



GB Climbing

Boulder | Lead | Speed

2019 BMC National Ranking System: Youth and Junior

1. Rankings Research

- 1.1 The objective of this research was to find and highlight the ways available to create a ranking system; to allow the creation of a ranking system for youth athletes that can be used to give an insight into how they compare against others in their category, and which can be used by the BMC to assist in selection for the GB National Development Squad (GBNDS).
- 1.2 We examine the current methods used for ranking by IFCS for senior and youth athletes, make some observations and comment on their suitability with respect to BMC youth competitions.
- 1.3 IFSC Senior Rankings
 - 1.3.1 This is based on the IFSC rules which can be found at [https://www.digitalrock.de/CUWR_rules.php]
 - 1.3.2 Separate rankings are created for each gender and discipline.
 - 1.3.3 A world ranking table is maintained, with current rankings of athletes in that discipline.
 - 1.3.4 At each competition, a field factor is used to quantify the quality of the field attending that competition, based on their world ranking the day before the competition.
 - 1.3.4.1 The field factor is calculated using a slightly adjusted set of ranking points (referred to as the WR-table points). The WR-table points associated with each rank position are the normal IFSC competition rank points, plus 15 points. E.g. 115 points instead of 100 for the 1st place, 95 points instead of 80 for 2nd place, etc. It is not explained why this is done. It may be to avoid some mathematical end-case, but the net impact is to change the scaling of the field factor a little. The details of why do not matter for this discussion.
 - 1.3.4.2 The field factor is calculated as the total WR-table points of the field attending the competition, divided by the total WR-table points for the top 30 ranks, and will be a value between 0 and 1.
 - 1.3.4.3 Example: At a competition, everyone in the top 30 world ranking attends, except for the 1st, 2nd and 30th ranked athletes. The total possible number of WR-table points is $1268 = ((100+15) + (80+15) + (65+15) + \dots + (1+15))$. The WR-tables points for this competition will be 1268 minus the WR-table points associated with the 1st, 2nd and 30th ranked athletes who are not in attendance. $1268 - (100+15) - (80+15) - (1+15) = 1042$. So the field factor for the competition is $1042/1268 = 0.82$.

- 1.3.5 From the results of the competition, the field factor weighted rank points from the competition are assigned to each athlete. The winner would receive field-factor * 100 points, 2nd place receives field-factor * 80 points etc.
- 1.3.5.1 In the example above with a field factor of 0.82, the athlete winning this competition would receive $0.82 * 100 = 82$ points instead of the unweighted 100 points, 2nd place received $0.82 * 80 = 65.6$ points instead of 80 etc.
- 1.3.6 The World ranking table is re-calculated including the points from the new competition. The rankings are determined by the total points from all competitions over the last 12 months.

1.4 IFSC Youth Rankings

- 1.4.1 The IFSC does not currently use field factor for the youth rankings.
- 1.4.2 The current ranking system description below is based on observation of the ranking tables on the IFSC website where the option at the bottom of the page "calculation of this ranking" has been selected. This can be found at [\[http://www.ifsc-climbing.org/index.php/world-competition#!type=ranking&cat=80\]](http://www.ifsc-climbing.org/index.php/world-competition#!type=ranking&cat=80)

1.4.3 Youth World Rankings

- 1.4.3.1 Although described as world rankings, these only include results from the European competitions (European Youth Cup's plus the European Youth Championships). The world ranking is simply the sum of all unweighted rank points from these competitions.

World Ranking: female youth B boulder
 As of 31.12.2018 after
 European Youth Championships (B) - Brussels (BEL) 2018 (31.08.2018)

Rank	NAME	Nation	Points	EYCH_Brussels_18 31.08.2018	Sofia 21.07.2018	EYC_NED_18 02.06.2018	EYC_POR_18 05.05.2018	EYC_Graz_18 28.04.2018
1	MEIGNAN	Nalle	FRA	400.00	1. 100.00	1. 100.00	1. 100.00	1. 100.00
2	DOUADY	Luce	FRA	290.00	4. 55.00	1. 100.00	2. 80.00	4. 55.00
3	LOTZ	Julia	AUT	276.00	2. 80.00		5. 51.00	3. 65.00
4	D'ADDARIO	Adelaide	ITA	241.00	5. 51.00	2. 80.00	6. 47.00	9. 37.00
5	LEITNER	Stephanie	AUT	191.00	8. 40.00		2. 80.00	8. 40.00
6	GRELLIER	Nina	FRA	181.00	16. 20.00	4. 55.00		4. 55.00
7	KODRA	Dominika	SLO	179.00	7. 43.00	6. 47.00	15. 22.00	7. 43.00
8	TARKUS	Lucija	SLO	153.00	6. 47.00		4. 55.00	5. 51.00
9	DEBEVEC	Betka	SLO	149.00	3. 65.00		9. 37.00	
10	FAJFAR	Letija	SLO	142.00	9. 37.00		8. 40.00	3. 65.00
11	BRKIĆ	Lucija	CRO	137.00	14. 24.00	5. 51.00	13. 26.00	18. 16.00
12	DAL ZOTTO	Caterina	ITA	127.00	27. 4.00	11. 31.00	23. 8.00	6. 47.00
13	CORNELY	Lili	GER	113.00	19. 14.00	21. 10.00	14. 24.00	11. 31.00

1.4.4 European Youth Cup Rankings

- 1.4.4.1 The EYC rankings include the best three results from the four EYCs in the category and discipline.

European Youth Cup 2018: female youth B boulder
As of 31.12.2018 after
European Youth Cup (B) - Sofia (BUL) 2018 (21.07.2018)

Rank	NAME		Nation	Points	Sofia 21.07.2018	EYC_NED_18 02.06.2018	EYC_POR_18 05.05.2018	EYC_Graz_18 28.04.2018
1	MEIGNAN	Naile	FRA	300.00		1. 100.00	1. 100.00	1. 100.00
2	DOUADY	Luce	FRA	235.00	1. 100.00		2. 80.00	4. 55.00
3	LOTZ	Julia	AUT	196.00		5. 51.00	3. 65.00	2. 80.00
4	D'ADDARIO	Adelaide	ITA	164.00	2. 80.00	6. 47.00	9. 37.00	13. (26.00)
5	GRELLIER	Nina	FRA	161.00	4. 55.00		4. 55.00	5. 51.00
6	LEITNER	Stephanie	AUT	151.00		2. 80.00	8. 40.00	11. 31.00
7	DAL ZOTTO	Caterina	ITA	115.00	11. 31.00	23. (8.00)	6. 47.00	9. 37.00
8	KODRA	Dominika	SLO	114.00	6. 47.00	15. (22.00)	7. 43.00	14. 24.00
9	TARKUS	Lucija	SLO	106.00		4. 55.00	5. 51.00	
10	FAJFAR	Letija	SLO	105.00		8. 40.00		3. 65.00

- 1.4.5 In the 2019 season there are only three EYC boulder competitions, and it is not clear at this stage if the rankings will be based on best two from three results, or all three results.
- 1.4.6 In these ranking systems, the rankings are updated during the season after each competition. It is not clear at the time of writing whether the ranking includes all eligible competitions over the previous 12 months and so depending on scheduling, may include more or fewer competitions over time, or if the oldest competition is always replaced by the newest as they occur.
- 1.4.7 Regardless of which of these methods is used, as the season progresses, athletes who are now competing in the category above gradually drop down the rankings as their competition points from the previous season's results drop off the time range, while new athletes in the category gradually move up the rankings as their results from the current season are included. By the end of the season, only results from the current season are included.

2. Rankings Research Conclusions

2.1 IFSC Senior Rankings

- 2.1.1 The senior rankings incorporate a measure of the strength of field for each competition and a similar system would assign less points to a competition were some of the top-ranked athletes missing.
- 2.1.2 The senior rankings are harder for athletes to understand than simply adding up points per competition.
- 2.1.3 This system also takes some time to settle down, as it requires either an initial ranking to be assigned to start the system, or an initial field factor to be assigned to the first competition.
 - 2.1.3.1 The choice of field factor influences the weighting of the points achieved in the first competition. A long-running ranking such as this loses influence over time, but over the short-term could influence rankings.
 - 2.1.3.2 The IFSC's initial ranking in 1995 used a fixed field factor of 0.6.
- 2.1.4 There would be some challenges applying such a system to BMC youth competitions:
 - 2.1.4.1 The youth athlete pool is segregated by age category.
 - 2.1.4.2 While the senior pool of IFSC athletes is large and changes slowly over time, the youth athlete pool is smaller, and heavily segregated. Youth A athletes will never compete against Youth C athletes, as such they can never be compared. This implies that any ranking system needs to be by category, as well as by gender and discipline.
 - 2.1.4.3 The youth athlete pool changes frequently.
 - 2.1.4.4 Every season, older aged athletes in each category move up an age category, resulting in a new pool of athletes who have not climbed against each other for at least a year, and maybe not at all.
 - 2.1.4.5 This makes all ranking systems that span seasons difficult to be applied for youth competitions, as at the start of the season there is no recent basis for comparing athletes in the upper and lower age brackets within the category.
 - 2.1.4.6 With field factors there is an additional difficulty in determining how to calculate the initial field factor.
 - 2.1.4.7 There are several approaches to this, since over the short term of a single season and a small number of competitions, this choice could noticeably affect the rankings. One possibility is that the GBNDS selection event, in

- which athletes compete in their new categories, could be used to provide the initial rankings used to calculate the first field factor.
- 2.1.5 The field factor calculation is more complex when covering multiple seasons, and it would take some time to create a system robust enough to use.
 - 2.1.6 The calculation of field factor would need to be correct, transparent to athletes, and quickly available, ideally on the day of the competition after the start lists are confirmed.
- 2.2 IFSC Youth Rankings
- 2.2.1 There is no attempt to weight the results by field factors.
 - 2.2.2 In the EYC Ranking, best three results from four are used. This does allow an athlete to miss one of the four competitions without impacting the maximum rank points they could obtain. However, athletes who attend only two EYC events in a discipline will have less opportunity to earn ranking points than those who attend at least three in that discipline.
 - 2.2.3 In the youth world ranking, points for all eligible competitions are included. This means that athletes who attend more events can potentially accrue more points and therefore gain a higher ranking.
- 2.3 Conclusions for the BMC National Ranking System: Youth and Junior
- 2.3.1 Considering the observations above, it would seem sensible that a national youth ranking system would ideally, follow the structure of the IFSC youth ranking system.
 - 2.3.2 It would be based on a full season's set of GB competition results.
 - 2.3.3 Use a "best N results" approach, since this method allows for athletes to miss some competitions without affecting their possible maximum points total. This is particularly useful as the dates of EYC's can sometimes clash with major national competitions. It also lessens the impact of missing a competition through injury during the season.
 - 2.3.4 As there are currently three competitions in boulder (Open Youth Event, British and Scottish Championships) a best two of three seems appropriate.
 - 2.3.5 For lead, there are four competitions (Open Youth Event, British, Welsh and Scottish Championships), so a best three of four seems appropriate.
 - 2.3.6 A combined category could be based on either the best two from each discipline, or potentially on combined ranks (either added or multiplied).

- 2.3.7 As there are currently only two events available for the speed discipline (British & Scottish Championships) “a best N results” approach would not work for this discipline. Therefore it is likely that speed would not be included within any combined category for the time being. This is something which can be reviewed were the number of speed competitions to increase.
- 2.3.8 If no field factor is used it would be a matter of choice as to whether the initial points at the start of the season are all set to 0, and incremented as new competitions are completed, or to use the points totals for the previous season for that category and be gradually replaced over the course of the season. Regardless, by the end of the season, the ranking will only include points accumulated during that season.
- 2.3.9 Benefits of this system are:
- 2.3.10 It is simpler to calculate and to understand than a full field factor-based approach.
- 2.3.11 It follows more closely the IFSC’s existing ranking for youth athletes.
- 2.3.12 If field factor is used it would also be possible to combine this with a “best N results” approach. However, this is likely to take time to assess ways in which the initial rankings or initial field factor should be assigned, and to develop a system robust enough to withstand usage in real competitions.
- 2.3.13 Benefits of this system are:
- 2.3.14 It gives a more accurate representation of the competitor field.
- 2.3.15 It allows transparency when age categories and competitions do not have the depth of field of competitors.

3. BMC National Ranking System: Youth and Junior

3.1 Overview

3.1.1 The BMC National Ranking System: Youth and Junior will follow the structure of the IFSC Youth Ranking System with the addition of Field Factor Analysis.

3.1.2 There will be a ranking for each individual age category and gender:

3.1.2.1 Female Junior

3.1.2.2 Male Junior

3.1.2.3 Female Youth A

3.1.2.4 Male Youth A

3.1.2.5 Female Youth B

3.1.2.6 Male Youth B

3.1.2.7 Female Youth C

3.1.2.8 Male Youth C

3.1.3 The ranking system will be for the 2019 season only and then will renew for each subsequent season.

3.1.4 Results from each of the national competitions for the 2019 season can be used to create athlete rankings. See below for the 2019 national competitions:

3.1.4.1 Welsh Climbing Championships (WCC) – 9th February 2019

3.1.4.2 Open Youth Boulder Event (OY Boulder) – 16th February 2019

3.1.4.3 Open Youth Lead Event (OY Lead) – 6th April 2019

3.1.4.4 Scottish Youth Bouldering Championship (SYBC) – 25th May 2019

3.1.4.5 Junior British Bouldering Championship (JBBC) – 22nd June 2019

3.1.4.6 Scottish Youth Climbing Championship (SYCC) – 1st September 2019

3.1.4.7 British Lead Climbing Championship (BLCC) – TBC

3.1.5 The ranking system will use a “best N results” approach to calculate rankings.

3.1.5.1 As this method allows for athletes to miss some competitions without affecting their possible maximum points total. This is particularly useful as the dates of EYC’s can sometimes clash with national competitions. It also lessens the impact of missing a competition through injury during the season.

- 3.1.6 To calculate boulder rankings a best two of three results will be used.
 - 3.1.7 To calculate lead rankings a best three of four results will be used.
 - 3.1.8 To calculate combined rankings a best two boulder and best two lead rankings will be used.
 - 3.1.9 There will not be an individual ranking for speed at this time due to the limited number of speed competitions. As such speed will also not be used as part of the combined ranking.
 - 3.1.10 Rankings displayed on the 2019 National Ranking System will be in order of **Combined Points** (Combined rankings).
 - 3.1.10.1 Individual rankings for Lead and Boulder will be used as part of GB National Development Squad Selection Policy 2020 for Youth A and Junior age categories, but will not be displayed on the 2019 National Ranking System.
 - 3.1.10.2 For more information on this topic please see [<https://www.thebmc.co.uk/gb-national-development-squad-2020>] or [<https://www.thebmc.co.uk/media/files/Comps/Development%20Squad/GB%20DEV%20Selec%20Policy%20v9.pdf>].
 - 3.1.11 This will be reviewed as part of any review process for the 2020 BMC National Ranking System: Youth and Junior.
 - 3.1.12 Field Factor Analysis will be applied to all rankings to quantify the quality of the field attending each competition, based on their ranking the day before the competition.
- 3.2 Field Factor Analysis
- 3.2.1 Field factor analysis will be used over the course of the season to determine the rank for each subsequent competition.
 - 3.2.2 The field factor is a number between 0 and 1.
 - 3.2.3 A field factor of 1 represents a field of the 30 best ranked athletes. If there is a smaller field size, or some ranked athletes are missing, the field factor is reduced.
 - 3.2.4 Initial field factor will be based on the initial ranking attained at the GBNDS selection event, as this is the first time that athletes will compete against each other in the same category for the 2019 season.
 - 3.2.4.1 Pre-selected athletes are assigned joint 1st rank, and then each athlete who attended selection day is assigned a rank in turn below these in order of selection day finish position.
 - 3.2.4.2 Any further athletes who attend the first competition of the season are assigned a joint rank one place below the rank of the last selection day rank (allowing for any tied ranks)

- 3.2.4.3 Example: 2 athletes (Fred & Barney) pre-qualify, 4 athletes attend selection day and finish in order Joe, Adrian, with Scott and Steven tied. 2 further athletes, Peter and Chris attend the first competition of the new season. The athletes are assigned ranks as follows; Fred, Barney (joint 1st), Joe (3rd), Adrian (4th), Scott and Steven (joint 5th), Peter and Chris (Joint 7th).
- 3.2.4.4 Rank for subsequent competitions; any new athletes who are attending future competitions, will start with a joint rank one place below that of the last rank in rankings table at that time (taking account of any ties in that final rank).
- 3.2.5 The initial field factor calculated from the results of the GBNDS selection event will be applied to the first competition of the season, the Welsh Climbing Championships (WCC).
- 3.2.6 The field factor analysis then takes into account subsequent competitions over the duration of the season to account for all competitions, all competitors and all rankings.
- 3.2.7 Example: GBNDS SE + WCC determines FF for OY Boulder, GBNDS + WCC + OY Boulder determines FF for OY Lead etc

3.3 Field Factor Calculation

- 3.3.1 The field factor is calculated using a slightly adjusted set of ranking points (referred to in IFSC papers as WR-table points). The WR-table points associated with each rank position are the normal IFSC competition rank points, plus 15 points. E.g. 115 points instead of 100 for the 1st place, 95 points instead of 80 for 2nd place, etc.
- 3.3.2 The field factor is calculated as the total WR-table points of the field attending the competition, divided by the total WR-table points for the top 30 ranks, and will be a value between 0 and 1.
- 3.3.3 Example: At a competition, everyone in the top 30 ranking attends, except for the 1st, 2nd and 30th ranked athletes. The total possible number of WR-table points is $1268 = ((100+15) + (80+15) + (65+15) + \dots + (1+15))$. The WR-tables points for this competition will be 1268 minus the WR-table points associated with the 1st, 2nd and 30th ranked athletes who are not in attendance. $1268 - (100+15) - (80+15) - (1+15) = 1042$. So the field factor for the competition is $1042/1268 = 0.82$.
- 3.3.4 Another way to think of this is that each ranked athletes who attends a competition, brings with them a percentage of the field factor. The first ranked athlete carries 9.07% of the field factor, 2nd place carries 7.49% of the field factor and so on until 30th place which carries 1.26% of the field factor. All ranked athletes who attend the competition have their percentages added up, and this is multiplied by 1 to get the competition field factor.

- 3.3.5 From the results of the competition, the field factor weighted rank points from the competition are assigned to each athlete. The winner would receive field-factor * 100 points, 2nd place receives field-factor * 80 points etc.
- 3.3.6 In the example above with a field factor of 0.82, the athlete winning this competition would receive $0.82 * 100 = 82$ points instead of the unweighted 100 points, 2nd place received $0.82 * 80 = 65.6$ points instead of 80 etc.

3.4 Rankings Table

- 3.4.1 A ranking table will be maintained for each category and gender, with current points and rankings of athletes in each category on the BMC website.
- 3.4.2 Rankings will be displayed in order of **Combined Points**.

3.4.3 The ranking table will include:

- 3.4.3.1 Season Ranking (ranked in order of Combined Points)
- 3.4.3.2 Athlete Name
- 3.4.3.3 Rank from GBNDS Selection Event
- 3.4.3.4 2019 Boulder Ranks
- 3.4.3.5 2019 Lead Ranks
- 3.4.3.6 GBNDS Selection Event Points
- 3.4.3.7 2019 Boulder Points
- 3.4.3.8 2019 Lead Points
- 3.4.3.9 Field Ranking Information
- 3.4.3.10 2019 Season Points

3.5 Ranking Points

- 3.5.1 Initial points are assigned for the GBNDS selection event. **These are used only in the calculation of the field factor (because they provide useful ranking information), but not in any other points totals.** These points are weighted by the field factor of the GBNDS selection event itself, which is calculated on the basis that these athletes represent the best N athletes as at the end of the previous season.
- 3.5.2 Season Points are the sum of points from all competitions entered in the 2019 season.

- 3.5.3 Boulder Points are the sum of points from the best 2 boulder competition results in the 2019 season.
- 3.5.4 Lead Points are the sum of points from the best 3 lead competition results in the 2019 season.
- 3.5.5 Combined Points are the sum of points from the best 2 boulder and the best 2 lead competition results in the 2019 season. **This creates the ranking for the Season Ranking.**