Course Planning & Route Choice

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table of contents

- Variety
- Route Choice
- Different types of course planning
- The Basic Steps
- Common mistakes
- Psychology
- How to be loved
Objectives of the Course Planner

- Fun
- Fair
- Challenging
1st T – vary Terrain

- Challenge orienteer to move and navigate effectively in all types of terrain
  - Flat / hilly / spur and valley
  - Many / few details
  - Good / bad visibility & runnability
  - Rock / marsh / open
  - Open forest / thick forest
  - Wilderness / lots of roads & tracks
2nd T – vary Technique

- Challenge orienteer to use a variety of navigation techniques
  - Line / point / area features
  - Along / across contours and line features
  - Map reading / compass
  - Different leg lengths
  - Changes of direction
3rd T – vary Tempo

- Challenge the orienteer to run at appropriate tempo
  - Fast terrain / slow
  - Long / Short legs
  - Easy / difficult map reading
  - Downhill / flat / up
Route Choice

- Why have route choice?
  - More interesting
  - More thinking
  - Separates runners

- It is the essential nature of orienteering
Route Choice

- How to make route choice
  - Need obstacles
    - Vegetation: green
    - Terrain: hills, valleys, cliffs, lakes…
    - Detailed terrain / navigational complexity
  - Need alternatives
    - Faster running / slower running
    - Longer / shorter
    - Safe / tricky navigation
Route Choice

- Should route choice alternatives be equal?
  - No!
  - Test map reading / decision making skills.
  - Reward the best ability to “see” good routes.
  - Easy-to-see route should be not the best
  - Good routes should be less obvious
Route Choice

• How does course planner compare alternative route choices?
  – You must understand how quickly people move in terrain…
    – You can guess…
    – You can test…
    – Or you can calculate…
# Speed in Terrain (elite male)

<table>
<thead>
<tr>
<th>Terrain</th>
<th>Speed (min/km)</th>
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<tbody>
<tr>
<td>Dark Green</td>
<td>10:00</td>
</tr>
<tr>
<td>Light Green</td>
<td>7:00</td>
</tr>
<tr>
<td>Marsh</td>
<td>5:30</td>
</tr>
<tr>
<td>Open Forest</td>
<td>5:00</td>
</tr>
<tr>
<td>Small Path</td>
<td>4:00</td>
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<tr>
<td>Field</td>
<td>4:00</td>
</tr>
<tr>
<td>Big Path</td>
<td>3:40</td>
</tr>
<tr>
<td>Road</td>
<td>3:20</td>
</tr>
<tr>
<td>Uphill</td>
<td>Add 1:30 min/km per 10%</td>
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</table>
| Downhill  | Less 0:40 for up to 20%  
|           | Add 2:00 for 30% or more |
Rules

- COF rule book
  - Technical rules
  - Course standards (winning TPK, number of courses, and so on)

- IOF rules
  - www.orienteering.org/rules.htm
  - More of the technical rules
  - More course planning principles
  - Especially: 16.2, 19.3, 19.4, Appendix 2.3, 3.4.2, 3.5.1
Course Length

- COF specifies *expected winning times*

*BUT*...

- How do you know how long to make your courses?
  - You might not care
  - Depends on your specific terrain
  - Depends on who will be there
  - Get one class/category right, then use Excel...
## Relative Speeds (winning TPKs)

<table>
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<th>1.00</th>
<th>W21</th>
<th>0.80</th>
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<td>0.71</td>
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<td>W60</td>
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<td>W65</td>
<td>0.44</td>
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<td>W70</td>
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<td>M75</td>
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<td>W75</td>
<td>0.35</td>
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</table>
Types of Course Planning

- Different types of races
  - Long Distance (Classic)
  - Middle Distance (Short)
  - Sprint Distance
  - Park Orienteering
  - Score-O
  - Night-O
  - Relays
  - Super-long
  - …and so on
Types of Course Planning

- Different “levels” of event
  - Impromptu training
  - Wednesday night events
  - B meets
  - A meets
  - Canadian Championship events
  - International championship events
Materials & Resources

- There aren’t many
- Experience, school of hard knocks
- Talk to people after races to understand their skills and what they enjoy
- Read articles, websites
- Use your Controller
- Ask someone to review your draft courses
Websites

- Canadian Orienteering Federation
  - www.orienteering.ca/r&s.htm

- International Orienteering Federation
  - www.orienteering.org/rules.htm
    - Course Planning Principles

- British Orienteering Guidelines
  - homepage.ntlworld.com/simon.errington/boftc/techcomm.htm
    - Environmental concerns, estimating course lengths, many other great references
Final Product

- Maps of each course (weather-protected)
- A few master maps
- Extra control descriptions
- Controls in the terrain in the proper place
- Water on the course
- Course planner notes in the meet information
Tools

- OCAD Version 8
- CONDES
- Color printers
- Photocopier
- Waterproof paper
The Basics: Preliminary Steps

- Choose a map
- Identify “best” areas of the map
- Choose suitable locations for
  - Assembly Area / Finish
  - Start
  - Parking
  - Beginner courses
- Obtain permissions
- Be aware of environmental issues
The Basics: Course shape

- Now you have your map & start/finish areas
- Identify “the best” parts of the map that you want to use
- Look for major features in the terrain that will affect route choice
- Make some excellent long legs
- Consider where water stations will be
- Add lots of changes in direction (figure 8 is good)
The Basics: Long Legs

- Provide excellent route choice
- Long legs often account for large time differences
- Build your courses around good long legs
- Look for obstructions (cliffs, lakes, valleys, etc)
- … and make a leg that crosses them
- Make a variety of good long legs
The Basics: Purpose for each leg

- Every leg must have a purpose
  - Map reading challenge
  - Route choice
  - Better point to start a good leg
  - Change of direction
  - Connect good areas / legs
  - Adding variety (3Ts)
Bringing it together

- Make draft courses
- Test
- Finalize courses, specify water stations
- Flag all control sites
- Map layout for each course
- Print maps for each course, master maps, control descriptions
Testing the courses

- Run it yourself or have others run it to judge
  - Winning time / length
  - Climb
  - Runability
  - Attacking control
  - Technical Difficulty
  - Physical Difficulty
Common mistakes: too much work

- Too much work for planner & helpers
  - Water controls too difficult to get to
  - Remote start/finish locations
  - More controls than necessary
Common mistakes: wrong process

- Beginning course planners often make a course by starting at the beginning and making the first leg, then the second, and so on. Tendency is to “sameness” of legs.
- Beginners often look for good sites to put a control, then join these control locations.
- Instead you should find good long legs and then combine them with shorter legs. The course will not be created in order 1,2,3…
Common Mistakes: boring course

- Lack of variety
  - Always the same type of problem
  - Always the same length of leg
  - Never any change in direction

- Remember to vary the 3Ts:
  - Terrain
  - Technique
  - Tempo
Common Mistakes: too easy

- Inappropriate challenge
  - Too easy for advanced or too tough for beginners
  - Too easy is more common
    - Catching feature before the control
    - Simple navigation
    - Dog legs
Common mistakes: boring shape

- Should have lots of changes in direction
- Consider “figure of eight” shape
Common mistakes: climb

- Avoid short uphill legs with no route choice
- Avoid unnecessary climb
- Make climbs interesting by setting long legs across the slope – this gives route choice and navigational challenge
Common Mistakes: on the edge

- Avoid control sites close to unbounded edges of the map
  - This invites people to run off the map
  - No way to relocate
  - Stay 100m away if possible, unless edge is bounded by road, stream, etc
Common Mistakes: no route choice

- Things that don’t necessarily provide route choice
  - Navigationally difficult leg
  - Left / right alternative
- Route choice comes from real alternatives
  - Safe or risky
  - Straight or around
  - Short or easy
Common Mistakes: Control sites

- Control site must be specific
- When using older maps, or maps you don’t know well, plan courses using “solid” features
  - Boulders, contours, other things that don’t change
  - Don’t use vegetation, one-line contour features, or anything else that you suspect is inaccurate
Interesting!

- Mistakes are most often made on:
  - First control
  - Second control
  - Second-to-last control

- Hmmm…. 
Psychology of Course Planning

- Be aware of orienteering psychology and set appropriate challenges…
  - For beginners, help them out perhaps
  - For advanced courses, challenge them more

- But don’t be “mean” or “devious”

- Fun, Fair, Challenging
Psychology: early controls

- At the Starting line, orienteers will be nervous, excited, adrenalin-charged.
  - They will **rush** decision making and navigation
  - Leading to mistakes on controls 1 & 2

- Will you take advantage of this?
Psychology: late controls

- At the 2\textsuperscript{nd}-to-last control orienteers will relax and lose concentration

- This is a good time to provide a challenging leg
Psychology: mental fatigue

- When orienteers are more tired they are likely to make mental mistakes
  - After a climb
  - Late in the course

- So give mental challenges at these times
Psychology: tempo

- Orienteers have a hard time changing Tempo (red light / green light)
  - Generally they will not slow down enough for detail terrain or to make an important route choice
  - At times they will be overly cautious and not go fast enough

- So provide many tempo changes
  - Detail navigation at bottom of hill (force them to slow down)
  - Short fast legs followed by long route choice leg
Psycholog: sad but true

- If they make lots of mistakes in a race, orienteers will complain about the map and especially about the course planning.
- If they have a good race they will believe they are excellent orienteers and that you are a “not-bad” course planner.
Course Planning: after the race

- Talk to the runners to see:
  - what skills they have
  - How they approached each leg
  - What they enjoyed most

- Especially talk to different age categories / different experience levels than you
- Especially talk to the kids
Course Planning as training

- “Pretend” course planning is excellent way to prepare for competitions
- Allows you to practice Route Choice
- Helps you become comfortable with the map and general nature of the terrain
Course Planning: Rewards

- The most fun aspect of organizing an event
- Lots of time in the field
- Excellent training for running in competitions
- Big thrill when people run your course and enjoy themselves
How to be a loved course planner

- Make people feel good about their orienteering, that they were given interesting challenges and that they solved them well.
  - Lots of variety (terrain, technique, tempo)
  - Minimize climb
  - Limit amount of thick forest and horrible swamp
  - Not too hard
  - Not too easy