

COURSE PLANNING WORKSHOP

Feb 2014

Essentials Of Course Planning

Reference: OA Foot Rules Appendix 2

- Courses should be correctly designed for the expected abilities (technical and physical) of participants
- Orienteering is running navigation, terrain needs to be runnable
- Fairness - Course planner needs to ensure that the contest is fair, all competitors face essentially the same conditions on every part of their course, i.e. eliminate the element of luck
- Competitor enjoyment - orienteers need to be satisfied with the courses they are given, course is suitable for the competitors
- The course planner needs to be fully acquainted with the terrain
- Courses should be set that normally fit competitors can run over most of the course set for their level of ability
- Protection of wildlife and the environment
- Consideration for spectators

Components of the Course

Reference: OA Foot Rules Appendix 2

- Start – mark by a control flag, course begins then
- Terrain
- Legs - fairness
- Controls – see later
- Climb - $< 4\%$
- Finish
- Elements of map reading
- Route choices
- Degree of Difficulty

Other References

- IOF Guidelines for Course Planning – World Class Events 2014 Version

Course Formats

Reference OA Foot Rules Appendix 8

- Long
- Middle
- Sprint
- Relay

Descriptions below are from view of Hard Navigation

Plus

- Night
- Street Park
- Score/Scatter

- MTBO – not discussed today

Long Distance Course Format

- Physically demanding
- Format emphasises route choice, including large scale route choice (splits competitors)
- Control is end point of long leg, may not in itself be difficult
- May include more technical sections characteristic of Middle Distance
- Element is long legs still requiring full concentration on map reading, e.g. 1.5 – 3 km on elite courses, 1 – 1.5 on shorter courses (ensure map reading and conc. still required)
- Don't start with sequence of short legs – following
- Test all orienteering techniques
- 1:10,000 and 1:15,000 scales

Middle Distance Course Format

- Profile is technical
- Emphasis on details navigation
- Requires constant concentration on map reading
- Shifts in running direction out from controls
- Shifts in speed through varied terrain types
- Small and medium scale route choice
- Controls themselves are technical
- Map scale is commonly 1:10,000 scale (map is a strict enlargement of a 1:15 000 scale map)

Sprint Distance Format

- Profile is high speed
- Commonly urban
- Tests ability to read complex maps and make route choice decisions and implement them at high speed
- Map scale is 1:5,000 or 1:4,000 scale, ISSOM map specification
- Controls are technically easy and should not set traps, aim is to test ability to choose and complete the best route
- But avoid areas so complex that they can't be interpreted at speed
- Out of bounds areas and features not to be crossed need to be considered in course planning, don't set legs that encourage these to be crossed

ISSOM symbols

Symbol	Colour	Meaning
	Black	Passable fence
	Black	Impassable fence
	Grey	Passable wall
	Black	Impassable wall
	Medium grey	Building – not to be entered
	Light grey	Canopy – may be passed under
	Black	Steps of a stairway
	Green/black	Impassable vegetation – not to be crossed
	Green/yellow	Forbidden access (as for “forest maps”)
	Green	Large tree (more than 0.5 m diameter)
	Green	Small tree (less than 0.5 m diameter) or bush

Relay Format

- Team competition
- Mixture of technical difficulties
- Elements of Middle and Long – route choice allows separation of runners
- Forking – but ensure fairness
- Last part of legs generally common
- Spectator friendly
- Enjoyable for competitors

Other Variations

Street – Park

- Elements of all formats depending on the map
- Route choice should be the primary focus with elements on Middle/Sprint if map permits
- Navigation limited to Very Easy to Moderate
- Out of Bounds and Un-crossable Features – don't encourage these to be crossed
- Traffic and Major Roads – minimise crossings
- Security of Control sites, but don't hide controls
- Friendly assembly area

Other Variations

Night Courses

- Long distance style but over shorter distance
- Safety considerations important, navigational standards reduced

Score/Scatter

- Format closest to Long
- Dependent on map areas

Navigational Standards

Summarised in OA Foot Rules Appendix 1

Hard – all A courses except 14 and under

Moderate – B Courses and M/W14

Easy – M/W12

Very Easy – M/W10

Some terrain will have up to Moderate only e.g. Street Park, Sprint

Planning Very Easy Courses

- Course must follow drawn linear features (tracks, fences, etc.) or physically easy flagged routes in open forest
- A control site is needed at every turning point and placed to lead competitor in the right direction
- Control markers must be visible on the approach side. Large obvious features, visible from and close (<25m) to the linear feature may also be used as control sites.
- Compass should not be needed to complete the course
- Can never be too easy – avoid DNFs
- May require many controls

Planning Easy Courses

- Control sites must be on or near drawn linear features (or use flagged cross country routes)
- But do not need to be at all turning points. This gives the opportunity to follow handrails or to cut across country.
- Short distances along large linear features that are not drawn (such as large gullies or well-defined spurs) may be included in the course but then catching features are essential.
- Control markers should be visible from the approach side by any reasonable route.
- Control sites introduce contours e.g. gully on a track
- Expectation that competitors can check control numbers

Planning Moderate Courses

- Course should have route choice
- Require big attack points near control sites
- Catching features less than 100m behind.
- Control sites may be fairly small point features and the control markers need not necessarily be visible from the attack point.
- Competitors should have basic contour recognition
- Avoid areas of complex detail
- Provide an orienteering challenge - but without allowing serious errors to occur

Hard Course Planning

General Principles

- Navigation should be as difficult as possible with small contour and point features as the preferred control sites (forest courses);
- there should be no handrails and no large attack points nearby.
- Route choice should be an important element of most legs (refer course formats).
- To be discussed further in the section on the “Structure of the Course’

Control Descriptions and Control Placement

References: Refer to OSA Web Site for links
IOF Control Descriptions, Australian Edition

Purpose - to give greater precision to the picture given by the map of the control feature and the location of the control flag in relation to this feature. However, a good control is found primarily by map reading.

Descriptions and codes can assist in this task, but should be kept as short and simple as is necessary to locate the control.

Note: Control descriptions should not be used to correct map errors.

Event Name							
Classes							
Course No	Course Length	Climb					
A	B	C	D	E	F	G	H
1							
2							
3							
4							
5							
6							
Distance to finish							
Marking of finish route							

IOF Descriptions -

Column A - Sequential numbers for no of controls on course

Column B - Control code

Column C - Which (of any similar) feature

Column D - The control feature

Column E - Details of Appearance

Column F - Size of Feature

Column G - Location of Marker

Column H - Any other Information

Control Description Example

IOF Event Example				
M45, M50, W21				
5		7.6 km		210 m
1	101			
2	212		1.0	
3	135			
4	246			
5	164			
○----- 120 ----->				
6	185			
7	178			
8	147		2.0	
9	149			
○----- 250 ----->⊙				

Condes. Octavian Droobers

Control Descriptions for IOF Event Example		
Classes M45, M50, W21		
Course number 5.	Length 7.6 km.	Height climb 210 m.
Start	Road, wall junction	
1	101	Narrow marsh bend
2	212	North western boulder, 1m high, east side
3	135	Between thickets
4	246	Middle depression, east part
5	164	Eastern ruin, west side
Follow taped route 120m away from control		
6	185	Stone wall, ruined, south east corner (outside)
7	178	Spur, north west foot
8	147	Upper cliff, 2m high
9	149	Path crossing
Follow taped route 250m from last control to finish		

Control Sites

- Controls are placed at features in the terrain that are marked on the map. This demands careful planning and checking to ensure fairness.
- It is particularly important that the map portrays the ground accurately in the vicinity of the controls, and that the direction and distances from all possible angles of approach are correct.
- Competitor should be able to see the control when they are at the described feature/position
- Value of a good leg is lost if the control is poorly placed leading to a treasure hunt and a searching pack of runners

Control Sites

- Don't try and make controls more difficult than the description suggests e.g. using a bush to "hide" a control in an open gully – reduces level of fairness as control visibility varies depending on approach direction
- Controls must not be sited on small features visible only from a short distance if there are no other supporting features on the map (esp. in green areas).
- Controls must not be sited where the visibility of the control flag for runners coming from different directions cannot be evaluated from the map or control description.
- Don't place controls in a maze of illegible detail or in very green areas
- Controls are not technically difficult because they are hidden
- Controls mark beginning and end of leg – also used for other purposes e.g. crossing points, water control, spectator points

Control Sites

- Competitors are more upset by issues with control sites than with quality of legs
- But don't spoil a good leg by an unsuitable control site (hidden, ambiguous, misplaced, misleading description) leading to unnecessary time loss

Control Sites – Rules and Guidelines

Fairness of Control Sites

It is necessary to choose control sites with great care and notably to avoid the 'acute angle' effect where incoming competitors can be led into the control by outgoing runners.

This is less applicable in sprint events

Proximity of Controls

Controls on different courses placed too close to one another can mislead runners who have navigated correctly to the control site.

Controls should not be sited within **30 m** of each other (**15 metres** for map scales of 1:5000 and 1:4000). Further, only when the control features are distinctly different in the terrain as well as on the map, should controls be placed closer than **60 metres** (**30 metres** for map scales of 1:5000 or 1:4000).

All distances are the straight line distance

Other Considerations

The Start

- Doesn't need to be at/near the Finish
- Consider Very Easy and Easy Courses
- Be prepared to have it away from the Finish/Assembly area if this improves your courses
- A remote Start is much better than a remote Finish
- An uphill walk to a start can help reduce climb on courses

The Finish

- Should be at the Assembly Area
- Do not have remote finishes unless there is absolutely no alternative

The Finish

- Should be at or close to assembly
- Improve spectator involvement even for minor events
- Avoid unmanned remote finishes except in exceptional circumstances e.g. no suitable parking or assembly on the map (e.g. Mack Creek for 2010 SA Champs but even this could have been improved)

Water on Courses

- Plan early – consider the course planner and organiser
- Consider accessibility when putting out water
- Spacing defined by the rules – “If the estimated winning time is more than 30 minutes, refreshments shall be available at least every 25 minutes at the estimated speed of the winner. Drinks shall be located at controls or compulsory crossing points”.
- Can add easy controls for water if logistically easier e.g. after a long route choice leg or technical section
- Consider the weather – put out water more frequently if required

Safety Considerations

- Safety of competitors
- Safety of officials especially course planner
 - During field check – notify others of plans, consider weather, working with others
- Event Planning
 - Identify hazards (bush and street-park are different)
 - Weather – hot, cold
 - Water
 - Plans for an emergency (Search & Rescue Plan, Communications, Emergency Services, Keys)
 - Appropriate course planning
 - Map boundaries

Safety Considerations

- Information for competitors
 - Standard information displayed at registration – safety bearing, course closure, event specific
 - Information on map – out of bounds, crossing points, dangerous areas and hazards
 - Repeat safety information at the start

Standard symbols for marking these features

- Out of bounds areas – if not printed on map, show by purple vertical lines, note that routes should not be shown crossing out of bounds areas
- Compulsory crossing points – shown by two purple arcs)(
- Dangerous areas – show in purple cross hatching
- Forbidden route – mark purple crosses along route e.g. a railway line

Determining Course Length

- Aim is to determine the course length to meet the expected winning time (refer to OSA Course Specifications)
- Difficult for courses that have a range of classes and expected abilities
- Course specification introduction has some reference data
- Previous events on the area also provide reference material
- Factors influencing relative run rates
 - Style of orienteering – long, middle, sprint
 - Navigation standard – hard, mod, easy, very easy (calculation for the last 3 is difficult, recommended distance may be more useful for Easy and Very Easy)
 - Terrain – open vs green, steepness, obstacles (small, large)
 - Level of competition, depth of field

Determining Course Length

Age Class Event Example

- Winning time for M60A is 50 mins
- Relative Speed to M21A for the class is 0.62
- M21A run rate is 5.1 min /km
- M60A course length = $50 / (5.1/0.62) = 6.07$ km
- i.e. winning time / mins per km for the age class
- Because multiple age classes are on one course, you will need to average the required distance for each class for that course
- For more physical terrain (steeper, rougher), older age classes become relatively slower to younger

Common Mistakes - Summary

- No route choice on the more difficult courses
- Course lacks variety
- Course unnecessarily physical for age groups concerned - do not equate technical and physical difficulty
- Older age groups like a technical challenge but not overdo the physical challenge
- Climb is excessive
- Lost distance - no navigation needed over most of the legs
- Dog legs are present or different courses approach the same control in opposite directions
- Control site confusing because of errors in map, unmapped details (what is in the circle must be correct)
- Control description incomplete
- Control flag is hidden to attempt to make control site harder
- Course has not been checked for running feasibility or hazards
- Misplaced controls, incorrect control number = the death of an otherwise good course
- Map scale was wrong in setup so course distance is wrong
- Degree of navigational difficulty is not correct
- Others ??

OSA Guidelines

Course Specifications

- Available on the OSA Web site at
- <http://sa.orienteering.asn.au/admin/OASAGuidelinesPolicies/>
- Cover the required courses for each type of event. For OY and above, defines the age classes for each course

Also on this page

- Safety Guidelines
- Link to OA Foot Orienteering rules
- Link to Control Specification document