienteering, and the sooner and better you can perform this skill, the

easier it is to learn and execute the other skills. Consequently, put down a good foundation by practicing your map reading. Your measure of how well your map reading is coming along is your performance in competitions. The following chart provides you with a framework of how to add your skills.

- Map reading
  - orienting the map with the compass
  - orienting the map with the terrain
- Compass
  - following a bearing
  - checking your direction
- Route selection
  - attack points, safe routes
  - point to point orienteering
- Rough and Precision Orienteering
- Distance Judgment
- Aiming Off
- Error Correction
- Corridor Orienteering
- Attack From Above
- Contouring
- Climb in the Beginning
- Control System
- Race Tactics (competition tips)

You can only successfully add new skills to skills that are already learned, and can be executed almost automatically. To make certain you are performing the skills properly, analyze your performance during competitions. Use a competition analysis form to record your execution of the skills.

When you combine skills, remember that your performance is only as good as the performance of the weakest skill.

If you cannot put two skills together during an event, practice them together in training.

Competition Analysis

EVENT - DATE -

LEGS -	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	COMMENTS
ERRORS																						
planning route																						
following route																						
lost concentration																						
rough compass																						
rough map reading																						
precision compass																						
precision map reading																						
map memory																						
distance judgement																						
peripheral vision																						
REASONS																						
too anxious																						
too nervous																						
too relaxed																						
careless																						
overconfident																						
underestimate difficulty																						
took a chance																						
tired																						
ran too slow																						
ran too fast																						
no 'attack point'																						
didn't read descriptions																						
followed someone																						
someone followed me																						
saw another orienteer																						
unusual map																						
unusual terrain																						
bad map																						
WHEN																						
leaving the control																						
middle of the leg																						
taking the control																						
short leg																						
medium leg																						
long leg																						
TERRAIN																						
flat																						
some elevation																						
hilly																						
detailed area																						
few details																						
near buildings																						
on trails																						
forest																						
VEGETATION																						
dense																						
average forest																						
open forest																						
field																						

STATISTICS		COMMENTS -
number of controls		
number of controls missed		
estimated lost time		
time		
winner's time		
time after winner		
kilometre time		
placing/field		
length of course		

Developed for O.O.I. by Denise DeMonte and Ron Lowry. Copyright® 1981 by Ontario Orienteering Association, Inc. Additional pads may be obtained at $3.00 each plus $1.00 postage and handling from Orienteering Ontario, 1220 Sheppard Ave. E., Willowdale, Ontario, Canada M2K 2X1. Phone: (416) 495-4160.

If you encounter difficulty with skill combination, look to the basics. Reduce the execution of the skills to their fundamentals and practice. Then increase the complexity of the skills.

Get together with friends or club members to discuss courses and events. They may be able to pick out some problems and offer solutions you have overlooked.

A good record of your performances and training is essential to help you improve. Keep the best record possible, and refer to it to help you help yourself.

Putting it all together is a never-ending process. It is a process that is never ending. Even the elite orienteer continually evaluates his or her skills, how they relate to each other, and what modifications are required for specific terrains and courses.

PUTTING IT ALL TOGETHER AT THE RIGHT TIME

It is inevitable that you will want to have that really good performance on a certain day. Perhaps it is a championship event or your deadline for a personal best performance.

The key to putting it all together is preparation. Invariably, this involves practice, but more importantly, it involves your perception of yourself and your performance. This is commonly referred to as confidence.

PREPARATION

ESTABLISHING CONFIDENCE

There's a lot of truth to the saying, "If you think you don't have a chance, then you don't have a chance." And in a more positive light, "If you think you have a chance, then you do."

One of the most recent discoveries of sports science research is that thinking positively has a measurable effect on athletic performance, and is somehow linked to better results. So it's extremely important to maintain that positive outlook — no matter what.

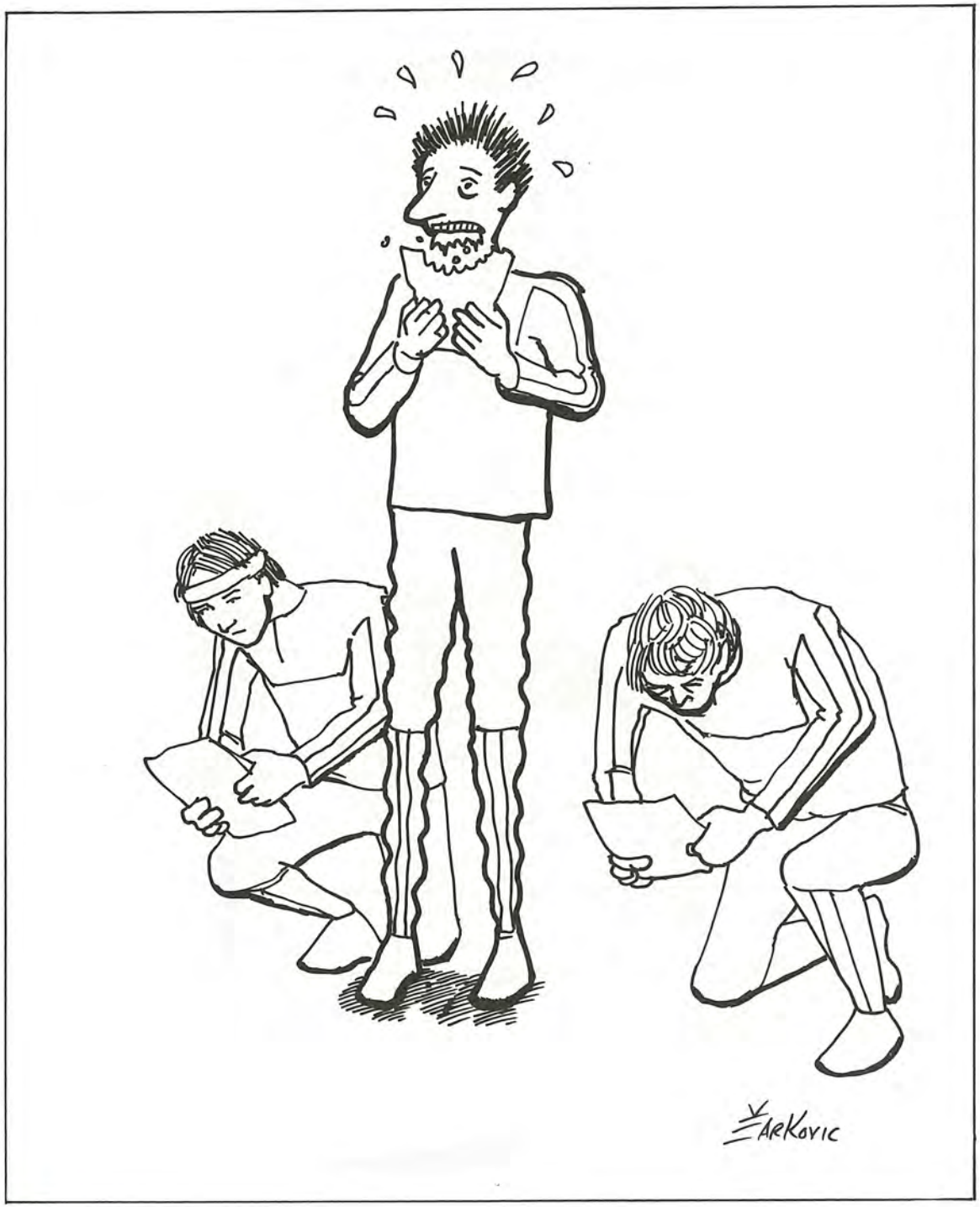
Another more concrete approach to maintaining confidence is maintaining excellent basic skills. If you can consistently perform your skills well in practice then you can do it in the event of your choice. Every champion has conformed to the following formula for success — "simple things done well daily". If you cannot perform in practice, the likelihood of performing in competition is lessened. Conversely, if you perform your skills well in practice, you have a much greater probability of success during the event.

You demonstrate to yourself that you are capable of good performance every time you execute your skills properly. The world class performer only does what he or she is trained to do, and you are no exception. This is the real confidence builder, and that is why you should carefully record your performances during practice and competitions. Graph the number of successful executions of skills to show your improvement. Keep this pictoral representation of your progress with your records.

A potential shortcoming is that you won't believe yourself. "I couldn't possibly have done all that", or "this graph must be wrong", are common among orienteers with lower levels of confidence. But those graphs are real and they are showing the real you.

Prior to the event(s) you want to perform well in, review your records and graphs. Take special note of how well you perform. Be honest with yourself. Admit that you can perform well.

For the disbelievers and as a good way of training for the believers, there is the test run. This is a training event that simulates the event. It is a regular course that you would run for training, with the exception that you have indicated in advance (at least one or two weeks prior) on your practice calendar that you want to do well at this session. You prepare by reviewing your track record of training and performance. You take an honest look at yourself, and then do what can be reasonably expected of you.



Performing what is expected of you is the stumbling block for some individuals. What you try to achieve with the careful record of performance, is not a pie in the sky performance, but something within your reach. It is unrealistic for a coach (in this case, yourself) or other people to expect you to be able to run a 15 km course in the mountains if the most difficult orienteering you have done is 5 km course in hilly terrain. However, it is not too much to expect you to perform well over a 4 km course in rolling woodland. The sooner you take stock of what you can do, the sooner you will be able to do it.

PREVENTING THE CHOKE

Even though you can do it in practice, you still can't do it when it counts - you choke. This is rampant among the disbelievers, but still occurs among the believers too. This is the second part of preparation.

The most important times for preventing the choke are the day of the event and during the event. The key is proper preparation and mental arousal. Choking inevitably happens when you are too excited, have placed too much importance on a particular event, have put too much pressure on yourself, or let others put too much pressure on you to do well. It often involves placing unrealistic expectations without the proper practice and training, or simply being too aroused. This all leads to a high level of anxiety. When you are too aroused, you are overloading your system, in this case your brain. Instead of concentrating on performing the skills well, your brain also has to deal with all the other concerns and pressures. It goes into overload, functions less effectively, and you choke. Here are several ways to help you prevent choking and build your confidence.

1. Put your performance and orienteering in perspective. It is a sport you want to do well at, but it is not the be all or end all of life. The sun is going to come up tomorrow, and you are still going to like yourself and others are going to like you.

2. Don't let others determine what you should be able to do. The only person who can really set your expectations for performance is you. Review your training and skills to determine what is realistically possible.

3. Being nervous before an event is natural and healthy. Being too nervous is detrimental. If you think you are too nervous: (i) do a longer warm-up — activity works to reduce anxiety; (ii) sit down and talk to yourself, putting this event into perspective.

4. During the event, if you find you are on the verge of making an error, stop immediately, and talk yourself through the orienteering problem. If you have trained yourself with a relaxation cue, this is a perfect time to use it. Deep breathing until you relax is an excellent method.

5. Before the event, spend 5 to 15 minutes relaxing. This also requires practice, so don't expect it to work the first time. You should practice a form of relaxation during your training. A good indicator that you are relaxing is a lowered heart rate.

6. Have a well thought out plan of what you are going to do during the event. You should have primary plans and back up procedures should the first strategies fail. Be totally prepared for what the course will offer.

7. If other participants terrify you, avoid them the day of the event. Go off by yourself and don't acknowledge their presence prior to the start.

There is no magic to the performer who can do it well, every time. That performer does what has been practiced many times, knows what he or she is capable of, and recognizes the relative importance of the event. You are capable of the same. You may not become a world champion, because you may not have the genetic material to run fast enough. But you can achieve the skill and preparatory status of the world champion or better, if you want to.

COMPETITION TIPS

Putting it all together during an event will be easier of you remeber a few general "rules". They've given more than one orienteer the competitive edge.

- When you make a mistake, don't be alarmed. Remind yourself that your competitors too are making mistakes. What you want to do is concentrate on correcting your mistakes as quickly as possible.

- When you encounter particularly tough hills or thick vegetation, push even harder. You must think, "this is where everyone else will be slowing down, so I will make an extra effort".

- You are only as good as your weakest skill. Be aware of what you do well and what you are working on to improve. If the orienteering problem calls for a skill you may not be able to execute properly, select another solution to the problem, even if it takes slightly longer to complete. Better to be safe than sorry.

- There is no time to analyze your errors while you are on the course. A quick notation of what went wrong to prevent the same from occurring later in the course is essential, but leave the indepth analysis until after the event.

- Be as prepared as possible, but don't be neurotic about detail. The nature of orienteering is that every leg is a new experience and will require a unique solution.

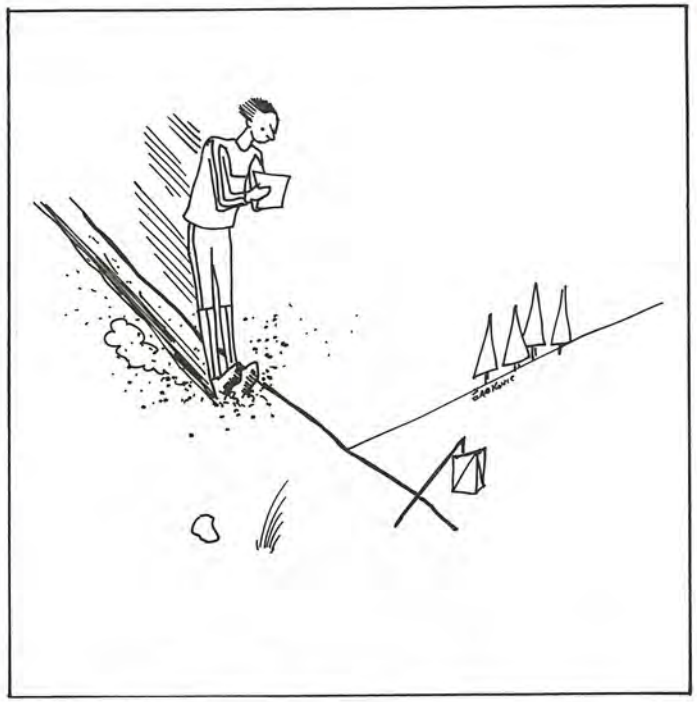
- Execution reigns supreme. Route choice is an important factor for orienteering, particularly in very hilly or dense vegetation terrain where your route choices can mean minutes lost or won. In many orienteering terrains, however, the choices are limited or you just can't decide which of two or three similar choices is best. In these instances, the execution of the skills is the key to success. Routes A and B may be only 15 seconds different in the time required to run them, but if you spend 30 seconds choosing between them, you've already lost 15 seconds or 45 seconds depending which selection you make.

- Sometimes an exact strategy or plan isn't possible. For example, if you must cross 500 metres of terrain with restricted visibility, it is unlikely you will able to run a straight line and come out of the area exactly where you want, even if you aim off. Be flexible. Have an open mind as to where you might and should be, relocate on features and then continue.

- When you select a route, the normal choices are left, right or centre (direct). If you can't quickly make up your mind which is best, go direct. There is no time to be standing around weighing the advantages and disadvantages of each route.

- If you do not know how to use other orienteers, don't. They will only interfere with your orienteering and pull you off your route. Practice using other orienteers during training sessions.

- Direction can be determined from more than just the compass. Once you know in which direction you want to run, the sun and shadows can guide you. Don't rely on this too heavily unless you are extremely confident with your orienteering.



- Remember — "It's not over until it's over". No matter how tough it is or how poorly you may perceive you are doing, the event is not over until you've finished and all the results are in. So don't give up ever. Usually when it is tough, it is tough for everyone.

- Take the weather and season into account when selecting strategies. The terrain and challenge from a course are often distinctly different at different times of the year.

- Putting it all together is the natural progression of training. All you are really doing is what you are trained to do well. Don't be afraid to do well or too anxious to do well. Just let it happen.

SUMMARY

1. Putting it all together requires PRACTICE.
2. Progressively add one skill to another until your repertoire of skills is complete. The skills must be well learned and practiced before they can be added.
3. A good record of training and performance is necessary to evaluate your development.
4. Proper preparation consists of confidence building and procedures on avoiding the choke.
5. Recognition of your own level of performance and then the performance of your practiced skills and strategies will result in your putting it all together when you want to.
6. Smooth, quick execution of skills is more important than route choice when not in very hilly or dense vegetation terrain.
7. Flexibility is necessary when running a route. Often you will not be exactly where you want to be when crossing terrain with reduced visibility.
8. An aggressive temperament when running is a competitive edge when the going gets tough.

14

Where To From Here . . .

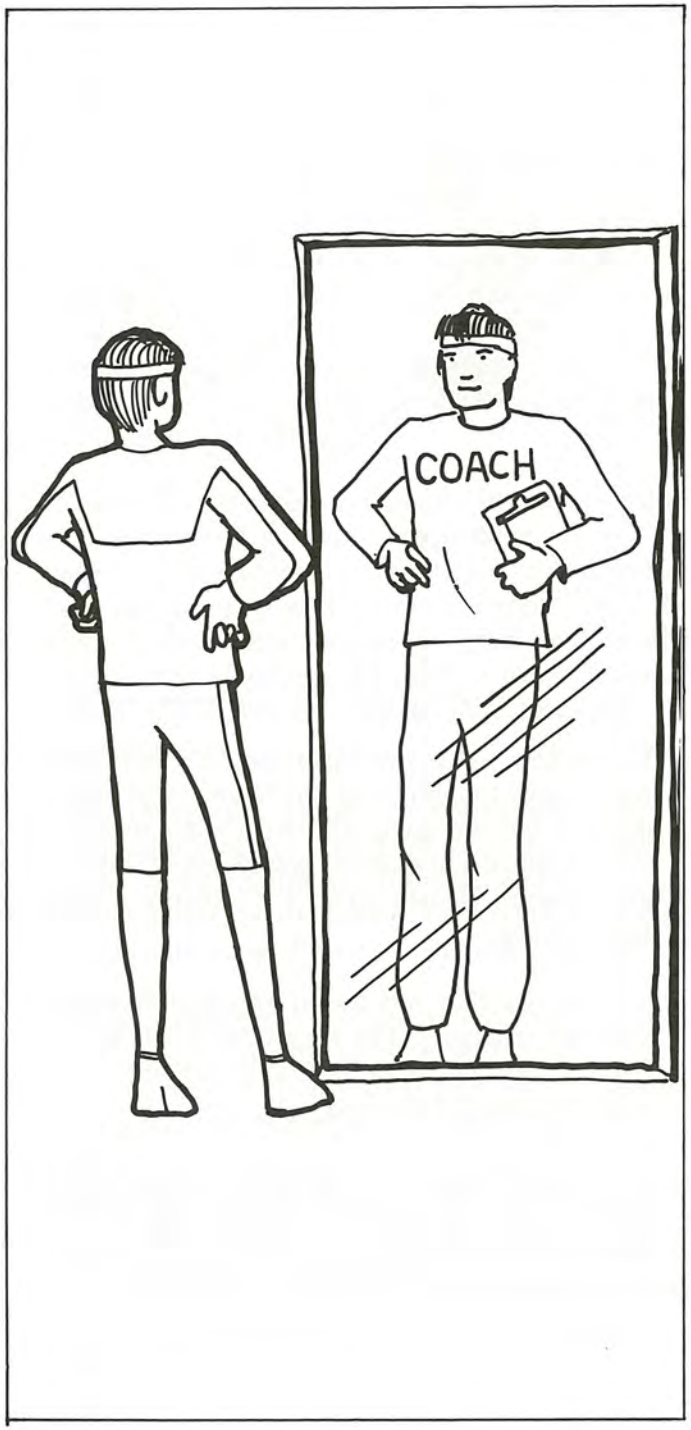
Now that you've mastered the skills and strategies of orienteering, where to from here? The nature of orienteering is such that every event is a new challenge. Your skills and strategies will have to be adjusted to meet each problem. Every leg and new terrain requires refinement of skills. Even orienteering on the same map requires adjustments, because every new course is different. The tremendous variability of seasons and weather complicates things even more.

In learning and practicing the skills in this book, you have laid the groundwork for further improvement. With experience you will develop your own personal style, adapting and refining your techniques. No matter how good you become, however, don't lose contact with the basics. When you run into periods where your performance slumps, go back to them to polish up your technique and renew your confidence.

There are many technical manuals available for advanced competitors. Use the examples and progressions in this book to practice skills described in other books, or that you learn from other orienteers. Most skills can be mastered using a variation of line orienteering or a specific skill course. Paramount in any practice session is that you enjoy yourself, and that you see some benefits arising from the training.

To help you better your performances furthermore, work with a personal coach or advisor if at all possible. Another orienteer whose judgment and experience you trust can also be a great asset. Even a non-expert can stand back and look objectively at your training and competitions, and offer invaluable advice.

Being a member of an orienteering club offers you an opportunity to have regular contact with other orienteers, with whom you can practice and discuss competitions. In particular, talk to orienteers who are better than you are. Find out how they approach each event, what skills and strategies they



use when and where. Learn from their experience and incorporate what you learn into your own technique.

For those who aspire to high level competition, orienteering offers virtually unlimited opportunities — particularly in North America where the sport is relatively new. The combination of mental and physical requirements means that a broad segment of the population can be seriously competitive. And memberships in many clubs are still low, giving many more participants the chance to compete at regional and national events.

Competitive teams usually provide the opportunity for further coaching, at least in the short term, where you will get valuable analysis on your performance and suggestions for specific training programs. By the time you reach a national level team, a personal coach is generally a must.

Another benefit that comes with belonging to an organized competitive team comes in the form of financial assistance from various levels of government. Besides one-on-one coaching, promising juniors and elite athletes enjoy subsidized training camps, fitness testing and travel to out-of-town meets. Clubs and associations help secure and administer any available government or commercial sponsorship on behalf of their members.

For more information on organized events, clubs, coaching, and financial support, contact your national orienteering federation, provincial association or local club.

But whatever your goals in orienteering — whether recreational or competitive — take what you have learned from this manual and use it as a springboard to even greater enjoyment and success. You can do it. You're your own " adventure running" coach. Congratulations!

Reference

RESOURCE MATERIALS

BOOKS

1. Lowry, Ron and Sidney, Ken. *Orienteering Training for Performance.* Willowdale: Orienteering Ontario, 1986.
2. Bengtsson, Hans and George Atkinson. *Orienteering for Sport and Pleasure.* Vermont: The Stephen Green Press, 1977.
3. Holloway, Wilfred. *Modern Orienteering Training.* Great Britain: Holl-O-Lit Publishers, 1980.
4. Holloway, Wilfred. *World Class Orienteering.* Great Britain: Holl-O-Lit Publishers, 1980.
5. Ellis, Margaret, *Orienteering Level I Coaching Certification.* Ottawa: Canadian Orienteering Federation, 1983.
6. Lowry, Ron. *Orienteering Level II Coaching Certification* Ottawa: Canadian Orienteering Federation, 1985.
7. Gilchrist, James and Lee, Jack. *Orienteering Instructor's Manual* Willowdale: Orienteering Ontario, 1984.
8. Stott, Winnie. *Armchair Orienteering.* Ottawa: Canadian Orienteering Federation, 1984.
9. McNeil, Carol and Others. *Orienteering Training and Coaching.* Great Britain: British Orienteering Federation, 1982.
10. Stott, Winnie. *Armchair Orienteering II:* Ottawa: Canadian Orienteering Federation, 1986.

AUDIO-VISUAL

1. **Orienteering Ontario.** *Orienteering — A Great Combination* (A slide-tape presentation).
2. Canadian Orienteering Federation. *What Makes Them Run?* (film).
3. Swedish Orienteering Federation. *Spiking Controls* (film).
4. Swedish Orienteering Federation. *OK Tallen I.* (film).
5. Swedish Orienteering Federation. *OK Tallen II.* (film).

ORIENTEERING ASSOCIATIONS

Orienteering associations provide information on sanctioned events, workshops, seminars, training sessions, available maps, and technical assistance.

CANADIAN PROVINCIAL ASSOCIATIONS

Alberta

Alberta Orienteering Association, c/o 7927-160 St., Edmonton, Alberta, T5R 2G6 Telephone: (403) 487-7099

British Columbia

Orienteering Association of British Columbia, 1220 Hornby Street, Vancouver, British Columbia, V6Z 1W2. Telephone: (604) 922-1794

Manitoba

Manitoba Orienteering Association, c/o Jennifer Hamilton, 1038 Palmerston Ave., Winnipeg, Man. R3G 1K2

New Brunswick

Orienteering New Brunswick, c/o Gerald Lebel, P.O. Box 1474, Grands Falls, New Brunswick, V0J 1M0. Telephone: (506) 473-1620

Newfoundland

Newfoundland Orienteering Association, 48 Pennywell Road, St. John's, Newfoundland, A1C 2K9. Telephone: (709) 579-0521

Northwest Territories

Contact the Canadian Orienteering Federation

Nova Scotia

Orienteering Association of Nova Scotia, Box 3020, S. Halifax, Nova Scota, B3J 3G6. Telephone: (902) 425-5450

Ontario

Orienteering Ontario, 1220 Sheppard Avenue East, Willowdale, Ontario, M2K 2X1. Telephone: (416) 495-4160 Telex: 069-86157 OSAC TOR

Prince Edward Island

Contact the Canadian Orienteering Federation

Quebec

Quebec Orienteering Federation, c/o #406 - 3615 Ridgewood Avenue, Montreal, Quebec, H3V 1B4. Telephone: (514) 733-5561

Saskatchewan

Contact the Canadian Orienteering Federation

NATIONAL ASSOCIATIONS OF ENGLISH SPEAKING COUNTRIES

Australia

Orienteering Federation of Australia, P.O. Box. 16, Abbotsford, Victoria, 3067, Australia

Canada

The Canadian Orienteering Federation, 333 River Road, Tower "A", 18th floor, Ottawa, Ontario, K1L 8H9 Telephone: (613) 748-5649

Great Britain

British Orienteering Federation, 41 Dale Road, Matlock, Derbyshire, DE4 3LT, Great Britain

Hong Kong

Orienteering Association of Hong Kong, c/o Police Cadet School, Fan Gardens, Fanling, New Territories, Hong Kong

Ireland

Irish Orienteering Federation, 69 Upper Rathmines Road, Rathmines, Dublin 6, Ireland

Japan

Japan Orienteering Federation, c/o Kenko-Tairyokusukuri, Jigyozaidan, Toranomon 34 Mori-Building; 1-25-5 Toranomon, Minato-ku, Tokyo 105, Japan

Korea

Korea Orienteering Federation, P.O. Box 3954, Seoul, Korea

New Zealand

New Zealand Orienteering Federation, P.O. Box 358, Papakura, New Zealand

United States

United States Orienteering Federation, P.O. Box 1039, Ballwin, Missouri, 63011, U.S.A.

INTERNATIONAL ORIENTEERING FEDERATION (IOF)

International Orienteering Federation (IOF) Mile End, Main Street, Doune, Scotland, GB-FK-16 6BJ

IOF MEMBER COUNTRIES

Australia
Austria
Belgium
Canada
Czechoslovakia
Denmark
Finland
France
Great Britain
Germany, East
Germany, West
Holland
Hong Kong
Hungary
India
Ireland
Israel
Japan
Korea
Luxembourg
New Zealand
Norway
Poland
Singapore
Spain
Sweden
Switzerland
United States
Yugoslavia

▲ The Swedish 5-Day orienteering event attracts over 26,000 competitors annually.

(photo by Winnie Stott)

IOF Orienteering Map Symbols

Expressway	Contour lines
Road	Form lines
Dirt road	Steep bank
Cart track	Gully
Large trail	Dry ditch
Small trail	Earth wall, small earth wall
Visible path junction	Knoll, small knoll
Indistinct junction	Depression - large, small
Narrow cut line	Pit
Railway	Impassable cliff
Powerline or ski tow	Cliff
Fence, wall	Rocky pit
High fence	Boulder- small, large, group
Building, ruin, tower	Boulder field, stony ground
Residential, out of bounds	Pond, beaver dam (COF spec.)

Uncrossable lake	Semi-open land
Water hole, well, spring	Vegetation - run
Crossable stream	Good visibility - slow run
Small stream	Good visibility - walk
Ditch	Vegetation - slow run
Uncrossable river	Vegetation - walk
Streambed or narrow marsh	Vegetation - fight
Footbridge	Forest runnable in one direction
Crossing point with bridge	Rough open
Crossing point without bridge	Orchard
Uncrossable marsh	Very distinct forest edge
Open marsh	Distinct vegetation boundary
Wooded marsh	Indistinct vegetation boundary
Diffused marsh	
Open land	

orienteering ontario
1220 Sheppard Avenue East
Willowdale, Ontario, Canada M2K 2X1

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IOF-Symbols

for the control descriptions

In international orienteering competitions participants from all nations, whatever their language, must be able to understand the control descriptions without ambiguity or the need for translation.

HEADING

Dimensions of symbol boxes

7 x 7 mm 5 x 5 mm

I Class	II Course Length	III Climbing
H 17–18 A	9.8	400

DESCRIPTIONS OF THE CONTROLS

A: Control number
B: Control code
C: Which (of any similar) feature
D: The control feature
E: Details of the appearance
F: Dimensions of the feature
G: Location of the marker
H: Other information

A	B	C	D	E	F	G	H
3	54	→			8×6		

MARKED ROUTE TO THE FINISH

All the route marked from the control

250

Forked markings

310

No streamers

190

C Which feature

0.1	Southern
0.2	Northeast
0.3	Upper
0.4	Lower
0.5	Middle
0.6	Between

D Control features

Land Forms

1.1	Steep bank
1.2	Quarry
1.3	Earth bank, dam
1.4	Terrace
1.5	Spur
1.6	Rib
1.7	Re-entrant
1.8	Gully
1.9	Dry ditch
1.10	Hill
1.11	Knoll
1.12	Saddle
1.13	Depression
1.14	Small depression
1.15	Pit

Rock and boulders

2.1	Cliff, crag
2.2	Bare rock
2.3	Cave
2.4	Boulder
2.5	Boulder field
2.6	Stony ground
2.7	Cairn pile of stones

Water and marsh

3.1	Lake
3.2	Pond
3.3	Waterhole
3.4	Stream
3.5	Ditch
3.6	Marsh
3.7	Small marsh
3.8	Firm ground in marsh
3.9	Well
3.10	Spring

Vegetation

4.1	Open land, field
4.2	Semi-open land
4.3	Forest corner
4.4	Clearing
4.5	Thicket
4.6	Felled area
4.7	Vegetation boundary
4.8	Copse

Man-made features

5.1 Road
5.2 Path
5.3 Narrow ride
5.4 Wall
5.5 Fence
5.6 Footbridge
5.7 Building
5.8 Ruin
5.9 Tower

Combinations

7.1 Path-Crossing or Intersection
Path-Ride-Crossing
7.2 Road-Junction
Stream-Ditch-Junction
7.3 Stream-Bend
7.4 Dry Ditch End (or Beginning)

G Location

8.1 North side
8.2 Northeast edge
8.3 East corner (re-entrant)
8.4 Sw-corner
8.5 Southern tip
8.6 Western part
8.7 Upper part («Head»)
Lower part («Foot»)
8.8 On the top of ——
8.9 The southern foot
At the foot (direction not specified)

H Other relevant information

9.1 Refreshments
9.2 Radio-Control
9.3 Control Check
9.4 First aid

Additional Symbols used in certain countries

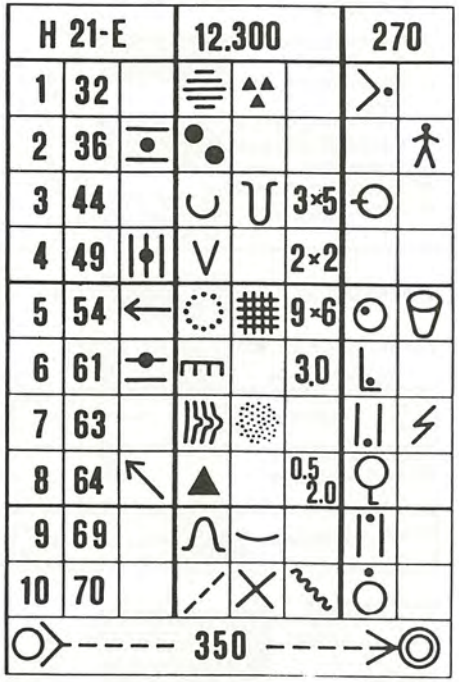
6.1 Shooting platform
6.2 Fodder rack
6.3 Rock pillar
6.4 Single tree
6.5 Salt lick
6.6 Root stock
6.7 Boundary-stone
6.8 Charcoal burning ground
6.9 Anthill
6.10 Broken ground, fox-earth
6.11 Special items the definitions of which must be supplied to the competitors in advance
6.12

E Appearance

7.5 Shallow
7.6 Deep
7.7 Overgrown
7.8 Open
7.9 Rocky
7.10 Marshy
7.11 Sandy
7.12 Coniferous
7.13 Deciduous

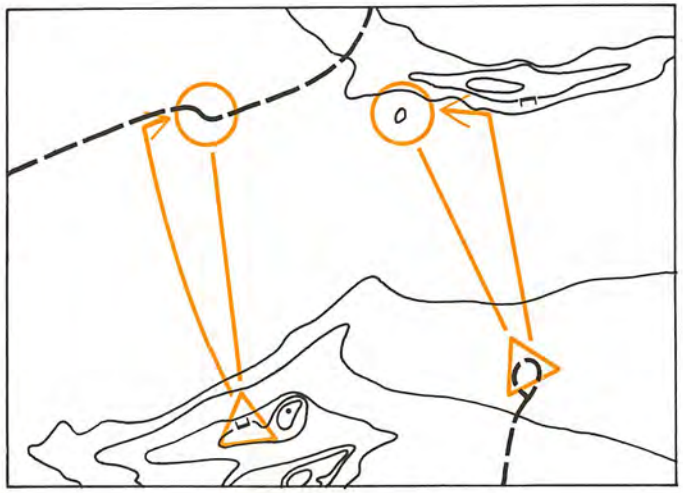
F Dimensions

5,5 Height in metres
7×5 Size in metres

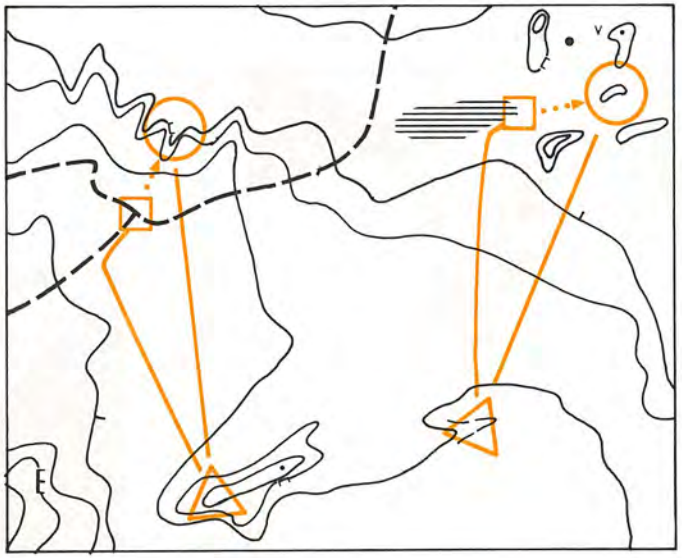


Glossary

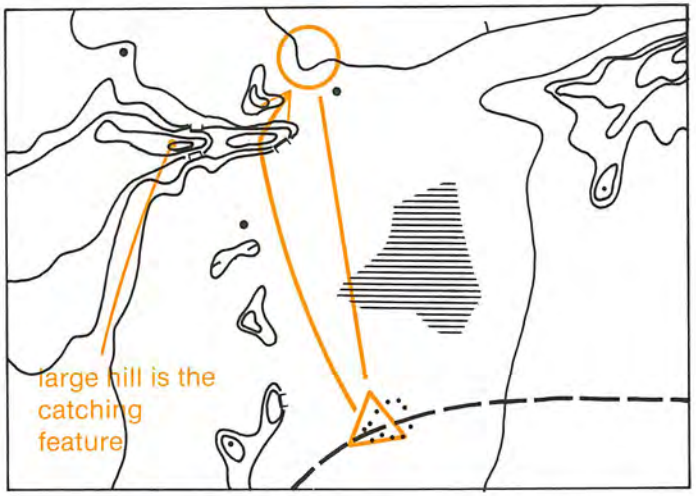
Aiming off — selecting a route to either the left or right side of the direct route. This ensures that you know your position in the terrain and simplifies the route.



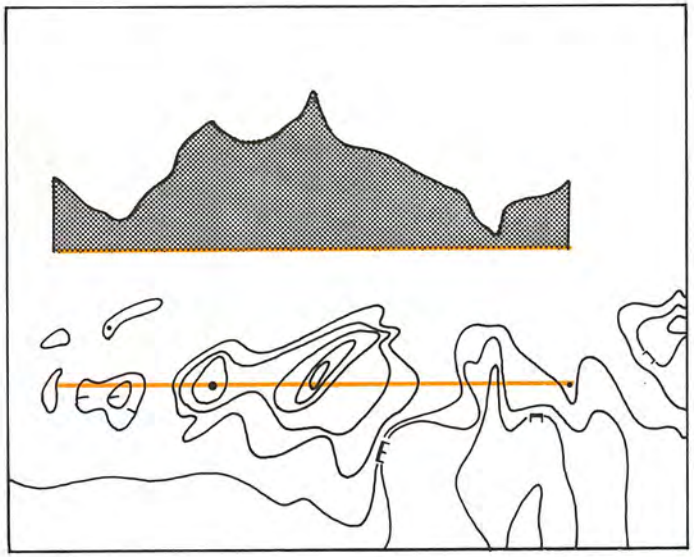
Attack point — a large distinct feature near the control. The feature must be easy to find.



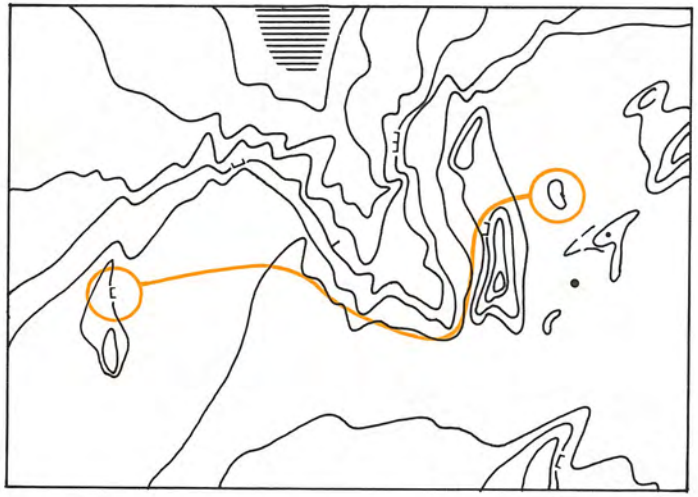
Catching feature — a large distinct feature along your route used to locate your position. The term comes from the feature 'catching' your attention.



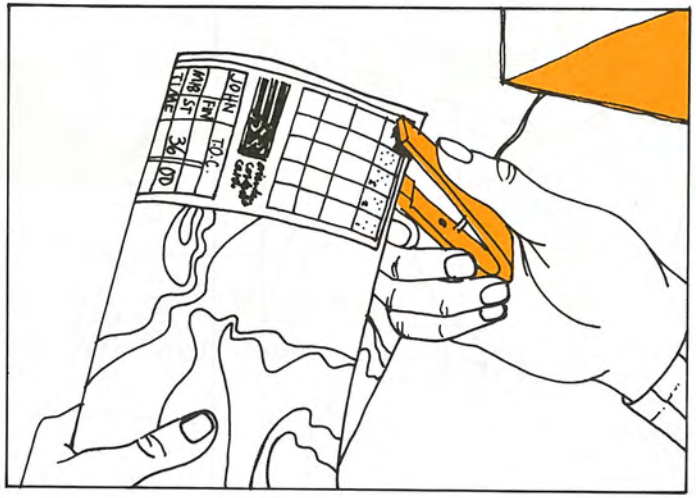
Contour lines — brown lines on your map to indicate the slope and topographic features.



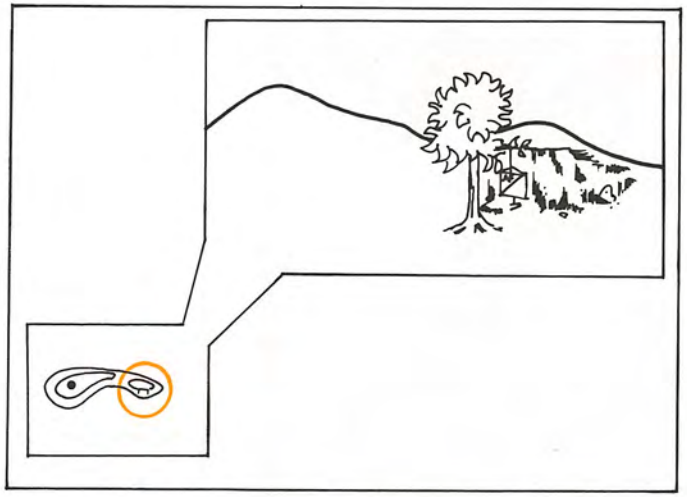
Contouring — the skill of navigating on the same elevation. It is usually used to run around a large obstruction such as a steep hill or deep re-entrant.



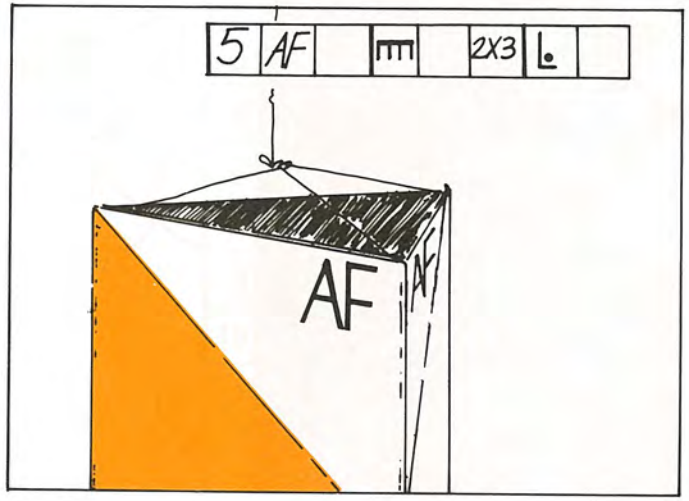
Control card — a card carried by the orienteer and punched at each control to verify his or her visit.



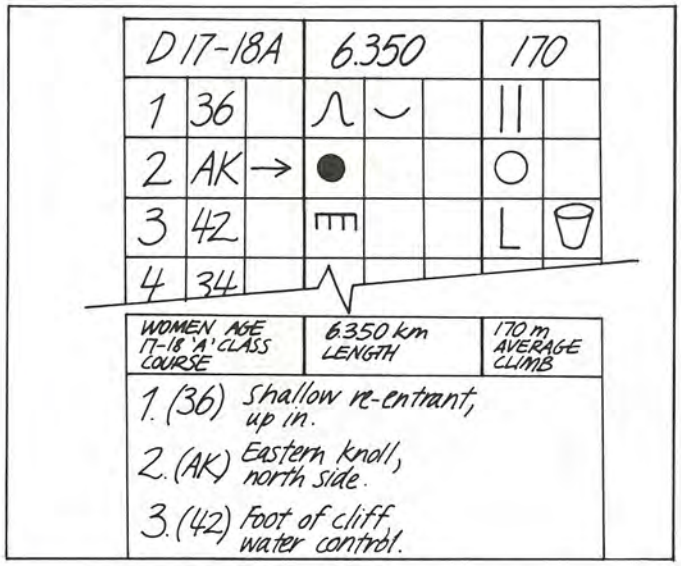
Control circle — a circle drawn around a feature on your map to indicate the location of a control marker. The exact location of the control marker is the centre of the circle.



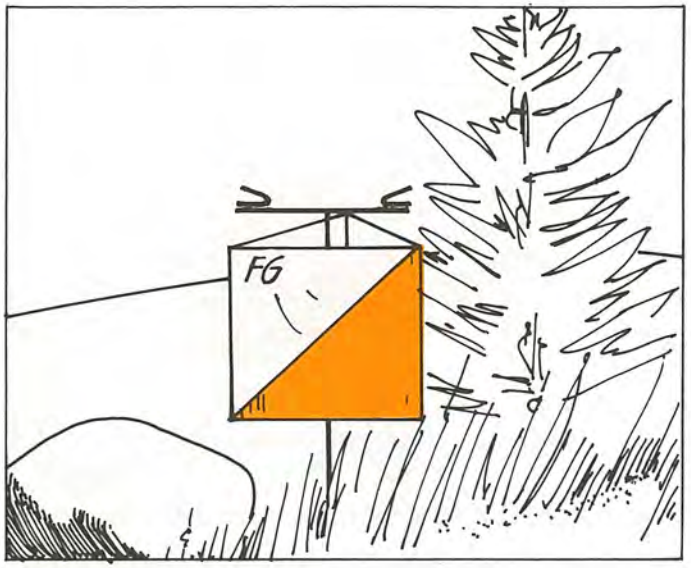
Control code — a number or letter on the control marker that identifies the control.



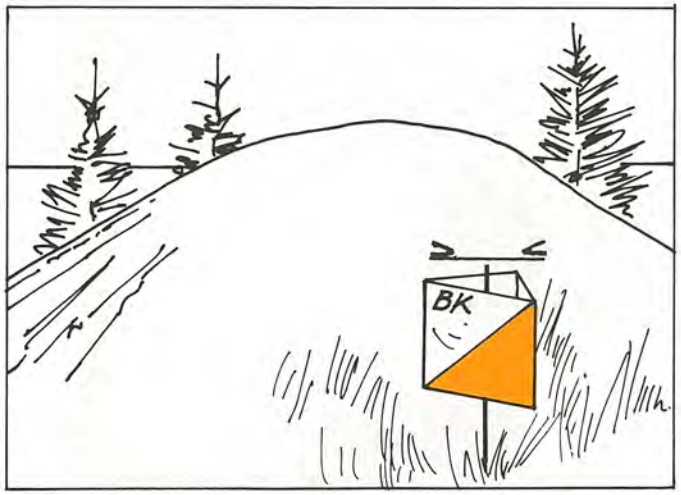
Control description — a written or symbol list given to the orienteer containing a brief description of each control to be visited, its order and code.



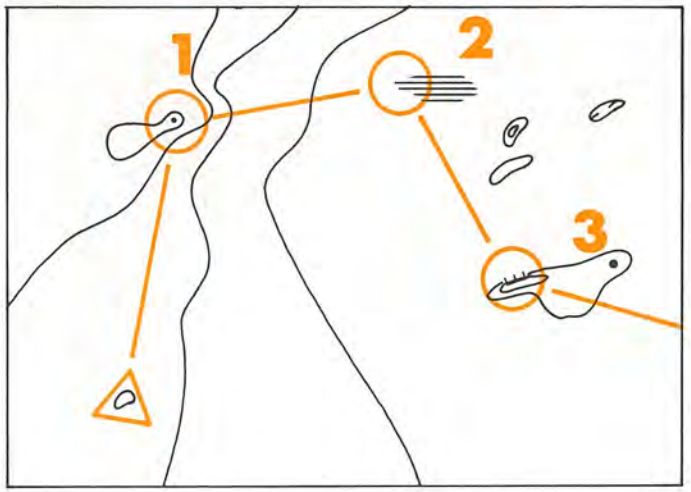
Control marker — a three-dimensional orange and white nylon marker used to mark the control feature.



Control feature — a feature in the terrain at which the control marker is hung.

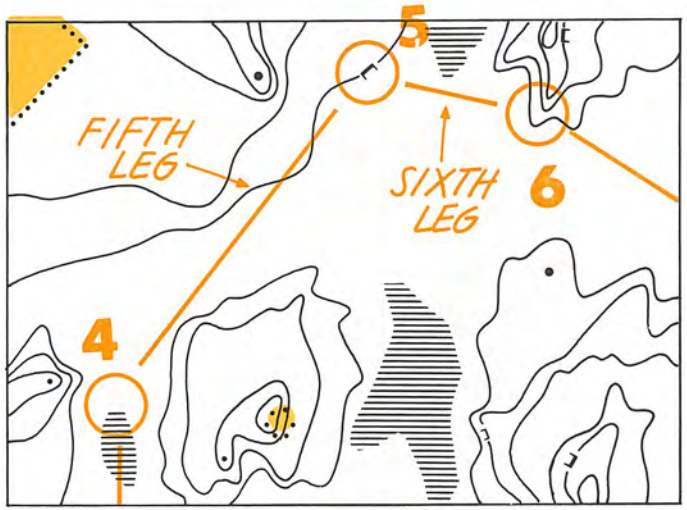


Control numbers — a number beside each control circle on the map which indicates the order in which the controls are to be visited.

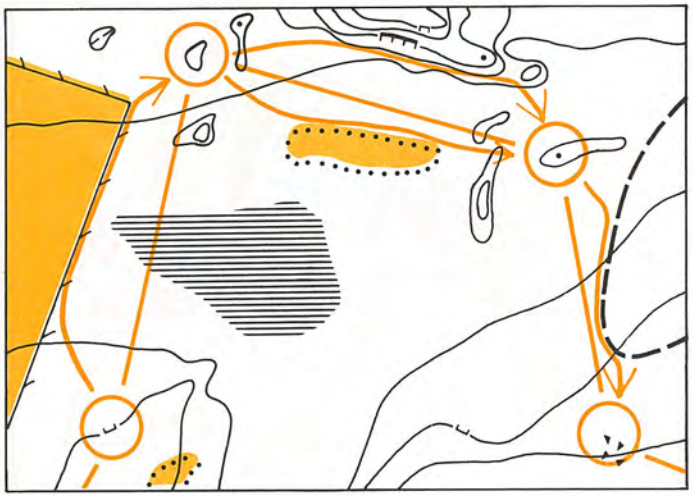


Finish symbol — a double circle which marks the location of a finish area on a map.

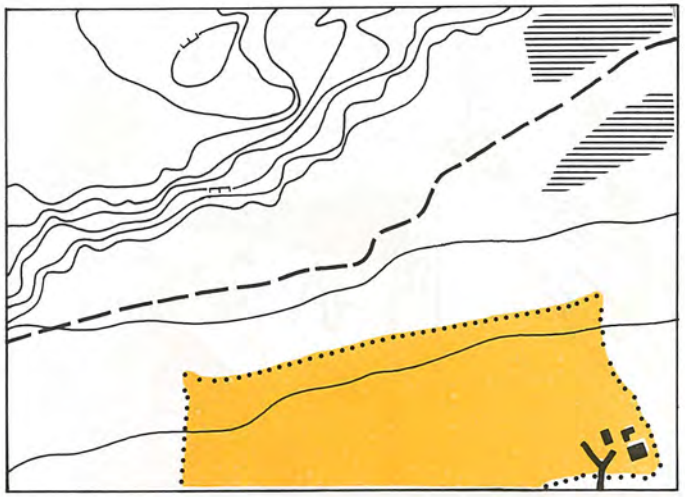
Leg — a section of the course between controls. For example, the start to the first control is the first leg; the first to the second control is the second leg; and so on.



Handrail — a linear feature such as a trail, field edge, fence, ridge or long hill, valley or slope, used as a navigational aid. You run along these features, which are parallel to your selected route.

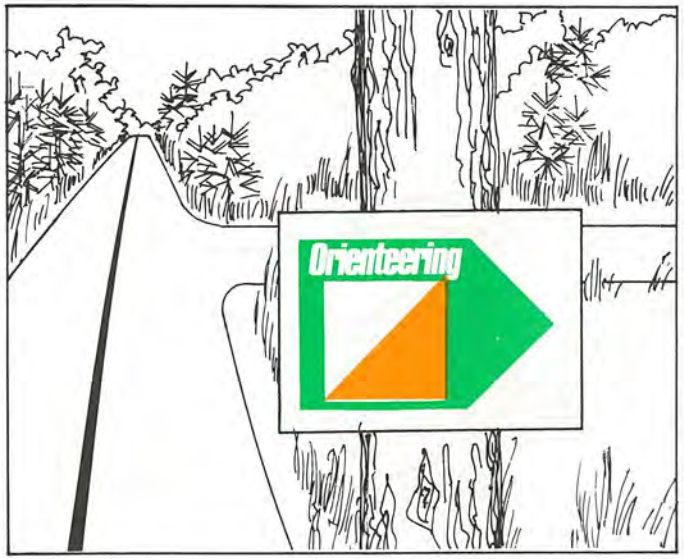


Linear feature — a feature that extends in one direction for some distance. Paths, fields, streams and slopes are good examples.

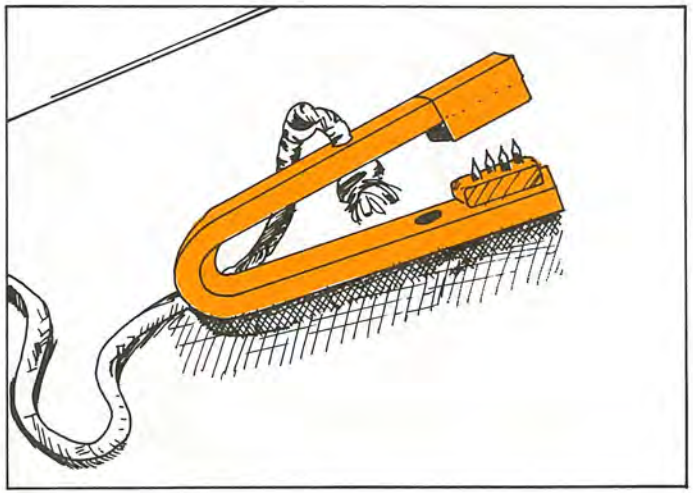


Master map — maps displayed near the start showing the course, which the competitor then copies onto his or her own map.

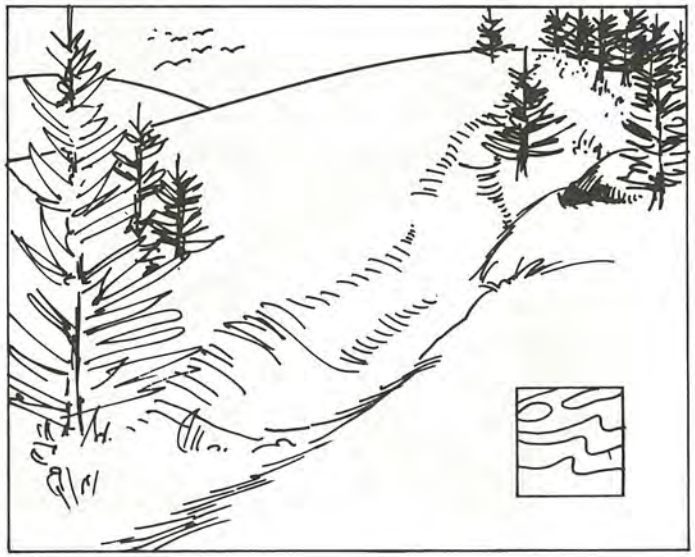
Orienteering road sign — a sign placed along the highway to guide orienteers to the meet site.



Punch — a small clipper with a different arrangements of pins at each control used by the orienteer to mark the control card.

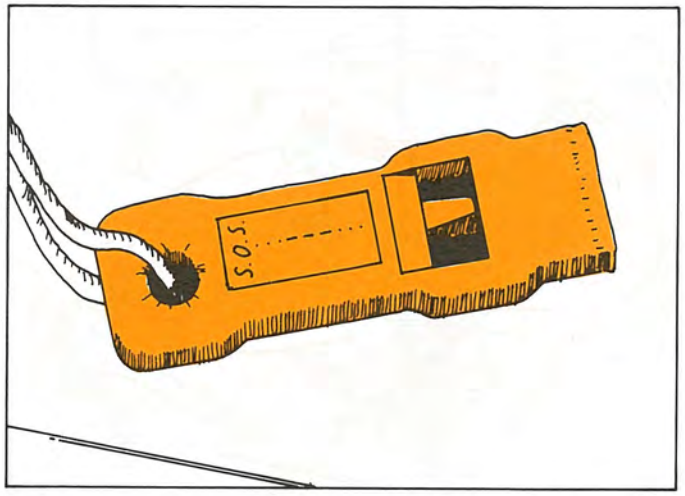


Re-entrant — a valley. Though usually small, re-entrants can also refer to large valleys.



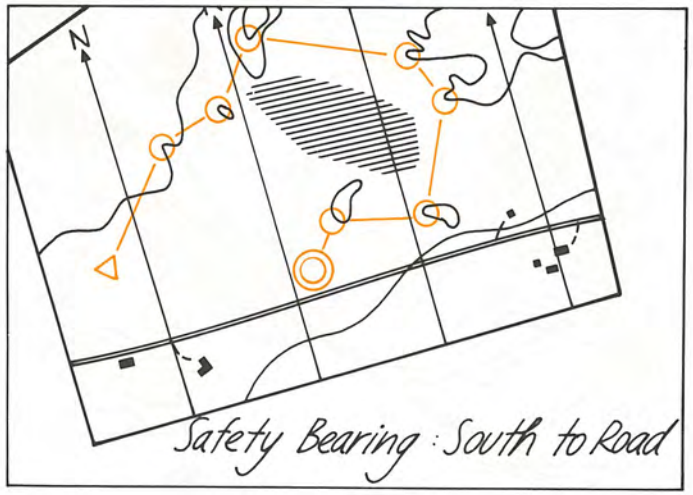
Route choice — the route the orienteer selects to follow on the map and in the terrain to a destination.

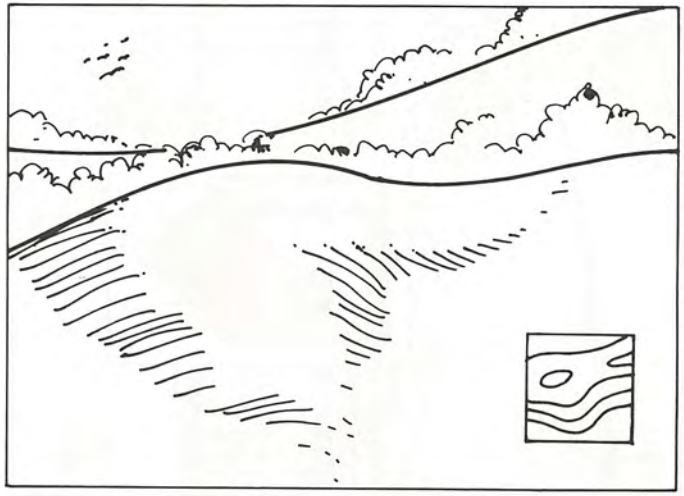
Safety whistle — a whistle the orienteer blows to obtain help if he or she is injured or lost.



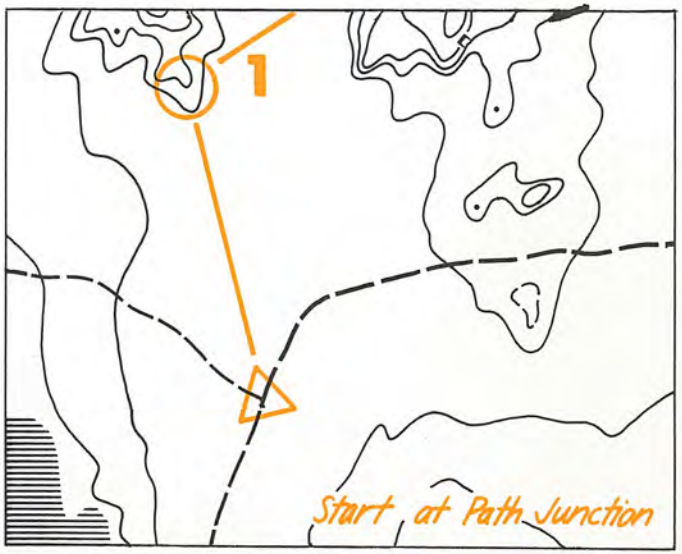
Safety direction — a compass bearing or direction to guide the orienteer directly to a road, major trail or settlement if lost or injured.

Spur — a piece of land protruding from a hill. Opposite to re-entrant.

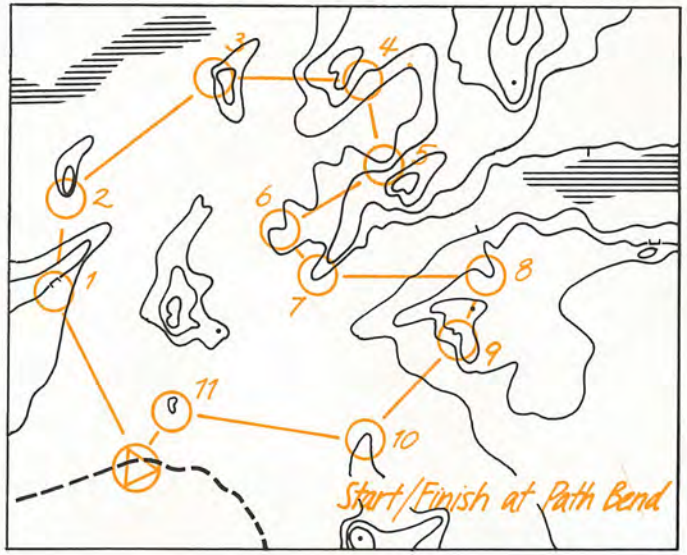




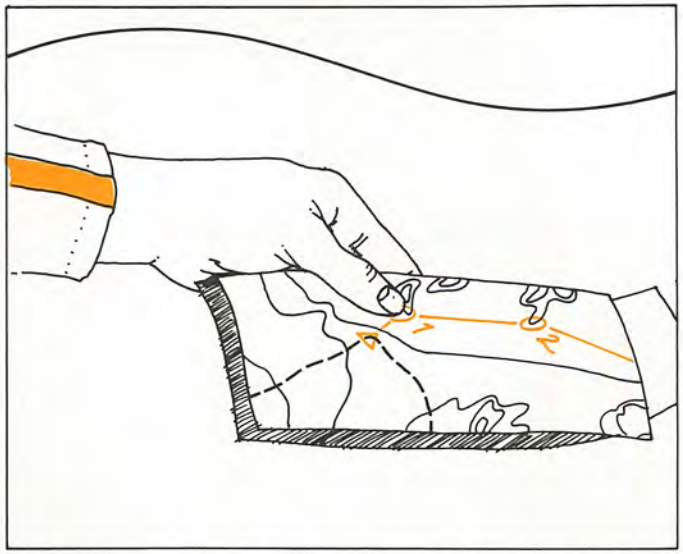
Start symbol — a triangle which marks the location of a start area on a map.



Start/finish symbol — a triangle within a circle which marks a location used for both start and finish.



Thumbing — a technique used to mark one's location on the map. As a feature in the terrain is reached and its corresponding symbol identified on the map, the thumbnail is placed at the symbol for reference.



Water control — a control where drinking water is available.

An Orienteering Ontario Coach Yourself Manual

Orienteering is a recognized Olympic and World Masters Games sport combining speed, endurance, decision-making and navigational skills. This book, *the first in a series on orienteering skills and fitness training,* outlines a basic coach-yourself approach for everyone from the recreational athlete to the seasoned competitor.

World-class orienteers Ron Lowry and Ken Sidney take you step-by-step through skills and strategy, including map and compass reading, terrain simplification, route selection and race tactics, with additional tips for running in different weather and terrain.

For anyone who wants challenge and excitement in their outdoor sport, this book is the key to enjoying, and winning, a great forest adventure.