

Introduction to Mountain Bike Orienteering

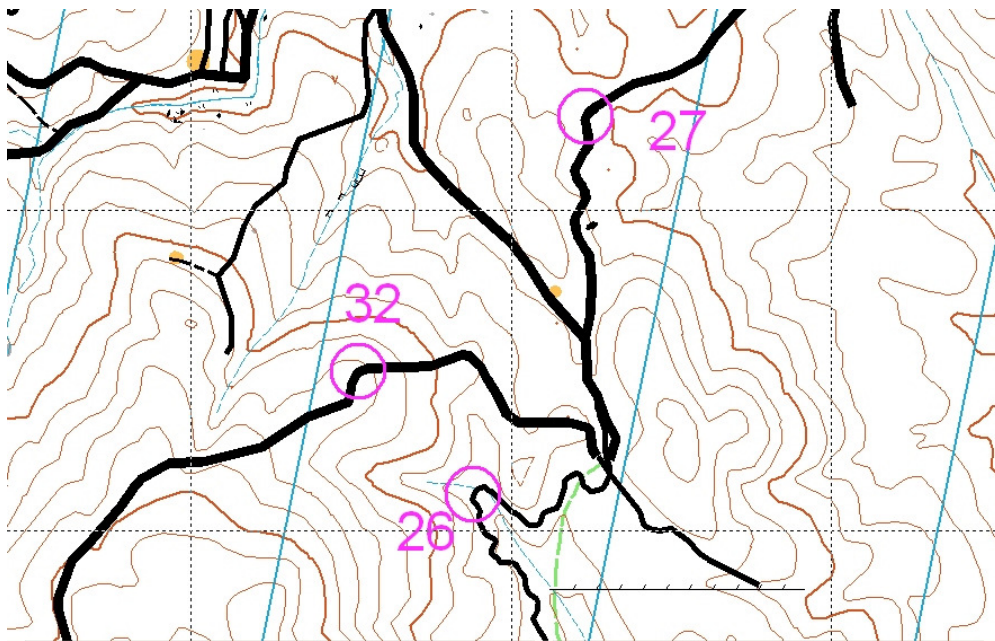


Introduction

Bike orienteering (“Bike-o”) combines map reading and route planning as an extra dynamic to mountain bike racing. A large number of navigational “controls” (markers) are placed on the race course. The location for each of the controls is marked on a map. The idea is to visit as many controls points as possible within the time allotted. The person or team with the most points (or, if all controls are visited, the fastest time) wins.

The navigation is not as difficult as in traditional foot orienteering—all controls are placed on trails—but the challenge is in route choice and being able to navigate at speed. Bike orienteering is identical in concept to the mountain bike segment commonly used in adventure racing.

An example of how the map would appear is shown below. The controls are located in the center of the magenta circle, and a control number appears nearby. Controls can be worth 10, 20, 30, 40, 50 or 60 points, depending on how hard they are to get to, or how difficult the navigation is. The leading digit of the two-digit control number indicates the number of points—for example, control “26” would be worth 20 points.



Map reading, route planning and navigational efficiency are key elements of Bike-O

Each competitor or team will carry a punch card with the control numbers listed. When a control is reached, the marker will have a uniquely coded punch pattern—this is how the scorekeeper determines that you did indeed visit the control. Just punch the card, and move on to the next control.

Our race will have a mass start, with two categories for competition: a two-hour time limit, and a four-hour time limit. Note that the penalty for arriving back after your time limit has passed is severe; 10 points deducted from your score for

each minute late. You may choose to determine which time category you want to be scored against after you return to the finish (i.e. you can change your mind).

The scale for the map will be 1:25,000 (1 cm = 250m). Note that for simplifying orientation of the map with a compass, magnetic north reference lines will be drawn on the map (this eliminates having to compensate for magnetic declination). Roads and trails are shown on the map, but there will be no text indicating road names or trail numbers. The Start/finish area is marked on the map with a magenta triangle.

General Rules (exceptions noted in Event Description)

- A helmet must be worn at all times while riding a bike
- Mountain bikes must remain on existing trails. Controls located off-trail (e.g. on a retired Forest road) must be approached on foot.
- GPS Receivers—Technically, GPS receivers are not allowed for navigation (although they will be of limited value on this map), but GPS receivers and GPS loggers can be used to record your route
- Bike computers are allowed for measuring distance
- Race can be run as an individual or as a team
- Scoring—Person or team with the highest score at the end of the time interval (typically 2 or 4 hours) wins. A severe penalty (e.g. 10 points per minute) will be subtracted from the score for a late finish.

Tips

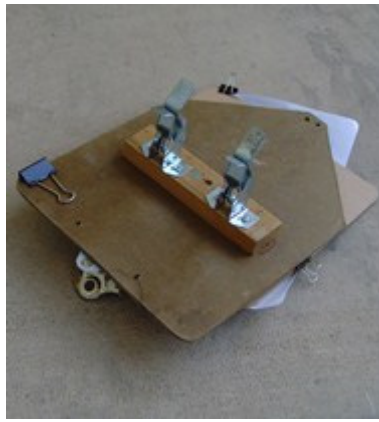
Equipment

The course is usually “ride-able” single track and dirt roads, and a robust mountain bike (hard-tail or full suspension) designed for cross-country travel would be preferred. A riding helmet is mandatory equipment, and riding gloves are highly recommended. Most advanced mountain bikers use a clipless pedal system to maximize power transfer and efficiency. For an “adventure race” venue, however, where some of the control markers may be well off of the trail, flat pedals with running shoes may be preferred.

A safety whistle is also mandatory equipment. Whistles can be purchased from GPHXO for \$1 each.

Riders should be prepared to carry enough snacks and water for a two or four hour ride. There is water at the start, and usually there are two to four unmanned water stops at locations marked on the map. Please note that for longer events, we cannot guarantee that water at the remote sites won’t run out. Riders are encouraged to bring a liter or more of water with them. Likewise, riders should carry, as a minimum, tools to repair damaged tires.

The only special equipment needed is some sort of map holder. These can vary from the very simple (baggie mounted to the handlebar) to the very sophisticated (specialized map holders that can easily be rotated to orient the map). Some brand names for map holders include AR Navigation, Miry, Devotech, Nordenmark, Autopilot and Windchill. I personally made a mountable map holder for about \$5 by using a clip board, with 2 of those tension clips that are used to hold garden tools mounted to the back. I then attach the clip board to the handlebars with the tension clips (wrap the handlebar with duct tape first), and use the clip on the clipboard to hold the map in the orientation that I want. A couple more of those black metal binding clips along the bottom of the clipboard keeps the map from flapping around in the wind.



A crude but somewhat effective map holder can be made for <\$10

Many bike orienteers do not use a compass while racing. A compass is extremely useful, however, if you need to re-locate yourself on the map. Carrying a compass with your gear is highly recommended. Compasses can be rented from GPHXO for \$1 each.

Techniques

Route Planning -- Good route planning is a key to successful bike orienteering. Often there will be a 10-15 minute window before the race where you can plan your racing strategy. In general, it's best to define an "outer loop" of higher-scoring control points, and then spiral in closer to the start to pick up remaining lower scoring controls. This gives the greatest flexibility in being able to modify the route while losing the fewest points (and you do NOT want to come back late to find that the penalty has eaten away your hard-earned points!)

Take advantage of what the map has to offer while planning a route. First, there are elevation contours on the map, so that you can factor in how much elevation gain there will be on the route. Second, the map has symbols that differentiate easy single track and roads from slower single track—this can also be used for figuring how quickly you can travel a route.

As you ride the route, keep track of how you are progressing relative to the plan. As you get nearer the finish time, re-assess how long it will take you to return with the remaining time, and make the appropriate adjustments.

Efficient map reading – The most common reason for slowing competitors down on the trail is inefficient map reading. It is difficult (and potentially dangerous!) to read the map while moving, and there can be a lot of time involved to find your location on the map each time you look at it. Some sort of map holder is essential for more efficient navigation. Some people are pretty good at being able to rotate a map in their head, but for most people, you will be more comfortable orienting you map to the direction of travel—which involves rotating the map. An easy method for rotating you map in the holder will make things go faster. Some people also prefer to mark their location on the map as they progress, to make it faster to reference the map. Some ideas might include push pins, magnets, or using marker pens or highlighters.

Navigate by "catching features" – One technique that will speed up your navigation is to take advantage of distinctive map features (trail junctions, obvious bends, washes, hilltops, etc.) and navigate to those points as quickly as you can. There should be no need for precise measurement of bearings or distances to get to these locations—just go! Save the precision for when the features become less obvious—like looking for a trail fork when there are many similar trails in the area.

Distance measuring – Another new skill to master is measuring distance—both on the map and in real life. The map, of course, is to scale, but here are a couple simple ideas for quickly estimating distance: First, you can use the spacing between the magnetic north reference lines that will be drawn on a map. These will be drawn at a fixed distance (normally 500 meters) and you can use these as a local reference to approximate distance. This is usually good enough for coarse navigation. Second, check the fingers on your hand and see if one measures close to 1 cm in width across the fingernail. This would correspond to 250 meters on the 1:25k map. You can use this for more precise measurement without having to fumble for a ruler. If you are using a bike computer as the method for measuring distance, set it up in “metric” mode, and then measure everything in meters—it’s a lot easier than miles and yards.

Card Punching – Another tip to save time is to have the punch card both securely attached and easy to access. Rather than stuff in a pocket every time you get to a control, consider attaching the bottom of the punch card to the bottom of your outer shirt with safety pins. In most cases, you should be able to reach the punch to the card without having to dismount the bike. Some people prefer to use a retractable cord or other method to minimize getting on or off of the bike to use the punch.

References

- Bike orienteering: http://en.wikipedia.org/wiki/Mountain_bike_orienteering
<http://www.orienteering.org/index.php?/iof2006/content/view/full/1042>
- Adventure racing: http://en.wikipedia.org/wiki/Adventure_racing
- Phoenix Orienteering club: <http://gphxo.org/>
- Foot Orienteering: <http://www.orienteering.org/index.php?/iof2006/content/view/full/968>
<http://en.wikipedia.org/wiki/Orienteering>
- AR Navigation map holder: <http://www.amazon.com/AR-Navigation-Supplies-Rotating-Mountain/dp/B0015P71L0>
- PMBA: <http://www.prescottmtb.com/>