

The WBL Automatic Draw System

This document explains the automatic draw capabilities of the WBL event management web application.

The system is now capable of performing several types of draw (at Knockout stage or first round). It is no longer necessary, except in rare circumstances (see later) for any manual intervention in making the draw after the group stages of an active tournament have completed.

Throughout this document I use the **2013 World Championship (150 up)** as the example (all detail on this tournament can be found [here](#)). This is because it is a worst-case scenario. Most other draws are much simpler and trouble free.

Firstly, the rationale behind the seeded draw is explained.

WBL Draw System Specification

The two basic criteria for the draw system are :-

1. Higher seeded players should not meet until as late as possible in the knockout stage.
For example, the 1 seed is drawn against the 32 seed; and in the other half of the draw the 2 seed against the 31, etc. Therefore the no 1 & 2 seeds cannot meet until the final. And so on.
2. Players from the same group should not meet until as late as possible.
For example, Group 1st and 2nd players should not meet until the final.

These two criteria ensure a fair competition and are designed to reward performance at the group stage (ie. 'on the day') whilst minimising the element of 'luck of the draw'.

This system works well when there are a regular number of groups supplying the knockout stage, for example 16 groups of 4 players per group. The problems arise when there is an irregular group number – eg. 13 groups of 4 players. More on this later.

Implementation

After the group stage of a tournament has completed, the WBL system automatically orders players into 'Draw Positions' (viz. seeds) based on their group stage performance. How they are ordered is explained in Appendix A.

An example :-

Figure 1 - WBL Player List (final)

World Championship (150 up)					World Championship
Players					
Player	Seed before trnmnt	Round Reached	Draw Position	Ranking Points Earned	
David Causier	1	Final	1	15350.00	
Geet Sethi	15	Last 32	2	4600.00	
Balachandra Bhaskar	16	Quarter Final	3	5850.00	
Robert Hall	3	Semi Final	4	8350.00	
Rupesh Shah	9	Quarter Final	5	6850.00	
Alok Kumar	6	Final	6	11350.00	
Martin Goodwill	5	Last 32	7	4600.00	
Matthew Bolton	4	Quarter Final	8	6850.00	
Sourav Kothari	13	Last 32	9	4600.00	
Devendra Joshi	11	Semi Final	10	7350.00	
Dhruv Sitwala	12	Last 16	11	5350.00	
Phil Mumford	7	Last 16	12	4350.00	
Kien Nguyen Trung	84	Last 32	13	2533.34	
Siddharth Parikh	21	Last 16	14	4250.00	
Phil Davis	19	Last 32	15	3450.00	
Wayne Doyle	29	Last 16	16	4200.00	
Robin Wilson	34	Last 32	17	3550.00	
Dhvaj Haria	23	Last 32	18	3450.00	
Michael Pearson	17	Last 16	19	4200.00	
Steve Brookshaw	32	Last 32	20	3450.00	
Ian Williamson	20	Last 32	21	3450.00	
Ashok Shandilya	10	Last 16	22	3283.34	
Peter Gilchrist	2	Last 16	23	3150.00	
Neil Bolton	27	Last 32	24	2533.34	
Peter Shelley	175	Last 32	25	2466.66	
Nalin Patel	18	Last 16	26	2050.00	
Raj Kumar	84	Last 32	27	2466.66	
Aditya Agrawal	183	Last 32	28	2500.00	
Arun Agrawal	22	Quarter Final	29	4750.00	
Chris Taylor	14	Last 32	30	2400.00	
Akhilesh Mohan	38	Last 32	31	2350.00	
Subramanian Venkateshwaran	35	Last 32	32	2400.00	
Binh Nquyen Thanh	84	Group H	33	2350.00	

The *Draw Position* column shows the seeding. This is required for seeding the knockout stage. Ignore the other columns for now. We are interested only in Draw Positions (seeds) 1-32.

Applying the WBL specification using the above draw positions, the 'ideal' draw would be :-

Figure 2 - Example Draw (first pass)

match	seed	Player 1	Group	Group	Player 2	seed
1	1	David Causier	B1	F3	Sub Venkateshwaran	32
2	10	Devendra Joshi	M1	E2	Peter Gilchrist	23
3	13	Kien Nguyen Trung	D1	F2	Steve Brookshaw	20
4	8	Matthew Bolton	C1	G2	Peter Shelley	25
5	5	Rupesh Shah	A1	I3	Aditya Agrawal	28
6	16	Wayne Doyle	A2	K2	Robin Wilson	17
7	12	Phil Mumford	G1	C2	Ian Williamson	21
8	4	Robert Hall	F1	C3	Arun Agrawal	29
9	3	Balachandra Bhaskar	E1	J3	Chris Taylor	30
10	11	Dhruv Sitwala	K1	M2	Ashok Shandilya	22
11	15	Phil Davis	L2	J2	Dhvaj Haria	18
12	6	Alok Kumar	J1	D3	Raj Kumar	27
13	7	Martin Goodwill	H1	B2	Nalin Patel	26
14	14	Siddharth Parikh	H2	I2	Michael Pearson	19
15	9	Sourav Kothari	I1	D2	Neil Bolton	24
16	2	Geet Sethi	L1	L3	Akhilesh Mohan	31

From a cursory glance at this draw it is clear that it is unacceptable and seeding has to be adjusted to fulfil the basic criteria of the draw system. It should also be evident that due to the 3rd place players, matching players and fulfilling the seeding criteria will not be simple, perhaps even impossible in rare cases.

The above draw is the start point of the automated system. It first tries to position each seed in the allocated slot as given above. If it cannot it tries the **next available** slot (the next higher seed number) and so on until it can find an acceptable slot for the player.

For example: seed 18 *Dhvaj Haria* – is in same half of draw as group winner *Alok Kumar* – this is unacceptable. So, it tries the next slot at 19 (also unacceptable), then 20 which is acceptable. It continues like this until it has covered all players.

Draw Options of the new system

After the completion of the group stage in a tournament, the draw can be done automatically by selecting from the following options :-

Random

A fully random draw is available by selecting this type of draw. All Plate and levels 1 & 2 competitions use a random draw.

The random element is provided by <http://www.random.org/> in real time – ie. when the button is clicked. This is a genuine (ie. not pseudo) random number generator.

The WBL system first inspects how many players are in the draw – anything between 5 and 64, and it then posts the list of numbers to the above website which returns the list randomised.

Matches are then assigned players using this list. If there is an odd number of players, then BYEs are issued. This is the case for nearly all Plate competitions.

Prequalification

In some tournaments there is a 'prequalifier' round at the Knockout stage. This is because there were insufficient players for a 8/16/32 stage. For example, in a tournament with 35 players, a prequalifier stage of 24 players is better than 16 or 32. In this event, the top 8 seeds get a bye straight through to the last 16 and the remaining 16 play off for places in the last 16.

Note that for this type of draw (ie. seeded AND random) to happen it cannot be a fully random draw. If it is required that the top 8 get BYEs but the remaining 16 are drawn randomly, then the whole draw has to be done manually (as we have been doing up till now).

A prequalifier can have 6, 12 or 24 players. In fact these are rounds of 8, 16 and 32 incorporating 2, 4 or 8 BYEs, resp. The system works this out automatically.

This option can be combined with the WBL seeded draw options.

Seeded

Seeded draws come in two flavours of the WBL system – 'strict' and 'relaxed'. The reason we have two options here is that the strict interpretation can sometimes be impossible, or it can grossly distort the draw. This can only happen when there are 3rd (or 4th) placed players going through to the knockout stage because of an irregular number of groups.

It is recommended that the strict interpretation is tried first. If the resulting draw is too distorted then the relaxed version should be tried.

Manual adjustment of 1 or 2 matches is also possible – sometimes the eye can spot a solution better than the system.

Both flavours of the WBL system are discussed below. Note that they produce identical output for 1st and 2nd placed players from the group – they differ only in the placement of 3rd and 4th placed players.

WBL strict

This shows the 'strict' WBL draw of the 2013 World Championship (150 up). Note that this is a good example because it was very difficult to seed all the players correctly.

Figure 3 - Draw (strict interpretation)

World Championship (150 up)							World Championship
Draw							
Draw Efficiency : 8/46							
Save ▾							
Match	Grp	Player 1	Draw Pos	Draw Pos	Player 2	Grp	Adjs
1	B-1	David Causier	1	29	* Arun Agrawal	C-3	3
2	M-1	Devendra Joshi	10	19	Michael Pearson	I-2	4
3	D-1	Kien Nguyen Trung	13	17	Robin Wilson	K-2	3
4	C-1	Matthew Bolton	8	23	Peter Gilchrist	E-2	2
5	A-1	Rupesh Shah	5	28	Aditya Agrawal	I-3	0
6	H-2	Siddharth Parikh	14	15	Phil Davis	L-2	4
7	G-1	Phil Mumford	12	18	Dhvj Haria	J-2	3
8	F-1	Robert Hall	4	31	* Akhilesh Mohan	L-3	2
9	E-1	Balachandra Bhaskar	3	30	* Chris Taylor	J-3	0
10	K-1	Dhruv Sitwala	11	24	Neil Bolton	D-2	2
11	F-2	Steve Brookshaw	20	21	Ian Williamson	C-2	8
12	J-1	Alok Kumar	6	32	* Subramanian Venkateshwaran	F-3	5
13	H-1	Martin Goodwill	7	26	Nalin Patel	B-2	0
14	A-2	Wayne Doyle	16	22	Ashok Shandilya	M-2	5
15	I-1	Sourav Kothari	9	25	Peter Shelley	G-2	1
16	L-1	Geet Sethi	2	27	Raj Kumar	D-3	4

Draw Efficiency: This indicates the efficiency of the automatic draw. The first number is the most places a player has been reseeded. The second number is the total places for all players. For both figures, the lower the better. That is, "0/0" is perfect.

(* If marked against a player this means that it was not possible to reseed this player optimally. Manual intervention may be necessary.

Note how the 'Draw Efficiency Rating' is 8/46. This is NOT a good rating and it shows the difficulty in seeding the draw. The first of the two numbers (8) is the largest 'seed shift' – *Ian Williamson*. The second number (46) is the total 'shifts' in the draw.

Note also how four players are flagged by '*'. This occurs when the system has been unable to implement strict WBL seeding on these players. However, a closer look at the implications of these 'problem' seeds shows that there is little problem.

According to the strict interpretation the rules, *Arun Agrawal* (3rd in group C) should be in the opposite quarter from the 2nd placed player from his group (C – *Ian Williamson*). In fact, they are in separate halves and cannot meet until the final. Arun is however in the same half as the group C winner – *Matt Bolton*, but they cannot meet until the quarter final. This is probably an acceptable draw as the alternative could involve many changes and risk overall integrity, at the expense of a 3rd placed player meeting his group winner in the quarter final.

WBL relaxed

The next screenshot shows the result of the same competition, but using the 'WBL relaxed' draw option.

The difference with this draw is in handling 3rd & 4th placed players. That is, instead of ensuring that the 2nd and 3rd players are "in the opposite quarter" (see Fig 1; 9.2 (b)), this method simply ensures that they are **not in the same quarter**. It will also ensure that the 1st and 3rd placed players are also **not in the same quarter**. Similarly for 4th placed players.

Figure 4 - Draw (relaxed)

World Championship (150 up)							World Champions
Draw							
Draw Efficiency : 8/36							
<input type="button" value="Save"/>							
Match	Grp	Player 1	Draw Pos	Draw Pos	Player 2	Grp	Adjs
1	B-1	David Causier	1	32	Subramanian Venkateshwaran	F-3	0
2	M-1	Devendra Joshi	10	19	Michael Pearson	I-2	4
3	D-1	Kien Nguyen Trung	13	17	Robin Wilson	K-2	3
4	C-1	Matthew Bolton	8	23	Peter Gilchrist	E-2	2
5	A-1	Rupesh Shah	5	27	Raj Kumar	D-3	1
6	H-2	Siddharth Parikh	14	15	Phil Davis	L-2	4
7	G-1	Phil Mumford	12	18	Dhvj Haria	J-2	3
8	F-1	Robert Hall	4	29	Arun Agrawal	C-3	0
9	E-1	Balachandra Bhaskar	3	31	Akhilesh Mohan	L-3	1
10	K-1	Dhruv Sitwala	11	24	Neil Bolton	D-2	2
11	F-2	Steve Brookshaw	20	21	Ian Williamson	C-2	8
12	J-1	Alok Kumar	6	28	Aditya Agrawal	I-3	1
13	H-1	Martin Goodwill	7	26	Nalin Patel	B-2	0
14	A-2	Wayne Doyle	16	22	Ashok Shandilya	M-2	5
15	I-1	Sourav Kothari	9	25	Peter Shelley	G-2	1
16	L-1	Geet Sethi	2	30	Chris Taylor	J-3	1

Draw Efficiency: This indicates the efficiency of the automatic draw. The first number is the most places a player has been reseeded. The second number is the total places for all players. For both figures, the lower the better. That is, "0/0" is perfect.

(*) If marked against a player this means that it was not possible to reseed this player optimally. Manual intervention may be necessary.

Note the Draw Efficiency – 8/36. This is better than the strict draw interpretation which was 8/46. An analysis of the 3rd placed players shows that all of them have been successfully separated from the 2nd placed player (ie. meet in final), and also from the 1st placed player (meet in semi).

Seeding Process

With the above options in mind, the seeding process can be laid out thus :-

1. In the Plate, Levels 1 or 2 competitions, then simply select **Random** Draw. This is all that is required.
2. For all other competition types, select **WBL (strict)** then inspect the draw. Perhaps keep it open in a separate browser window for comparison. It may well be fine as it is now, in which case ignore the next step.
3. If the **strict** draw looks flawed, then open a new browser window and select **WBL (relaxed)**. The two versions of the draw can now be compared. If this second draw is better, then no more needs to be done. If you prefer the strict draw, then redo the draw with **WBL (strict)**.

Tests

I ran these tests over all tournaments in 2013/2014 (16 tournaments; 6 seeded, 10 random). The random draws were perfect, as expected.

As for the six seeded draws, four were perfect in the WBL (strict) method.

The worst case was the example used above, the solution of which would have been to do the relaxed draw then *perhaps* do a single swap.

The next worst was the World (long up). This time, the WBL (strict) draw gave a good distribution, but with the single problem that the 2nd and 3rd placed players of group L could have met again in the quarter final. This was an acceptable draw in my opinion.

Summary

There will always be the potential for problematic draw seeding when 3rd & 4th placed players are included due to an irregular number of feeder groups. To minimise this risk two draw systems are available, one of which should work. In the worst case, a manual swap of a few players may be necessary.

To take the automatic system further, to be more clever than now (which is eminently possible) would have risked the integrity of the 'upper' seeds (ie. the 2nd placed). Therefore the tradeoff is made that in rare cases, manual shifting of a **lower** seed is necessary after visual inspection.

Appendix A – Group Positions

After a group stage has completed, all players are ordered based on their performance. This appendix explains exactly how this is done. To inspect the group results from the example tournament used in this document, click [here](#).

There are two areas (group and draw positions) and two formats (timed and frame-based) which all conspire to complicate it. Therefore I'll cover them in detail below.

Group Positions

The criteria for calculating your position within the group are :-

TIME-based tournament (or long-up)

1. Match Wins
2. Head-to-head
3. Average points difference
4. Seed at start of tournament
5. Coin toss

FRAME-based tournament (eg. 150-up)

1. Match Wins
2. Head-to-head
3. Average frames (not points) difference
4. Percentage of frames won on total played
5. Seed at start of tournament
6. Coin toss

Draw Positions

The criteria for calculating your position in the last-32 (or last-16) after the group stage has completed are :-

TIME-based

1. Group Position (eg. 1, 2,..)
2. Percentage of MATCHES won
3. Average points difference
4. Seed at start of tournament
5. Coin toss

FRAME-based

1. Group Position (eg. 1, 2,..)
2. Percentage of MATCHES won
3. Percentage of FRAMES won on total played
4. Average POINTS difference (across all frames played)
5. Seed at start of tournament
6. Coin toss

When a head-to-head ordering has been applied, the *Wins* value will show with a '+' or a '-'. For example, see Group J [here](#).

From a scan of past data using the above criteria, the *coin toss* and *seed at start of tournament* criteria have never been necessary. Nevertheless we do need these specified so that there is no ambiguity.

The long-up (or timed) format has never been a problem – it's the 150-up which has caused us bother as many of you will know from this year's World Championship. Having six players with a 100% record at group stage required a drill-down to points performance in each frame. This required quite a lot of manual calculation, however now it is all automatic.