



Women's Shot Put

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INTRODUCTION

This event was marred by the subsequent disqualification of the winner Ostapchuk for a doping violation. As she had such an impact on the event I have not removed her from this report, she simply has no placing.

The final saw three Chinese putters, two Russians and two Belarusians. As with the men's Shot final, we saw a much more global spread of competitors, with competitors from Chile and Brazil in the line-up.

Unlike the men's event, there were no rotational putters in the final. The event, as it is generally with the women's Shot was dominated by the glide putters, with only Arcanjo of Brazil using the little used step back technique, not being a glider. Over the years many coaches have mused over why the rotational technique has not been taken up by the women. The consensus is, that the weight of the implement may be too light to allow the potential of the rotation to be utilised by women? It does seem that with the very strong athletic women now prevalent in the heavy throws, that the implements are too light to necessitate them to fully utilise technique to throw far.

Following Ostapchuk's disqualification the medals were redistributed with Val Adams retaining her Olympic title, the first since Tamara Press in the 1964. Adams competed well both before, and after the Games, but in London after the 21m puts by Ostapchuk, she looked shell shocked and very uncomfortable, totally taken out of her game and lacklustre in comparison to her usual competitive self. Had Ostapchuk not been there I am sure we would have seen a much better performance from her. Adams towered over the rest of the field and it is hard to see her losing, whilst maintaining such physical superiority. She looks more than capable of winning a unique third title in Rio, in four year time, which would certainly reinforce the claim that she is the most successful women's putter of all time

Silver medallist Kolodko, of Russia, produced a PB put in the last round to show her competitive mettle, finishing less than 30cm behind Adams. She is still young, but the women do find it very hard, to move from 20m to 21m.

Two Chinese athletes filled the 3rd and 4th places, but the gap between them was over half a metre. 19.02m made the top eight, whilst Mikhnevich finished last in the final, after her silver medal of four years ago.

Fifth placed putter, Michelle Carter of the USA, is the daughter of the 1984 men's Shot silver medallist, Mike Carter. The only person ever to win an Olympic medal and a Superbowl (American Football) winners ring, in the same year.

2000 Olympic Champion Yanina Karolchyk finished in 17th place.

Thirty-two athletes took part in the two qualifying pools, which were held in tandem from two circles. This at least ensures that everyone qualifies in the same conditions, but only the Shot, with its' shorter distances, can accommodate this.

WOMEN'S SHOT PUT STATISTICS

Competition data and athlete details have been obtained from the IAAF website. Rankings and record information has been taken from the Tilastopaja Website. Historical graphs were provided by Ian Tempest, NUTS.

World Record	2012 World Lead	IAAF A Standard	Automatic Qualifying
22.63m	21.58m*	18.30m	18.90m

Table 1: Standards for the Women's Shot Put

The World Record for the Women's Shot Put was set back in 1987 by Natalya Lisovskaya. The World Lead in 2012 is held by Nadzeya Ostapchuk, however she was disqualified from the London Olympics following a failed doping test (*). The next furthest mark in 2012 is held by Valerie Adams at 21.11m. The IAAF A standard was 18.30m, and the automatic qualifying mark set at 18.90m.

Ostapchuk competed in the final, throwing the furthest distance and being awarded the gold medal. However, following the event she was disqualified for a doping violation, and had her medal withdrawn. She has therefore been excluded from subsequent analysis.

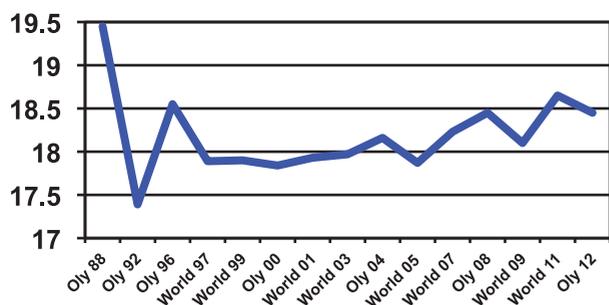


Figure 1: Qualifying for Women's Shot Put final at past Olympics and World Championships

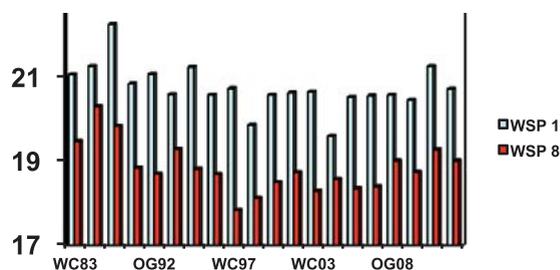


Figure 2: Distance for 1st and 8th in past Olympics and World Championships

Five athletes (six including Ostapchuk) met the automatic qualifying marks, with all three doing so in their first two Puts. The Gold medal was eventually rewarded to Valerie Adams with her 20.70m throw, Silver went to Evgeniia Kolodko with 20.48 and Bronze to Lijiao Gong with 20.22m. It took a distance of 18.45 to make the final, a mark which has been gradually increasing over the past 15 years (figure 3). The winning distance is fairly consistent with the past 20 years, with 8th position at 19.00m also consistent with past World and Olympic Championships (figure 4).

As with the Men, both qualifying groups took place at the same time, in the two rings situated at the same end of the stadium. Thus weather conditions were identical for both groups. Five of the qualifiers for the final came from Group A (one of whom was Ostapchuk, later disqualified), and seven from Group B.

	Put (m)	Age (y)			Height (cm)			Weight (kg)			BMI		
		Av.	Max	Min	Av.	Max	Min	Av.	Max	Min	Av.	Max	Min
Medal	20.22	24.00	27	22	183.33	193	175	106.67	120	92	31.75	35.27	27.77
Top 8	19.00	24.25	27	20	181.43	193	175	111.29	120	92	33.87	37.88	27.77
Final	18.45	24.82	30	20	180.70	193	175	107.90	120	92	33.07	37.88	27.77
All	14.43	26.94	36	20	178.70	193	168	98.59	120	63	30.87	37.88	20.81

Table 2: Summary statistics for Women's Shot Put from London 2012 Olympics

The average age of competitors decreases slightly as you go from competitors to finalists to top 8 and medallists. The average age of female medallists at 24 is also noticeably younger than the average age of their male counterparts, at 28.67 years. The oldest female medallist was just 27 years of age, in comparison to the oldest competitor who was 36 years old. The tallest and heaviest competitor was Adams, the ultimate champion. However, the shortest athlete of the finalists, Gong, and the lightest athlete of the finalists, Kolodko, both medalled. Thus once again there does not appear to be an immediate link between height and performance, or weight and performance. The BMI of the medallists also ranged from 27.77-35.27, suggesting no obvious correlation between BMI and performance.

As with the Men's competition, there was few SB or PBs. Only seven competitors produced SBs at the Olympics, five of which were PBs. Two of the SBs and one of the PBs were produced by the medallists, further highlighting the importance of being able to produce your best performance when it matters most.

SHOT FINAL & QUALIFYING PERFORMANCES

Final

Rk	Bib	Country	Athlete	Grp	Mark(m)	
1	2613	New Zeal.	ADAMS Valerie		20.70	
2	2870	Russian	KOLODKO Evgeniia		20.48	PB
3	1374	China	GONG Lijiao		20.22	SB
4	1377	China	LI Ling		19.63	
5	3276	USA	CARTER Michelle		19.42	
6	1383	China	LIU Xiangrong		19.18	
7	1233	Brazil	ARCANJO Geisa		19.02	PB
8	2898	Russia	TARASOVA Irina		19.00	
9	1337	Chile	DUKO Natalia		18.80	NR
10	1964	Germany	SCHWANITZ Christina		18.47	
11	1190	Belarus	MIKHNEVICH Natallia		18.42	
-	1193	Belarus	OSTAPCHUK Nadzeya		DQ	

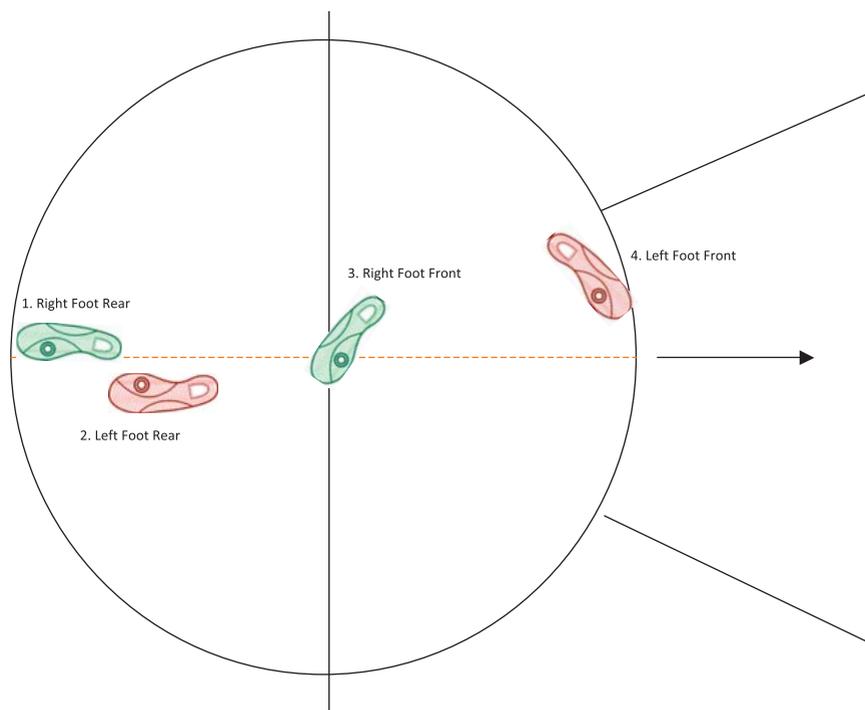
Qualifying

Rk	Bib	Country	Athlete	Grp	Mark(m)	
1	2613	New Zeal.	ADAMS Valerie	A	20.40	Q
2	2870	Russia	KOLODKO Evgeniia	B	19.31	Q
3	1377	China	LI Ling	A	19.23	Q
4	1374	China	GONG Lijiao	B	19.11	Q
5	1383	China	LIU Xiangrong	B	18.96	Q
6	2898	Russia	TARASOVA Irina	B	18.76	q
7	3276	USA	CARTER Michelle	A	18.63	q
8	1964	Germany	SCHWANITZ Christina	A	18.62	q
9	1190	Belarus	MIKHNEVICH Natallia	B	18.60	q
10	1233	Brazil	ARCANJO Geisa	B	18.47	q
11	1337	Chile	DUKO Natalia	B	18.45	q
12	3057	Trin & Tob	BOREL Cleopatra	A	18.36	q
13	1941	Germany	KLEINERT Nadine	B	18.36	
14	2160	Italy	ROSA Chiara	A	18.30	
15	3274	USA	CAMARENA-WILLIAMS Jillian	A	18.22	

16	1657	Spain	RUIZ Ursula	B	17.99	PB
17	1195	Belarus	PRAVALINSKAY-KAROLCHYK Yanina	B	17.87	
18	1970	Germany	TERLECKI Josephine	A	17.78	
19	3271	USA	BROOKS Tia	B	17.72	
20	1496	Cuba	GONZALEZ Misleydis	B	17.68	
21	2089	Iran	RAJABI Leyla	A	17.55	
22	1312	Canada	LABONTE Julie	A	17.48	
23	2057	Hungary	MARTON Anita	A	17.48	
24	2845	Russia	AVDEEVA Anna	A	17.47	
25	3035	Taipei	LIN Chia-Ying	B	17.43	NR
26	1507	Cuba	VARGAS Mailin	A	16.76	
27	1434	Colombia	LEMOS Sandra	A	16.50	
28	2278	Kazaks'n	FISHER Alexandra	A	16.16	
29	3019	Tonga	POUHILA Ana	B	15.80	
30	3338	Uzbekis'n	SMOLYANOVA Elena	B	14.43	
-	1269	Bulgaria	MAVRODIEVA Radoslava	B	NM	
-	1193	Belarus	OSTAPCHUK Nadzeya	A	DQ	

INDIVIDUAL ANALYSIS

Key to foot positions



For the Shot Put, the feet position of the athletes was taken as an interpolation of their Puts in the final, create an average position. The diagrams for all the finalists are reproduced overleaf, along with any other throwers who showed any extremes of technique.

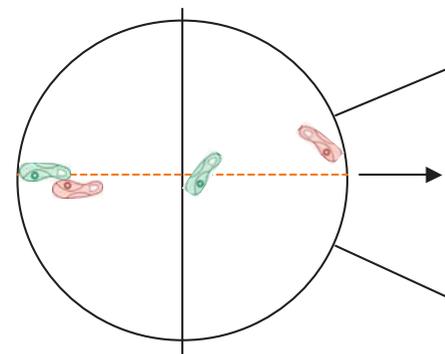
All positions relate to right handed throwers. All the finalists were right handed.

1. Is the position of the right foot when the athlete is settled and ready to begin their Put.
2. Is the position of the left foot when the athlete is settled and ready to begin their Put.
3. Is the position and direction of the right foot, when it first lands in the middle of the circle.
4. Is when the left foot lands at the front of the circle.

Nadzeya Ostapchuck

Postion: Disq
Mark: 21.36
Technique: Glide
Country: Belarus

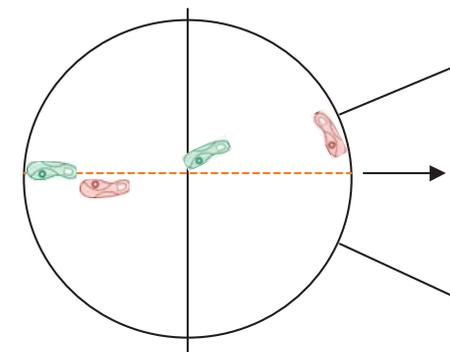
Non active start to glide, both legs assist drive to middle. Right heel leaves rear last, shoulders kept square to rear and left arm remains closed. Body quite upright as right foot lands in the middle and the left touches down quite quickly at the stopboard. The upper body has already started to unwind, before any activity by the legs. The left arm is opening early, helping to open the upper body further. The hips now do rotate rapidly and the legs drive upward strongly, with the left foot lifting off, but staying braced, The right arm strike hits very hard, with the right foot staying grounded until the shot is released. Not a model technique, but the release speed of the shot was most impressive.



Valerie Adams

Postion: 1st
Mark: 20.70
Technique: Glide
Country: New Zealand

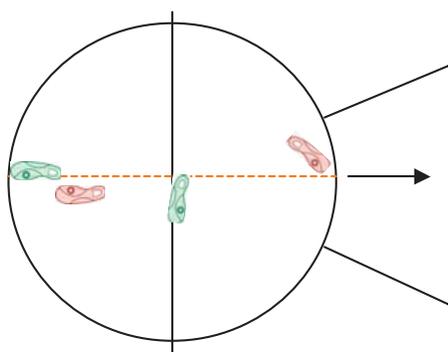
Active 'German' start to the glide. Upper body piked over with shoulders relaxed. Drops very low as leg drive starts. Good drive by both legs and shoulders kept square to the rear. The left arm opens, but is then pulled back across the chest as she lands in the circle middle. The left foot grounds very quickly after the right, the shoulders are still square to the rear, the right leg drives upward and forward, with the left leg staying bent and soft. The hips are not fully turned and with the upper body still facing right when the right arm strike is started. The left arm has also opened up prematurely as the legs lift off into a jump release against a soft, left side brace. The shot is released over the stopboard. Not the usual technical proficiency we have come to expect.



Evgenia Kolodko

Position: 2nd
Mark: 20.46
Technique: Glide
Country: Russia

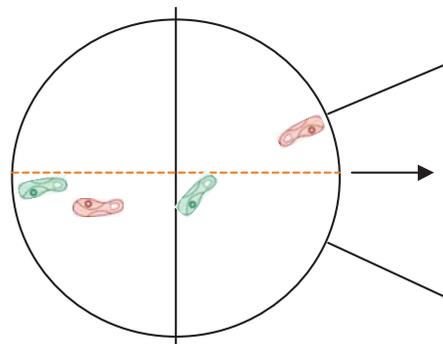
Fast moving standard start, upper body drops low to thigh, leading into a vigorous left leg kick towards the middle, the right leg does not work as powerfully and the foot is dragged off the rear, as opposed to driving off, with the foot leaving the rear on the ball of the foot. The shoulders stay square, but the leg arm is thrown backward to assist the glide. In the centre Kolodko is piking slightly with the upper body, with the left arm closing back up again. The hips and upper body unwind together and the left arm opens very early, the arm strike starts as the upper body is lined up with the right sector line. The left foot stays flat on the ground, the left knee unlocked, as the right foot lifts off the ground. The arm strikes fast and high as she jump releases, the left leg never having straightened.



Lijao Gong

Position: 3rd
Mark: 20.22
Technique: Glide
Country: Belarus

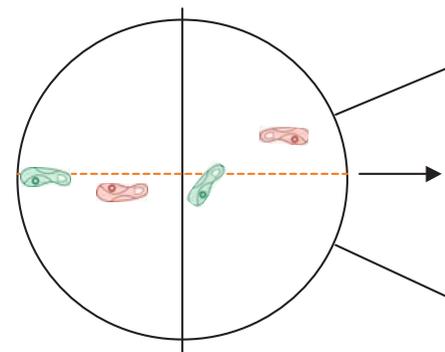
Gong starts her put with a conventional start to the glide. She drops low and drives with both legs to the middle. The shoulders are kept square to the rear. The right heel leaves the rear last. Gong lands in the middle on the balls of both feet. She remains low, but opens up the upper body and left arm before the leg drive starts. The upper body continues to lead the movement with little leg and hip drive contribution. With a poor left side brace, the upper body relies on a left arm brace as the shot leaves the hand with a jump release. The shot is released well over the stopboard. A good performance competitively, but again we see that technical inefficiencies are compensated for by strength and athleticism.



Ling Li

Position: 4th
Mark: 19.63
Technique: Glide
Country: China

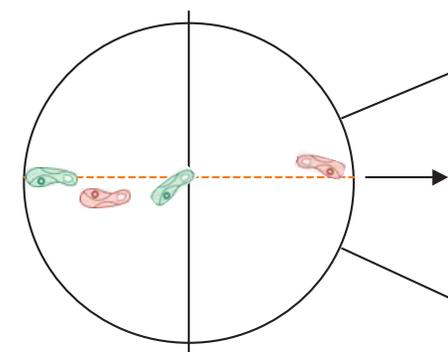
Starts low at rear of circle, active start to the glide. Good drive with both legs, right heel off last, left arm pulls in across chest, shoulders square to rear. Head starts to turn into the put before the right foot lands in middle. The right foot lands high on the toe and the hips start to unwind before the left foot lands, which touches down pointing into the sector, well back from the stopboard. The head, left arm and hips all open up early and the right arm strike starts with the shoulders still facing the side. Both legs extend fully, leaving the ground, but the left side is braced but both the action of the left leg and arm. There is an active reverse, but Li is in danger of fouling as she always watches the shot throughout the flight, whilst balanced on one leg.



Michelle Carter

Position: 5th
Mark: 19.42
Technique: Glide
Country: USA

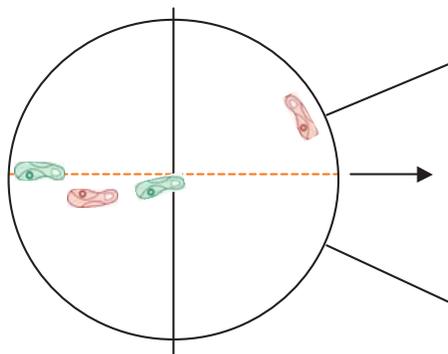
Starts her glide very fast, with good drive from both legs. The left arm is held straight across the upper body in an awkward looking position. The right heel leaves the rear last. Carter lands the right foot behind the centre line, with the left foot landing slightly late and pointing towards the sector. Here she displays one of the best power positions of all the competitors. Her upper body is held well back, the shoulder still square and the right foot well under the body, the left arm still wrapped. This position is wasted though, as the upper body unwinds and the legs drive straight upward, the right leaving the ground early. The upper body and head are thrown back, with excessive lean backwards as the arm strikes against no brace. A reverse is barely needed.



Xiangong Liu

Position: 6th
Mark: 19.18
Technique: Glide
Country: China

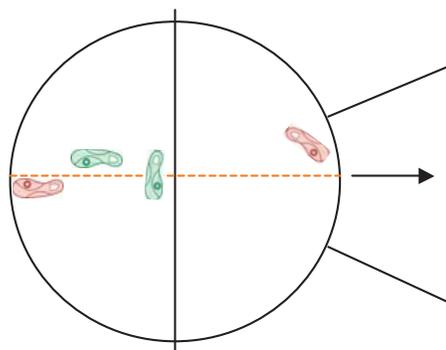
Liu sinks very low at the rear, with the head bowed down, chin on chest. A vigorous left leg drive pulls the right foot off the rear, with the right foot being dragged to barely the centre line. The base is so wide that the left foot cannot land quickly and lands to the left side of the stopboard. The upper body and left arm unwind and pull the right foot off the circle in order to rotate to the front. As the right arm strikes, the upper body leans and pikes to the left. The direction line of force of the legs and body, is not the same as that of the right arm and shot. As often seen in this competition, muscling the shot out is more effective than applying mechanically sound technique.



Geisa Arcanjo

Position: 7th
Mark: 19.02
Technique: Step-back
Country: Brazil

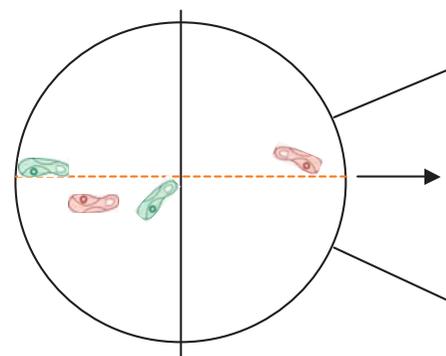
Arcanjo set a PB in the final, using a step back technique. Whilst this technique is barely used, it does suit the athlete with a high degree of upper body strength. Arcanjo starts at the back with the legs set as though she is a left handed glider. From here the right foot just steps to the middle, adding nothing to the drive to the middle, whilst the left leg is pulled to the middle then accelerates to the front. In the middle the right foot has landed still in the rear half of the circle, whilst the propulsive left land very fast at the front. The upper body unwinds very fast, with good hip drive, even though the legs never straighten. The left side braces through the action of the left arm and the right arm strike is very fast. Arcanjo uses a technique that exploits her strengths, with a PB as a result.



Irina Tarasova

Position: 8th
Mark: 19.00
Technique: Glide
Country: Russia

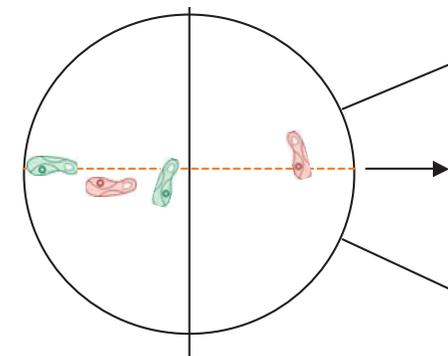
Begins the glide from a low tucked position, shoulders and facing the rear. Drives well with both legs, the right heel leaving the circle last. The right foot lands behind the centre line, the left lands back from the stopboard, pointing towards the front. The shoulders have remained square to the back and Tarasova has stayed low into the power position. The right hip and leg drive forward an up very fast, but the left leg straightens and braces too early, which forces her to twist the upper body round and down to the left in order to get the upper body round to the front before striking the shot with the right arm. Tarasova was one of the few female putters trying to apply force to the shot from the ground upward.



Natalia Duco

Position: 9th
Mark: 18.80
Technique: Glide
Country: Chile

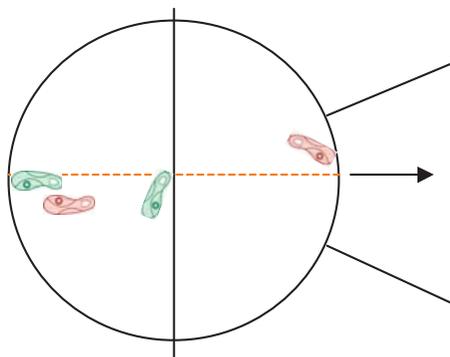
Duco starts her glide with the left arm and shoulder pushed straight down, looking as though she is trying to wind the upper body to increase range. This supposition is rapidly lost as she drops down and instigates the drive of the glide with the left arm and shoulder opening up before the leg drive begins. Duco lands in the middle with the right foot short of the centre line and the left blocked, somewhat back from the stopboard. The upper body is already well open, along with the left arm. From here she just extends the whole body upright and puts from fixed feet, then into a reverse. Because of landing so far from the stopboard, she is never likely to foul, perhaps the only virtue of her throwing despite it being a PB.



Christina Schwanitz

Position: 10th
Mark: 18.47
Technique: Glide
Country: Germany

Starts her put from a low tucked position, the left leg provides most of the drive to the middle, as the right foot leaves the rear off the ball of the foot and hops into its' position in the middle, landing just on the centre line. The left lands at the stopboard and Schwanitz exhibits a very good power position, with good knee bend and the shoulders still square. Her stance may be a little wide though. The right leg and hip turn and drive into the throw well, but as is putting with fixed feet the ability to turn fully to the front is restricted. The left arm braces the upper body and the right arm strikes at a different angle than the body is fixed in. Overall a solid, stable technique.



Natalia Mikhnevich

Position: 11th
Mark: 18.42
Technique: Glide
Country: Belarus

The former silver medallist never looked comfortable in this competition and seemed to be just going through the motions. The glide starts low with the weight balanced on the right leg, the left leg drive is powerful and she stretches the left arm out in front of her, to keep the upper body trailing the legs. The right foot lands on the ball, just behind the centre line and the left foot land late at the stopboard, but in just about the perfect position. The upper body starts to unwind before the legs, though the leg action is good, it is behind the rest of the put. Mikhnevich is facing into the sector as she strikes with the right arm, against a left side brace. But that arm strike is lacklustre and while technically it was very proficient, it lacked her usual explosiveness.

