

FOC 1 – 13 / Item 3 / 17 January 2012

WOC qualification models

The Foot Orienteering Commission, in conjunction with a Reference Group appointed by Council, has been tasked to develop a proposal for WOC qualification and starting order once qualification races are abolished for the middle and long distance (in 2014). Guidance given by the 2012 General Assembly, and the October 2012 Council meeting, is as follows:

1. How to distribute additional starting places
 - Places should be awarded to nations, not individuals
 - All nations are guaranteed one starting place in the long and middle finals
 - The maximum number of places that can be given to a nation shall be three.
 - A personal place for the reigning champion will come in addition to this.
2. How to decide starting orders and set up the start field
 - The sizes of start fields should be in the magnitude of 70-80 runners
 - The strongest athletes ("favorites") shall start in the last part of the field ("red group" etc.)
 - The model should consider start intervals 2 min (long) and 1.30 min (middle)
 - Men and women heats shall start so that demands from television are met concerning avoiding blending of runners in TV-pictures
3. How to measure nation's strength
 - The measurement shall solely consider performance at WOC.
 - The results from more than one WOC (last WOC) shall be taken into consideration, ideally last 2-3 WOC's
 - It should be considered to calculate separate rankings for middle and long
 - Results in gender relay should be part of calculation of places for long and middle final
 - Results in sprint should not be part of calculation for places in long and middle final
 - The effects of separate or combined rankings should be analysed and demonstrated using simulations of the proposed model(s)
 - The border situations (the conditions for climbing from 1 to 2 places and from 2 to 3 places) should be analysed and demonstrated using simulations of the proposed model(s)

This paper will address points 1 and 3. Starting order will be dealt with in a companion paper.

The options canvassed in this paper generally follow this guidance, although some options are canvassed which are not strictly in accordance with one or more of the points above, for Council to accept or reject as they see fit.

Overarching strategic objectives of a WOC qualification system

This paper is developed on the basis of the following being the most important strategic objectives of a WOC qualification system:

- To maximise the number of the world's best orienteers participating in the WOC final.
- To maximise the number of countries, and the geographical spread of countries, participating at WOC.

It is not necessarily possible to optimise both objectives but any system which is adopted should achieve at least acceptable outcomes for both. (To give two extremes: a system in which the best 50 in the World Ranking qualified, with no limit on numbers per country, would give close to the strongest possible field but would mean few or no participants from outside Europe, while a system with one runner per country, regardless of strength, would mean that a number of potential medallists from strong countries would not be able to participate).

The qualification system should also avoid introducing any perverse incentives – for example, a system based on average result per runner may encourage a country with one strong runner but limited depth to enter only that runner, and not take up their other places.

How many places do we have to work with?

Guidance from Council is that the target field size is 70-80 competitors.

In 2012, there were 49 countries with participants in the men's middle distance and 47 in the long; for women the numbers were 36 and 37 respectively. If we assume similar numbers in future years, one participant per country plus the World Champion's personal place would account for about 50 men and 40 women. This would give us about 30 'additional' places to distribute, with some countries receiving two and some one.

This paper is drafted on the basis that the total number of additional places to be allocated is 30, but the principles discussed are not strongly dependent on the exact number.

Definitions

For the purposes of this paper, countries will be described as Division 1 (those countries with three runners), Division 2 (those with two runners) and Division 3 (those with one runner). The allocation of countries to divisions may differ between men and women, and may also differ (depending on options adopted) between the middle and long distance.

Distribution of additional places

There are a number of ways in which 30 additional places can be distributed. The smaller the number of countries with two additional places, the larger the number of countries which can be allocated one additional place, for example:

- 6 countries with two additional places (three in total), 18 with one additional place (two in total). Total of 24 countries with two or three runners.
- 8 countries with two additional places, 14 with one. 22 countries with two or three runners.

- 10 countries with two additional places, 10 with one. 20 countries with two or three runners.
- 12 countries with two additional places, 6 with one. 18 countries with two or three runners.

A relevant consideration here is that a country with only one runner in the long distance and one runner in the middle may be less likely to send a relay team, as they will have at least one runner whose only forest race would be the relay. This suggests that participation in the relay will be maximised if the number of countries with at least two runners in the individual races is maximised (something which would come at the expense of fewer countries having three runners).

One possible benchmark for numbers could be:

- The number of countries with three places should be approximately the average number of countries which qualify three (or four) runners into each WOC final now, and/or the number of countries which average more than 2.0 finalists per year over the long term.
- The number of countries with two or three places should be approximately the average number of countries represented in a WOC final now.

For the former benchmark, the 2008-2012 average number of countries with three or more qualifiers in a middle/long final ranges from 6.6 (men long) to 8.2 (women middle), while the number of countries with an average of more than 2.0 finalists per year for 2008-2012 is 8 for men middle and 9 for the other three.

For the latter benchmark, the average number of countries represented in each WOC middle or long final ranges from 22.2 (men and women middle) to 23.4 (men long).

This would suggest that, if these benchmarks were indeed adopted, 8 countries would be allocated two additional places (three total), and 14 more would be allocated one additional place (two total).

Initial seeding and ongoing operation of a qualification system

Different issues apply to the first use of a qualification system for WOC, and its ongoing operation.

In the first use of the system (assumed to be in 2014), the previous WOC results will all be drawn from WOC events in which all countries have had the opportunity to enter three runners in qualification races. This means that all countries have an equal opportunity to score points, whichever system is adopted.

In the ongoing operation of a qualification system, some or all of the results used for qualification will be drawn from events in which Division 1, Division 2 and Division 3 countries have different numbers of runners. In turn, this means that Division 1 countries potentially have a greater opportunity to score points for qualification than Division 2 and 3 countries – the extent to which this happens depends on the exact point-scoring system adopted, and the weight given to the relay (where all countries have one team). In turn this will tend to entrench those teams which are in Division 1 in 2014, and may create a “closed shop”.

The issue of mobility between divisions, and how a qualification system might deal with this, is addressed in more detail later in this paper. For now, we note that a qualification system which is fair for initial seeding of the system may not be fair for its ongoing operation, and hence it may be necessary to use a different system for initial set-up of

the qualification scheme, in 2014, to that which is used for ongoing operation from 2015 onwards.

How might a system be set up – from scratch each time, or promotion / relegation?

At least two conceptual models can be considered of how a system might operate:

- A system which operates from scratch each time, in which the best X countries (based on WOC results up to the current year) are in Division 1 for the following year, the next Y countries are in Division 2, and the remainder in Division 3 (for some values of X and Y).
- A system in which a set number of countries move up and down between divisions each year – with the worst-performing X teams in Division 1 being replaced by the best-performing X teams in Division 2 (and similarly for Division 2/3) – equivalent to the promotion/relegation system used in football.

The first type of system would have to be used the first time the WOC qualification scheme is used, as there is no prior allocation of divisions to use for promotion/relegation. It is also historically the type of system which has been used in past cases where previous WOC results have been used for qualification for something (World Games, also the WOC long distance in 1991 and 1993).

As noted above, the first type of system, while it has been used historically, may suffer from a lack of mobility, with countries making an improvement finding it difficult to move up through the divisions because they have fewer opportunities to score points than those who already have three runners. In a promotion/relegation system all countries in a given division have the same opportunities to score points in any given year, but not necessarily over more than one year if there is movement between divisions each year.

Elements to consider in a scoring system

Whichever type of system is adopted, a method will need to be found for allocating points. Key questions here include:

- How much weight the system should give to a single outstanding performance, and how much weight it should give to depth of performances through a team. (To think about the issues here, consider a country with one very good performer but then a big drop to the second-best; on the one hand, a system which weights that good performer highly may bring weak team-mates into the field at the expense of good people from other countries, but on the other hand, if an outstanding individual cannot score enough points on their own to qualify anyone else, that may be a barrier to elite development in that country as others see little hope of ever reaching a WOC team). It would seem desirable that qualification for a higher division should require more than one result (although the multiple results could come from the same person). A useful indicator here is the number of results which contribute to the pointscore of the last team to qualify for a division.
- How far down through the field points should extend. (Currently the points system used for World Cup, and for World Games qualification, extends to 40th place, but this may not be enough to produce useful results at the Division 2/3 boundary, as countries ranked around 20th-25th may well have no-one in the top 40).
- How the relay should be scored relative to individual performances. (There is an argument that the relay should have a high weight since, as the only event where all countries will have the same opportunity to enter after 2014, it provides the fairest point of comparison. On the other hand, a highly weighted relay makes a relay disqualification a potentially catastrophic result for a country, especially if

the points system is one in which last place receives a significant number of points. Also, it can be argued that the difference between, say, 5th and 15th in a relay is more significant, in the context of national ranking, than it is in an individual event and the points should reflect this).

The same system does not necessarily have to be used for the initial seeding of the system as for ongoing operation. (One difference which will have to be taken into account is that, if the points system goes beyond 45th, some method will need to be found to allocate points to those who fail to qualify in qualification races).

We note, in this discussion, that Council's mandate is to consider previous WOC results only, which excludes the possibility of using World Ranking federation league tables (or similar), a method which had been recommended in previous FOC proposals (although not all the reasons for that recommendation still hold).

Which events should be used, and for how many years?

Council guidance is that results from more than one previous WOC should be used. This introduces more stability to the system and makes it less likely that qualification will be influenced by a single anomalous result (either good or bad).

On the other hand, it is not really consistent with a promotion/relegation system unless the timespan over which results are considered is the same as the frequency of changes to divisions (e.g. promoting/relegating countries every two years on the basis of the previous two years' results). The reason for this is that, if promotion/relegation happens every year but results from the previous two years are used (for example), a newly promoted country (which is likely in any case to be towards the weaker end of the the division) will have had fewer runners than the countries it is competing against in the second-last year, and therefore be at elevated risk of being immediately relegated again.

Council guidance is also to consider separate qualification for middle and long. The major advantage of this is that it means that a country with particular strength in one format is not disadvantaged in qualifying runners for that format by weaker performances in the other format. On the other hand, by reducing the sample size of results to draw from, it increases the potential influence of single anomalous results. It would also need to be considered whether the relay is used in qualification for the middle, the long or both, and at what weight.

(In practice, few countries have consistent strength or weakness in either the middle or long relative to the other. There are only two countries whose 2008-2012 average final representation differs by 1.0 or more between the middle and the long – the Hungarian women (1.8 long, 0.8 middle) and the French men (2.6 long, 3.6 middle), and the latter is largely explained by personal places won by Thierry Gueorgiou. Specialist countries are more common in the sprint, where the Chinese women have an average of 2.2 qualifiers, compared with 0.8 for the long and 0.4 for the middle).

An issue which needs to be considered in the initial seeding of the system is retrospectivity. If 2012 (or 2011) results are used in addition to 2013 results for determining 2014 qualification, there is a risk that some countries will contend that they would have made different decisions for WOC 2011/12 (e.g. sending larger teams) had they known the results would be used for future qualification. We put a proposal using two years in this paper but note that the option of using only one year is open to Council should they believe that the retrospective aspect of the proposal is not acceptable.

Outcomes of simulations of various systems

A large number of simulations have been run, using 2008-10 results for the initial seeding of a national ranking system, then using those rankings to construct a notional set of 2011-12 results which include 3 runners from only the highest-ranked nations (and 2 runners for the next highest-ranked). Full details are given in the 'Notes' sheet in the attached spreadsheet. Combinations of the following have been used:

- Three different pointscore systems – one giving points to the top 30 individuals and top 12 relay teams, plus points for participation ("Haldna"), one giving points to the top 40 individuals and top 20 relay teams ("World Cup") and one giving points to the top 60 individuals and top 30 relay teams ("Trewin").
- Using 2 years or 3 years of previous results to set up the system.
- Using 1 year or 2 years of results for the ongoing operation of the system.
- Combining long and middle distance results, or using them separately.

In the simulations, it is assumed that there are 8 countries in Division 1 and 14 in Division 2.

Key points to emerge from the simulations are as follows:

- The exact method used to set up the system has only a modest impact at the Division 1/Division 2 boundary, but has a much larger impact at the Division 2/Division 3 boundary, especially for the women. There are only 2 countries (GBR and UKR) whose status in men's Division 1 or Division 2 depends on the method used, but 13 different countries are in women's Division 2 for some methods and Division 3 for others.
- Pointscore systems which only extend to the top 30 do not adequately classify countries at the Division 2/3 boundary, and systems based on the top 40 are marginal. In some simulations, fewer than 22 countries scored any points for placings with their ranking based solely on 'participation points'.
- In systems based on the top 60, the 22nd-ranked country has scores drawn from between 3 and 13 results, providing a reasonable depth of performance. While 3 years provides more depth than 2 for the initial seeding of the system, and 2 more depth than 1 for its ongoing operation, the shorter periods would still provide an acceptable result in this respect.
- Mobility between the divisions is limited without a promotion/relegation system. No simulation has any movement between women's Division 1 and Division 2 at the end of the 2011-12 period. Most simulations have 1 or 2 countries moving between men's Division 1 and Division 2, and between men's Division 2 and Division 3, with 2-4 countries moving between women's Division 2 and Division 3.

Regional championships

While it does not form part of the Council guidance, for completeness the possibility of making some limited use of Regional Championships is noted here. Options for doing so would include:

- (a) A personal place for the Regional Champion at the WOC following the Regional Championship (with current timing, even years for Europe, odd years for North America, Asia, South America and Oceania).
- (b) An additional national place for the country of the Regional Champion.
- (c) An additional national place for the country of the Regional Champion, if they are in Division 2 or 3 (i.e. they do not already have three runners qualified).

Any of these options would involve adding on average 2-3 runners to the field in any given year (fewer in the case of option (c) if the Regional Champion is from a Division 1 country), and would potentially raise the profile of Regional Championships, especially outside Europe. There is some concern that the use of the European Championships could give already strong countries further representation; the proposal addresses this by imposing an absolute limit of 4 competitors per country (i.e. if a country has both a Regional Champion and a (different) World Champion, they would only have 2 additional places, not 3).

Should there be any minimum standard for participation?

The Council proposals, as they currently stand, guarantee every country a minimum of one place. It is likely that this means that the very weakest competitors in the field will be competitors who have little or no chance of finishing inside the time limit as expressed in current rules.

This raises the question of whether there should be any attempt made to impose a basic minimum standard on competitors. If such a minimum standard is imposed, it should be at a 'basic competence' level – for example, having achieved, at least once during their career, a World Ranking score of 500 or better (this could be achieved as late as the WOC sprint qualification).

Another item which should be considered, although it does not fall strictly within the brief of this working group, is increasing the WOC time limit. With the mooted field size and start interval, the time limit could be extended substantially (e.g. to 4 hours for the long and 2 hours for the middle) without affecting the 'event closure' time, as 4 hours/2 hours after the first start would still expire before the last starter finished.

Some initial conclusions

Some broad conclusions, which emerge from the simulations carried out, and from initial discussions in FOC, include:

- The broader strategic goals to be met through a WOC qualification system (including maximising relay participation) appear to be best met by having a relatively small number of countries with 3 runners, and a relatively large number with 2 runners.
- The pointscore system to be used needs to extend to the top 40 individuals at a minimum, and preferably the top 50-60, in order to adequately classify teams at the Division 2/Division 3 boundary.
- As there is little evidence of countries systematically specialising in either the middle or the long distance, the justification for operating separate qualification systems for the two does not appear to be strong, and may not outweigh the disadvantage of a smaller sample of results making qualification potentially more sensitive to a single anomalous result (especially at the Division 2/Division 3 boundary).
- Providing that the pointscore system extends sufficiently deep into the field, there appears to be little advantage in having a qualification system which extends over 3 years (rather than 2).
- The simulations indicate that mobility between divisions is limited once a qualification system is established. If greater mobility is desired then options such as a promotion/relegation system, with a fixed number of countries moving between divisions each year, should be considered.

FOC's proposal for WOC qualification

The Foot Orienteering Commission proposes the following model for WOC qualification:

1. Nations ranked 1-8 in the initial set-up to have a base allocation of 3 runners (Division 1), and nations ranked 9-22 to have 2 runners (Division 2). Other countries (Division 3) to have 1 runner, subject to clause 7 below. Countries will be ranked separately for men and women but men and women will have the same number of countries in each division.
2. The initial set-up of the system to use results from the preceding 2 years (2012 and 2013), with the same pointscore to be used for long and middle.
3. At the end of each year, nations moved between divisions as follows, based on points from the preceding two years:
 - The highest-scoring country from Division 2 promoted to Division 1 for the following year
 - The lowest-scoring country from Division 1 relegated to Division 2 for the following year
 - 2 highest-scoring countries from Division 3 promoted to Division 2 for the following year
 - 2 lowest-scoring countries from Division 2 relegated to Division 3 for the following year

The number of countries listed above for promotion/relegation would be a minimum. If a country outside the automatically promoted group outscores a country outside the automatically promoted group – despite having fewer runners to earn points (e.g. if the 2nd highest-scoring country in Division 2 outscores the 2nd lowest-scoring country in Division 1) – those countries would also exchange divisions.

4. The pointscore system for both (2) and (3) be as follows:
 - Individual: 120 for 1st place, 100 for 2nd, 80 for 3rd, 70-65-60-57-55-53-51 for positions 4-10, then 50-49-...-1 for positions 11-60. In the initial set-up of the system when qualification races are still in use, places 16-20 in the qualification races would earn 15-12-9-6-3, and those who qualify for the final but do not record a result in the final would receive the points for last place in the final (normally 16).
 - Relay: 240 for 1st place, 160 for 2nd, 130 for 3rd, 114 for 4th, 106 for 5th, then 100-96-...-8-4 for positions 6-30.

If a country has more runners than it would be entitled to from its divisional status alone (through personal places for World or Regional Champions, or through being a host country), only its best 3 (2,1) runners should score points if the country is in Division 1 (2 or 3 respectively).

5. The World Champion in the distance should have an additional, personal place, while the Regional Champions in the distance should also have additional, personal places at the next World Championship after that Regional Championship.
6. Regardless of the division in which they are currently placed, the host country should be allocated 3 places.
7. The ability of division 3 countries to start 1 runner in the final should be conditional on that runner having achieved a World Ranking score of at least 500 points at least once in their career prior to the WOC event (this could occur at earlier events in the same WOC, e.g. the Sprint Qualification).

*This version created and finalised by Blair Trewin
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