What makes a good Sprint course?

David May
SLOW/IOF Foot-O Commission

Lausanne - July 2012
My background

- Member of FOC whilst Sprint was developed
- Introduced Sprint into WMOC
- WMOC SEA for 2008 (first Sprint competition)
- WMOC SEA for 2012
- WMOC SEA for 2013
- GBR – Sprint officially included in JK in 2008
- GBR – Planned JK Sprint in 2008
IOF Sprint History

• Today’s three individual disciplines developed over past 10-12 years
• Need for distinctly different disciplines
• FOC: “IOF Sprint Race Criteria” document (May 2001)
• WOC 2001 – Sprint introduced
• Appendix 6 in today’s Competition Rules describes all three disciplines
Sprint features
IOF Competition Rules – Appendix 6

• Winning Time 12 – 15 minutes
• Map – scale is 1:5000/4000 plus 2.5m VI
• Map – ISSOM and not ISOM
• Terrain – predominantly park or urban maybe with some (fast runnable) forest
• Start interval 1 minute
• Controls are technically easy but route choice is difficult requiring high concentration
• Running is “very high speed”
Sprint features

IOF Competition Rules – Appendix 6

• Winning Time 12 – 15 minutes
• Map – scale is 1:5000/4000 plus 2.5m VI
• Map – ISSOM and not ISOM
• Terrain – predominantly park or urban maybe with some (fast runnable) forest
• Start interval 1 minute
• Controls are technically easy but route choice is difficult requiring high concentration
• Running is “very high speed”
What makes a good course?

1 - Terrain selection

- “predominantly park or urban maybe with some (fast runnable) forest”
  - Sprint should be distinctly different from Middle or Long

- Major IOF events in past 10 years have not always obeyed the terrain criteria

- (personal view) It should be possible for the WOC Sprint winner never to have orienteered in a forest ...

Lausanne - July 2012
Terrain example 1

2008 – Great Britain

British Sprint Champs

Classic campus terrain
Judging Terrain

• Concept of “granularity”
  – or fineness of detail

• Example of large granularity:
  – Only simple route choices possible

• Example of small granularity:
  – Frequent direction changes now possible
Granularity examples

Large granularity – still some interest however

Small granularity – lots of detail provides many good route choices
Terrain example 2

Classic old town terrain

Mixed granularity with complex detail in castle

WMOC 2008 – Portugal

Sprint Qualifier
Terrain example 3

WOC 2005 – Japan
Sprint Qualification race
Does not meet terrain criteria at all!
What makes a good course? 2 – Route Choice

• “Controls are technically easy but route choice is difficult requiring high concentration”

• Route choice is the key to good Sprint courses
  • Ideally, every leg should have challenging route choice

• How to assess this …
Course approval

• 65 for WMOC 2008
• 73 for WMOC 2012

• No usual controller feedback

• Need tool to aid this task ...
# Sprint Course Assessment

- 4 point scale for each leg

<table>
<thead>
<tr>
<th>Points</th>
<th>Urban</th>
<th>Non Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lausanne - July 2012
Sprint Course Assessment
- 4 point scale for each leg

<table>
<thead>
<tr>
<th>Points</th>
<th>Urban</th>
<th>Non Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Little or no route choice</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lausanne - July 2012
**Sprint Course Assessment**

- 4 point scale for each leg

<table>
<thead>
<tr>
<th>Points</th>
<th>Urban</th>
<th>Non Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Little or no route choice</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Two similar routes, easy to identify</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lausanne - July 2012
## Sprint Course Assessment

- 4 point scale for each leg

<table>
<thead>
<tr>
<th>Points</th>
<th>Urban</th>
<th>Non Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Little or no route choice</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Two similar routes, easy to identify</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Several possible routes, or one longer route which is complex to execute – thinking needed</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lausanne - July 2012
## Sprint Course Assessment
- 4 point scale for each leg

<table>
<thead>
<tr>
<th>Points</th>
<th>Urban</th>
<th>Non Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Little or no route choice</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Two similar routes, easy to identify</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Several possible routes, or one longer route which is complex to execute – thinking needed</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Complex route choice/detailed navigation needed – many decision points</td>
<td></td>
</tr>
</tbody>
</table>

Lausanne - July 2012
Sprint Course Assessment
- 4 point scale for each leg

<table>
<thead>
<tr>
<th>Points</th>
<th>Urban</th>
<th>Non Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Little or no route choice</td>
<td>Simple leg with minimal navigation needed</td>
</tr>
<tr>
<td>1</td>
<td>Two similar routes, easy to identify</td>
<td>Easy route choice leg with little technical detail</td>
</tr>
<tr>
<td>2</td>
<td>Several possible routes, or one longer route which is complex to execute – thinking needed</td>
<td>Route choices not immediately obvious and/or some technical challenge</td>
</tr>
<tr>
<td>3</td>
<td>Complex route choice/detailed navigation needed – many decision points</td>
<td>Complex route choice/detailed navigation needed</td>
</tr>
</tbody>
</table>
Quality 0 example

12 - 13

“Little or no route choice”
Quality 1 example

9 - 10

“Two similar routes, easy to identify”

This leg is at the top end of the “1” scale
Quality 2 examples

13 – 14 and 14 - 15

“Several possible routes, or one longer route which is complex to execute – thinking needed”
Quality 3 example

Start - 1

“Complex route choice/detailed navigation needed – many decision points”
Rate this course – JK Sprint 2008

Total = 28
Rate this course
– WMOC Final 2012
Total = 15
WOC 2005 – Japan
Men’s Sprint Final race

Low score because

• Too few direction changes

• Too few control sites

• Long sections where little or no thinking is needed
  i.e. no “high concentration”

• Terrain not suitable for Sprint!
So, what makes a good Sprint course?

• Good terrain – small “granularity”
• Planning encourages high concentration
  – Maximise route choices in each leg
  – Minimise the ease of seeing best route choice
  – Don’t have too few control points
  – Maximise direction changes
  – Avoid long legs unless they have very high quality
• Next, some practical tips …
Maximising route choice quality

- Avoid legs with no realistic route choice:
  - Clockwise route = 63 m
  - Anticlockwise route = 91 m
  - Difference is obvious to runners who will take the clockwise route, especially as they are likely to be arriving at 1 from the west and will carry on the same direction
Maximising route choice quality 2

• Instead, move 2 - now inside wall corner:

  • Clockwise route = 91 m
  • Anticlockwise route = 77 m
  • Difference not so obvious to runners, especially as best route involves 145° direction change at 1
  • “The most obvious way out from a control should not necessarily be the most favourable one” - IOF
Long legs
- are boring if there’s not much navigation

• This leg gets a score of 2 – OK for a short leg
• Very poor for a long leg – far too much time with little or no thinking
Maximise changes of direction

Crossovers give:

- Big changes of direction
- Greater use of small areas/best parts of terrain

But:

- Increased chance of competitor collision (especially for WMOC)!
Control separations

Can be 15m minimum (or 30m if similar features)
Close controls

- ISSOM mapping allows very precise navigation
- Greater density of controls in Sprint (esp for WMOC!)
- Encourage skill of deciding *which* flag is correct ...
SUMMARY – Good courses give maximum mental challenge!

• e.g. JK08 M21E – 20 controls in 2.7 km
  – Average leg length = 130 m
  – Approx 5 to 7 decision points per leg, or a decision point every 20 to 30 m! (6 to 9 s at elite pace!)

• Example from the WMOC 2008 Final next …
Terrain suitability

Should the IOF EA approve this for a major IOF Sprint race?

Granularity large

Too much forest – green in parts too

Sand dunes

Old town very nice and with small granularity – but only a small area
Terrain suitability

Design a course shape for, say, a 2.0 to 2.5km course.

Decide where the Start should be but use the marked Finish.
M50A WMOC Sprint Final

- 21 controls in 2.3 km
- 4/5 different terrain types
- 3-4 – good use of “large grain” terrain
- 10 controls in runnable forest/dunes
- Challenging finish in “small grain” old town
M50A leg 3-4

- Unpromising “large grain” terrain - Big blocks with no ways through
- Careful positioning of controls creates a good route choice leg
- Red (3:57)
- Purple (3:31)
Summary

• Sprint is still evolving
  – many planners lack wide experience
  – many also don’t understand Sprint philosophy
  – IOF guidance will help

• Terrain selection critical

• Maximise mental challenge
  – use leg quality tool to test the planning
Bonus slide

• Q & A

Or

• Analysis of 2012 Post Finance Sprint on next slide ...
Points total thus effectively <19

WT = 16:22, thus at least 10% too long
Red route is 50m shorter but has 5m more climb – balances out!