

2024 Season Hurdles Report

Hurdle Touchdown Times

Men's 110m Hurdles
Women's 100m Hurdles
Men's 400m Hurdles
Women's 400m Hurdles



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Todd Henson

2024 Season Hurdles Report

Men's 110m Hurdles

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2024 Season Hurdles Report

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Notes:

- The times listed as TV Analysis are taken from [youtube.com](https://www.youtube.com) videos and generally coming from Television broadcasts. These are not always the best angles or coverage for getting times. They are often trying to tell a story by focusing on one athlete, and sometimes while shifting camera angles an extra frame can get added or removed.
- Where times are taken from the first movement, instead of the gun, there is at least a ± 0.12 second difference/error. This will show up from the start to the first hurdle and then from hurdle 10 to the finish. The between hurdle intervals should be fairly consistent, but there is still the usual ± 0.03 second
- For Diamond League meetings, I have included the Diamond League race analysis data provided by Omega Timing. This is done with a timing chip on the back of the athletes bib number, and it set to the actual distance of the hurdle not the touchdown distance of the athlete. Does the time start on the gun or when the athlete passes the 0.0m mark? This is a question I am still hoping to find an answer to.
- Data errors, missing data, spelling mistakes, anything that need correction - please let me know. As always, I try to put together the most complete and accurate report possible.
- I have done the best I could, I hope people find it useful or at least interesting.

Men's 110m Hurdles

Holloway, Grant (USA) (1997)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10	
FINAL - 2024 USA Olympic Trials (Eugene, OR) (TV Analysis)			Henson (2024) - Athlete First: 2024 year end hurdle report																
	date	28-Jun	time	2.44	3.42	4.40	5.37	6.34	7.32	8.31	9.32	10.36	11.42		12.86	6 / 1			
	reaction time		interval	7 steps	0.98	0.98	0.97	0.97	0.98	0.99	1.01	1.04	1.06	1.44			2.93	2.94	3.11
	wind	2.0 m/s	velocity	5.62	9.33	9.33	9.42	9.42	9.33	9.23	9.05	8.79	8.62	9.74	8.55		9.36	9.33	8.82
Holloway, Grant (USA) (1997)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10	
Heat 1 - 2024 USA Olympic Trials (Eugene, OR) (TV Analysis)			Henson (2024) - Athlete First: 2024 year end hurdle report																
	date	24-Jun	time	2.43	3.48	4.43	5.41	6.38	7.35	8.35	9.38	10.40	11.46		12.92	4 / 1			
	reaction time		interval	7 steps	1.05	0.95	0.98	0.97	0.97	1.00	1.03	1.02	1.06	1.46			2.98	2.94	3.11
	wind	0.8 m/s	velocity	5.65	8.70	9.62	9.33	9.42	9.42	9.14	8.87	8.96	8.62	9.60	8.51		9.20	9.33	8.82
Crittenden, Freddie (USA) (1994)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10	
FINAL - 2024 USA Olympic Trials (Eugene, OR) (TV Analysis)			Henson (2024) - Athlete First: 2024 year end hurdle report																
	date	28-Jun	time	2.54	3.56	4.54	5.54	6.54	7.52	8.52	9.51	10.52	11.56		12.93	7 / 2			
	reaction time		interval		1.02	0.98	1.00	1.00	0.98	1.00	0.99	1.01	1.04	1.37	PB		3.00	2.98	3.04
	wind	2.0 m/s	velocity	5.40	8.96	9.33	9.14	9.14	9.33	9.14	9.23	9.05	8.79	10.23	8.51		9.14	9.20	9.02
Holloway, Grant (USA) (1997)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10	
Semi-Final 1 - 2024 USA Olympic Trials (Eugene, OR) (TV Analysis)			Henson (2024) - Athlete First: 2024 year end hurdle report																
	date	27-Jun	time	2.44	3.42	4.41	5.37	6.35	7.34	8.34	9.34	10.41	11.48		12.96	7 / 1			
	reaction time		interval	7 steps	0.98	0.99	0.96	0.98	0.99	1.00	1.00	1.07	1.07	1.48			2.93	2.97	3.14
	wind	0.3 m/s	velocity	5.62	9.33	9.23	9.52	9.33	9.23	9.14	9.14	8.54	8.54	9.47	8.49		9.36	9.23	8.73
Roberts, Daniel (USA) (1998)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10	
FINAL - 2024 USA Olympic Trials (Eugene, OR) (TV Analysis)			Henson (2024) - Athlete First: 2024 year end hurdle report																
	date	28-Jun	time	2.46	3.48	4.48	5.47	6.48	7.50	8.51	9.53	10.55	11.58		12.96	4 / 3			
	reaction time		interval	7 steps	1.02	1.00	0.99	1.01	1.02	1.01	1.02	1.02	1.03	1.38	PB		3.01	3.04	3.07
	wind	2.0 m/s	velocity	5.58	8.96	9.14	9.23	9.05	8.96	9.05	8.96	8.96	8.87	10.16	8.49		9.11	9.02	8.93
Holloway, Grant (USA) (1997)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10	
Semi-Final 1 - 2024 Olympic Games (Paris, FRA)			Omega Timing (2024) - Olympic games race analysis																
	date	7-Aug	time	2.31	3.32	4.29	5.27	6.24	7.22	8.22	9.24	10.29	11.37		12.98	6 / 1			
	reaction time	0.149	interval	7 steps	1.01	0.97	0.98	0.97	0.98	1.00	1.02	1.05	1.08	1.61			2.96	2.95	3.15
	wind	0.1 m/s	velocity	5.94	9.05	9.42	9.33	9.42	9.33	9.14	8.96	8.70	8.46	8.71	8.47		9.26	9.29	8.70
Holloway, Grant (USA) (																			

2024 Memorial van damme (Brussels, BEL)

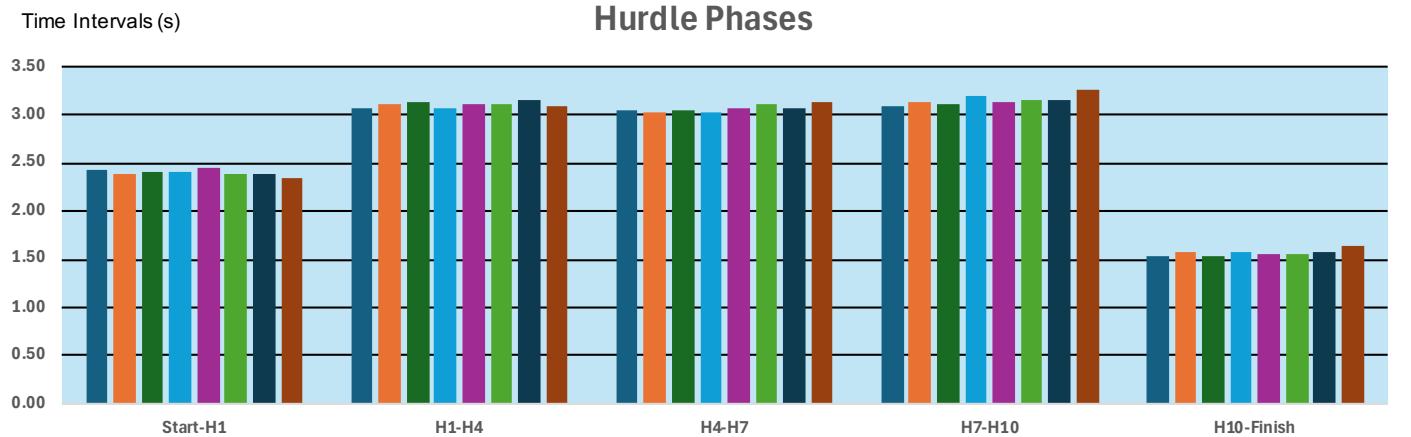
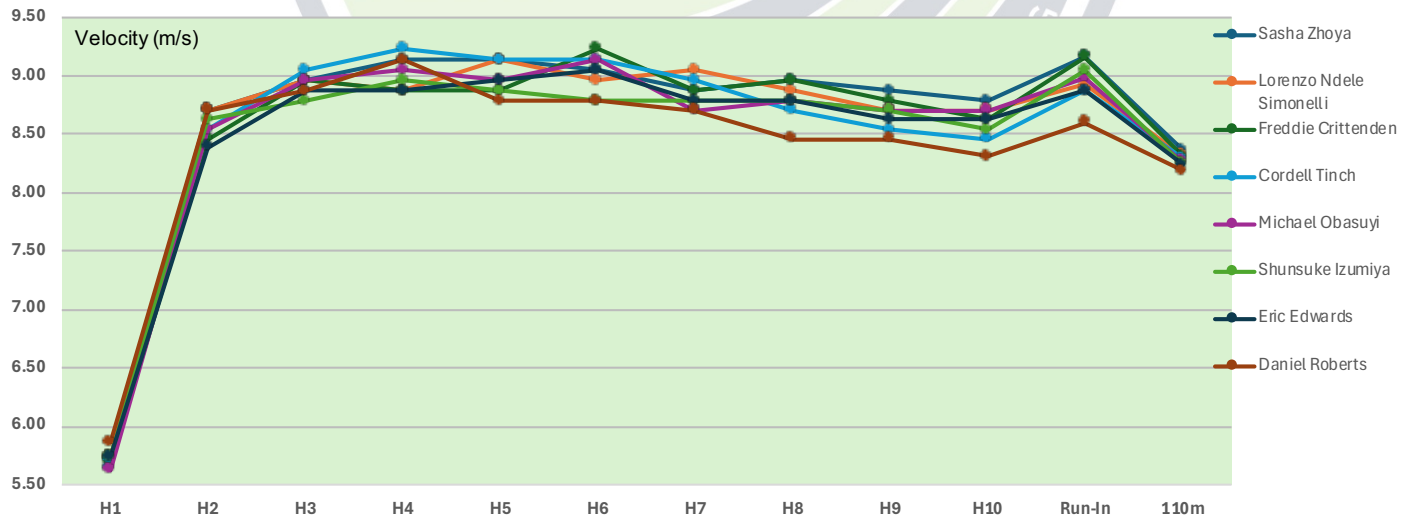
110m Hurdles

Date: 2024.09.13

Wind: 0.4 m/s

FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Zhoya, Sasha (FRA) (2002)	time		2.43	3.48	4.50	5.50	6.50	7.51	8.54	9.56	10.59	11.63		13.16	6 / 1			
	reaction time	0.150											1.53			3.07	3.04	3.09
	interval		7 steps	1.05	1.02	1.00	1.00	1.01	1.03	1.02	1.03	1.04	1.53			8.93	9.02	8.87
Simonelli, Lorenzo Ndele (ITA) (2002)	time		2.39	3.44	4.46	5.49	6.49	7.51	8.52	9.55	10.60	11.65		13.22	4 / 2			
	reaction time	0.136											1.57			3.10	3.03	3.13
	interval		7 steps	1.05	1.02	1.03	1.00	1.02	1.01	1.03	1.05	1.05	1.57			8.85	9.05	8.76
Crittenden, Freddie (USA) (1994)	time		2.41	3.49	4.51	5.54	6.57	7.56	8.59	9.61	10.65	11.71		13.24	3 / 3			
	reaction time	0.141											1.53			3.13	3.05	3.12
	interval		7 steps	1.08	1.02	1.03	1.03	0.99	1.03	1.02	1.04	1.06	1.53			8.76	8.99	8.79
Tinch, Cordell (USA) (2000)	time		2.40	3.47	4.48	5.47	6.47	7.47	8.49	9.54	10.61	11.69		13.27	7 / 4			
	reaction time	0.147											1.58			3.07	3.02	3.20
	interval		7 steps	1.07	1.01	0.99	1.00	1.00	1.02	1.05	1.07	1.08	1.58			8.93	9.08	8.57
Obasuyi, Michael (BEL) (1999)	time		2.44	3.51	4.53	5.54	6.56	7.56	8.61	9.65	10.70	11.75		13.31	8 / 5			
	reaction time	0.160											1.56			3.10	3.07	3.14
	interval		7 steps	1.07	1.02	1.01	1.02	1.00	1.05	1.04	1.05	1.05	1.56			8.85	8.93	8.73
Izumiya, Shunsuke (JPN) (2000)	time		2.39	3.45	4.49	5.51	6.54	7.58	8.62	9.66	10.71	11.78		13.33	2 / 6			
	reaction time	0.145											1.55			3.12	3.11	3.16
	interval		7 steps	1.06	1.04	1.02	1.03	1.04	1.04	1.04	1.05	1.07	1.55			8.79	8.82	8.68
Edwards, Eric (USA) (2000)	time		2.39	3.48	4.51	5.54	6.56	7.57	8.61	9.65	10.71	11.77		13.35	1 / 7			
	reaction time	0.128											1.58			3.15	3.07	3.16
	interval		7 steps	1.09	1.03	1.03	1.02	1.01	1.04	1.04	1.06	1.06	1.58			8.70	8.93	8.68
Roberts, Daniel (USA) (1998)	time		2.34	3.39	4.42	5.42	6.46	7.50	8.55	9.63	10.71	11.81		13.44	5 / 8			
	reaction time	0.145											1.63			3.08	3.13	3.26
	interval		7 steps	1.05	1.03	1.00	1.04	1.04	1.05	1.08	1.08	1.10	1.63			8.90	8.76	8.41
	velocity		5.65	8.70	8.96	9.14	9.14	9.05	8.87	8.96	8.87	8.79	9.16	8.36				



Source: Omega Timing (Fri 13 Sep 2024 20:32) - diamond league race analysis
<https://www.omegatiming.com/File/000204120102090101FFFFFFFFFFFF6D.pdf>

Video: <https://www.youtube.com/watch?v=qEcLBktcl-8>

2024 Weltklasse (Zürich, SUI)

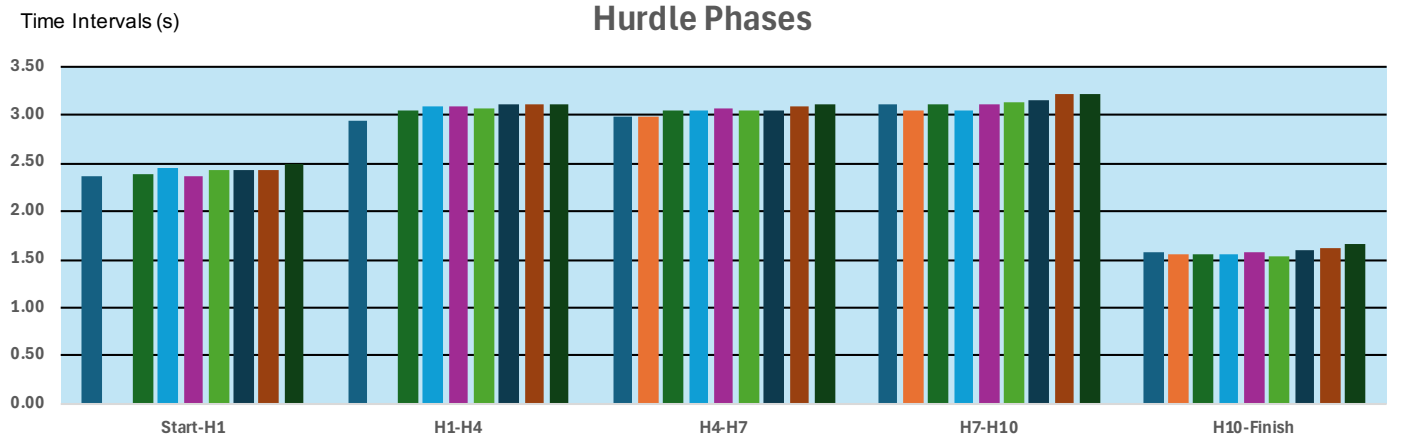
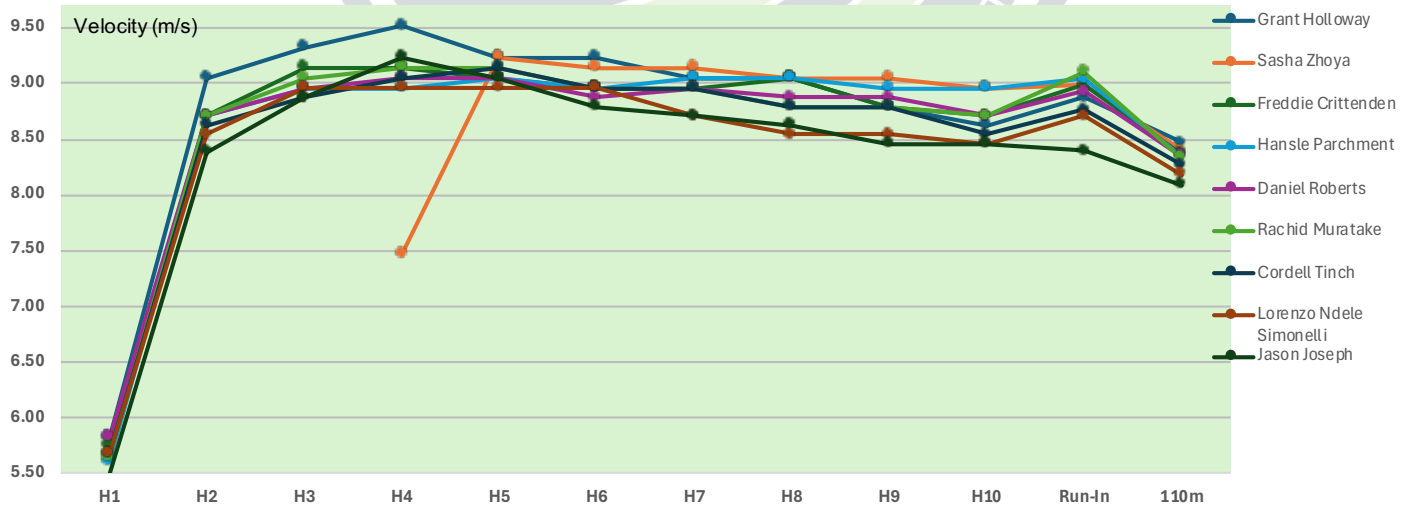
110m Hurdles

Date: 2024.09.05

Wind: -0.3 m/s

FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Holloway, Grant (USA) (1997)	time		2.36	3.37	4.35	5.31	6.30	7.29	8.30	9.31	10.35	11.41		12.99	6 / 1			
	reaction time	0.144														2.95	2.99	3.11
	interval		7 steps	1.01	0.98	0.96	0.99	0.99	1.01	1.01	1.04	1.06	1.58			9.29	9.17	8.82
Zhoya, Sasha (FRA) (2002)	time					5.51	6.50	7.50	8.50	9.51	10.52	11.54		13.10	2 / 2			
	reaction time	0.148														5.51	2.99	3.04
	interval		7 steps				0.99	1.00	1.00	1.01	1.02	1.56		PB		4.98	9.17	9.02
Crittenden, Freddie (USA) (1994)	time		2.39	3.44	4.44	5.44	6.45	7.47	8.49	9.50	10.54	11.59		13.15	7 / 3			
	reaction time	0.127														3.05	3.05	3.10
	interval			1.05	1.00	1.00	1.01	1.02	1.02	1.01	1.04	1.05	1.56			8.99	8.99	8.85
Parchment, Hansle (JAM) (1990)	time		2.45	3.50	4.52	5.54	6.55	7.57	8.58	9.59	10.61	11.63		13.18	8 / 4			
	reaction time	0.131														3.09	3.04	3.05
	interval		7 steps	1.05	1.02	1.02	1.01	1.02	1.01	1.01	1.02	1.02	1.55			8.87	9.02	8.99
Roberts, Daniel (USA) (1998)	time		2.36	3.41	4.43	5.44	6.45	7.48	8.50	9.53	10.56	11.61		13.18	5 / 5			
	reaction time	0.154														3.08	3.06	3.11
	interval		7 steps	1.05	1.02	1.01	1.01	1.03	1.02	1.03	1.03	1.05	1.57			8.90	8.96	8.82
Muratake, Rachid (JPN) (2002)	time		2.43	3.48	4.49	5.49	6.49	7.51	8.53	9.57	10.61	11.66		13.20	3 / 6			
	reaction time	0.161														3.06	3.04	3.13
	interval		7 steps	1.05	1.01	1.00	1.00	1.02	1.02	1.04	1.04	1.05	1.54			8.96	9.02	8.76
Tinch, Cordell (USA) (2000)	time		2.42	3.48	4.51	5.52	6.52	7.54	8.56	9.60	10.64	11.71		13.31	1 / 7			
	reaction time	0.170														3.10	3.04	3.15
	interval		7 steps	1.06	1.03	1.01	1.00	1.02	1.02	1.04	1.04	1.07	1.60			8.85	9.02	8.70
Simonelli, Lorenzo Ndele (ITA) (2002)	time		2.42	3.49	4.51	5.53	6.55	7.57	8.62	9.69	10.76	11.84		13.45	4 / 8			
	reaction time	0.158														3.11	3.09	3.22
	interval		7 steps	1.07	1.02	1.02	1.02	1.02	1.05	1.07	1.07	1.08	1.61			8.82	8.87	8.52
Joseph, Jason (SUI) (1998)	time		2.50	3.59	4.62	5.61	6.62	7.66	8.71	9.77	10.85	11.93		13.60	9 / 9			
	reaction time	0.170														3.11	3.10	3.22
	interval		7 steps	1.09	1.03	0.99	1.01	1.04	1.05	1.06	1.08	1.08	1.67			8.82	8.85	8.52



Source: Omega Timing (Thu 5 Sep 2024 20:45) - diamond league race analysis
<https://www.omegatiming.com/File/000204110103080101FFFFFFFFFFFF6D.pdf>

Video: <https://www.youtube.com/watch?v=IjwSlrOK1g>

2024 Golden Gala • Pietro Mennea (Roma, ITA)

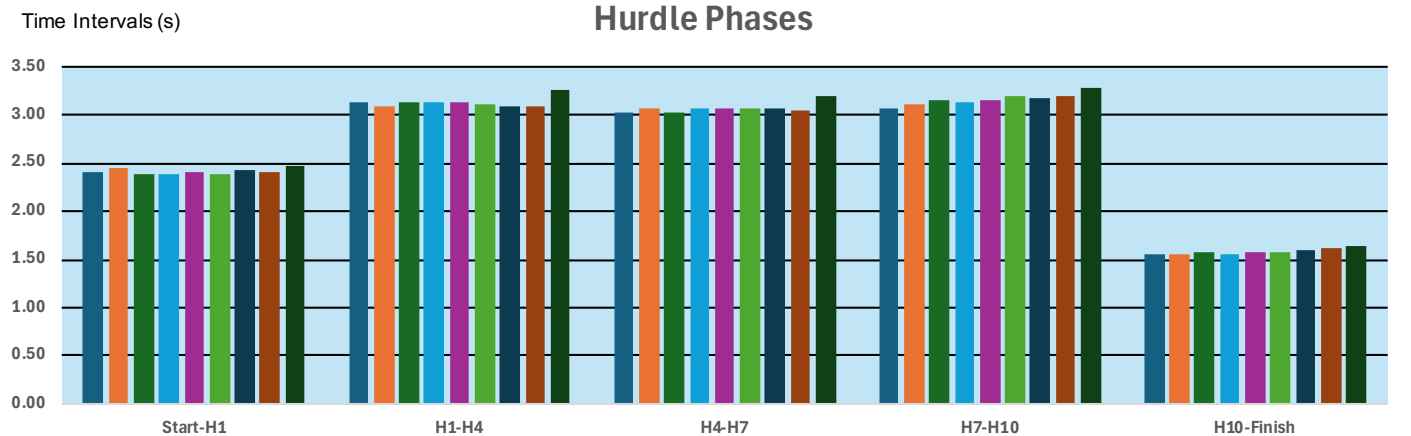
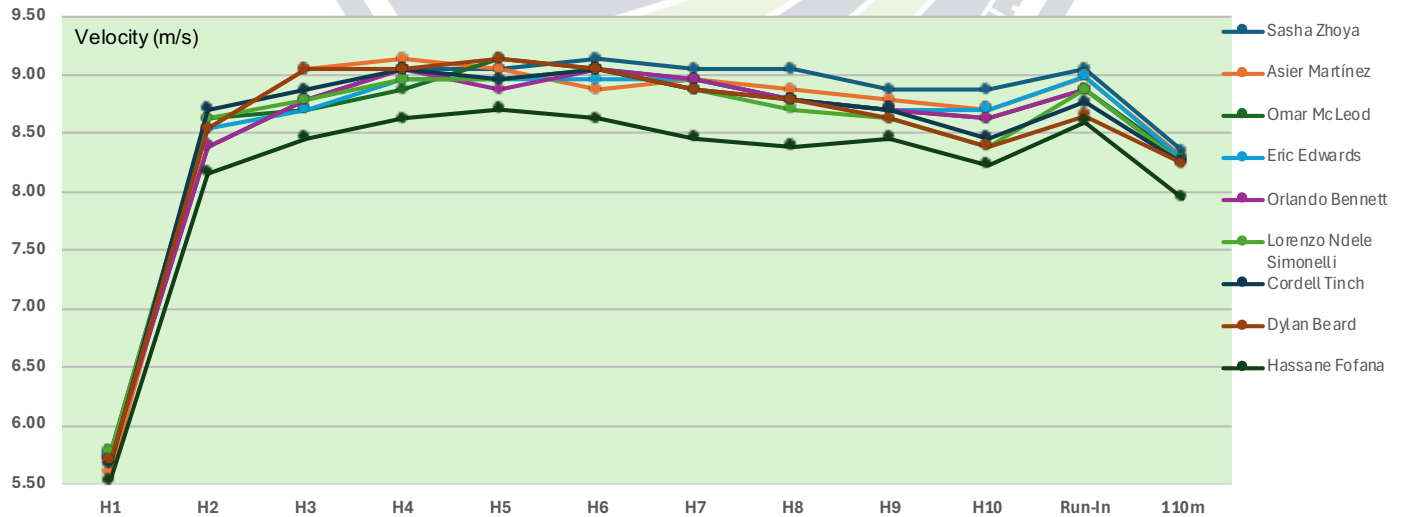
110m Hurdles

Date: 2024.08.30

Wind: 0.4 m/s

FINAL

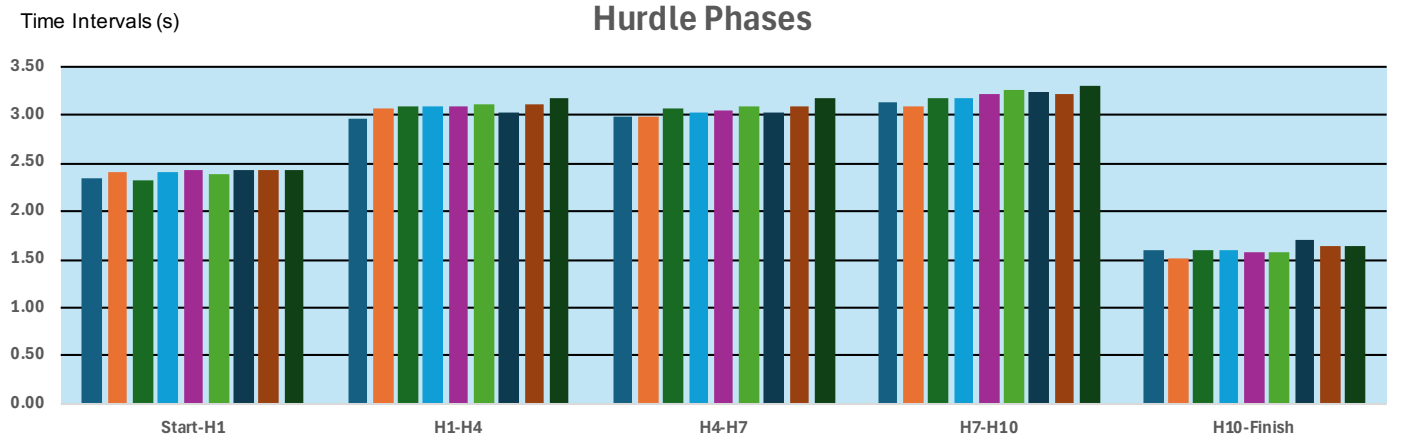
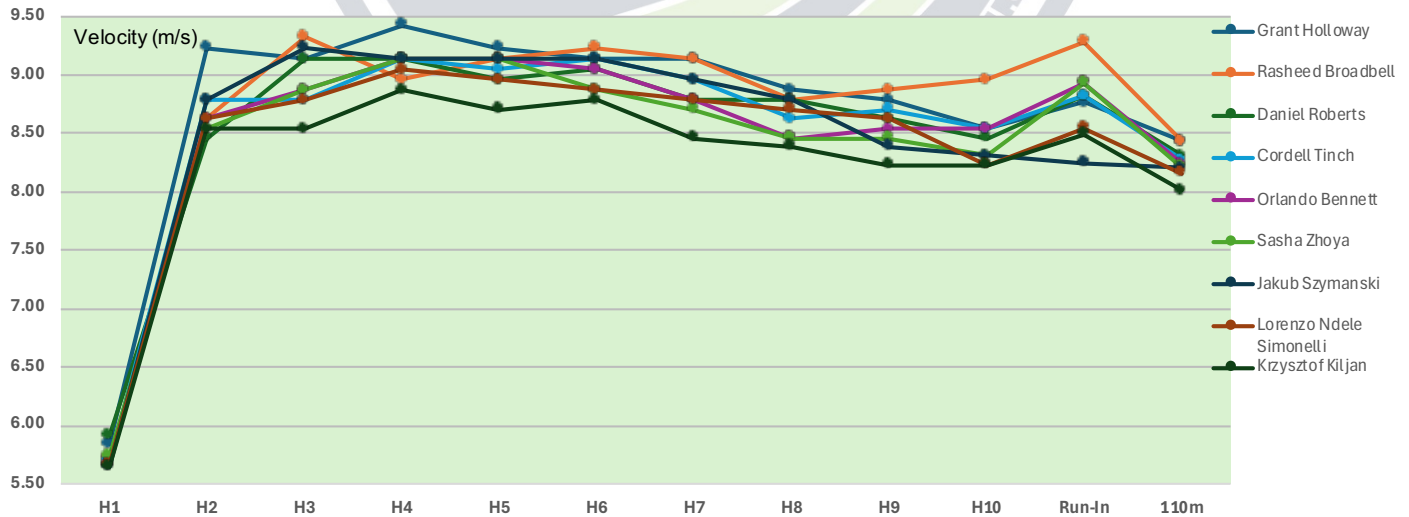
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Zhoya, Sasha (FRA) (2002)	time		2.40	3.49	4.53	5.54	6.55	7.55	8.56	9.57	10.60	11.63		13.18	6 / 1			
	reaction time	0.151											1.55			3.14	3.02	3.07
	interval velocity		7 steps	1.09	1.04	1.01	1.01	1.00	1.01	1.01	1.03	1.03	9.05	8.35		8.73	9.08	8.93
Martínez, Asier (ESP) (2000)	time		2.45	3.52	4.53	5.53	6.54	7.57	8.59	9.62	10.66	11.71		13.27	2 / 2			
	reaction time	0.157											1.56			3.08	3.06	3.12
	interval velocity		7 steps	1.07	1.01	1.00	1.01	1.03	1.02	1.03	1.04	1.05	8.99	8.29		8.90	8.96	8.79
McLeod, Omar (JAM) (1994)	time		2.38	3.44	4.49	5.52	6.52	7.53	8.55	9.59	10.64	11.70		13.28	9 / 3			
	reaction time	0.151											1.58			3.14	3.03	3.15
	interval velocity			1.06	1.05	1.03	1.00	1.01	1.02	1.04	1.05	1.06	8.87	8.28		8.73	9.05	8.70
Edwards, Eric (USA) (2000)	time		2.39	3.46	4.51	5.53	6.55	7.57	8.59	9.63	10.68	11.73		13.29	8 / 4			
	reaction time	0.130											1.56			3.14	3.06	3.14
	interval velocity			1.07	1.05	1.02	1.02	1.02	1.02	1.04	1.05	1.05	8.99	8.28		8.73	8.96	8.73
Bennett, Orlando (JAM) (1999)	time		2.40	3.49	4.53	5.54	6.57	7.58	8.60	9.64	10.69	11.75		13.33	5 / 5			
	reaction time	0.166											1.58			3.14	3.06	3.15
	interval velocity			1.09	1.04	1.01	1.03	1.01	1.02	1.04	1.05	1.06	8.87	8.25		8.73	8.96	8.70
Simonelli, Lorenzo Ndele (ITA) (2002)	time		2.38	3.44	4.48	5.50	6.52	7.53	8.56	9.61	10.67	11.76		13.34	4 / 6			
	reaction time	0.164											1.58			3.12	3.06	3.20
	interval velocity		7 steps	1.06	1.04	1.02	1.02	1.01	1.03	1.05	1.06	1.09	8.87	8.25		8.79	8.96	8.57
Tinch, Cordell (USA) (2000)	time		2.42	3.47	4.50	5.51	6.53	7.54	8.57	9.61	10.66	11.74		13.34	3 / 7			
	reaction time	0.171											1.60			3.09	3.06	3.17
	interval velocity		7 steps	1.05	1.03	1.01	1.02	1.01	1.03	1.04	1.05	1.08	8.76	8.25		8.87	8.96	8.65
Beard, Dylan (USA) (1998)	time		2.41	3.48	4.49	5.50	6.50	7.51	8.54	9.58	10.64	11.73		13.35	7 / 8			
	reaction time	0.170											1.62			3.09	3.04	3.19
	interval velocity			1.07	1.01	1.01	1.00	1.01	1.03	1.04	1.06	1.09	8.65	8.24		8.87	9.02	8.60
Fofana, Hassane (ITA) (1992)	time		2.48	3.60	4.68	5.74	6.79	7.85	8.93	10.02	11.10	12.21		13.84	1 / 9			
	reaction time	0.154											1.63			3.26	3.19	3.28
	interval velocity			1.12	1.08	1.06	1.05	1.06	1.08	1.09	1.08	1.11	8.60	7.95		8.41	8.60	8.36



Source: Omega Timing (Fri 30 Aug 2024 21:59) - diamond league race analysis
<https://www.omegatiming.com/File/000204100102080101FFFFFFFFFFFF6D.pdf>
Video: <https://www.youtube.com/watch?v=jZF8UJAosDHE>

2024 Kamila Skolimowska Memorial (Silesia, POL)

110m Hurdles			Date: 2024.08.25		Wind: 1.1 m/s												FINAL			
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10		
Holloway, Grant (USA) (1997)	time		2.35	3.34	4.34	5.31	6.30	7.30	8.30	9.33	10.37	11.44		13.04	6 / 1	2.96	2.99	3.14		
	reaction time	0.157	7 steps	0.99	1.00	0.97	0.99	1.00	1.00	1.03	1.04	1.07	1.60							
	interval		5.84	9.23	9.14	9.42	9.23	9.14	9.14	8.87	8.79	8.54	8.76	8.44					9.26	9.17
Broadbell, Rasheed (JAM) (2000)	time		2.40	3.46	4.44	5.46	6.46	7.45	8.45	9.49	10.52	11.54		13.05	5 / 2	3.06	2.99	3.09		
	reaction time	0.152	7 steps	1.06	0.98	1.02	1.00	0.99	1.00	1.04	1.03	1.02	1.51							
	interval		5.72	8.62	9.33	8.96	9.14	9.23	9.14	8.79	8.87	8.96	9.28	8.43					8.96	9.17
Roberts, Daniel (USA) (1998)	time		2.32	3.40	4.40	5.40	6.42	7.43	8.47	9.51	10.57	11.65		13.24	8 / 3	3.08	3.07	3.18		
	reaction time	0.154	7 steps	1.08	1.00	1.00	1.02	1.01	1.04	1.04	1.06	1.08	1.59							
	interval		5.91	8.46	9.14	9.14	8.96	9.05	8.79	8.79	8.62	8.46	8.82	8.31					8.90	8.93
Tinch, Cordell (USA) (2000)	time		2.41	3.45	4.49	5.49	6.50	7.50	8.52	9.58	10.63	11.70		13.29	4 / 4	3.08	3.03	3.18		
	reaction time	0.173	7 steps	1.04	1.04	1.00	1.01	1.00	1.02	1.06	1.05	1.07	1.59							
	interval		5.69	8.79	8.79	9.14	9.05	9.14	8.96	8.62	8.70	8.54	8.82	8.28					8.90	9.05
Bennett, Orlando (JAM) (1999)	time		2.42	3.48	4.51	5.51	6.51	7.52	8.56	9.64	10.71	11.78		13.35	3 / 5	3.09	3.05	3.22		
	reaction time	0.154	7 steps	1.06	1.03	1.00	1.00	1.01	1.04	1.08	1.07	1.07	1.57							
	interval		5.67	8.62	8.87	9.14	9.14	9.05	8.79	8.46	8.54	8.54	8.93	8.24					8.87	8.99
Zhoya, Sasha (FRA) (2002)	time		2.39	3.46	4.49	5.49	6.49	7.52	8.57	9.65	10.73	11.83		13.40	1 / 6	3.10	3.08	3.26		
	reaction time	0.138	7 steps	1.07	1.03	1.00	1.00	1.03	1.05	1.08	1.08	1.10	1.57							
	interval		5.74	8.54	8.87	9.14	9.14	8.87	8.70	8.46	8.46	8.31	8.93	8.21					8.85	8.90
Szymanski, Jakub (POL) (2002)	time		2.43	3.47	4.46	5.46	6.46	7.46	8.48	9.52	10.61	11.71		13.41	2 / 7	3.03	3.02	3.23		
	reaction time	0.182	7 steps	1.04	0.99	1.00	1.00	1.00	1.02	1.04	1.09	1.10	1.70							
	interval		5.65	8.79	9.23	9.14	9.14	9.14	8.96	8.79	8.39	8.31	8.25	8.20					9.05	9.08
Simonelli, Lorenzo Ndele (ITA) (2002)	time		2.42	3.48	4.52	5.53	6.55	7.58	8.62	9.67	10.73	11.84		13.48	7 / 8	3.11	3.09	3.22		
	reaction time	0.178	7 steps	1.06	1.04	1.01	1.02	1.03	1.04	1.05	1.06	1.11	1.64							
	interval		5.67	8.62	8.79	9.05	8.96	8.87	8.79	8.70	8.62	8.23	8.55	8.16					8.82	8.87
Kiljan, Krzysztof (POL) (1999)	time		2.43	3.50	4.57	5.60	6.65	7.69	8.77	9.86	10.97	12.08		13.73	9 / 9	3.17	3.17	3.31		
	reaction time	0.162	7 steps	1.07	1.07	1.03	1.05	1.04	1.08	1.09	1.11	1.11	1.65							
	interval		5.65	8.54	8.54	8.87	8.70	8.79	8.46	8.39	8.23	8.23	8.50	8.01					8.65	8.65



Source: Omega Timing (Sun 25 Aug 2024 14:55) - diamond league race analysis
<https://www.omegatiming.com/File/0002040F0101080101FFFFFFFFFFFF6D.pdf>

Video: No Video

2024 Athletissima (Lausanne, SUI)

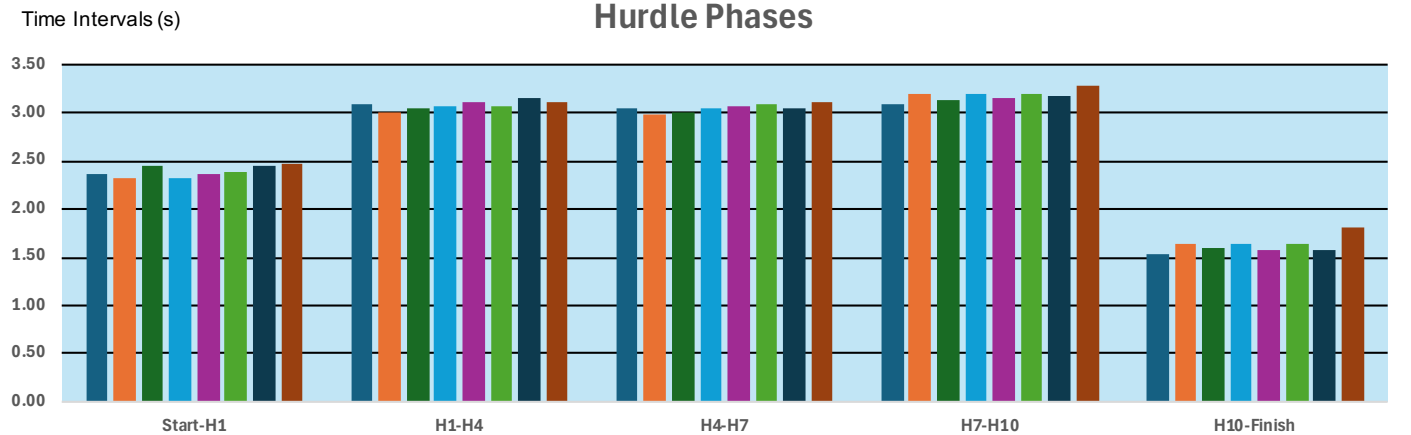
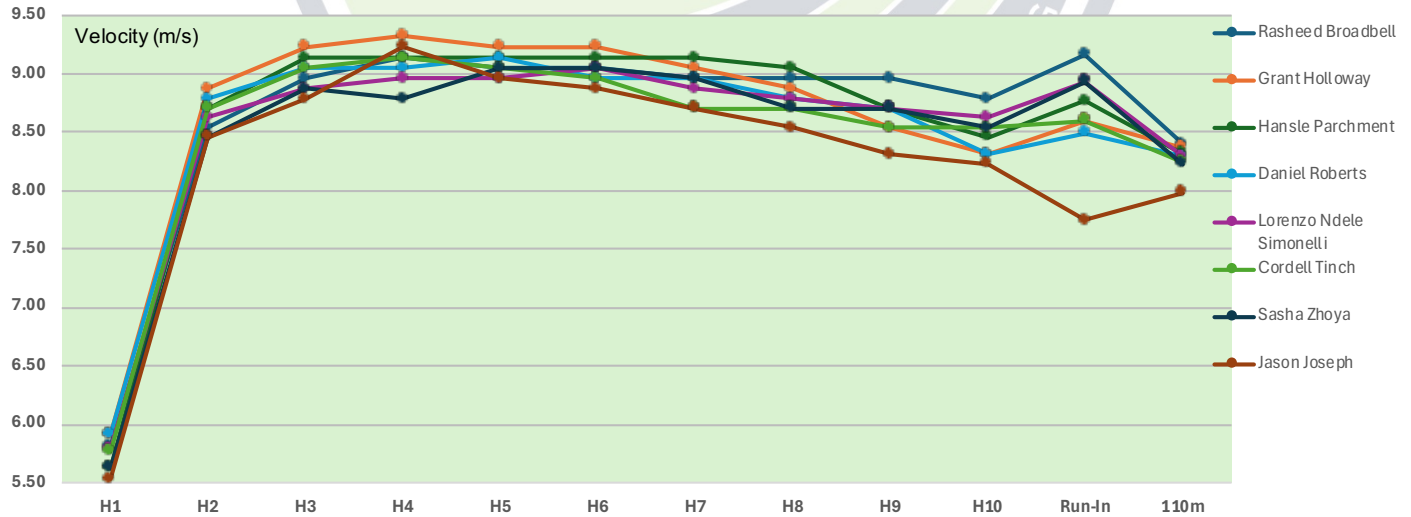
110m Hurdles

Date: 2024.08.22

Wind: -0.1 m/s

FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Broadbell, Rasheed (JAM) (2000)	time	2.36	3.43	4.45	5.45	6.46	7.47	8.49	9.51	10.53	11.57		13.10	3 / 1			
	reaction time	0.138													3.09	3.04	3.08
	interval		7 steps	1.07	1.02	1.00	1.01	1.02	1.02	1.02	1.04	1.53			8.87	9.02	8.90
Holloway, Grant (USA) (1997)	time	2.32	3.35	4.34	5.32	6.31	7.30	8.31	9.34	10.41	11.51		13.14	6 / 2			
	reaction time	0.146													3.00	2.99	3.20
	interval		7 steps	1.03	0.99	0.98	0.99	1.01	1.03	1.07	1.10	1.63			9.14	9.17	8.57
Parchment, Hansle (JAM) (1990)	time	2.44	3.49	4.49	5.49	6.49	7.49	8.49	9.50	10.55	11.63		13.23	7 / 3			
	reaction time	0.154													3.05	3.00	3.14
	interval		7 steps	1.05	1.00	1.00	1.00	1.00	1.01	1.05	1.08	1.60			8.99	9.14	8.73
Roberts, Daniel (USA) (1997)	time	2.32	3.36	4.37	5.38	6.38	7.40	8.42	9.46	10.51	11.61		13.26	5 / 4			
	reaction time	0.164													3.06	3.04	3.19
	interval		7 steps	1.04	1.01	1.01	1.02	1.02	1.04	1.05	1.10	1.65			8.96	9.02	8.60
Simonelli, Lorenzo Ndele (ITA) (2002)	time	2.37	3.43	4.46	5.48	6.50	7.51	8.54	9.58	10.63	11.69		13.26	4 / 5			
	reaction time	0.136													3.11	3.06	3.15
	interval		7 steps	1.06	1.03	1.02	1.01	1.03	1.04	1.05	1.06	1.57			8.82	8.96	8.70
Tinch, Cordell (USA) (2000)	time	2.38	3.43	4.44	5.44	6.45	7.47	8.52	9.57	10.64	11.71		13.34	1 / 6			
	reaction time	0.153													3.06	3.08	3.19
	interval		7 steps	1.05	1.01	1.00	1.01	1.02	1.05	1.07	1.07	1.63			8.96	8.90	8.60
Zhoya, Sasha (FRA) (2002)	time	2.44	3.52	4.55	5.59	6.60	7.61	8.63	9.68	10.73	11.80		13.37	8 / 7			
	reaction time	0.142													3.15	3.04	3.17
	interval		7 steps	1.08	1.03	1.04	1.01	1.02	1.05	1.05	1.07	1.57			8.70	9.02	8.65
Joseph, Jason (SUI) (1998)	time	2.48	3.56	4.60	5.59	6.61	7.64	8.69	9.76	10.86	11.97		13.78	2 / 8			
	reaction time	0.148													3.11	3.10	3.28
	interval		7 steps	1.08	1.04	0.99	1.02	1.03	1.05	1.07	1.10	1.81			8.82	8.85	8.36
	velocity																



Source: Omega Timing (Thu 22 Aug 2024 21:14) - diamond league race analysis
<https://www.omegatiming.com/File/0002040E01010B0101FFFFFFFFFFFF6D.pdf>

Video: <https://www.youtube.com/watch?v=Y1txJdUZWzQ>

2024 Olympic Games (Paris, FRA)

110m Hurdles		Date: 2024.08.08		Wind: -0.1 m/s		FINAL												
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Holloway, Grant (USA) (1997)	time		2.33	3.34	4.32	5.29	6.25	7.24	8.23	9.25	10.30	11.39		12.99	6 / 1	2.96	2.94	3.16
	reaction time	0.104																
	interval		7 steps	1.01	0.98	0.97	0.96	0.99	0.99	1.02	1.05	1.09	1.60					
Roberts, Daniel (USA) (1997)	velocity		5.89	9.05	9.33	9.42	9.52	9.23	9.23	8.96	8.70	8.39	8.76	8.47		9.26	9.33	8.68
	time		2.31	3.36	4.39	5.40	6.43	7.45	8.47	9.49	10.51	11.56		13.09	4 / 2	3.09	3.07	3.09
	reaction time	0.139																
interval		7 steps	1.05	1.03	1.01	1.03	1.02	1.02	1.02	1.05	1.53							
Broadbell, Rasheed (JAM) (2000)	velocity		5.94	8.70	8.87	9.05	8.87	8.96	8.96	8.96	8.96	8.70	9.16	8.40		8.87	8.93	8.87
	time		2.40	3.48	4.49	5.50	6.50	7.50	8.52	9.52	10.54	11.57		13.09	5 / 3	3.10	3.02	3.05
	reaction time	0.144																
interval		7 steps	1.08	1.01	1.01	1.00	1.00	1.02	1.00	1.02	1.03	1.52						
Llopis, Enrique (ESP) (2000)	velocity		5.72	8.46	9.05	9.05	9.14	9.14	8.96	9.14	8.96	8.87	9.22	8.40		8.85	9.08	8.99
	time		2.40	3.49	4.52	5.53	6.53	7.53	8.53	9.56	10.59	11.64		13.20	3 / 3	3.13	3.00	3.11
	reaction time	0.144																
interval		7 steps	1.09	1.03	1.01	1.00	1.00	1.00	1.03	1.03	1.05	1.56						
Muratake, Rachid (JPN) (2002)	velocity		5.72	8.39	8.87	9.05	9.14	9.14	8.87	8.87	8.70	8.99	8.33		8.76	9.14	8.82	
	time		2.39	3.44	4.47	5.47	6.48	7.50	8.51	9.55	10.58	11.64		13.21	9 / 5	3.08	3.04	3.13
	reaction time	0.161																
interval		7 steps	1.05	1.03	1.00	1.01	1.02	1.01	1.04	1.03	1.06	1.57						
Crittenden, Freddie (USA) (1994)	velocity		5.74	8.70	8.87	9.14	9.05	8.96	9.05	8.79	8.87	8.62	8.93	8.33		8.90	9.02	8.76
	time		2.41	3.49	4.53	5.55	6.57	7.59	8.61	9.65	10.69	11.75		13.32	8 / 6	3.14	3.06	3.14
	reaction time	0.161																
interval		7 steps	1.08	1.04	1.02	1.02	1.02	1.02	1.04	1.04	1.06	1.57						
Bennett, Orlando (JAM) (1999)	velocity		5.69	8.46	8.79	8.96	8.96	8.96	8.96	8.79	8.79	8.62	8.93	8.26		8.73	8.96	8.73
	time		2.36	3.44	4.48	5.48	6.49	7.50	8.51	9.56	10.62	11.69		13.34	7 / 7	3.12	3.03	3.18
	reaction time	0.142																
interval		7 steps	1.08	1.04	1.00	1.01	1.01	1.01	1.05	1.06	1.07	1.65						
Parchment, Hansle (JAM) (1990)	velocity		5.81	8.46	8.79	9.14	9.05	9.05	9.05	8.70	8.62	8.54	8.50	8.25		8.79	9.05	8.62
	time		2.47	3.55	4.58	5.60	6.61	7.63	8.65	9.69	10.74	11.78		13.39	2 / 8	3.13	3.05	3.13
	reaction time	0.144																
interval		7 steps	1.08	1.03	1.02	1.01	1.02	1.02	1.04	1.05	1.04	1.61						
	velocity		5.55	8.46	8.87	8.96	9.05	8.96	8.96	8.79	8.70	8.79	8.71	8.22		8.76	8.99	8.76

2024 Olympic Games (Paris, FRA)

110m Hurdles

Date: 2024.08.07

Wind: 0.6 m/s

Semi-Final 3

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Bennett, Orlando (JAM) (1999)	time	2.33	3.38	4.40	5.39	6.38	7.38	8.39	9.42	10.45	11.50		13.09	7 / 1			
	reaction time	0.155															
	interval		1.05	1.02	0.99	0.99	1.00	1.01	1.03	1.03	1.05	1.59	PB		3.06	3.00	3.11
Roberts, Daniel (USA) (1997)	time	2.29	3.34	4.36	5.37	6.37	7.38	8.40	9.43	10.46	11.52		13.10	8 / 2			
	reaction time	0.143															
	interval		1.05	1.02	1.01	1.00	1.01	1.02	1.03	1.03	1.06	1.58			3.08	3.03	3.12
	velocity	5.89	8.70	8.96	9.23	9.23	9.14	9.05	8.87	8.87	8.70	8.82	8.40		8.96	9.14	8.82

Date: 2024.08.07

Wind: -0.1 m/s

Semi-Final 2

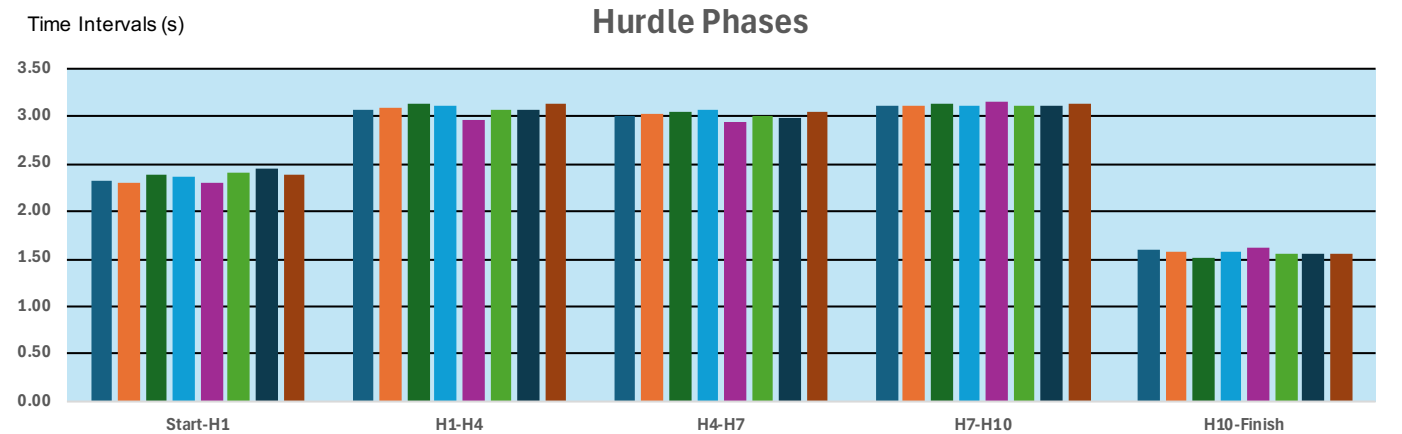
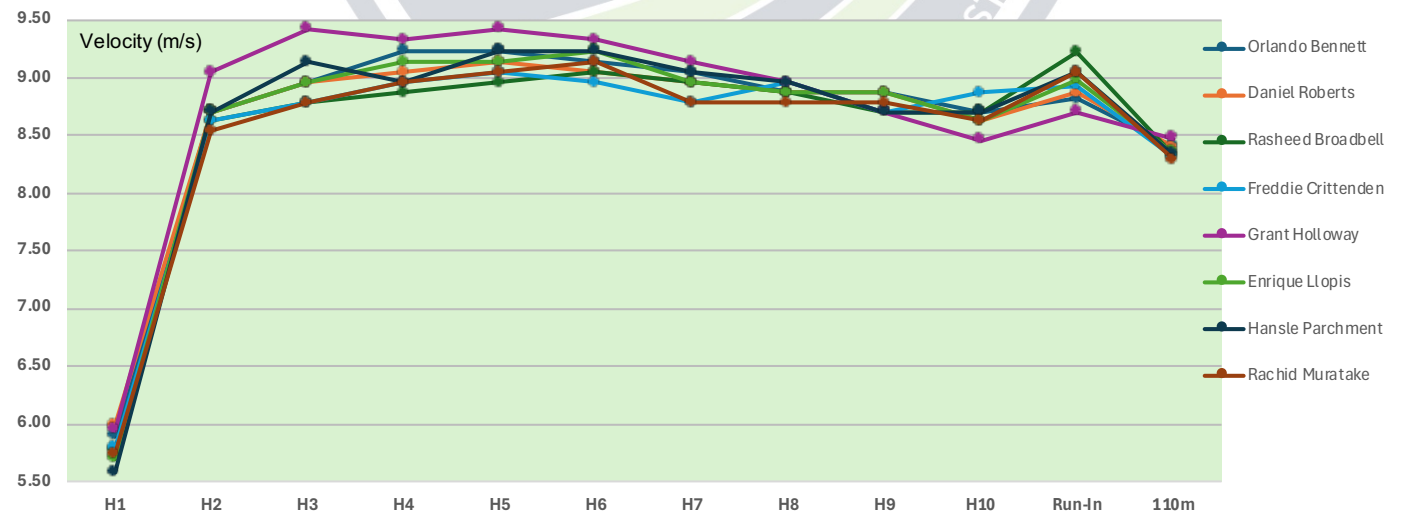
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Broadbell, Rasheed (JAM) (2000)	time	2.38	3.44	4.48	5.51	6.53	7.54	8.56	9.59	10.64	11.69		13.21	6 / 1			
	reaction time	0.151															
	interval		1.06	1.04	1.03	1.02	1.01	1.02	1.03	1.05	1.05	1.52			3.13	3.05	3.13
Crittenden, Freddie (USA) (1994)	time	2.37	3.43	4.47	5.49	6.50	7.52	8.56	9.58	10.63	11.66		13.23	2 / 2			
	reaction time	0.139															
	interval		1.06	1.04	1.02	1.01	1.02	1.04	1.02	1.05	1.03	1.57			3.12	3.07	3.10
	velocity	5.79	8.62	8.79	8.96	9.05	8.96	8.79	8.96	8.70	8.87	8.93	8.31		8.79	8.93	8.85

Date: 2024.08.07

Wind: 0.1 m/s

Semi-Final 1

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Holloway, Grant (USA) (1997)	time	2.31	3.32	4.29	5.27	6.24	7.22	8.22	9.24	10.29	11.37		12.98	6 / 1			
	reaction time	0.149															
	interval		1.01	0.97	0.98	0.97	0.98	1.00	1.02	1.05	1.08	1.61			2.96	2.95	3.15
Llopis, Enrique (ESP) (2000)	time	2.41	3.46	4.48	5.48	6.48	7.47	8.49	9.52	10.55	11.61		13.17	5 / 2			
	reaction time	0.138															
	interval		1.05	1.02	1.00	1.00	0.99	1.02	1.03	1.03	1.06	1.56			3.07	3.01	3.12
Parchment, Hansle (JAM) (1990)	time	2.46	3.51	4.51	5.53	6.52	7.51	8.52	9.54	10.59	11.64		13.19	3 / 3			
	reaction time	0.148															
	interval		1.05	1.00	1.02	0.99	0.99	1.01	1.02	1.05	1.05	1.55			3.07	2.99	3.12
Muratake, Rachid (JPN) (2002)	time	2.39	3.46	4.50	5.52	6.53	7.53	8.57	9.61	10.65	11.71		13.26	4 / 4			
	reaction time	0.160															
	interval		1.07	1.04	1.02	1.01	1.00	1.04	1.04	1.04	1.06	1.55			3.13	3.05	3.14
	velocity	5.74	8.54	8.79	8.96	9.05	9.14	8.79	8.79	8.79	8.62	9.05	8.30		8.76	8.99	8.73



Source: Paris 2024 Olympic Games - Results Book (2024), p. 197-199

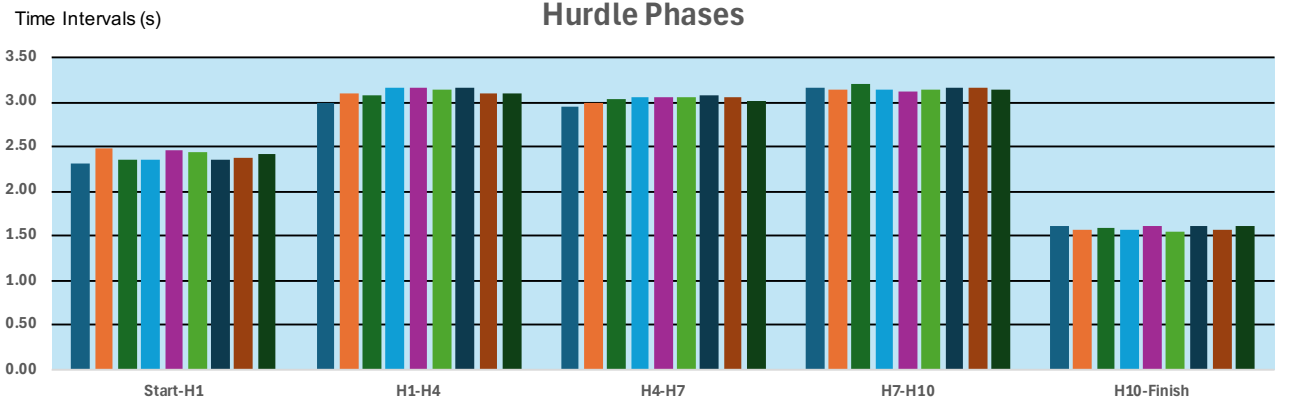
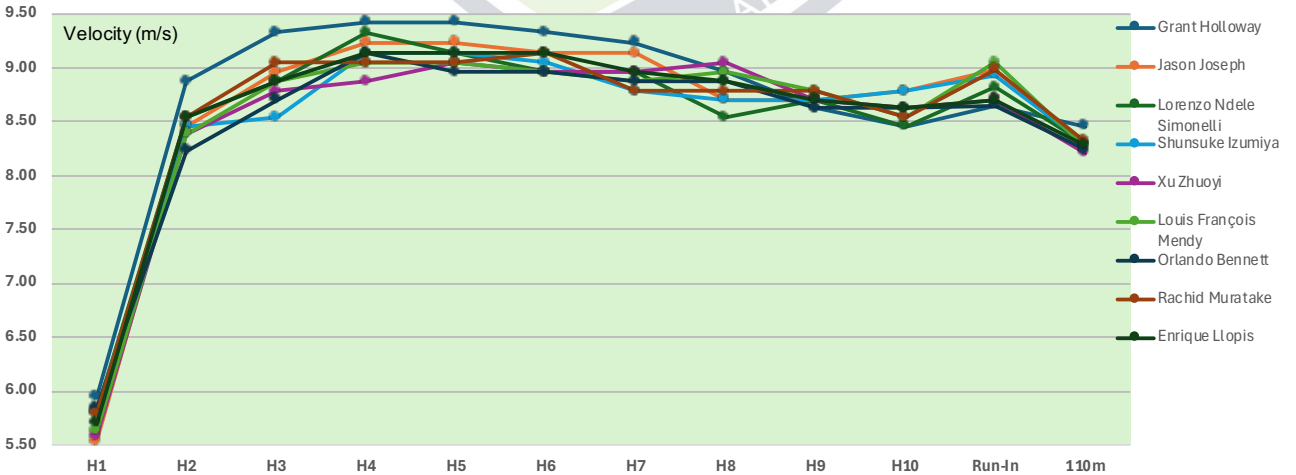
https://olympics.com/OG2024/pdf/OG2024/ATH/OG2024_ATH_B99_ATH-----pdf

Video: <https://olympics.com/en/paris-2024/videos/track-and-field-day-13-afternoon-athletics-olympic-games-paris-2024>

2024 Olympic Games (Paris, FRA)

110m Hurdles

		Date: 2024.08.04		Wind: 0.7 m/s												Heat 5			
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place		H1-H4	H4-H7	H7-H10	
Holloway, Grant (USA) (1997)	time	2.31	3.34	4.32	5.29	6.26	7.24	8.23	9.25	10.31	11.39		13.01	6 / 1					
	reaction time	0.136																	
	interval velocity	7 steps	1.03	0.98	0.97	0.97	0.98	0.99	1.02	1.06	1.08	1.62				2.98	2.94	3.16	
			5.94	8.87	9.33	9.42	9.33	9.23	8.96	8.62	8.46	8.65	8.46			9.20	9.33	8.68	
		Date: 2024.08.04		Wind: 0.3 m/s												Heat 4			
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place		H1-H4	H4-H7	H7-H10	
Joseph, Jason (SUI) (1998)	time	2.48	3.56	4.58	5.57	6.56	7.56	8.56	9.61	10.66	11.70		13.26	6 / 1					
	reaction time	0.170																	
	interval velocity	7 steps	1.08	1.02	0.99	0.99	1.00	1.00	1.05	1.05	1.04	1.56				3.09	2.99	3.14	
			5.53	8.46	8.96	9.23	9.23	9.14	9.14	8.70	8.79	8.99	8.30			8.87	9.17	8.73	
Simonelli, Lorenzo Ndele (ITA) (2002)	time	2.36	3.43	4.46	5.44	6.44	7.46	8.48	9.55	10.60	11.68		13.27	7 / 2					
	reaction time	0.151																	
	interval velocity	7 steps	1.07	1.03	0.98	1.00	1.02	1.02	1.07	1.05	1.08	1.59				3.08	3.04	3.20	
			5.81	8.54	8.87	9.33	9.14	8.96	8.96	8.70	8.46	8.82	8.29			8.90	9.02	8.57	
Izumiya, Shunsuke (JPN) (2000)	time	2.36	3.44	4.51	5.51	6.51	7.52	8.56	9.61	10.66	11.70		13.27	9 / 3					
	reaction time	0.150																	
	interval velocity		1.08	1.07	1.00	1.00	1.01	1.04	1.05	1.05	1.04	1.57				3.15	3.05	3.14	
			5.81	8.46	8.54	9.14	9.14	9.05	8.79	8.70	8.79	8.93	8.29			8.70	8.99	8.73	
		Date: 2024.08.04		Wind: 1.1 m/s												Heat 3			
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place		H1-H4	H4-H7	H7-H10	
Xu Zhuoyi (CHN) (2003)	time	2.46	3.55	4.59	5.62	6.63	7.65	8.67	9.68	10.73	11.79		13.40	7 / 1					
	reaction time	0.159																	
	interval velocity		1.09	1.04	1.03	1.01	1.02	1.02	1.01	1.05	1.06	1.61				3.16	3.05	3.12	
			5.58	8.39	8.79	8.87	9.05	8.96	8.96	9.05	8.70	8.62	8.71	8.21		8.68	8.99	8.79	
		Date: 2024.08.04		Wind: 1.2 m/s												Heat 2			
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place		H1-H4	H4-H7	H7-H10	
Mendy, Louis François (SEN) (1999)	time	2.44	3.53	4.56	5.57	6.58	7.60	8.63	9.65	10.69	11.76		13.31	9 / 1					
	reaction time	0.170																	
	interval velocity		1.09	1.03	1.01	1.01	1.02	1.03	1.02	1.04	1.07	1.55				3.13	3.06	3.13	
			5.62	8.39	8.87	9.05	8.96	8.87	8.96	8.79	8.54	9.05	8.26			8.76	8.96	8.76	
Bennett, Orlando (JAM) (1999)	time	2.35	3.46	4.51	5.51	6.53	7.55	8.58	9.61	10.67	11.73		13.35	7 / 2					
	reaction time	0.160																	
	interval velocity		1.11	1.05	1.00	1.02	1.02	1.03	1.03	1.06	1.06	1.62				3.16	3.07	3.15	
			5.84	8.23	8.70	9.14	8.96	8.96	8.87	8.87	8.62	8.62	8.65	8.24		8.68	8.93	8.70	
		Date: 2024.08.04		Wind: 0.1 m/s												Heat 1			
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place		H1-H4	H4-H7	H7-H10	
Muratake, Rachid (JPN) (2002)	time	2.37	3.44	4.45	5.46	6.47	7.47	8.51	9.55	10.59	11.66		13.22	8 / 1					
	reaction time	0.139																	
	interval velocity	7 steps	1.07	1.01	1.01	1.01	1.00	1.04	1.04	1.04	1.07	1.56				3.09	3.05	3.15	
			5.79	8.54	9.05	9.05	9.05	9.14	8.79	8.79	8.79	8.54	8.99	8.32		8.87	8.99	8.70	
Llopis, Enrique (ESP) (2000)	time	2.41	3.48	4.51	5.51	6.51	7.51	8.53	9.56	10.61	11.67		13.28	9 / 2					
	reaction time	0.143																	
	interval velocity	7 steps	1.07	1.03	1.00	1.00	1.00	1.02	1.03	1.05	1.06	1.61				3.10	3.02	3.14	
			5.69	8.54	8.87	9.14	9.14	9.14	8.96	8.87	8.70	8.62	8.71	8.28		8.85	9.08	8.73	



Source: Paris 2024 Olympic Games - Results Book (2024), p. 209-213
https://olympics.com/OG2024/pdf/OG2024/ATH/OG2024_ATH_B99_ATH-----pdf
Video: <https://olympics.com/en/paris-2024/videos/track-and-field-day-10-morning-athletics-olympic-games-paris-2024>

2024 Herculis Meeting International d'Athlétisme (Monaco, MON)

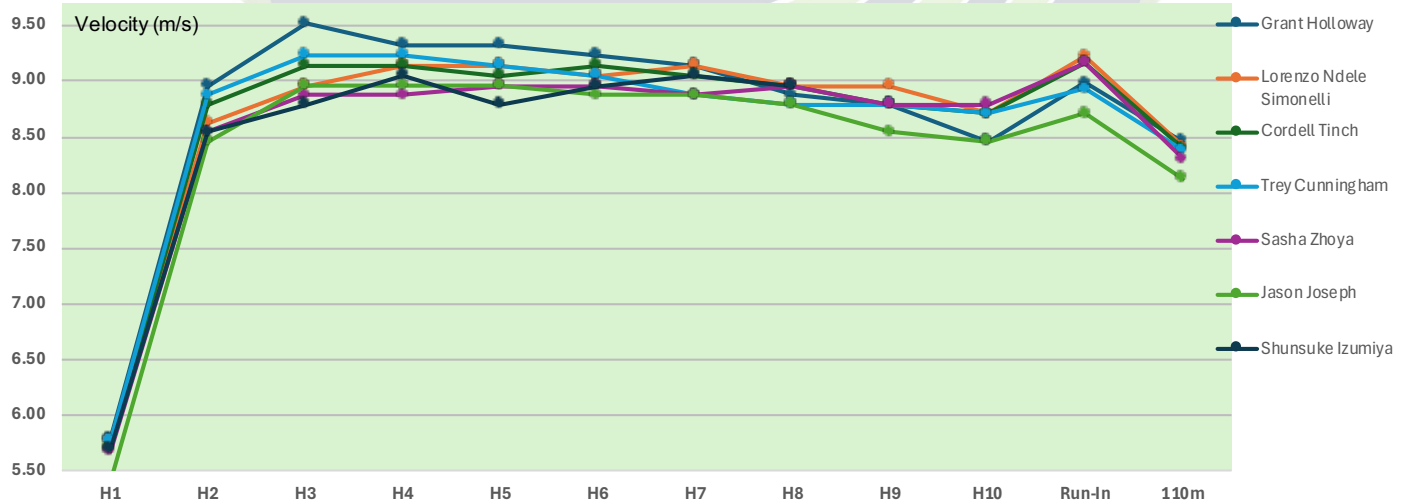
110m Hurdles

Date: 2024.07.12

Wind: -0.7 m/s

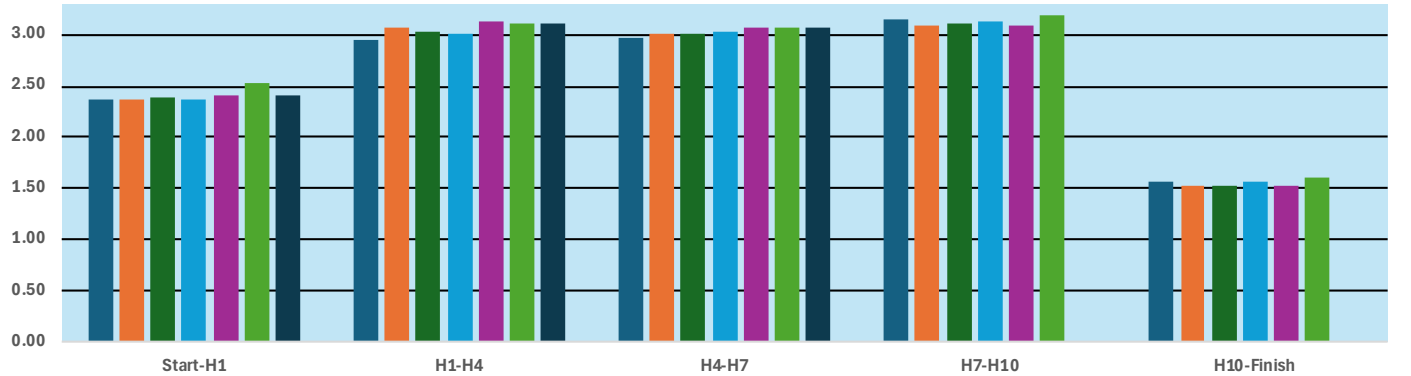
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Holloway, Grant (USA) (1997)	time		2.37	3.39	4.35	5.33	6.31	7.30	8.30	9.33	10.37	11.45		13.01	6 / 1			
	reaction time	0.132											1.56			2.96	2.97	3.15
	interval velocity		7 steps	1.02	0.96	0.98	0.98	0.99	1.00	1.03	1.04	1.08	8.99	8.46		9.26	9.23	8.70
Simonelli, Lorenzo Ndele (ITA) (2002)	time		2.38	3.44	4.46	5.46	6.46	7.47	8.47	9.49	10.51	11.56		13.08	3 / 2			
	reaction time	0.140											1.52			3.08	3.01	3.09
	interval velocity		7 steps	1.06	1.02	1.00	1.00	1.01	1.00	1.02	1.02	1.05	9.22	8.41		8.90	9.11	8.87
Tinch, Cordell (USA) (2000)	time		2.40	3.44	4.44	5.44	6.45	7.45	8.46	9.48	10.52	11.57		13.10	7 / 3			
	reaction time	0.161											1.53			3.04	3.02	3.11
	interval velocity		7 steps	1.04	1.00	1.00	1.01	1.00	1.01	1.02	1.04	1.05	9.16	8.40		9.02	9.08	8.82
Cunningham, Trey (USA) (1998)	time		2.38	3.41	4.40	5.39	6.39	7.40	8.43	9.47	10.51	11.56		13.13	4 / 4			
	reaction time	0.134											1.57			3.01	3.04	3.13
	interval velocity		7 steps	1.03	0.99	0.99	1.00	1.01	1.03	1.04	1.04	1.05	8.93	8.38		9.11	9.02	8.76
Zhoya, Sasha (FRA) (2002)	time		2.42	3.49	4.52	5.55	6.57	7.59	8.62	9.64	10.68	11.72		13.25	5 / 5			
	reaction time	0.137											1.53			3.13	3.07	3.10
	interval velocity		7 steps	1.07	1.03	1.03	1.02	1.02	1.03	1.02	1.04	1.04	9.16	8.30		8.76	8.93	8.85
Joseph, Jason (SUI) (1998)	time		2.54	3.62	4.64	5.66	6.68	7.71	8.74	9.78	10.85	11.93		13.54	1 / 6			
	reaction time	0.154											1.61			3.12	3.08	3.19
	interval velocity		7 steps	1.08	1.02	1.02	1.02	1.03	1.03	1.04	1.07	1.08	8.71	8.12		8.79	8.90	8.60
Izumiya, Shunsuke (JPN) (2000)	time		2.41	3.48	4.52	5.53	6.57	7.59	8.60	9.62				dnf	8 / --			
	reaction time	0.156														3.12	3.07	
	interval velocity		7 steps	1.07	1.04	1.01	1.04	1.02	1.01	1.02						8.79	8.93	



Time Intervals (s)

Hurdle Phases



Source: Omega Timing (Fri 12 Jul 2024 21:05) - diamond league race analysis
<https://www.omegatiming.com/File/0002040C0102060101FFFFFFFFFFFF6D.pdf>
Video: <https://www.youtube.com/watch?v=5cpA23m0WGg>

2024 Meeting de Paris (Paris, FRA)

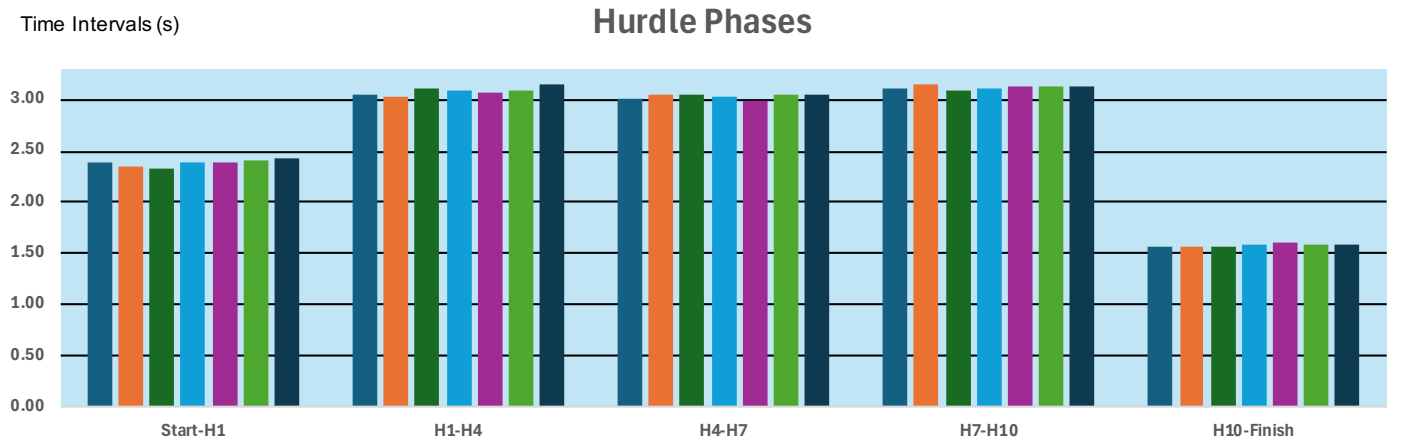
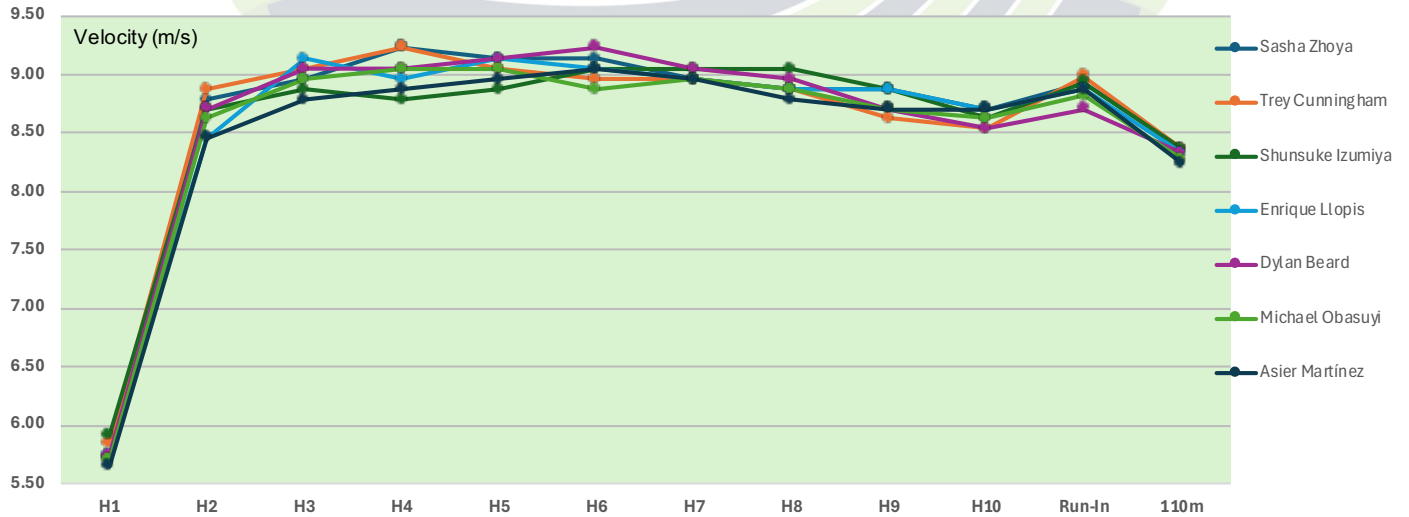
110m Hurdles

Date: 2024.07.07

Wind: -0.6 m/s

FINAL

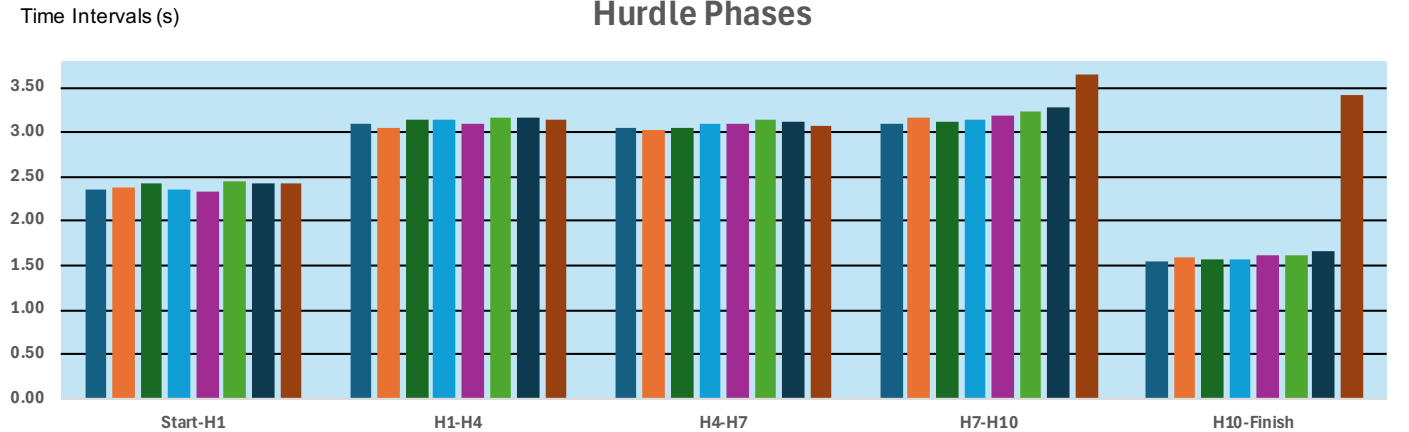
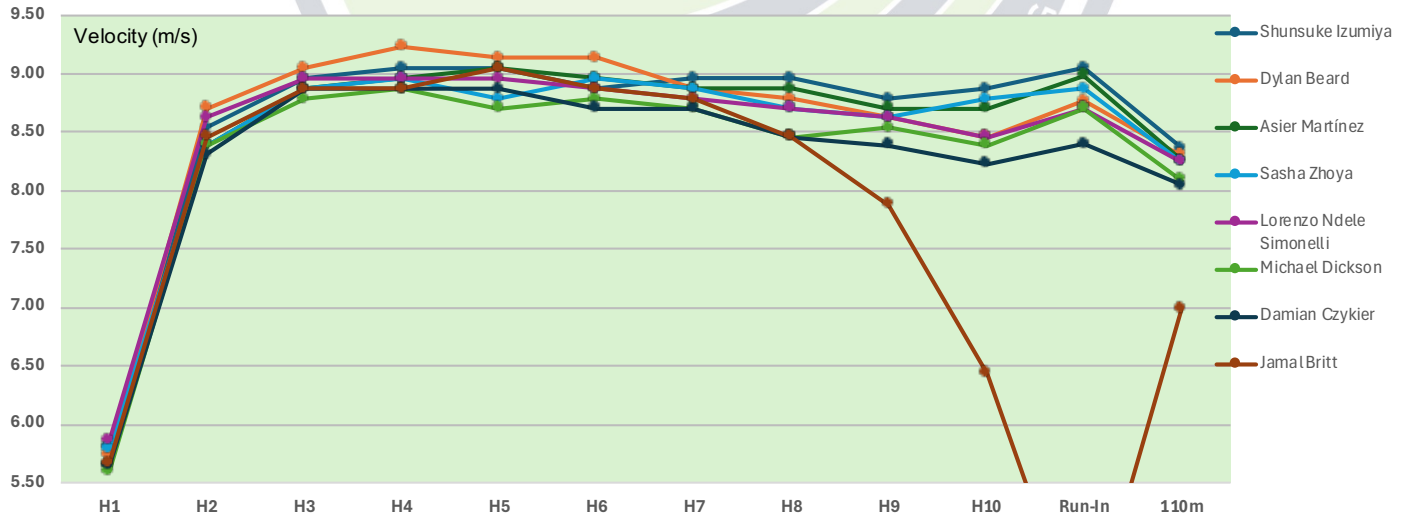
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Zhoya, Sasha (FRA) (2002)	time		2.40	3.44	4.46	5.45	6.45	7.45	8.47	9.50	10.53	11.58		13.15	8 / 1	3.05	3.02	3.11
	reaction time	0.142												=PB				
	interval		7 steps	1.04	1.02	0.99	1.00	1.00	1.02	1.03	1.03	1.05	1.57	8.37				
	velocity		5.72	8.79	8.96	9.23	9.14	9.14	8.96	8.87	8.87	8.70	8.93	8.37		8.99	9.08	8.82
Cunningham, Trey (USA) (1998)	time		2.35	3.38	4.39	5.38	6.39	7.41	8.43	9.46	10.52	11.59		13.15	5 / 2	3.03	3.05	3.16
	reaction time	0.148											1.56					
	interval		7 steps	1.03	1.01	0.99	1.01	1.02	1.02	1.03	1.06	1.07	1.56	8.37				
	velocity		5.84	8.87	9.05	9.23	9.05	8.96	8.87	8.87	8.62	8.54	8.99	8.37		9.05	8.99	8.68
Izumiya, Shunsuke (JPN) (2000)	time		2.32	3.37	4.40	5.44	6.47	7.48	8.49	9.50	10.53	11.59		13.16	6 / 3	3.12	3.05	3.10
	reaction time	0.145											1.57					
	interval		7 steps	1.05	1.03	1.04	1.03	1.01	1.01	1.01	1.03	1.06	1.57	8.36				
	velocity		5.91	8.70	8.87	8.79	8.87	9.05	9.05	9.05	8.87	8.62	8.93	8.36		8.79	8.99	8.85
Llopis, Enrique (ESP) (2000)	time		2.39	3.47	4.47	5.49	6.49	7.50	8.52	9.55	10.58	11.63		13.21	1 / 4	3.10	3.03	3.11
	reaction time	0.146											1.58					
	interval		7 steps	1.08	1.00	1.02	1.00	1.01	1.02	1.03	1.03	1.05	1.58	8.33				
	velocity		5.74	8.46	9.14	8.96	9.14	9.05	8.96	8.87	8.87	8.70	8.87	8.33		8.85	9.05	8.82
Beard, Dylan (USA) (1998)	time		2.39	3.44	4.45	5.46	6.46	7.45	8.46	9.48	10.53	11.60		13.21	3 / 5	3.07	3.00	3.14
	reaction time	0.156											1.61					
	interval		7 steps	1.05	1.01	1.01	1.00	0.99	1.01	1.02	1.05	1.07	1.61	8.33				
	velocity		5.74	8.70	9.05	9.05	9.14	9.23	9.05	8.96	8.70	8.54	8.71	8.33		8.93	9.14	8.73
Obasuyi, Michael (BEL) (1999)	time		2.41	3.47	4.49	5.50	6.51	7.54	8.56	9.59	10.64	11.70		13.29	7 / 6	3.09	3.06	3.14
	reaction time	0.151											1.59					
	interval		7 steps	1.06	1.02	1.01	1.01	1.03	1.02	1.03	1.05	1.06	1.59	8.28				
	velocity		5.69	8.62	8.96	9.05	9.05	8.87	8.96	8.87	8.70	8.62	8.82	8.28		8.87	8.96	8.73
Martínez, Asier (ESP) (2000)	time		2.43	3.51	4.55	5.58	6.60	7.61	8.63	9.67	10.72	11.77		13.35	2 / 7	3.15	3.05	3.14
	reaction time	0.139											1.58					
	interval		7 steps	1.08	1.04	1.03	1.02	1.01	1.02	1.04	1.05	1.05	1.58	8.24				
	velocity		5.65	8.46	8.79	8.87	8.96	9.05	8.96	8.79	8.70	8.70	8.87	8.24		8.70	8.99	8.73



Source: Omega Timing (Sun 07 Jul 2024 16:50) - diamond league race analysis
<https://www.omegatiming.com/File/0002040B0101090201FFFFFFFFFFFF6D.pdf>
Video: <https://www.youtube.com/watch?v=ACVFqC1mvus>

2024 Meeting de Paris (Paris, FRA)

110m Hurdles			Date: 2024.07.07		Wind: 0.4 m/s		Heat 2													
					H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Izumiya, Shunsuke (JPN) (2000)	time		2.36	3.43	4.45	5.46	6.47	7.50	8.52	9.54	10.58	11.61			13.16	7 / 1				
	reaction time	0.137															3.10	3.06	3.09	
	interval		7 steps	1.07	1.02	1.01	1.01	1.03	1.02	1.02	1.04	1.03	1.55				8.85	8.96	8.87	
Beard, Dylan (USA) (1998)	time		2.39	3.44	4.45	5.44	6.44	7.44	8.47	9.51	10.57	11.65			13.25	3 / 2				
	reaction time	0.164															3.05	3.03	3.18	
	interval			1.05	1.01	0.99	1.00	1.00	1.03	1.04	1.06	1.08	1.60				8.99	9.05	8.62	
Martínez, Asier (ESP) (2000)	time		2.43	3.52	4.55	5.57	6.58	7.60	8.63	9.66	10.71	11.76			13.32	8 / 3				
	reaction time	0.140															3.14	3.06	3.13	
	interval		7 steps	1.09	1.03	1.02	1.01	1.02	1.03	1.03	1.05	1.05	1.56				8.73	8.96	8.76	
Zhoya, Sasha (FRA) (2002)	time		2.37	3.46	4.49	5.51	6.55	7.57	8.60	9.65	10.71	11.75			13.33	6 / 4				
	reaction time	0.135															3.14	3.09	3.15	
	interval		7 steps	1.09	1.03	1.02	1.04	1.02	1.03	1.05	1.06	1.04	1.58				8.73	8.87	8.70	
Simonelli, Lorenzo Ndele (ITA) (2002)	time		2.34	3.40	4.42	5.44	6.46	7.49	8.53	9.58	10.64	11.72			13.33	4 / 5				
	reaction time	0.140															3.10	3.09	3.19	
	interval		7 steps	1.06	1.02	1.02	1.02	1.03	1.04	1.05	1.06	1.08	1.61				8.85	8.87	8.60	
Dickson, Michael (USA) (1997)	time		2.45	3.54	4.58	5.61	6.66	7.70	8.75	9.83	10.90	11.99			13.60	2 / 6				
	reaction time	0.192															3.16	3.14	3.24	
	interval		7 steps	1.09	1.04	1.03	1.05	1.04	1.05	1.08	1.07	1.09	1.61				8.68	8.73	8.46	
Czykier, Damian (POL) (1992)	time		2.43	3.53	4.56	5.59	6.62	7.67	8.72	9.80	10.89	12.00			13.67	1 / 7				
	reaction time	0.152															3.16	3.13	3.28	
	interval		7 steps	1.10	1.03	1.03	1.03	1.05	1.05	1.08	1.09	1.11	1.67				8.68	8.76	8.36	
Britt, Jamal (USA) (1998)	time		2.42	3.50	4.53	5.56	6.57	7.60	8.64	9.72	10.88	12.30			15.73	5 / 8				
	reaction time	0.153															3.14	3.08	3.66	
	interval		7 steps	1.08	1.03	1.03	1.01	1.03	1.04	1.08	1.16	1.42	3.43				8.73	8.90	7.49	
	velocity		5.67	8.46	8.87	8.87	9.05	8.87	8.79	8.46	7.88	6.44	4.09	6.99						



Source: Omega Timing (Sun 07 Jul 2024 15:35) - diamond league race analysis
<https://www.omegatiming.com/File/0002040B0101090102FFFFFFFFFFFF6D.pdf>

Video: No Video

2024 Meeting de Paris (Paris, FRA)

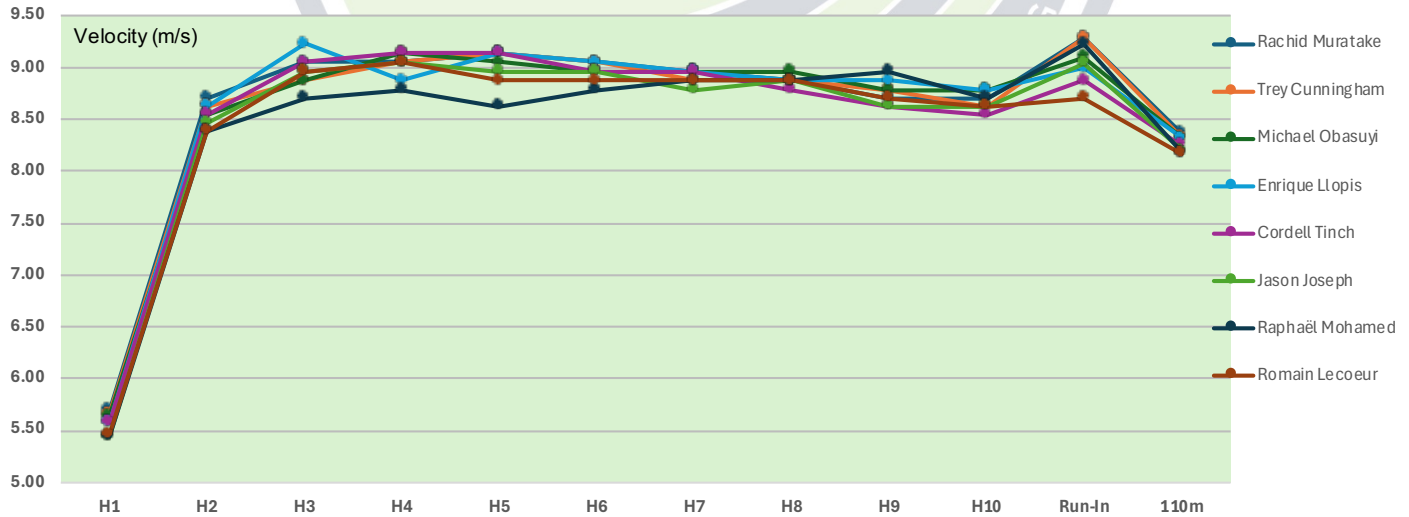
110m Hurdles

Date: 2024.07.07

Wind: 0.1 m/s

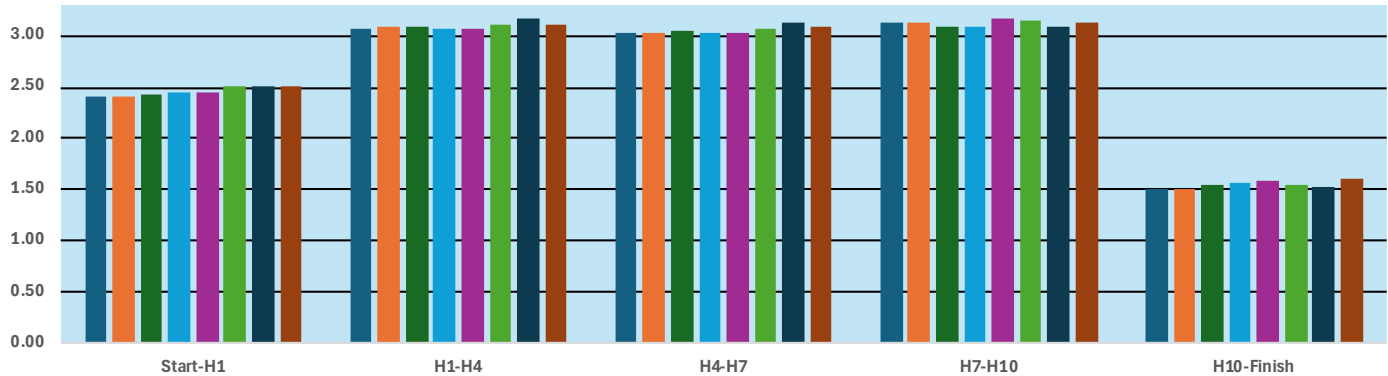
Heat 1

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Muratake, Rachid (JPN) (2002)	time	2.41	3.46	4.47	5.48	6.48	7.49	8.51	9.54	10.59	11.64		13.15	6 / 1			
	reaction time	0.149										1.51			3.07	3.03	3.13
	interval velocity	5.69	8.70	9.05	9.05	9.14	9.05	8.96	8.87	8.70	8.70	9.28	8.37		8.93	9.05	8.76
Cunningham, Trey (USA) (1998)	time	2.42	3.48	4.51	5.52	6.52	7.53	8.56	9.59	10.63	11.69		13.20	4 / 2			
	reaction time	0.165										1.51			3.10	3.04	3.13
	interval velocity	5.67	8.62	8.87	9.05	9.14	9.05	8.87	8.87	8.79	8.62	9.28	8.33		8.85	9.02	8.76
Obasuyi, Michael (BEL) (1999)	time	2.43	3.50	4.53	5.53	6.54	7.56	8.58	9.60	10.64	11.68		13.22	7 / 3			
	reaction time	0.129										1.54			3.10	3.05	3.10
	interval velocity	5.65	8.54	8.87	9.14	9.05	8.96	8.96	8.96	8.79	8.79	9.10	8.32		8.85	8.99	8.85
Llopis, Enrique (ESP) (2000)	time	2.46	3.52	4.51	5.54	6.54	7.55	8.57	9.60	10.63	11.67		13.23	3 / 4			
	reaction time	0.144										1.56			3.08	3.03	3.10
	interval velocity	5.58	8.62	9.23	8.87	9.14	9.05	8.96	8.87	8.87	8.79	8.99	8.31		8.90	9.05	8.85
Tinch, Cordell (USA) (2000)	time	2.46	3.53	4.54	5.54	6.54	7.56	8.58	9.62	10.68	11.75		13.33	5 / 5			
	reaction time	0.174										1.58			3.08	3.04	3.17
	interval velocity	5.58	8.54	9.05	9.14	9.14	8.96	8.96	8.79	8.62	8.54	8.87	8.25		8.90	9.02	8.65
Joseph, Jason (SUI) (1998)	time	2.52	3.60	4.62	5.63	6.65	7.67	8.71	9.74	10.80	11.86		13.41	2 / 6			
	reaction time	0.158										1.55			3.11	3.08	3.15
	interval velocity	5.44	8.46	8.96	9.05	8.96	8.96	8.79	8.87	8.62	8.62	9.05	8.20		8.82	8.90	8.70
Mohamed, Raphaël (FRA) (1998)	time	2.52	3.61	4.66	5.70	6.76	7.80	8.83	9.86	10.88	11.93		13.45	8 / 7			
	reaction time	0.155										1.52			3.18	3.13	3.10
	interval velocity	5.44	8.39	8.70	8.79	8.62	8.79	8.87	8.87	8.96	8.70	9.22	8.18		8.62	8.76	8.85
Lecoeur, Romain (FRA) (1997)	time	2.51	3.60	4.62	5.63	6.66	7.69	8.72	9.75	10.80	11.86		13.47	1 / 8			
	reaction time	0.177										1.61			3.12	3.09	3.14
	interval velocity	5.47	8.39	8.96	9.05	8.87	8.87	8.87	8.87	8.70	8.62	8.71	8.17		8.79	8.87	8.73



Time Intervals (s)

Hurdle Phases



Source: Omega Timing (Sun 07 Jul 2024 15:34) - diamond league race analysis
<https://www.omegatiming.com/File/0002040B0101090101FFFFFFFFFFFF6D.pdf>

Video: No Video

2024 USA Olympic Trials (Eugene, OR) (TV Analysis)

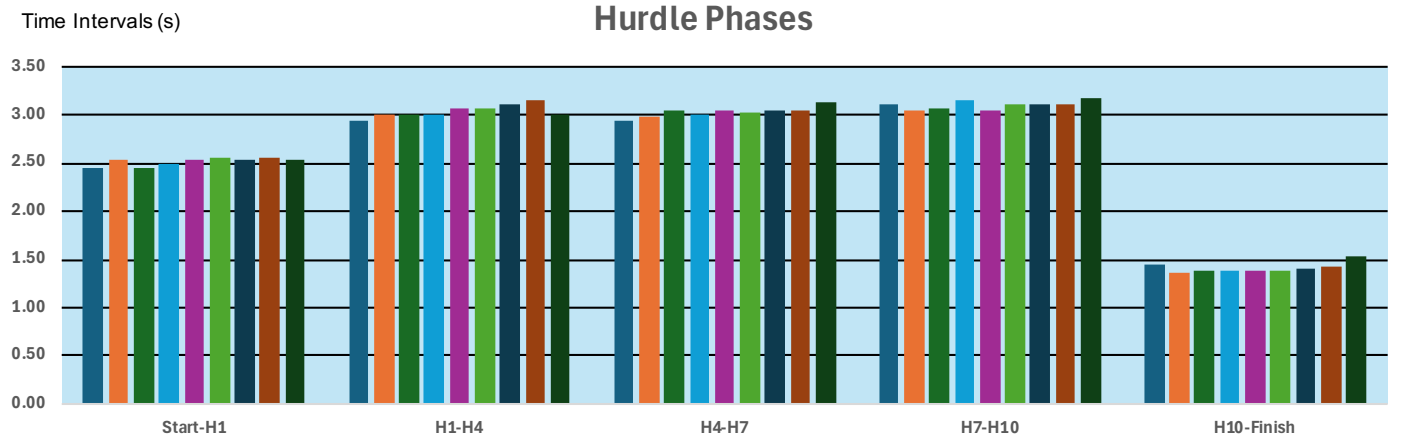
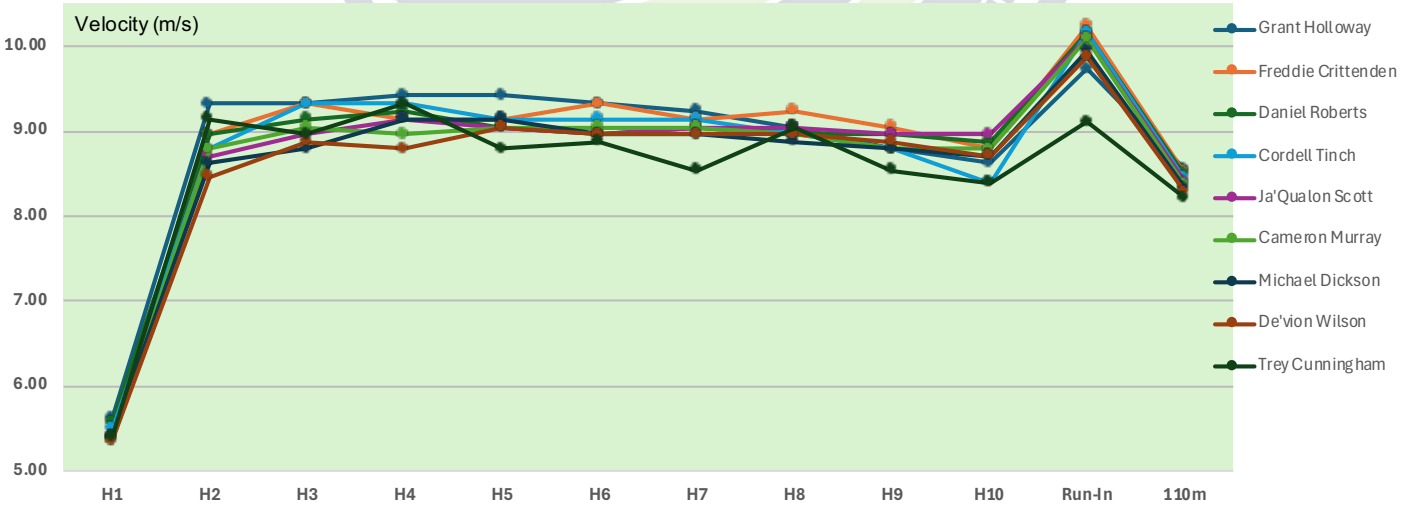
110m Hurdles

Date: 2024.06.28

Wind: 2.0 m/s

FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Holloway, Grant (USA) (1997)	time	2.44	3.42	4.40	5.37	6.34	7.32	8.31	9.32	10.36	11.42		12.86	6 / 1			
	reaction time														2.93	2.94	3.11
	interval	7 steps	0.98	0.98	0.97	0.97	0.98	0.99	1.01	1.04	1.06	1.44			9.36	9.33	8.82
Crittenden, Freddie (USA) (1994)	time	2.54	3.56	4.54	5.54	6.54	7.52	8.52	9.51	10.52	11.56		12.93	7 / 2			
	reaction time														3.00	2.98	3.04
	interval											1.37			9.14	9.20	9.02
Roberts, Daniel (USA) (1998)	time	2.46	3.48	4.48	5.47	6.48	7.50	8.51	9.53	10.55	11.58		12.96	4 / 3			
	reaction time														3.01	3.04	3.07
	interval	7 steps	1.02	1.00	0.99	1.01	1.02	1.01	1.02	1.02	1.03	1.38	PB		9.11	9.02	8.93
Tinch, Cordell (USA) (2000)	time	2.50	3.54	4.52	5.50	6.50	7.50	8.50	9.52	10.56	11.65		13.03	3 / 4			
	reaction time														3.00	3.00	3.15
	interval	7 steps	1.04	0.98	0.98	1.00	1.00	1.00	1.02	1.04	1.09	1.38			9.14	9.14	8.70
Scott, Ja'Qualon (USA) (2001)	time	2.54	3.59	4.61	5.61	6.62	7.64	8.65	9.66	10.68	11.70		13.09	8 / 5			
	reaction time														3.07	3.04	3.05
	interval	7 steps	1.05	1.02	1.00	1.01	1.02	1.01	1.01	1.02	1.02	1.39	PB		8.93	9.02	8.99
Murray, Cameron (USA) (1999)	time	2.56	3.60	4.61	5.63	6.64	7.65	8.66	9.68	10.72	11.76		13.15	1 / 6			
	reaction time														3.07	3.03	3.10
	interval	7 steps	1.04	1.01	1.02	1.01	1.01	1.01	1.02	1.04	1.04	1.39	PB		8.93	9.05	8.85
Dickson, Michael (USA) (1997)	time	2.54	3.60	4.64	5.64	6.64	7.66	8.68	9.71	10.75	11.80		13.21	5 / 7			
	reaction time														3.10	3.04	3.12
	interval	7 steps	1.06	1.04	1.00	1.00	1.02	1.02	1.03	1.04	1.05	1.41			8.85	9.02	8.79
Wilson, De'vion (USA) (2000)	time	2.56	3.64	4.67	5.71	6.72	7.74	8.76	9.78	10.81	11.86		13.28	9 / 8			
	reaction time														3.15	3.05	3.10
	interval	7 steps	1.08	1.03	1.04	1.01	1.02	1.02	1.02	1.03	1.05	1.42			8.70	8.99	8.85
Cunningham, Trey (USA) (1998)	time	2.54	3.54	4.56	5.54	6.58	7.61	8.68	9.69	10.76	11.85		13.39	2 / 9			
	reaction time														3.00	3.14	3.17
	interval	7 steps	1.00	1.02	0.98	1.04	1.03	1.07	1.01	1.07	1.09	1.54			9.14	8.73	8.65



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=Cbmp6Lfh8XU>

2024 USA Olympic Trials (Eugene, OR) (TV Analysis)

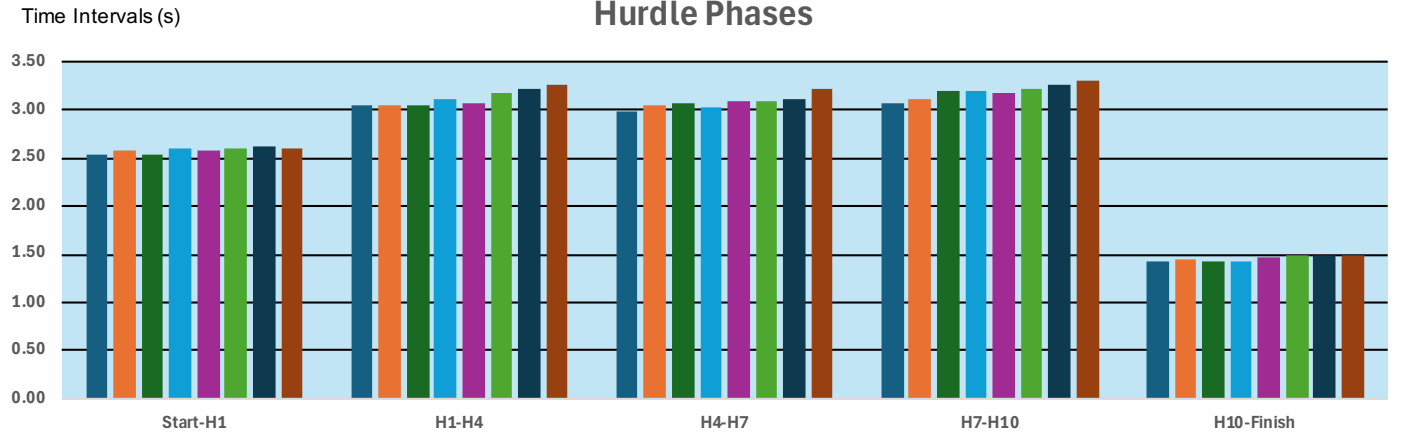
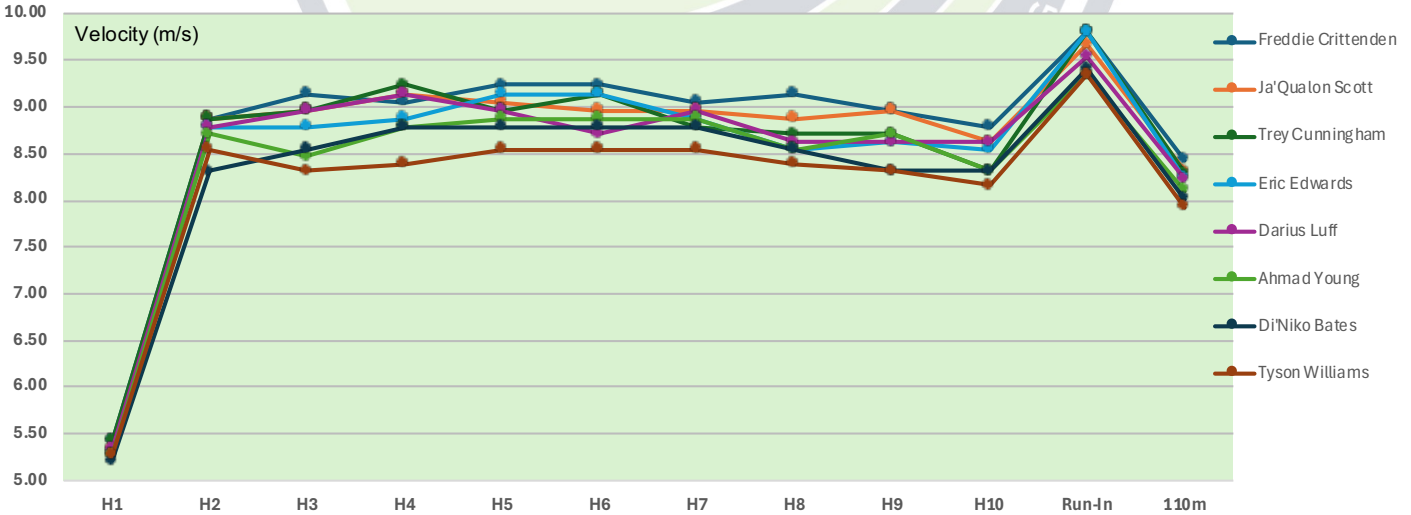
110m Hurdles

Date: 2024.06.27

Wind: -0.2 m/s

Semi-Final 2

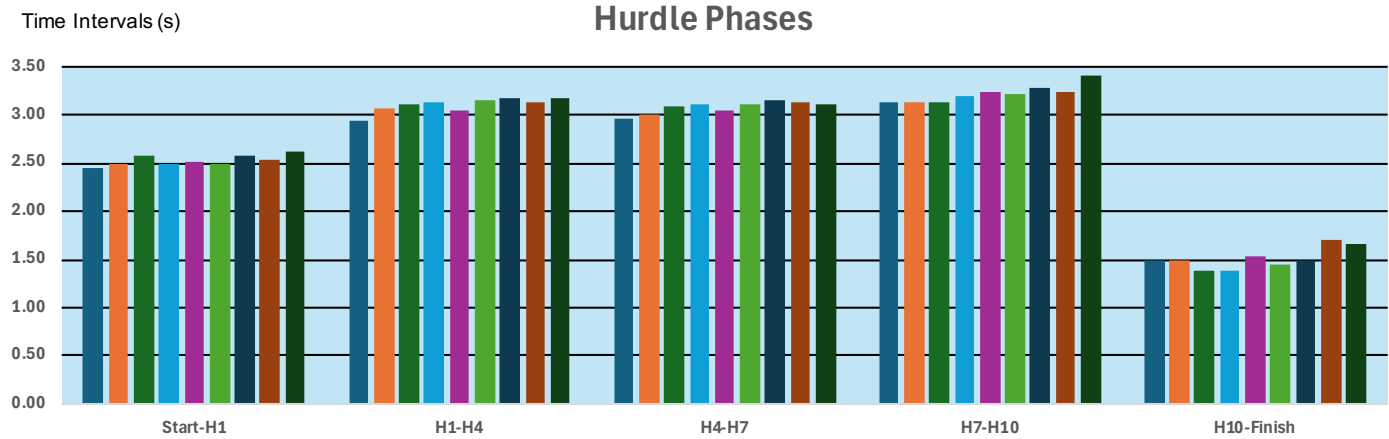
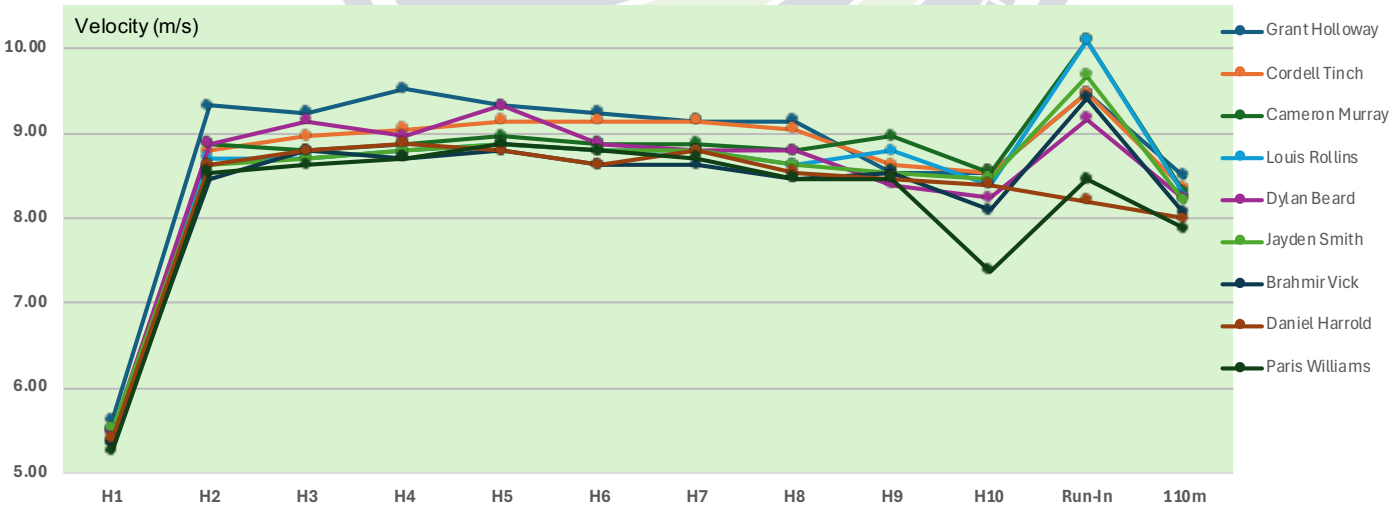
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Crittenden, Freddie (USA) (1994)	time	2.53	3.56	4.56	5.57	6.56	7.55	8.56	9.56	10.58	11.62		13.05	7 / 1	3.04	2.99	3.06
	reaction time																
	interval		1.03	1.00	1.01	0.99	0.99	1.01	1.00	1.02	1.04	1.43					
Scott, Ja'Qualon (USA) (2001)	time	2.57	3.60	4.62	5.62	6.63	7.65	8.67	9.70	10.72	11.78		13.23	6 / 2	3.05	3.05	3.11
	reaction time																
	interval		1.03	1.02	1.00	1.01	1.02	1.02	1.03	1.02	1.06	1.45					
Cunningham, Trey (USA) (1998)	time	2.53	3.56	4.58	5.57	6.59	7.59	8.63	9.68	10.73	11.83		13.26	4 / 3	3.04	3.06	3.20
	reaction time																
	interval		1.03	1.02	0.99	1.02	1.00	1.04	1.05	1.05	1.10	1.43					
Edwards, Eric (USA) (2000)	time	2.59	3.63	4.67	5.70	6.70	7.70	8.73	9.80	10.86	11.93		13.36	8 / 4	3.11	3.03	3.20
	reaction time																
	interval		1.04	1.04	1.03	1.00	1.00	1.03	1.07	1.06	1.07	1.43					
Luff, Darius (USA) (2001)	time	2.57	3.61	4.63	5.63	6.65	7.70	8.72	9.78	10.84	11.90		13.37	5 / 5	3.06	3.09	3.18
	reaction time																
	interval		1.04	1.02	1.00	1.02	1.05	1.02	1.06	1.06	1.06	1.47					
Young, Ahmad (USA) (2000)	time	2.60	3.65	4.73	5.77	6.80	7.83	8.86	9.93	10.98	12.08		13.58	9 / 6	3.17	3.09	3.22
	reaction time																
	interval		1.05	1.08	1.04	1.03	1.03	1.03	1.07	1.05	1.10	1.50					
Bates, Di'Niko (USA) (2003)	time	2.63	3.73	4.80	5.84	6.88	7.92	8.96	10.03	11.13	12.23		13.72	2 / 7	3.21	3.12	3.27
	reaction time																
	interval		1.10	1.07	1.04	1.04	1.04	1.04	1.07	1.10	1.10	1.49					
Williams, Tyson (USA) (2002)	time	2.60	3.67	4.77	5.86	6.93	8.00	9.07	10.16	11.26	12.38		13.88	1 / 8	3.26	3.21	3.31
	reaction time																
	interval		1.07	1.10	1.09	1.07	1.07	1.07	1.09	1.10	1.12	1.50					
	velocity	5.42	8.87	9.14	9.05	9.23	9.23	9.05	9.14	8.96	8.79	9.80	8.43		9.02	9.17	8.96
	velocity	5.34	8.87	8.96	9.14	9.05	8.96	8.96	8.87	8.96	8.62	9.67	8.31		8.99	8.99	8.82
	velocity	5.42	8.87	8.96	9.23	8.96	9.14	8.79	8.70	8.70	8.31	9.80	8.30		9.02	8.96	8.57
	velocity	5.30	8.79	8.79	8.87	9.14	9.14	8.87	8.54	8.62	8.54	9.80	8.23		8.82	9.05	8.57
	velocity	5.34	8.79	8.96	9.14	8.96	8.70	8.96	8.62	8.62	8.62	9.54	8.23		8.96	8.87	8.62
	velocity	5.28	8.70	8.46	8.79	8.87	8.87	8.87	8.54	8.70	8.31	9.35	8.10		8.65	8.87	8.52
	velocity	5.22	8.31	8.54	8.79	8.79	8.79	8.79	8.54	8.31	8.31	9.41	8.02		8.54	8.79	8.39
	velocity	5.28	8.54	8.31	8.39	8.54	8.54	8.54	8.39	8.31	8.16	9.35	7.93		8.41	8.54	8.28



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: https://www.youtube.com/watch?v=EE_MZM6ziM

2024 USA Olympic Trials (Eugene, OR) (TV Analysis)

110m Hurdles		Date: 2024.06.27		Wind: 0.3 m/s										Semi-Final 1			
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Holloway, Grant (USA) (1997)	time	2.44	3.42	4.41	5.37	6.35	7.34	8.34	9.34	10.41	11.48		12.96	7 / 1			
	reaction time											1.48			2.93	2.97	3.14
	interval	7 steps	0.98	0.99	0.96	0.98	0.99	1.00	1.00	1.07	1.07	1.48			9.36	9.23	8.73
Tinch, Cordell (USA) (2000)	time	2.50	3.54	4.56	5.57	6.57	7.57	8.57	9.58	10.64	11.71		13.19	6 / 2			
	reaction time											1.48			3.07	3.00	3.14
	interval	7 steps	1.04	1.02	1.01	1.00	1.00	1.00	1.01	1.06	1.07	1.48			8.93	9.14	8.73
Murray, Cameron (USA) (1999)	time	2.57	3.60	4.64	5.67	6.69	7.72	8.75	9.79	10.81	11.88		13.27	8 / 3			
	reaction time											1.39			3.10	3.08	3.13
	interval	7 steps	1.03	1.04	1.03	1.02	1.03	1.03	1.04	1.02	1.07	1.39			8.85	8.90	8.76
Rollins, Louis (USA) (1996)	time	2.50	3.55	4.60	5.64	6.67	7.71	8.75	9.81	10.85	11.94		13.33	3 / 4			
	reaction time											1.39			3.14	3.11	3.19
	interval		1.05	1.05	1.04	1.03	1.04	1.04	1.06	1.04	1.09	1.39			8.73	8.82	8.60
Beard, Dylan (USA) (1998)	time	2.51	3.54	4.54	5.56	6.54	7.57	8.61	9.65	10.74	11.85		13.38	5 / 5			
	reaction time											1.53			3.05	3.05	3.24
	interval		1.03	1.00	1.02	0.98	1.03	1.04	1.04	1.09	1.11	1.53			8.99	8.99	8.46
Smith, Jayden (USA) (2003)	time	2.49	3.55	4.60	5.64	6.67	7.71	8.75	9.81	10.88	11.96		13.41	4 / 6			
	reaction time											1.45			3.15	3.11	3.21
	interval	7 steps	1.06	1.05	1.04	1.03	1.04	1.04	1.06	1.07	1.08	1.45			8.70	8.82	8.54
Vick, Brahmira (USA) (2002)	time	2.57	3.65	4.69	5.74	6.78	7.84	8.90	9.98	11.05	12.18		13.67	1 / 7			
	reaction time											1.49			3.17	3.16	3.28
	interval		1.08	1.04	1.05	1.04	1.06	1.06	1.08	1.07	1.13	1.49			8.65	8.68	8.36
Harrold, Daniel (USA) (2000)	time	2.54	3.60	4.64	5.67	6.71	7.77	8.81	9.88	10.96	12.05		13.76	9 / 8			
	reaction time											1.71			3.13	3.14	3.24
	interval	7 steps	1.06	1.04	1.03	1.04	1.06	1.04	1.07	1.08	1.09	1.71			8.76	8.73	8.46
Williams, Paris (USA) (1998)	time	2.61	3.68	4.74	5.79	6.82	7.86	8.91	9.99	11.07	12.31		13.97	2 / 9			
	reaction time											1.66			3.18	3.12	3.40
	interval	7 steps	1.07	1.06	1.05	1.03	1.04	1.05	1.08	1.08	1.24	1.66			8.62	8.79	8.06



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=GAMKRCjRSf4>

2024 USA Olympic Trials (Eugene, OR) (TV Analysis)

110m Hurdles

Date: 2024.06.24

Wind: 1.2 m/s

Heat 4

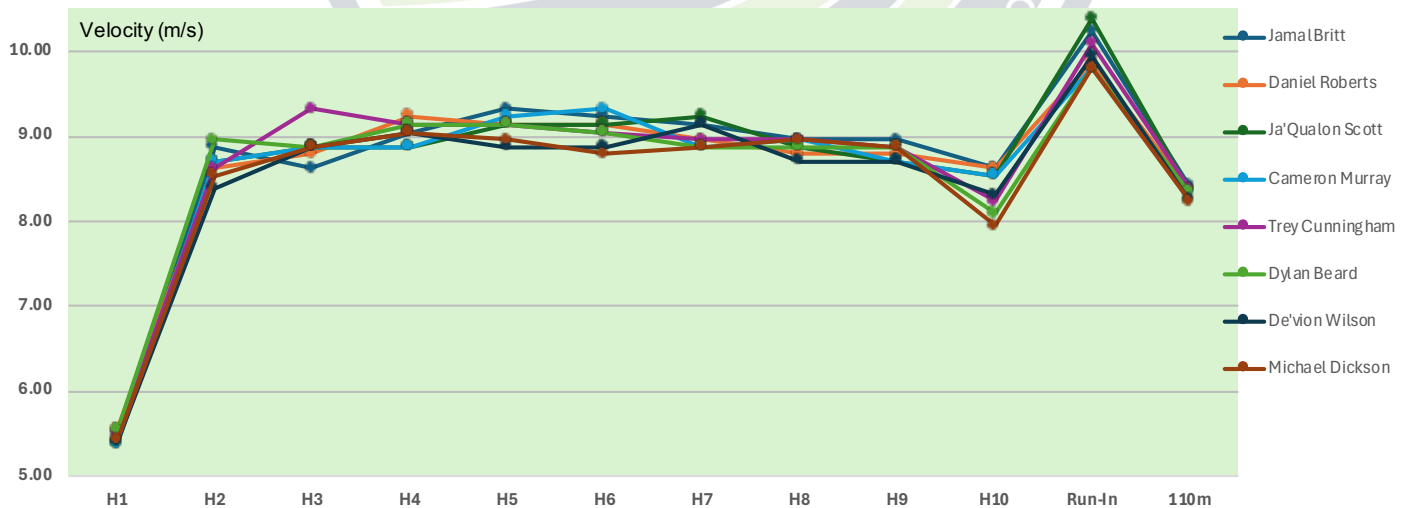
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Britt, Jamal (USA) (1998)	time	2.53	3.56	4.62	5.63	6.61	7.60	8.60	9.62	10.64	11.70		13.07	4 / 1	3.10	2.97	3.10
	reaction time																
	interval	7 steps	1.03	1.06	1.01	0.98	0.99	1.00	1.02	1.02	1.06	1.37	PB				
Roberts, Daniel (USA) (1998)	time	2.47	3.53	4.57	5.56	6.56	7.56	8.58	9.62	10.66	11.72		13.14	5 / 2	3.09	3.02	3.14
	reaction time																
	interval	7 steps	1.06	1.04	0.99	1.00	1.00	1.02	1.04	1.04	1.06	1.42					
Scott, Ja'Qualon (USA) (2001)	time	2.55	3.60	4.63	5.66	6.66	7.66	8.65	9.68	10.73	11.80		13.15	2 / 3	3.11	2.99	3.15
	reaction time																
	interval	7 steps	1.05	1.03	1.03	1.00	1.00	0.99	1.03	1.05	1.07	1.35	PB				
Murray, Cameron (USA) (1999)	time	2.55	3.60	4.63	5.66	6.65	7.63	8.66	9.68	10.73	11.80		13.23	7 / 4	3.11	3.00	3.14
	reaction time																
	interval	7 steps	1.05	1.03	1.03	0.99	0.98	1.03	1.02	1.05	1.07	1.43					
	velocity	5.38	8.70	8.87	8.87	9.23	9.33	8.87	8.96	8.70	8.54	9.80	8.31		8.82	9.14	8.73

Date: 2024.06.24

Wind: 1.8 m/s

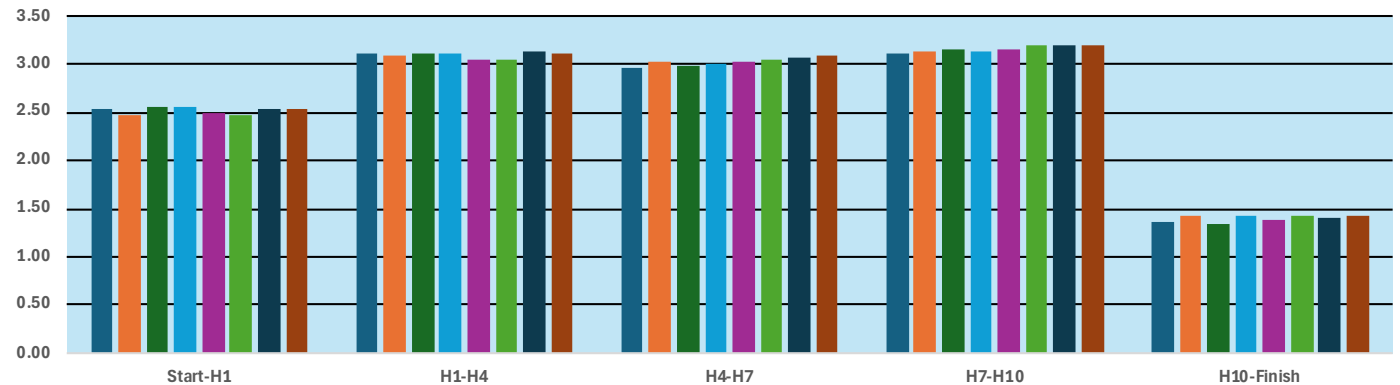
Heat 3

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Cunningham, Trey (USA) (1998)	time	2.50	3.56	4.54	5.54	6.54	7.55	8.57	9.59	10.62	11.73		13.12	3 / 1	3.04	3.03	3.16
	reaction time																
	interval	7 steps	1.06	0.98	1.00	1.00	1.01	1.02	1.02	1.03	1.11	1.39					
Beard, Dylan (USA) (1998)	time	2.48	3.50	4.53	5.53	6.53	7.54	8.57	9.60	10.63	11.76		13.19	4 / 2	3.05	3.04	3.19
	reaction time																
	interval		1.02	1.03	1.00	1.00	1.01	1.03	1.03	1.03	1.13	1.43					
Wilson, De'vion (USA) (2000)	time	2.54	3.63	4.66	5.67	6.70	7.73	8.73	9.78	10.83	11.93		13.34	6 / 3	3.13	3.06	3.20
	reaction time																
	interval	7 steps	1.09	1.03	1.01	1.03	1.03	1.00	1.05	1.05	1.10	1.41					
Dickson, Michael (USA) (1997)	time	2.53	3.60	4.63	5.64	6.66	7.70	8.73	9.75	10.78	11.93		13.36	2 / 4	3.11	3.09	3.20
	reaction time																
	interval	7 steps	1.07	1.03	1.01	1.02	1.04	1.03	1.02	1.03	1.15	1.43					
	velocity	5.42	8.54	8.87	9.05	8.96	8.79	8.87	8.96	8.87	7.95	9.80	8.23		8.82	8.87	8.57



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1280 x 720 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=CHtQirTa0j4&pp=ygUzMjAyNCBVLyBpHltcGijlIFRyaWFScyB0cmFjayBhbhmQgZmlhGQ%3D>

2024 USA Olympic Trials (Eugene, OR) (TV Analysis)

110m Hurdles

Date: 2024.06.24 Wind: -0.3 m/s

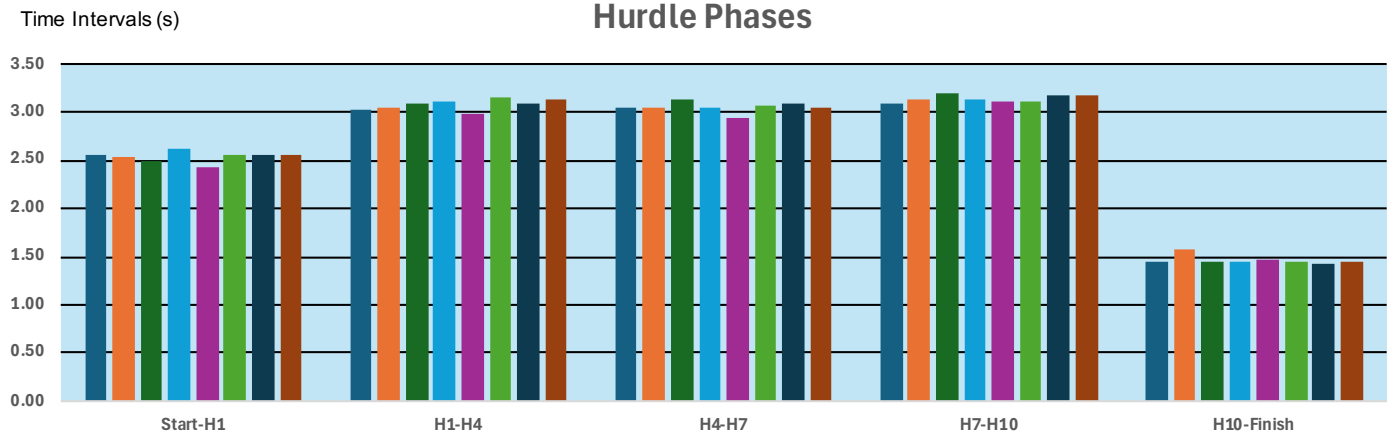
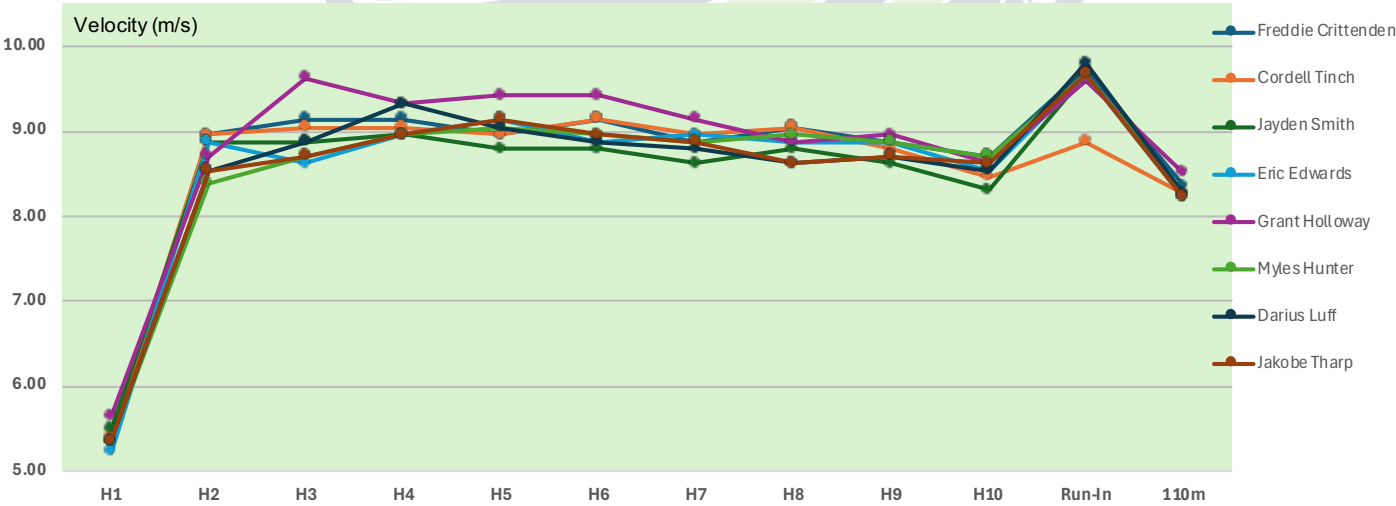
Heat 2

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Crittenden, Freddie (USA) (1994)	time	2.56	3.58	4.58	5.58	6.60	7.60	8.63	9.64	10.67	11.72		13.16	2 / 1			
	reaction time		1.02	1.00	1.00	1.02	1.00	1.03	1.01	1.03	1.05	1.44			3.02	3.05	3.09
	velocity	5.36	8.96	9.14	9.14	8.96	9.14	8.87	9.05	8.87	8.70	9.74	8.36		9.08	8.99	8.87
Tinch, Cordell (USA) (2000)	time	2.54	3.56	4.57	5.58	6.60	7.60	8.62	9.63	10.67	11.75		13.33	6 / 2			
	reaction time		7 steps 1.02	1.01	1.01	1.02	1.00	1.02	1.01	1.04	1.08	1.58			3.04	3.04	3.13
	velocity	5.40	8.96	9.05	9.05	8.96	9.14	8.96	9.05	8.79	8.46	8.87	8.25		9.02	9.02	8.76
Smith, Jayden (USA) (2003)	time	2.50	3.53	4.56	5.58	6.62	7.66	8.72	9.76	10.82	11.92		13.37	1 / 3			
	reaction time		7 steps 1.03	1.03	1.02	1.04	1.04	1.06	1.04	1.06	1.10	1.45	PB		3.08	3.14	3.20
	velocity	5.49	8.87	8.87	8.96	8.79	8.79	8.62	8.79	8.62	8.31	9.67	8.23		8.90	8.73	8.57
Edwards, Eric (USA) (2000)	time	2.63	3.66	4.72	5.74	6.74	7.77	8.79	9.82	10.85	11.92		13.37	8 / 4			
	reaction time		1.03	1.06	1.02	1.00	1.03	1.02	1.03	1.03	1.07	1.45			3.11	3.05	3.13
	velocity	5.22	8.87	8.62	8.96	9.14	8.87	8.96	8.87	8.87	8.54	9.67	8.23		8.82	8.99	8.76

Date: 2024.06.24 Wind: 0.8 m/s

Heat 1

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Holloway, Grant (USA) (1997)	time	2.43	3.48	4.43	5.41	6.38	7.35	8.35	9.38	10.40	11.46		12.92	4 / 1			
	reaction time		7 steps 1.05	0.95	0.98	0.97	0.97	1.00	1.03	1.02	1.06	1.46			2.98	2.94	3.11
	velocity	5.65	8.70	9.62	9.33	9.42	9.42	9.14	8.87	8.96	8.62	9.60	8.51		9.20	9.33	8.82
Hunter, Myles (USA) (1995)	time	2.56	3.65	4.70	5.72	6.73	7.75	8.78	9.80	10.83	11.88		13.33	6 / 2			
	reaction time		1.09	1.05	1.02	1.01	1.02	1.03	1.02	1.03	1.05	1.45	PB		3.16	3.06	3.10
	velocity	5.36	8.39	8.70	8.96	9.05	8.96	8.87	8.96	8.87	8.70	9.67	8.25		8.68	8.96	8.85
Luff, Darius (USA) (2001)	time	2.56	3.63	4.66	5.64	6.65	7.68	8.72	9.78	10.83	11.90		13.33	1 / 3			
	reaction time		1.07	1.03	0.98	1.01	1.03	1.04	1.06	1.05	1.07	1.43			3.08	3.08	3.18
	velocity	5.36	8.54	8.87	9.33	9.05	8.87	8.79	8.62	8.70	8.54	9.80	8.25		8.90	8.90	8.62
Tharp, Jakobe (USA) (2005)	time	2.56	3.63	4.68	5.70	6.70	7.72	8.75	9.81	10.86	11.92		13.37	3 / 4			
	reaction time		7 steps 1.07	1.05	1.02	1.00	1.02	1.03	1.06	1.05	1.06	1.45			3.14	3.05	3.17
	velocity	5.36	8.54	8.70	8.96	9.14	8.96	8.87	8.62	8.70	8.62	9.67	8.23		8.73	8.99	8.65



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1280 x 720 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=CHtQirTa0j4&pp=yglUmMjAyNCBVLyBPhHltcGijlFRyaWFEscyB0cmFjayBhbhmQgZmlhGQ%3D>

2024 European Athletics Championships (Roma, ITA) (TV Analysis)

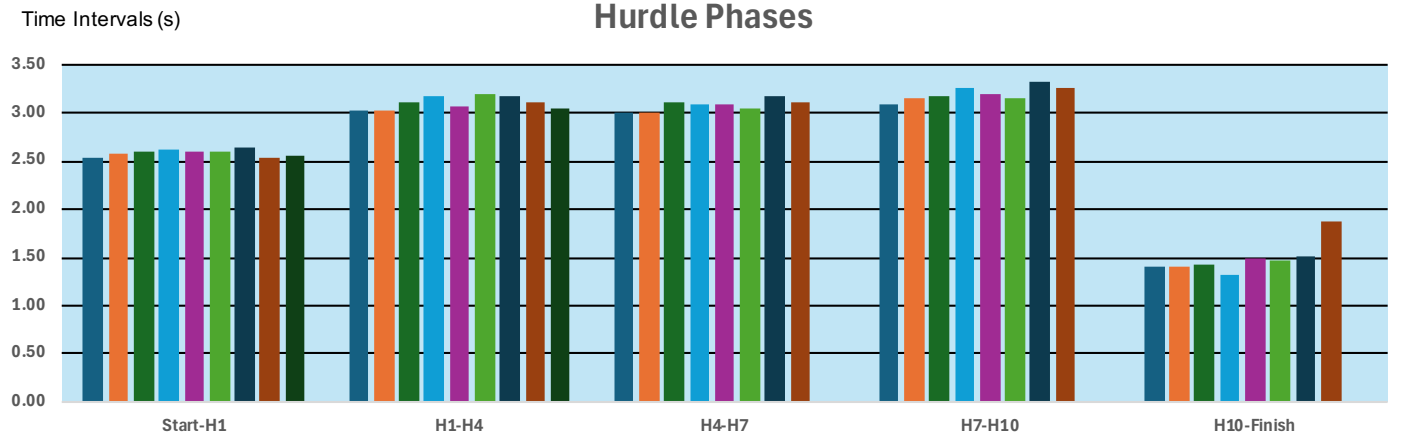
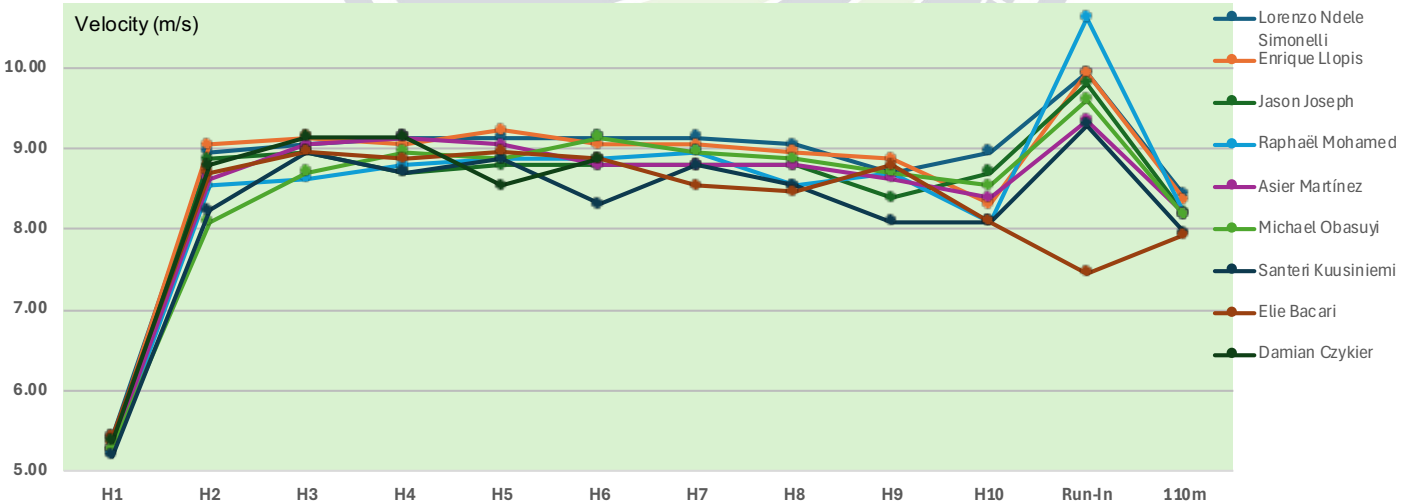
110m Hurdles

Date: 2024.06.08

Wind: 0.6 m/s

FINAL

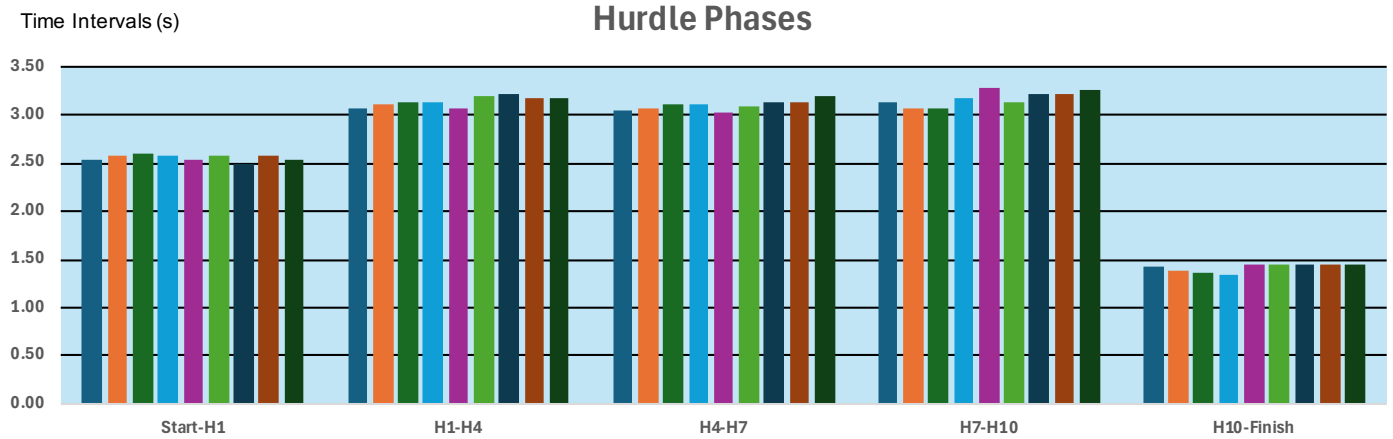
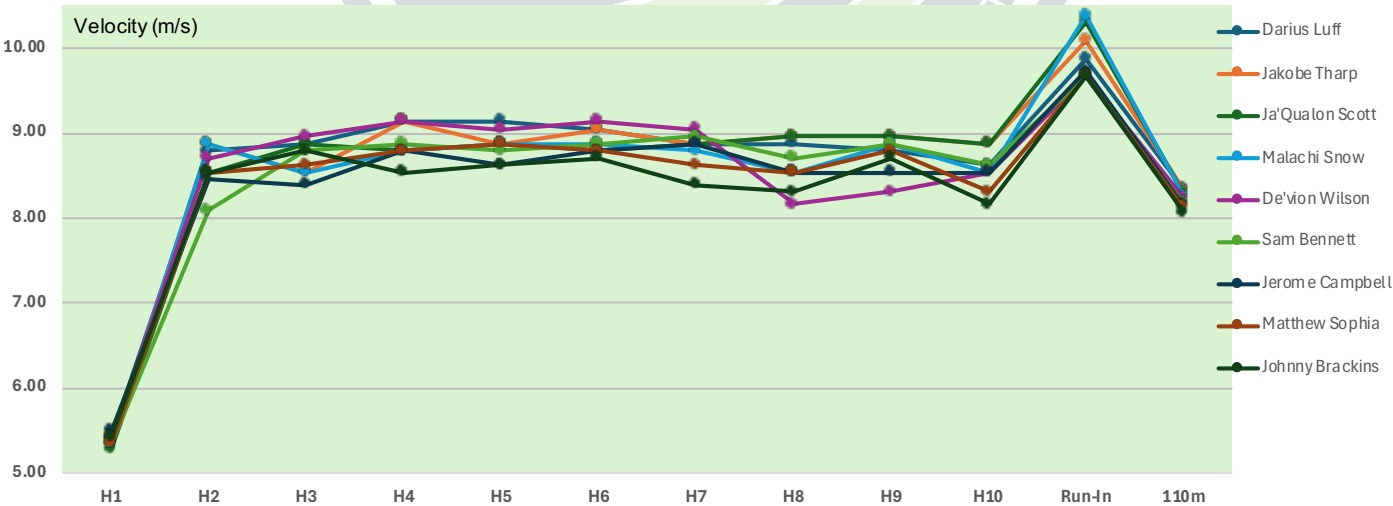
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Simonelli, Lorenzo Ndele (ITA) (2002)	time		2.53	3.55	4.56	5.56	6.56	7.56	8.56	9.57	10.62	11.64		13.05	5 / 1	3.03	3.00	3.08
	reaction time	0.145												NR PB				
	interval velocity		7 steps	1.02	1.01	1.00	1.00	1.00	1.01	1.05	1.02	1.41	8.43					
Llopis, Enrique (ESP) (2000)	time		2.57	3.58	4.58	5.59	6.58	7.59	8.60	9.62	10.65	11.75		13.16	7 / 2	3.02	3.01	3.15
	reaction time	0.144												PB				
	interval velocity		7 steps	1.01	1.00	1.01	0.99	1.01	1.01	1.02	1.03	1.10	1.41	8.36				
Joseph, Jason (SUI) (1998)	time		2.60	3.63	4.65	5.70	6.74	7.78	8.82	9.86	10.95	12.00		13.43	6 / 3	3.10	3.12	3.18
	reaction time	0.155												8.19				
	interval velocity		7 steps	1.03	1.02	1.05	1.04	1.04	1.04	1.04	1.09	1.05	1.43	8.19				
Mohamed, Raphaël (FRA) (1998)	time		2.63	3.70	4.76	5.80	6.83	7.86	8.88	9.95	11.00	12.13		13.45	3 / =4	3.17	3.08	3.25
	reaction time	0.171												8.18				
	interval velocity		7 steps	1.07	1.06	1.04	1.03	1.03	1.02	1.07	1.05	1.13	1.32	8.18				
Martínez, Asier (ESP) (2000)	time		2.60	3.66	4.67	5.67	6.68	7.72	8.76	9.80	10.86	11.95		13.45	4 / =4	3.07	3.09	3.19
	reaction time	0.165												8.18				
	interval velocity		7 steps	1.06	1.01	1.00	1.01	1.04	1.04	1.04	1.06	1.09	1.50	8.18				
Obasuyi, Michael (BEL) (1999)	time		2.60	3.73	4.78	5.80	6.83	7.83	8.85	9.88	10.93	12.00		13.46	8 / 6	3.20	3.05	3.15
	reaction time	0.170												8.17				
	interval velocity		7 steps	1.13	1.05	1.02	1.03	1.00	1.02	1.03	1.05	1.07	1.46	8.17				
Kuusiniemi, Santeri (FIN) (1998)	time		2.65	3.76	4.78	5.83	6.86	7.96	9.00	10.07	11.20	12.33		13.84	1 / 7	3.18	3.17	3.33
	reaction time	0.157												7.95				
	interval velocity		7 steps	1.11	1.02	1.05	1.03	1.10	1.04	1.07	1.13	1.13	1.51	7.95				
Bacari, Elie (BEL) (2003)	time		2.53	3.58	4.60	5.63	6.65	7.68	8.75	9.83	10.87	12.00		13.88	2 / 	no official time given	3.10	3.12
	reaction time	0.115												1.88				3.12
	interval velocity		7 steps	1.05	1.02	1.03	1.02	1.03	1.07	1.08	1.04	1.13	7.46	7.93				3.12
Czykier, Damian (POL) (1992)	time		2.56	3.60	4.60	5.60	6.67	7.70						dnf	9 / --	3.04	9.02	
	reaction time	0.151																
	interval velocity		7 steps	1.04	1.00	1.00	1.07	1.03										



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 24fps
Timing From: First Movement
Source: https://www.youtube.com/watch?v=E_zkyngnfU

2024 NCAA Championships (Eugene, OR) (TV Analysis)

110m Hurdles		Date: 2024.06.07		Wind: 0.1 m/s												FINAL			
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10		
Luff, Darius (USA) (2001)	time	2.53	3.57	4.60	5.60	6.60	7.61	8.64	9.67	10.71	11.77		13.19	6 / 1	3.07	3.04	3.13		
	reaction time		1.04	1.03	1.00	1.00	1.01	1.03	1.03	1.04	1.06	1.42	PB						
	velocity	5.42	8.79	8.87	9.14	9.14	9.05	8.87	8.87	8.79	8.62	9.87	8.34		8.93	9.02	8.76		
Tharp, Jakobe (USA) (2005)	time	2.57	3.60	4.67	5.67	6.70	7.71	8.74	9.76	10.78	11.81		13.20	5 / 2	3.10	3.07	3.07		
	reaction time		1.03	1.07	1.00	1.03	1.01	1.03	1.02	1.02	1.03	1.39							
	velocity	5.34	8.87	8.54	9.14	8.87	9.05	8.87	8.96	8.96	8.87	10.09	8.33		8.85	8.93	8.93		
Scott, Ja'Qualon (USA) (2001)	time	2.60	3.67	4.70	5.74	6.77	7.81	8.84	9.86	10.88	11.91		13.27	3 / 3	3.14	3.10	3.07		
	reaction time		7 steps 1.07	1.03	1.04	1.03	1.04	1.03	1.02	1.02	1.03	1.36	PB						
	velocity	5.28	8.54	8.87	8.79	8.87	8.79	8.87	8.96	8.96	8.87	10.31	8.29		8.73	8.85	8.93		
Snow, Malachi (USA) ()	time	2.57	3.60	4.67	5.71	6.74	7.77	8.81	9.88	10.91	11.98		13.33	8 / 4	3.14	3.10	3.17		
	reaction time		7 steps 1.03	1.07	1.04	1.03	1.03	1.04	1.07	1.03	1.07	1.35	PB						
	velocity	5.34	8.87	8.54	8.79	8.87	8.87	8.79	8.54	8.87	8.54	10.39	8.25		8.73	8.85	8.65		
Wilson, De'vion (USA) (2000)	time	2.53	3.58	4.60	5.60	6.61	7.61	8.62	9.74	10.84	11.91		13.36	4 / 5	3.07	3.02	3.29		
	reaction time		7 steps 1.05	1.02	1.00	1.01	1.00	1.01	1.12	1.10	1.07	1.45							
	velocity	5.42	8.70	8.96	9.14	9.05	9.14	9.05	8.16	8.31	8.54	9.67	8.23		8.93	9.08	8.33		
Bennett, Sam (GBR) (2001)	time	2.57	3.70	4.74	5.77	6.81	7.84	8.86	9.91	10.94	12.00		13.45	1 / 6	3.20	3.09	3.14		
	reaction time		7 steps 1.13	1.04	1.03	1.04	1.03	1.02	1.05	1.03	1.06	1.45	PB						
	velocity	5.34	8.09	8.79	8.87	8.79	8.87	8.96	8.70	8.87	8.62	9.67	8.18		8.57	8.87	8.73		
Campbell, Jerome (JAM) (2002)	time	2.50	3.58	4.67	5.71	6.77	7.81	8.84	9.91	10.98	12.05		13.49	9 / 7	3.21	3.13	3.21		
	reaction time		1.08	1.09	1.04	1.06	1.04	1.03	1.07	1.07	1.07	1.44							
	velocity	5.49	8.46	8.39	8.79	8.62	8.79	8.87	8.54	8.54	8.54	9.74	8.15		8.54	8.76	8.54		
Sophia, Matthew (NED) (2003)	time	2.57	3.64	4.70	5.74	6.77	7.81	8.87	9.94	10.98	12.08		13.53	2 / 8	3.17	3.13	3.21		
	reaction time		1.07	1.06	1.04	1.03	1.04	1.06	1.07	1.04	1.10	1.45							
	velocity	5.34	8.54	8.62	8.79	8.87	8.79	8.62	8.54	8.79	8.31	9.67	8.13		8.65	8.76	8.54		
Brackins, Johnny (USA) (2003)	time	2.53	3.60	4.64	5.71	6.77	7.82	8.91	10.01	11.06	12.18		13.63	7 / 9	3.18	3.20	3.27		
	reaction time		7 steps 1.07	1.04	1.07	1.06	1.05	1.09	1.10	1.05	1.12	1.45							
	velocity	5.42	8.54	8.79	8.54	8.62	8.70	8.39	8.31	8.70	8.16	9.67	8.07		8.62	8.57	8.39		



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=AVbhjJzRW9w&pp=yglJjd29yhGQgaW5kb29yIGF0aGxldGljcyAyMDI0IGh1cmRsZXNM%3D>

2024 Prefontaine Classic (Eugene, OR)

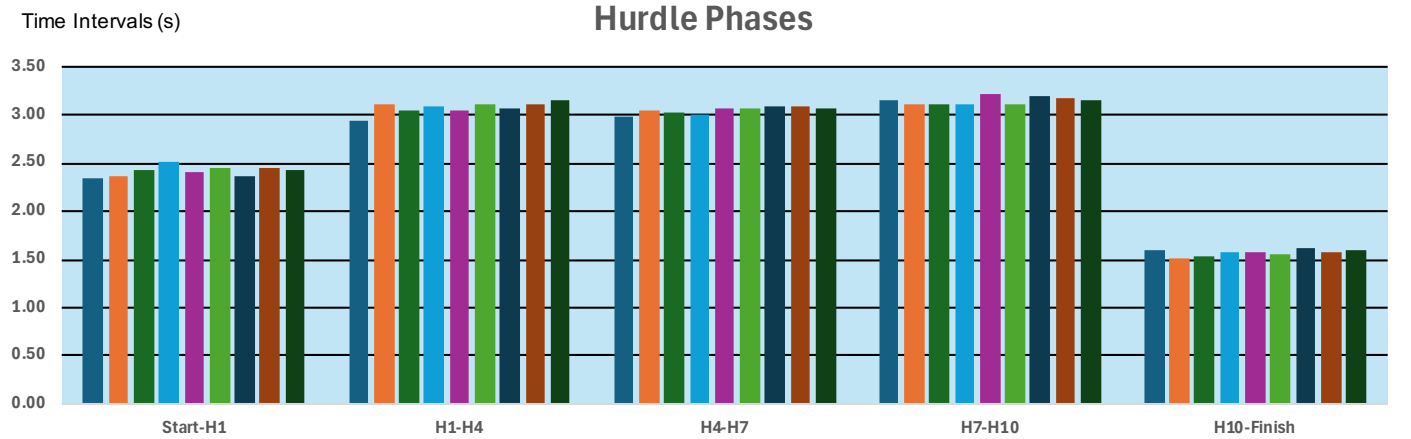
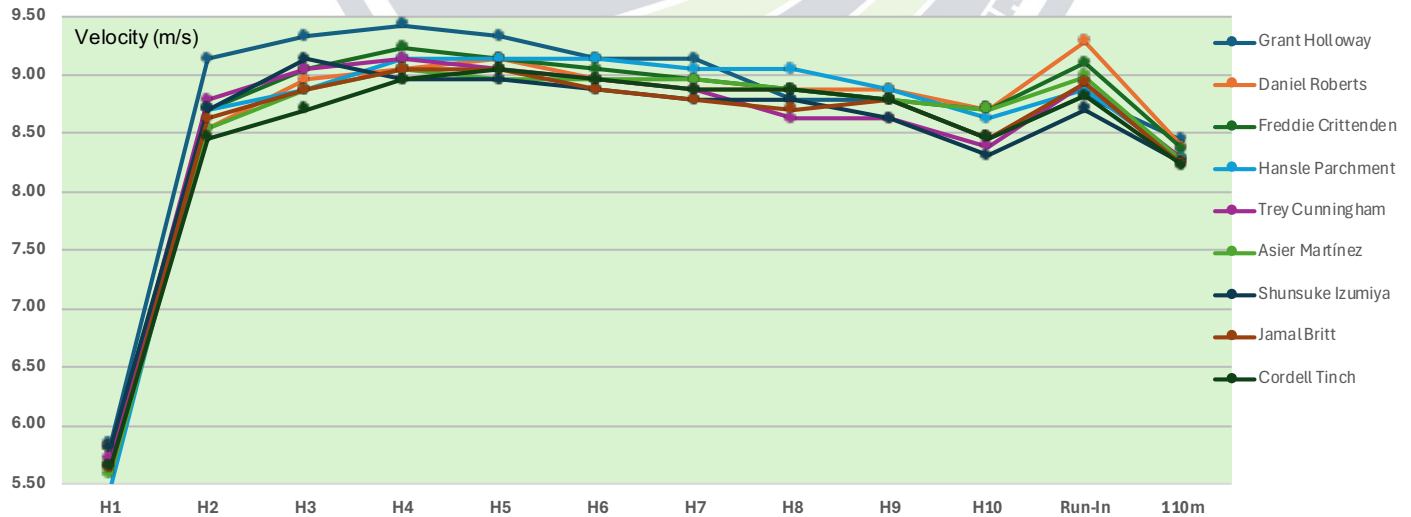
110m Hurdles

Date: 2024.05.25

Wind: -0.1 m/s

FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Holloway, Grant (USA) (1997)	time		2.35	3.35	4.33	5.30	6.28	7.28	8.28	9.32	10.36	11.44		13.03	5 / 1			
	reaction time	0.132											1.59			2.95	2.98	3.16
	interval		7 steps	1.00	0.98	0.97	0.98	1.00	1.00	1.04	1.04	1.08	1.59			9.29	9.20	8.68
Roberts, Daniel (USA) (1998)	time		2.36	3.43	4.45	5.46	6.46	7.48	8.51	9.54	10.57	11.62		13.13	4 / 2			
	reaction time	0.148											1.51			3.10	3.05	3.11
	interval		7 steps	1.07	1.02	1.01	1.00	1.02	1.03	1.03	1.03	1.05	1.51			8.85	8.99	8.82
Crittenden, Freddie (USA) (1994)	time		2.42	3.47	4.48	5.47	6.47	7.48	8.50	9.53	10.57	11.62		13.16	8 / 3			
	reaction time	0.140											1.54			3.05	3.03	3.12
	interval			1.05	1.01	0.99	1.00	1.01	1.02	1.03	1.04	1.05	1.54			8.99	9.05	8.79
Parchment, Hansle (JAM) (1990)	time		2.51	3.56	4.59	5.59	6.59	7.59	8.60	9.61	10.64	11.70		13.28	6 / 4			
	reaction time	0.151											1.58			3.08	3.01	3.10
	interval		7 steps	1.05	1.03	1.00	1.00	1.00	1.01	1.01	1.03	1.06	1.58			8.90	9.11	8.85
Cunningham, Trey (USA) (1998)	time		2.40	3.44	4.45	5.45	6.46	7.48	8.51	9.57	10.63	11.72		13.29	2 / 5			
	reaction time	0.134											1.57			3.05	3.06	3.21
	interval		7 steps	1.04	1.01	1.00	1.01	1.02	1.03	1.06	1.06	1.09	1.57			8.99	8.96	8.54
Martínez, Asier (ESP) (2000)	time		2.46	3.53	4.56	5.57	6.59	7.61	8.63	9.66	10.70	11.75		13.31	1 / 6			
	reaction time	0.136											1.56			3.11	3.06	3.12
	interval		7 steps	1.07	1.03	1.01	1.02	1.02	1.02	1.03	1.04	1.05	1.56			8.82	8.96	8.79
Izumiya, Shunsuke (JPN) (2000)	time		2.36	3.41	4.41	5.43	6.45	7.48	8.52	9.56	10.62	11.72		13.33	7 / 7			
	reaction time	0.131											1.61			3.07	3.09	3.20
	interval		7 steps	1.05	1.00	1.02	1.02	1.03	1.04	1.04	1.06	1.10	1.61			8.93	8.87	8.57
Britt, Jamal (USA) (1998)	time		2.44	3.50	4.53	5.54	6.55	7.58	8.62	9.67	10.71	11.79		13.36	9 / 8			
	reaction time	0.149											1.57			3.10	3.08	3.17
	interval		7 steps	1.06	1.03	1.01	1.01	1.03	1.04	1.05	1.04	1.08	1.57			8.85	8.90	8.65
Tinch, Cordell (USA) (2000)	time		2.43	3.51	4.56	5.58	6.59	7.61	8.64	9.67	10.71	11.79		13.38	3 / 9			
	reaction time	0.164											1.59			3.15	3.06	3.15
	interval		7 steps	1.08	1.05	1.02	1.01	1.02	1.03	1.03	1.04	1.08	1.59			8.70	8.96	8.70



Source: Omega Timing (Sat 25 May 2024 14:06) - diamond league race analysis
<https://www.omegatiming.com/File/000204080103060101FFFFFFFFFFFF6D.pdf>

Video: <https://www.youtube.com/watch?v=upNfdvFEIY>

2024 Atlanta City Games (Atlanta, GA) (Street Race) (TV Analysis)

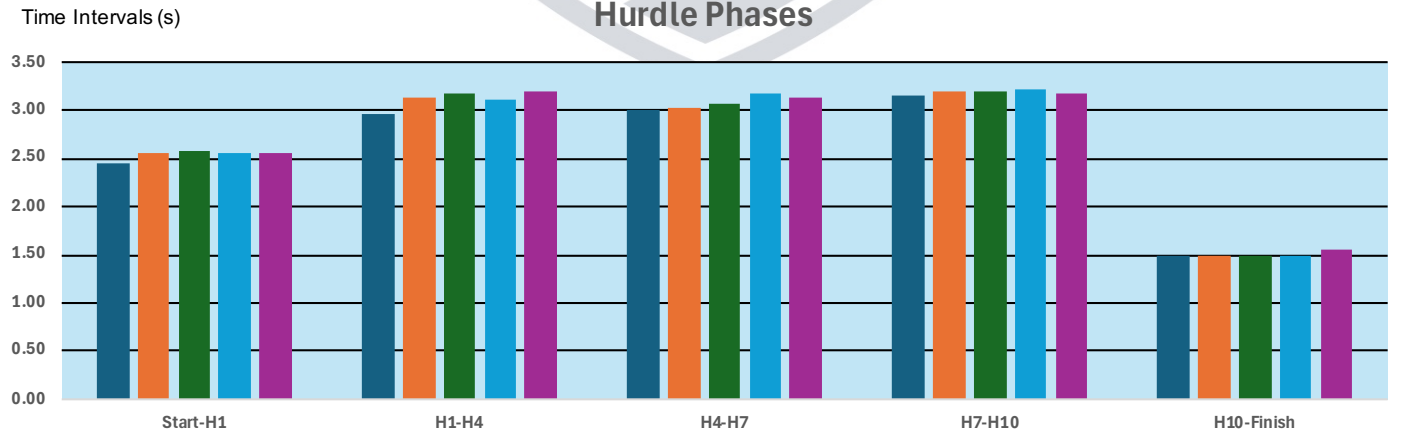
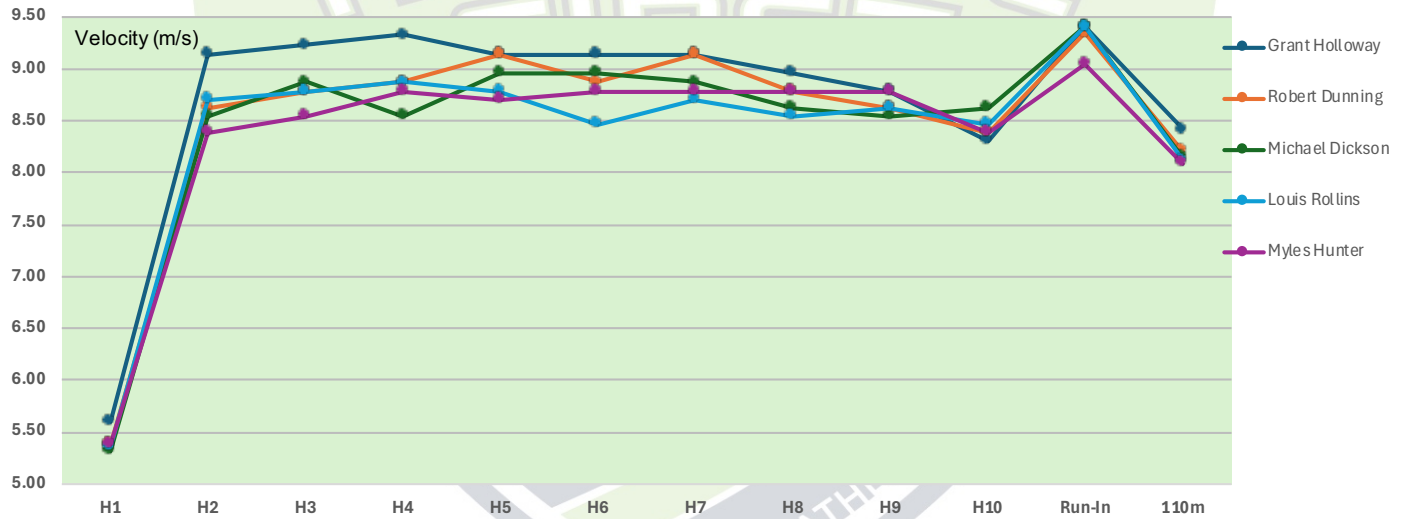
110m Hurdles

Date: 2024.05.18

Wind: -0.7 m/s

FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Holloway, Grant (USA) (1997)	time	2.45	3.45	4.44	5.42	6.42	7.42	8.42	9.44	10.48	11.58		13.07	3 / 1			
	reaction time											1.49			2.97	3.00	3.16
	interval	7 steps	1.00	0.99	0.98	1.00	1.00	1.00	1.02	1.04	1.10	1.49			9.23	9.14	8.68
Dunning, Robert (USA) (1997)	time	2.55	3.61	4.65	5.68	6.68	7.71	8.71	9.75	10.81	11.90		13.40	1 / 2			
	reaction time											1.50			3.13	3.03	3.19
	interval	7 steps	1.06	1.04	1.03	1.00	1.03	1.00	1.04	1.06	1.09	1.50			8.76	9.05	8.60
Dickson, Michael (USA) (1997)	time	2.58	3.65	4.68	5.75	6.77	7.79	8.82	9.88	10.95	12.01		13.50	4 / 3			
	reaction time											1.49			3.17	3.07	3.19
	interval	7 steps	1.07	1.03	1.07	1.02	1.02	1.03	1.06	1.07	1.06	1.49			8.65	8.93	8.60
Rollins, Louis (USA) (1996)	time	2.56	3.61	4.65	5.68	6.72	7.80	8.85	9.92	10.98	12.06		13.55	2 / 4			
	reaction time											1.49			3.12	3.17	3.21
	interval		1.05	1.04	1.03	1.04	1.08	1.05	1.07	1.06	1.08	1.49			8.79	8.65	8.54
Hunter, Myles (USA) (1995)	time	2.55	3.64	4.71	5.75	6.80	7.84	8.88	9.92	10.96	12.05		13.60	5 / 5			
	reaction time											1.55			3.20	3.13	3.17
	interval		1.09	1.07	1.04	1.05	1.04	1.04	1.04	1.04	1.09	1.55			8.57	8.76	8.65
	velocity	5.60	9.14	9.23	9.33	9.14	9.14	9.14	8.96	8.79	8.31	9.41	8.42				
	velocity	5.38	8.70	8.79	8.87	8.79	8.46	8.70	8.54	8.62	8.46	9.41	8.12				
	velocity	5.32	8.54	8.87	8.54	8.96	8.96	8.87	8.62	8.54	8.62	9.41	8.15				
	velocity	5.36	8.70	8.79	8.87	8.79	8.46	8.70	8.54	8.62	8.46	9.41	8.12				
	velocity	5.38	8.39	8.54	8.79	8.70	8.79	8.79	8.79	8.79	8.39	9.05	8.09				

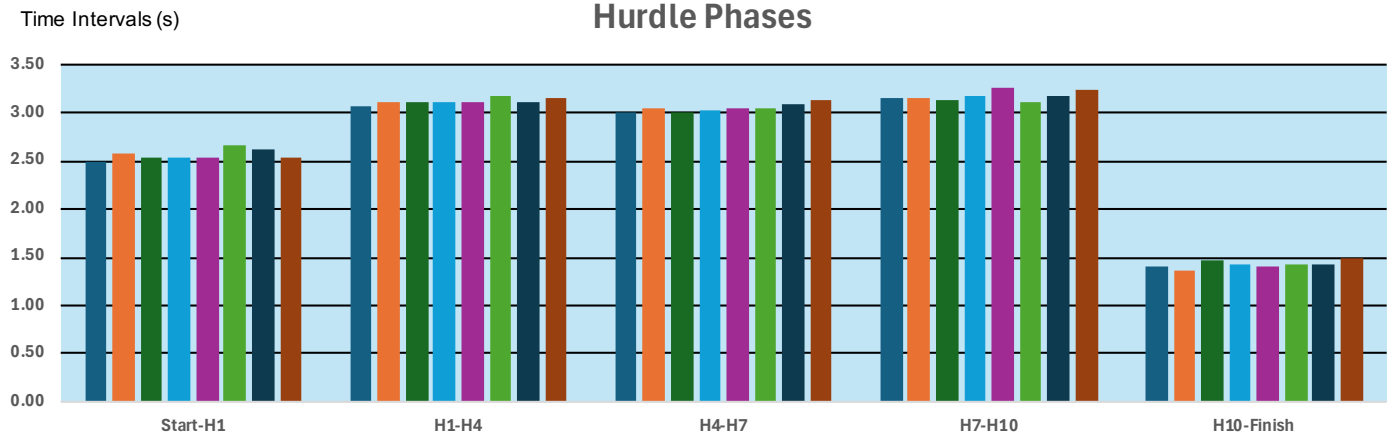
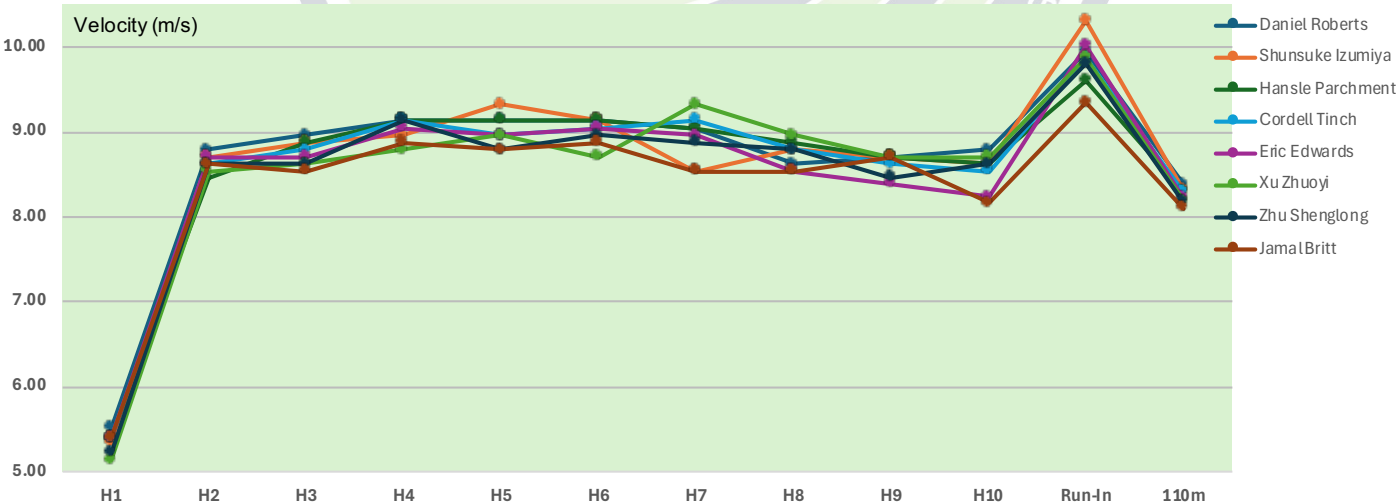


Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 60fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=vdvvpAAu9g8&pp=ygUkMjAyNCBhdGxhbnRhIGNpdHkgZ2FiZXMgMTFwbSBodXJkbGVz>

Biomechanical Analysis

2024 Yangtze River Delta Athletics Diamond Gala (Suzhou, CHN) (TV Analysis)

110m Hurdles		Date: 2024.04.27		Wind: 0.8 m/s												FINAL			
				H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Roberts, Daniel (USA) (1998)	time		2.49	3.53	4.55	5.55	6.55	7.55	8.56	9.62	10.67	11.71			13.12	4 / 1	3.06	3.01	3.15
	reaction time	0.147																	
	interval	7 steps	1.04	1.02	1.00	1.00	1.00	1.01	1.06	1.05	1.04	1.41							
	velocity		5.51	8.79	8.96	9.14	9.14	9.14	9.05	8.62	8.70	8.79	9.94	8.38			8.96	9.11	8.70
Izumiya, Shunsuke (JPN) (2000)	time		2.57	3.62	4.65	5.67	6.65	7.65	8.72	9.76	10.81	11.87			13.23	3 / 2	3.10	3.05	3.15
	reaction time	0.146																	
	interval	7 steps	1.05	1.03	1.02	0.98	1.00	1.07	1.04	1.05	1.06	1.36							
	velocity		5.34	8.70	8.87	8.96	9.33	9.14	8.54	8.79	8.70	8.62	10.31	8.31			8.85	8.99	8.70
Parchment, Hansle (JAM) (1990)	time		2.54	3.62	4.65	5.65	6.65	7.65	8.66	9.69	10.74	11.80			13.26	5 / 3	3.11	3.01	3.14
	reaction time	0.143																	
	interval	7 steps	1.08	1.03	1.00	1.00	1.00	1.01	1.03	1.05	1.06	1.46							
	velocity		5.40	8.46	8.87	9.14	9.14	9.14	9.05	8.87	8.70	8.62	9.60	8.30			8.82	9.11	8.73
Tinch, Cordell (USA) (2000)	time		2.54	3.60	4.64	5.64	6.66	7.67	8.67	9.71	10.77	11.84			13.26	6 / 4	3.10	3.03	3.17
	reaction time	0.151																	
	interval	7 steps	1.06	1.04	1.00	1.02	1.01	1.00	1.04	1.06	1.07	1.42							
	velocity		5.40	8.62	8.79	9.14	8.96	9.05	9.14	8.79	8.62	8.54	9.87	8.30			8.85	9.05	8.65
Edwards, Eric (USA) (2000)	time		2.54	3.59	4.64	5.65	6.67	7.68	8.70	9.77	10.86	11.97			13.37	7 / 5	3.11	3.05	3.27
	reaction time	0.139																	
	interval	7 steps	1.05	1.05	1.01	1.02	1.01	1.02	1.07	1.09	1.11	1.40							
	velocity		5.40	8.70	8.70	9.05	8.96	9.05	8.96	8.54	8.39	8.23	10.01	8.23			8.82	8.99	8.39
Xu Zhuoyi (CHN) (2003)	time		2.67	3.74	4.80	5.84	6.86	7.91	8.89	9.91	10.96	12.01			13.43	2 / 6	3.17	3.05	3.12
	reaction time	0.155																	
	interval	7 steps	1.07	1.06	1.04	1.02	1.05	0.98	1.02	1.05	1.05	1.42							
	velocity		5.14	8.54	8.62	8.79	8.96	8.70	9.33	8.96	8.70	8.70	9.87	8.19			8.65	8.99	8.79
Zhu Shenglong (CHN) (2000)	time		2.63	3.69	4.75	5.75	6.79	7.81	8.84	9.88	10.96	12.02			13.45	8 / 7	3.12	3.09	3.18
	reaction time	0.150																	
	interval	7 steps	1.06	1.06	1.00	1.04	1.02	1.03	1.04	1.08	1.06	1.43							
	velocity		5.22	8.62	8.62	9.14	8.79	8.96	8.87	8.79	8.46	8.62	9.80	8.18			8.79	8.87	8.62
Britt, Jamal (USA) (1998)	time		2.54	3.60	4.67	5.70	6.74	7.77	8.84	9.91	10.96	12.08			13.58	1 / 8	3.16	3.14	3.24
	reaction time	0.128																	
	interval	7 steps	1.06	1.07	1.03	1.04	1.03	1.07	1.07	1.05	1.12	1.50							
	velocity		5.40	8.62	8.54	8.87	8.79	8.87	8.54	8.54	8.70	8.16	9.35	8.10			8.68	8.73	8.46



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=zCIQ03WG3VY>

2024 Xiamen Diamond League (Xiamen, CHN)

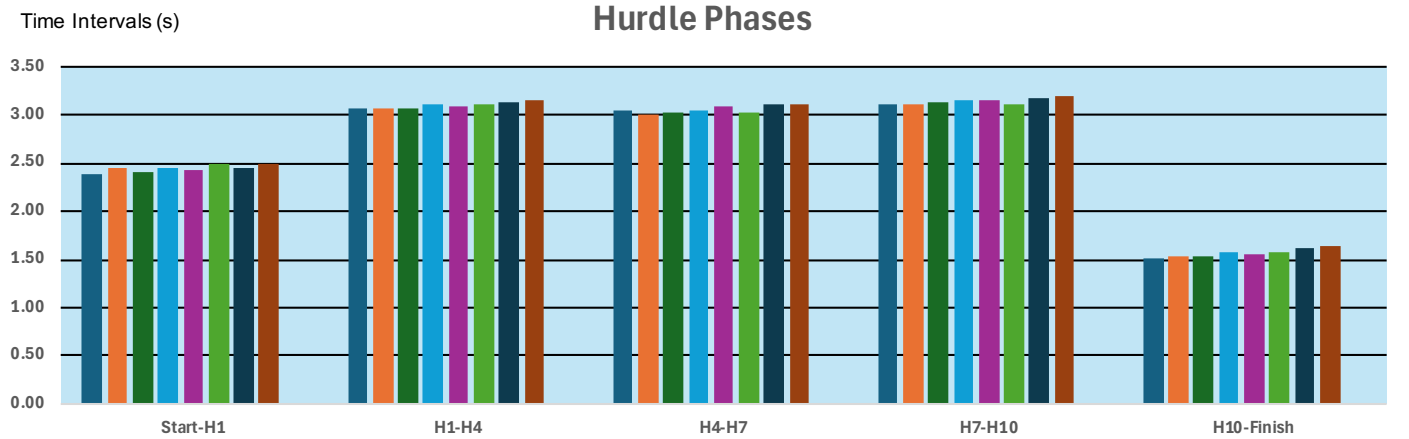
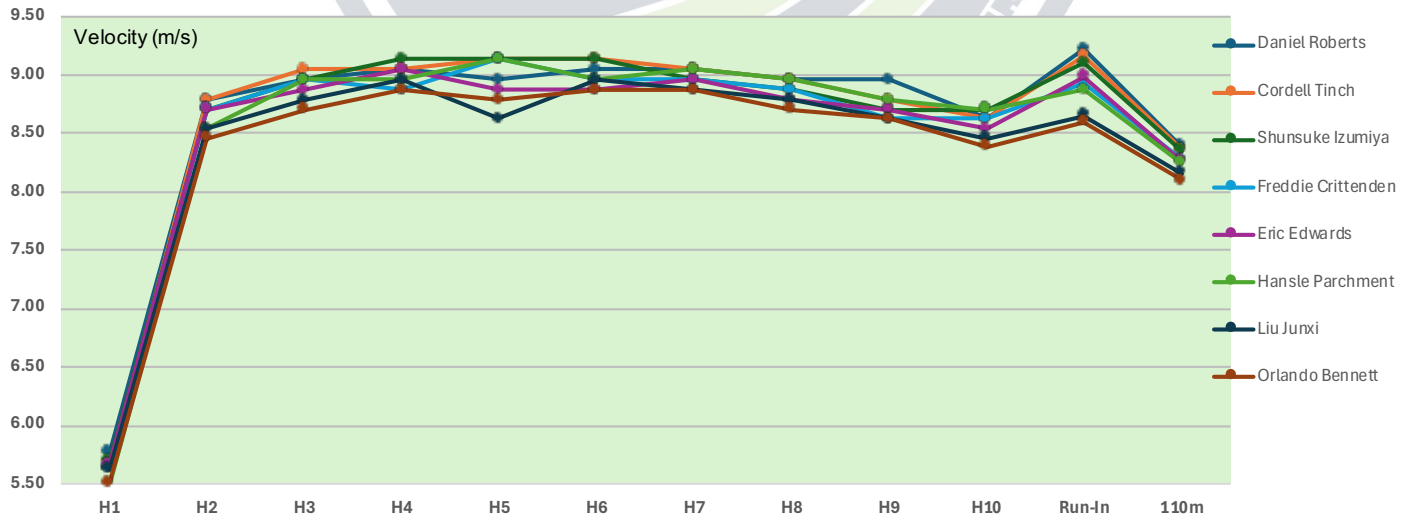
110m Hurdles

Date: 2024.04.20

Wind: -0.3 m/s

FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Roberts, Daniel (USA) (1998)	time	2.38	3.42	4.44	5.45	6.47	7.48	8.49	9.51	10.53	11.59		13.11	6 / 1			
	reaction time	0.156													3.07	3.04	3.10
	interval		7 steps	1.04	1.02	1.01	1.02	1.01	1.02	1.02	1.06	1.52			8.93	9.02	8.85
Tinch, Cordell (USA) (2000)	time	2.44	3.48	4.49	5.50	6.50	7.50	8.51	9.53	10.57	11.63		13.16	3 / 2			
	reaction time	0.176													3.06	3.01	3.12
	interval		7 steps	1.04	1.01	1.01	1.00	1.01	1.02	1.04	1.06	1.53			8.96	9.11	8.79
Izumiya, Shunsuke (JPN) (2000)	time	2.41	3.46	4.48	5.48	6.48	7.48	8.50	9.53	10.58	11.63		13.17	4 / 3			
	reaction time	0.172													3.07	3.02	3.13
	interval		7 steps	1.05	1.02	1.00	1.00	1.02	1.03	1.05	1.05	1.54			8.93	9.08	8.76
Crittenden, Freddie (USA) (1994)	time	2.44	3.49	4.51	5.54	6.54	7.56	8.58	9.61	10.67	11.73		13.30	7 / 4			
	reaction time	0.166													3.10	3.04	3.15
	interval			1.05	1.02	1.03	1.00	1.02	1.03	1.06	1.06	1.57			8.85	9.02	8.70
Edwards, Eric (USA) (2000)	time	2.42	3.47	4.50	5.51	6.54	7.57	8.59	9.63	10.68	11.75		13.31	9 / 5			
	reaction time	0.143													3.09	3.08	3.16
	interval			1.05	1.03	1.01	1.03	1.02	1.04	1.05	1.07	1.56			8.87	8.90	8.68
Parchment, Hansle (JAM) (1990)	time	2.50	3.57	4.59	5.61	6.61	7.63	8.64	9.66	10.70	11.75		13.33	5 / 6			
	reaction time	0.157													3.11	3.03	3.11
	interval		7 steps	1.07	1.02	1.02	1.00	1.01	1.02	1.04	1.05	1.58			8.82	9.05	8.82
Liu Junxi (CHN) (2003)	time	2.44	3.51	4.55	5.57	6.63	7.65	8.68	9.72	10.78	11.86		13.48	10 / 7			
	reaction time	0.159													3.13	3.11	3.18
	interval		7 steps	1.07	1.04	1.02	1.06	1.02	1.03	1.04	1.06	1.62			8.76	8.82	8.62
Bennett, Orlando (JAM) (1999)	time	2.49	3.57	4.62	5.65	6.69	7.72	8.75	9.80	10.86	11.95		13.58	2 / 8			
	reaction time	0.182													3.16	3.10	3.20
	interval			1.08	1.05	1.03	1.04	1.03	1.05	1.06	1.09	1.63			8.68	8.85	8.57
Britt, Jamal (USA) (1998)	time	0.144											13.88	8 / 9			
	reaction time																
	interval		7 steps														



Source: Omega Timing (Sat 20 Apr 2024 20:29) - diamond league race analysis
<https://www.omegatiming.com/File/000204040102090101FFFFFFFFFFFF6D.pdf>
Video: <https://www.youtube.com/watch?v=u6sgslkWTU>

Women's 100m Hurdles

2024 Top 10 Times - Women's 100m Hurdles

Nugent, Ackera (JAM) (2002) FINAL - 2024 Golden Gala • Pietro Mennea (Roma, ITA)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
	date	30-Aug	time	2.40	3.42	4.37	5.31	6.27	7.21	8.16	9.12	10.08	11.06	Omega Timing (2024) - diamond league race analysis		
	reaction time	0.153	interval		1.02	0.95	0.94	0.96	0.94	0.95	0.96	0.98	0.98	1.18	NR PB	2.91 2.85 2.90
	wind	-0.4 m/s	velocity	5.42	8.33	8.95	9.04	8.85	9.04	8.95	8.85	8.85	8.67	8.90	8.17	8.76 8.95 8.79
Russell, Masai (USA) (2000) FINAL - 2024 USA Olympic Trials (Eugene, OR) (TV Analysis)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
	date	30-Jun	time	2.54	3.55	4.55	5.51	6.46	7.39	8.35	9.29	10.23	11.19	Henson (2024) - Athlete First: 2024 year end hurdle report		
	reaction time		interval		1.01	1.00	0.96	0.95	0.93	0.96	0.94	0.94	0.96	1.06	PB	2.97 2.84 2.84
	wind	0.7 m/s	velocity	5.12	8.42	8.50	8.85	8.95	9.14	8.85	9.04	9.04	8.85	9.91	8.16	8.59 8.98 8.98
Nugent, Ackera (JAM) (2002) FINAL - 2024 Jamaican National Senior Championships (Kingston, JAM) (TV Analysis)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
	date	28-Jun	time	2.53	3.53	4.50	5.47	6.41	7.35	8.30	9.27	10.24	11.22	Henson (2024) - Athlete First: 2024 year end hurdle report		
	reaction time	0.145	interval		1.00	0.97	0.97	0.94	0.94	0.95	0.97	0.97	0.98	1.06	NR PB	2.94 2.83 2.92
	wind	0.1 m/s	velocity	5.14	8.50	8.76	8.76	9.04	9.04	8.95	8.76	8.76	8.67	9.91	8.14	8.67 9.01 8.73
Nugent, Ackera (JAM) (2002) FINAL - 2024 Kamila Skolimowska Memorial (Chorzów, POL)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
	date	25-Aug	time	2.40	3.42	4.38	5.32	6.25	7.17	8.13	9.11	10.10	11.08	Omega Timing (2024) - diamond league race analysis		
	reaction time	0.147	interval		1.02	0.96	0.94	0.93	0.92	0.96	0.98	0.99	0.98	1.21		2.92 2.81 2.95
	wind	-0.5 m/s	velocity	5.42	8.33	8.85	9.04	9.14	9.24	8.85	8.67	8.59	8.67	8.68	8.14	8.73 9.07 8.64
Nugent, Ackera (JAM) (2002) Heat B - 2024 Kamila Skolimowska Memorial (Chorzów, POL)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
	date	25-Aug	time	2.39	3.40	4.35	5.30	6.24	7.21	8.16	9.12	10.09	11.08	Omega Timing (2024) - diamond league race analysis		
	reaction time	0.140	interval		1.01	0.95	0.95	0.94	0.97	0.95	0.96	0.97	0.99	1.22		2.91 2.86 2.92
	wind	0.6 m/s	velocity	5.44	8.42	8.95	8.95	9.04	8.76	8.95	8.85	8.76	8.59	8.61	8.13	8.76 8.92 8.73
Samba-Mayela, Cyréna (FRA) (2000) FINAL - 2024 European Athletics Championships (Roma, ITA) (TV Analysis)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
	date	6-Jun	time	2.54	3.54	4.52	5.46	6.42	7.34	8.30	9.26	10.23	11.22	Henson (2024) - Athlete First: 2024 year end hurdle report		
	reaction time	0.150	interval		1.00	0.98	0.94	0.96	0.92	0.96	0.96	0.97	0.99	1.09	NR PB	2.92 2.84 2.92
	wind	0.8 m/s	velocity	5.12	8.50	8.67	9.04	8.85	9.24	8.85	8.85	8.76	8.59	9.63	8.12	8.73 8.98 8.73
Johnson, Alaysha (USA) (1996) FINAL - 2024 USA Olympic Trials (Eugene, OR) (TV Analysis)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
	date	30-Jun	time	2.56	3.57	4.53	5.48	6.42	7.38	8.34	9.28	10.25	11.21	Henson (2024) - Athlete First: 2024 year end hurdle report		
	reaction time		interval		1.01	0.96	0.95	0.94	0.96	0.96	0.94	0.97	0.96	1.10	PB	2.92 2.86 2.87
	wind	0.7 m/s	velocity	5.08	8.42	8.85	8.95	9.04	8.85	8.85	9.04	8.76	8.85	9.55	8.12	8.73 8.92 8.89
Stark, Grace (USA) (2001) FINAL - 2024 USA Olympic Trials (Eugene, OR) (TV Analysis)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
	date	30-Jun	time	2.52	3.54	4.53	5.46	6.42	7.37	8.33	9.27	10.25	11.25	Henson (2024) - Athlete First: 2024 year end hurdle report		
	reaction time		interval		1.02	0.99	0.93	0.96	0.95	0.96	0.94	0.98	1.00	1.06	PB	2.94 2.87 2.92
	wind	0.7 m/s	velocity	5.16	8.33	8.59	9.14	8.85	8.95	8.85	9.04	8.67	8.50	9.91	8.12	8.67 8.89 8.73
Russell, Masai (USA) (2000) FINAL - 2024 Golden Gala • Pietro Mennea (Roma, ITA)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
	date	30-Aug	time	2.41	3.45	4.44	5.41	6.36	7.31	8.26	9.21	10.17	11.13	Omega Timing (2024) - diamond league race analysis		
	reaction time	0.152	interval		1.04	0.99	0.97	0.95	0.95	0.95	0.95	0.96	0.96	1.18		3.00 2.85 2.87
	wind	-0.4 m/s	velocity	5.39	8.17	8.59	8.76	8.95	8.95	8.95	8.95	8.85	8.85	8.90	8.12	8.50 8.95 8.89
Russell, Masai (USA) (2000) FINAL - 2024 Olympic Games (Paris, FRA)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
	date	10-Aug	time	2.53	3.55	4.56	5.52	6.48	7.44	8.38	9.34	10.29	11.27	Paris 2024 Olympc Games - Results Book (2024)		
	reaction time	0.137	interval		1.02	1.01	0.96	0.96	0.96	0.94	0.96	0.95	0.98	1.06		2.99 2.86 2.89
	wind	-0.3 m/s	velocity	5.14	8.33	8.42	8.85	8.85	8.85	9.04	8.85	8.95	8.67	9.91	8.11	8.53 8.92 8.82
Johnson, Alaysha (USA) (1996) Semi-Final 2 - 2024 Olympic Games (Paris, FRA)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
	date	10-Aug	time	2.41	3.45	4.44	5.40	6.36	7.31	8.25	9.21	10.17	11.14	Paris 2024 Olympc Games - Results Book (2024)		
	reaction time	0.133	interval		1.04	0.99	0.96	0.96	0.95	0.94	0.96	0.96	0.97	1.20		2.99 2.85 2.89
	wind	0.4 m/s	velocity	5.39	8.17	8.59	8.85	8.85	8.95	9.04	8.85	8.85	8.76	8.75	8.10	8.53 8.95 8.82
Samba-Mayela, Cyréna (FRA) (2000) FINAL - 2024 Olympic Games (Paris, FRA)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
	date	10-Aug	time	2.55	3.57	4.55	5.51	6.46	7.40	8.36	9.31	10.27	11.27	Paris 2024 Olympc Games - Results Book (2024)		
	reaction time	0.143	interval		1.02	0.98	0.96	0.95	0.94	0.96	0.95	0.96	1.00	1.07		2.96 2.85 2.91
	wind	-0.3 m/s	velocity	5.10	8.33	8.67	8.85	8.95	9.04	8.85	8.95	8.85	8.50	9.81	8.10	8.61 8.95 8.76
Russell, Masai (USA) (2000) Heat 2 - 2024 USA Olympic Trials (Eugene, OR) (TV Analysis)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
	date	28-Jun	time	2.57	3.56	4.55	5.53	6.48	7.44	8.39	9.34	10.31	11.28	Henson (2024) - Athlete First: 2024 year end hurdle report		
	reaction time		interval		0.99	0.99	0.98	0.95	0.96	0.95	0.95	0.97	0.97	1.07	PB	2.96 2.86 2.89
	wind	0.2 m/s	velocity	5.06	8.59	8.59	8.67	8.95	8.85	8.95	8.95	8.76	8.76	9.81	8.10	8.61 8.92 8.82
Camacho-Quinn, Jasmine (PUR) (1996) Semi-Final 3 - 2024 Olympic Games (Paris, FRA)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
	date	10-Aug	time	2.44	3.46	4.43	5.39	6.32	7.27	8.23	9.19	10.17	11.15	Paris 2024 Olympc Games - Results Book (2024)		
	reaction time	0.161	interval		1.02	0.97	0.96	0.93	0.95	0.96	0.96	0.98	0.98	1.20		2.95 2.84 2.92
	wind	-0.7 m/s	velocity	5.33	8.33	8.76	8.85	9.14	8.95	8.85	8.85	8.67	8.67	8.75	8.10	8.64 8.98 8.73

2024 Memorial van damme (Brussels, BEL)

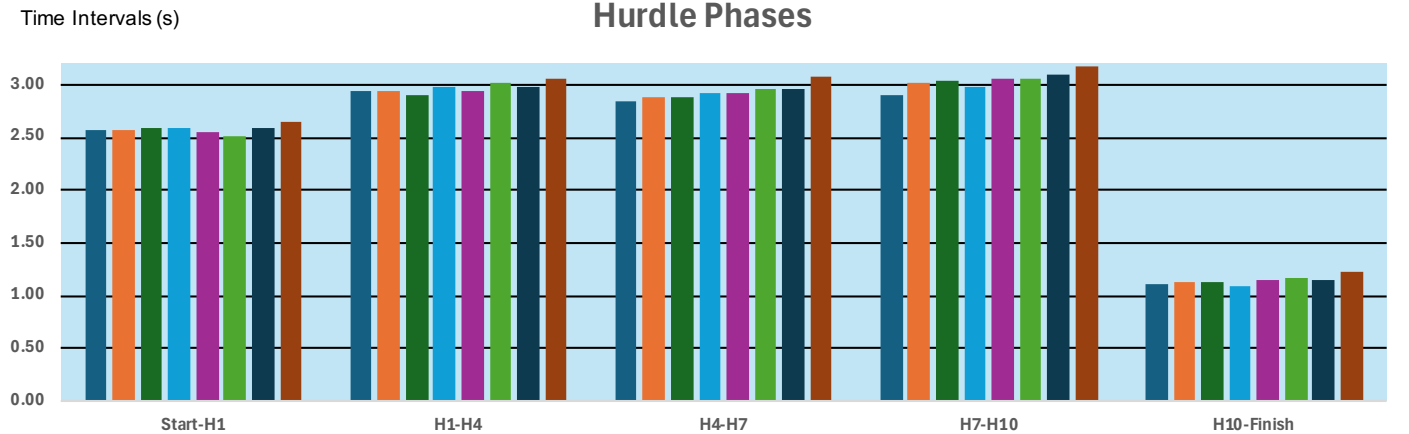
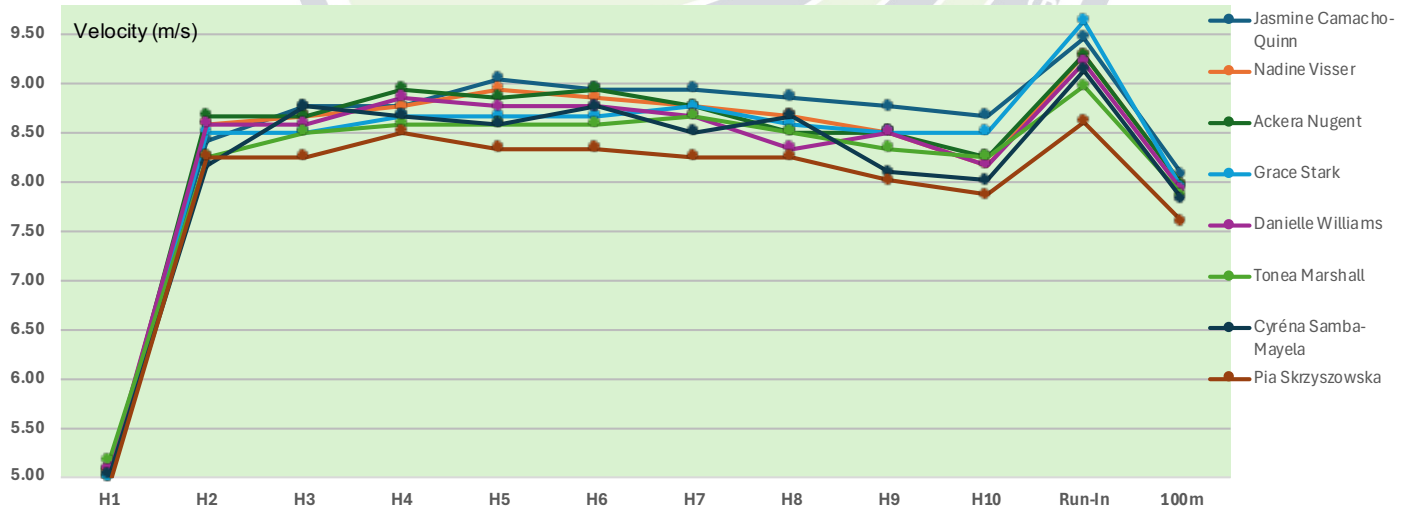
100m Hurdles

Date: 2024.09.14

Wind: 0.4 m/s

FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Camacho-Quinn, Jasmine (PUR) (199 time	reaction time	0.152																
	interval		2.57	3.58	4.55	5.52	6.46	7.41	8.36	9.32	10.29	11.27		12.38	4 / 1	2.95	2.84	2.91
	velocity		5.06	8.42	8.76	8.76	9.04	8.95	8.95	8.85	8.76	8.67	9.46	8.08		8.64	8.98	8.76
Visser, Nadine (NED) (1995 time	reaction time	0.150													2 / 2	2.94	2.88	3.02
	interval		2.57	3.56	4.54	5.51	6.46	7.42	8.39	9.37	10.37	11.41		12.54		8.67	8.85	8.44
	velocity		5.06	8.59	8.67	8.76	8.95	8.85	8.76	8.67	8.50	8.17	9.29	7.97				
Nugent, Ackera (JAM) (2002 time	reaction time	0.130													5 / 3	2.91	2.88	3.03
	interval		2.60	3.58	4.56	5.51	6.47	7.42	8.39	9.39	10.39	11.42		12.55		8.76	8.85	8.42
	velocity		5.00	8.67	8.67	8.95	8.85	8.95	8.76	8.50	8.50	8.25	9.29	7.97				
Stark, Grace (USA) (2001 time	reaction time	0.153													3 / 4	2.98	2.93	2.99
	interval		2.60	3.60	4.60	5.58	6.56	7.54	8.51	9.50	10.50	11.50		12.59		8.56	8.70	8.53
	velocity		5.00	8.50	8.50	8.67	8.67	8.67	8.76	8.59	8.50	8.50	9.63	7.94				
Williams, Danielle (JAM) (1992 time	reaction time	0.129													7 / 5	2.94	2.92	3.06
	interval		2.56	3.55	4.54	5.50	6.47	7.44	8.42	9.44	10.44	11.48		12.62		8.67	8.73	8.33
	velocity		5.08	8.59	8.59	8.85	8.76	8.76	8.67	8.33	8.50	8.17	9.21	7.92				
Marshall, Tonea (USA) (1998 time	reaction time	0.128													1 / 6	3.02	2.96	3.05
	interval		2.51	3.54	4.54	5.53	6.52	7.51	8.49	9.49	10.51	11.54		12.71		8.44	8.61	8.36
	velocity		5.18	8.25	8.50	8.59	8.59	8.59	8.67	8.50	8.33	8.25	8.97	7.87				
Samba-Mayela, Cyr�na (FRA) (2000 time	reaction time	0.132													6 / 7	2.99	2.96	3.09
	interval		2.59	3.63	4.60	5.58	6.57	7.54	8.54	9.52	10.57	11.63		12.78		8.53	8.61	8.25
	velocity		5.02	8.17	8.76	8.67	8.59	8.76	8.50	8.67	8.10	8.02	9.13	7.82				
Skrzysowska, Pia (POL) (2001 time	reaction time	0.165													8 / 8	3.06	3.07	3.17
	interval		2.64	3.67	4.70	5.70	6.72	7.74	8.77	9.80	10.86	11.94		13.16		8.33	8.31	8.04
	velocity		4.92	8.25	8.25	8.50	8.33	8.33	8.25	8.25	8.02	7.87	8.61	7.60				



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Video: <https://www.youtube.com/watch?v=4KqzPETIGic>

2024 Weltklasse (Zürich, SUI)

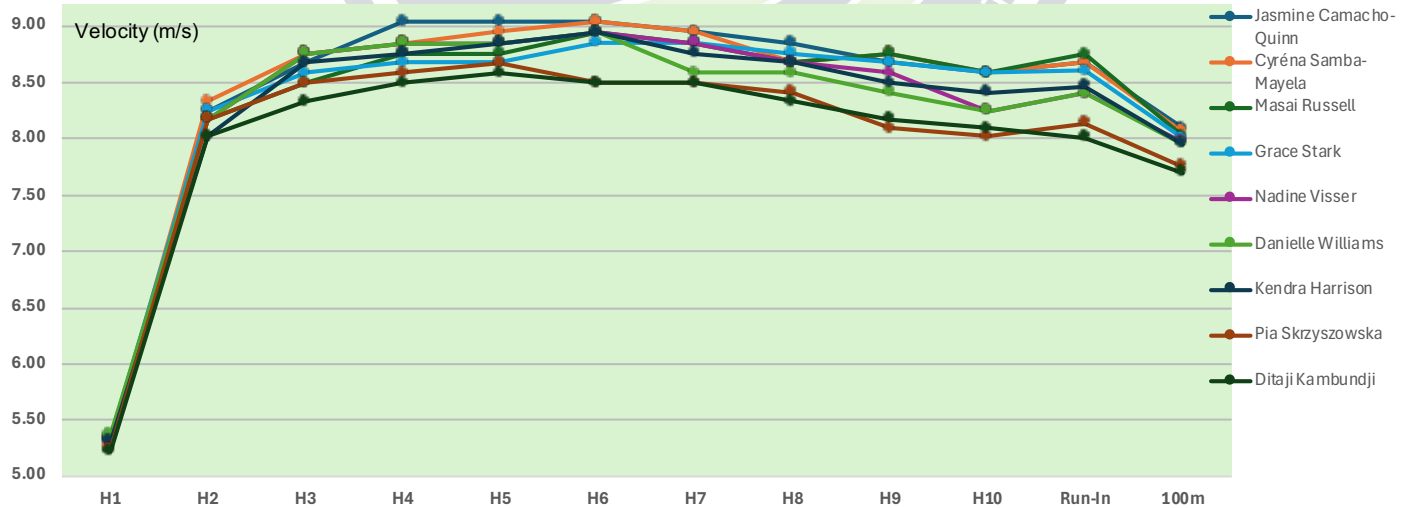
100m Hurdles

Date: 2024.09.05

Wind: 0.8 m/s

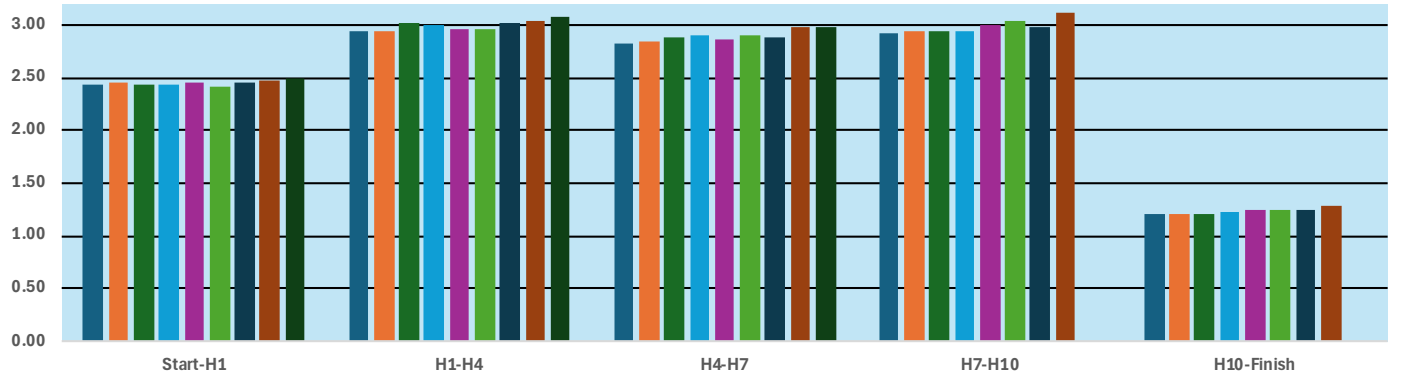
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Camacho-Quinn, Jasmine (PUR) (199 time)	reaction time	0.145												4 / 1	2.95	2.83	2.93
	interval		1.03	0.98	0.94	0.94	0.94	0.95	0.96	0.98	0.99	1.21			8.64	9.01	8.70
	velocity	5.33	8.25	8.67	9.04	9.04	9.04	8.95	8.85	8.67	8.59	8.68	8.09				
Samba-Mayela, Cyréna (FRA) (2000 time)	reaction time	0.121												6 / 2	2.95	2.84	2.94
	interval		1.02	0.97	0.96	0.95	0.94	0.95	0.98	0.97	0.99	1.21			8.64	8.98	8.67
	velocity	5.28	8.33	8.76	8.85	8.95	9.04	8.95	8.67	8.76	8.59	8.68	8.06				
Russell, Masai (USA) (2000 time)	reaction time	0.149												5 / 3	3.01	2.88	2.94
	interval		1.04	1.00	0.97	0.97	0.95	0.96	0.98	0.97	0.99	1.20			8.47	8.85	8.67
	velocity	5.33	8.17	8.50	8.76	8.76	8.95	8.85	8.67	8.76	8.59	8.75	8.02				
Stark, Grace (USA) (2001 time)	reaction time	0.144												7 / 4	3.00	2.90	2.94
	interval		1.03	0.99	0.98	0.98	0.96	0.96	0.97	0.98	0.99	1.22			8.50	8.79	8.67
	velocity	5.35	8.25	8.59	8.67	8.67	8.85	8.85	8.76	8.67	8.59	8.61	8.01				
Visser, Nadine (NED) (1995 time)	reaction time	0.140												3 / 5	2.97	2.87	3.00
	interval		1.04	0.97	0.96	0.96	0.95	0.96	0.98	0.99	1.03	1.25			8.59	8.89	8.50
	velocity	5.31	8.17	8.76	8.85	8.85	8.95	8.85	8.67	8.59	8.25	8.40	7.97				
Williams, Danielle (JAM) (1992 time)	reaction time	0.108												2 / 6	2.97	2.90	3.03
	interval		1.04	0.97	0.96	0.96	0.95	0.99	0.99	1.01	1.03	1.25			8.59	8.79	8.42
	velocity	5.37	8.17	8.76	8.85	8.85	8.95	8.59	8.59	8.42	8.25	8.40	7.96				
Harrison, Kendra (USA) (1992 time)	reaction time	0.147												1 / 7	3.01	2.88	2.99
	interval		1.06	0.98	0.97	0.96	0.95	0.97	0.98	1.00	1.01	1.24			8.47	8.85	8.53
	velocity	5.31	8.02	8.67	8.76	8.85	8.95	8.76	8.67	8.50	8.42	8.47	7.96				
Skrzysowska, Pia (POL) (2001 time)	reaction time	0.134												9 / 8	3.03	2.98	3.12
	interval		1.04	1.00	0.99	0.98	1.00	1.00	1.01	1.05	1.06	1.29			8.42	8.56	8.17
	velocity	5.24	8.17	8.50	8.59	8.67	8.50	8.50	8.42	8.10	8.02	8.14	7.75				
Kambundji, Ditaji (SUI) (2002 time)	reaction time	0.097												8 / 9	no official time given		
	interval		1.06	1.02	1.00	0.99	1.00	1.00	1.02	1.04	1.05	1.31	DQ		3.08	2.99	3.11
	velocity	5.22	8.02	8.33	8.50	8.59	8.50	8.50	8.33	8.17	8.10	8.02	7.70		8.28	8.53	8.20



Time Intervals (s)

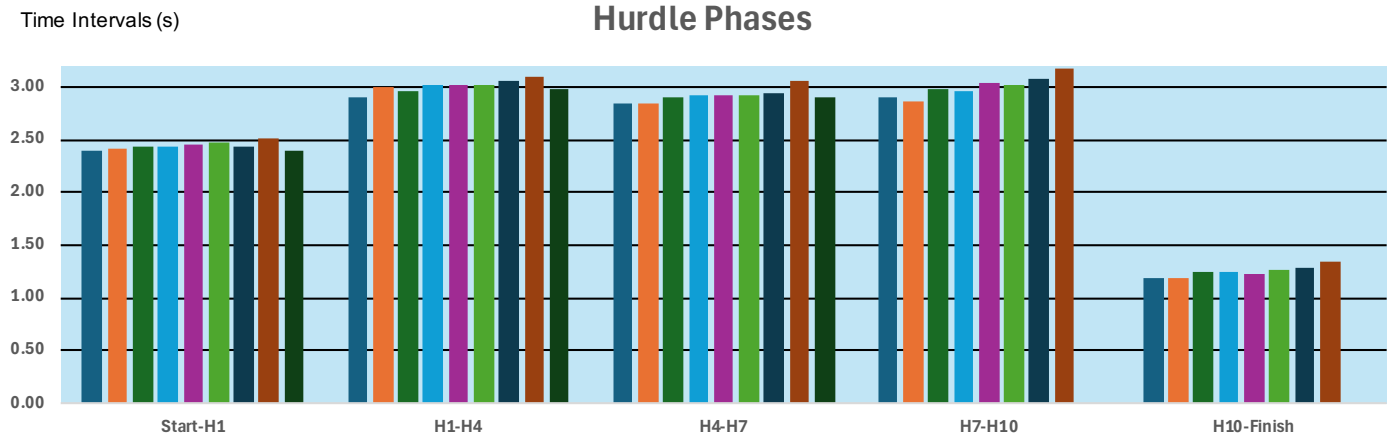
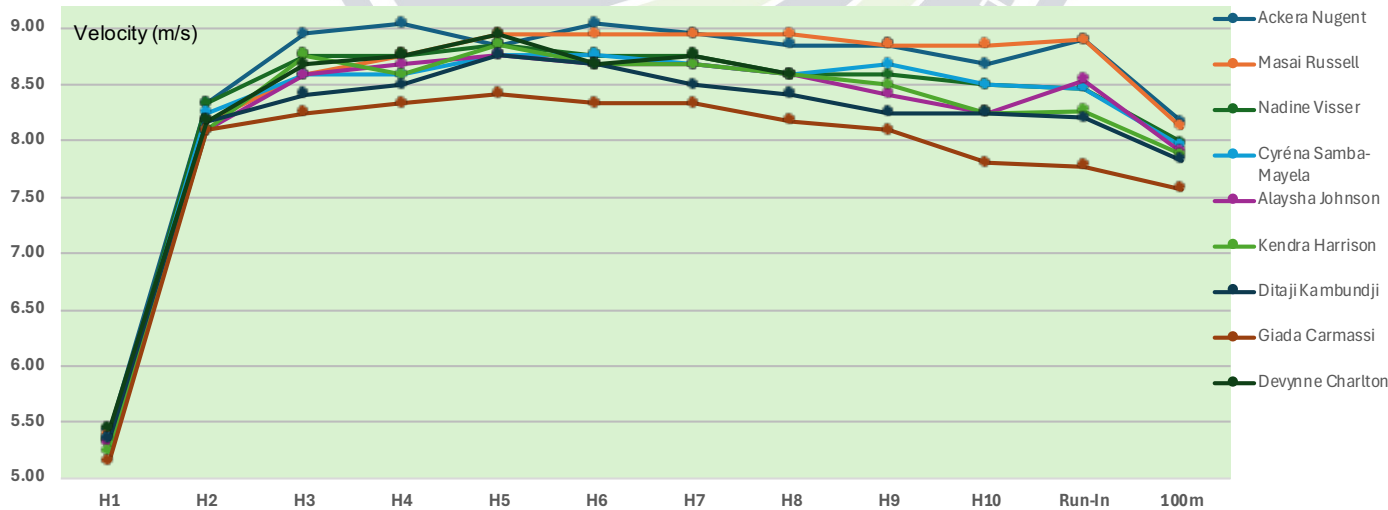
Hurdle Phases



Source: Omega Timing (Thu 5 Sep 2024 21:57) - diamond league race analysis
<https://www.omegatiming.com/File/0002041101010A0101FFFFFFFFFFFFF6D.pdf>
Video: <https://www.youtube.com/watch?v=2etLovyhg14>

2024 Golden Gala • Pietro Mennea (Roma, ITA)

100m Hurdles			Date: 2024.08.30			Wind: -0.4 m/s													FINAL			
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10				
Nugent, Ackera (JAM) (2002)	time		2.40	3.42	4.37	5.31	6.27	7.21	8.16	9.12	10.08	11.06		12.24	7 / 1							
	reaction time	0.153											1.18	NR PB		2.91	2.85	2.90				
	interval velocity		5.42	8.33	8.95	9.04	8.85	9.04	8.95	8.85	8.85	8.67	8.90	8.17		8.76	8.95	8.79				
Russell, Masai (USA) (2000)	time		2.41	3.45	4.44	5.41	6.36	7.31	8.26	9.21	10.17	11.13		12.31	4 / 2							
	reaction time	0.152											1.18			3.00	2.85	2.87				
	interval velocity		5.39	8.17	8.59	8.76	8.95	8.95	8.95	8.95	8.85	8.85	8.90	8.12		8.50	8.95	8.89				
Visser, Nadine (NED) (1995)	time		2.44	3.46	4.43	5.40	6.36	7.33	8.30	9.29	10.28	11.28		12.52	3 / 3							
	reaction time	0.145											1.24			2.96	2.90	2.98				
	interval velocity		5.33	8.33	8.76	8.76	8.85	8.76	8.76	8.59	8.59	8.50	8.47	7.99		8.61	8.79	8.56				
Samba-Mayela, Cyréna (FRA) (2000)	time		2.43	3.46	4.45	5.44	6.41	7.38	8.36	9.35	10.33	11.33		12.57	5 / 4							
	reaction time	0.141											1.24			3.01	2.92	2.97				
	interval velocity		5.35	8.25	8.59	8.59	8.76	8.76	8.67	8.59	8.67	8.50	8.47	7.96		8.47	8.73	8.59				
Johnson, Alaysha (USA) (1996)	time		2.45	3.50	4.49	5.47	6.44	7.42	8.40	9.39	10.40	11.43		12.66	2 / 5							
	reaction time	0.147											1.23			3.02	2.93	3.03				
	interval velocity		5.31	8.10	8.59	8.67	8.76	8.67	8.67	8.59	8.42	8.25	8.54	7.90		8.44	8.70	8.42				
Harrison, Kendra (USA) (1992)	time		2.48	3.53	4.50	5.49	6.45	7.43	8.41	9.40	10.40	11.43		12.70	9 / 6							
	reaction time	0.161											1.27			3.01	2.92	3.02				
	interval velocity		5.24	8.10	8.76	8.59	8.85	8.67	8.67	8.59	8.50	8.25	8.27	7.87		8.47	8.73	8.44				
Kambundji, Ditaji (SUI) (2002)	time		2.43	3.47	4.48	5.48	6.45	7.43	8.43	9.44	10.47	11.50		12.78	8 / 7							
	reaction time	0.119											1.28			3.05	2.95	3.07				
	interval velocity		5.35	8.17	8.42	8.50	8.76	8.67	8.50	8.42	8.25	8.25	8.20	7.82		8.36	8.64	8.31				
Carmassi, Giada (ITA) (1994)	time		2.52	3.57	4.60	5.62	6.63	7.65	8.67	9.71	10.76	11.85		13.20	1 / 8							
	reaction time	0.136											1.35			3.10	3.05	3.18				
	interval velocity		5.16	8.10	8.25	8.33	8.42	8.33	8.33	8.17	8.10	7.80	7.78	7.58		8.23	8.36	8.02				
Charlton, Devynne (BAH) (1995)	time		2.39	3.43	4.41	5.38	6.33	7.31	8.28	9.27				dnf	6 / --							
	reaction time	0.151														2.99	2.90					
	interval velocity		5.44	8.17	8.67	8.76	8.95	8.67	8.76	8.59						8.53	8.79					



Source: Omega Timing (Fri 30 Aug 2024 21:20) - diamond league race analysis
<https://www.omegatiming.com/File/000204100103030101FFFFFFFFFFFF6D.pdf>
Video: <https://www.youtube.com/watch?v=4C8buXxBdA>

2024 Kamila Skolimowska Memorial (Chorzów, POL)

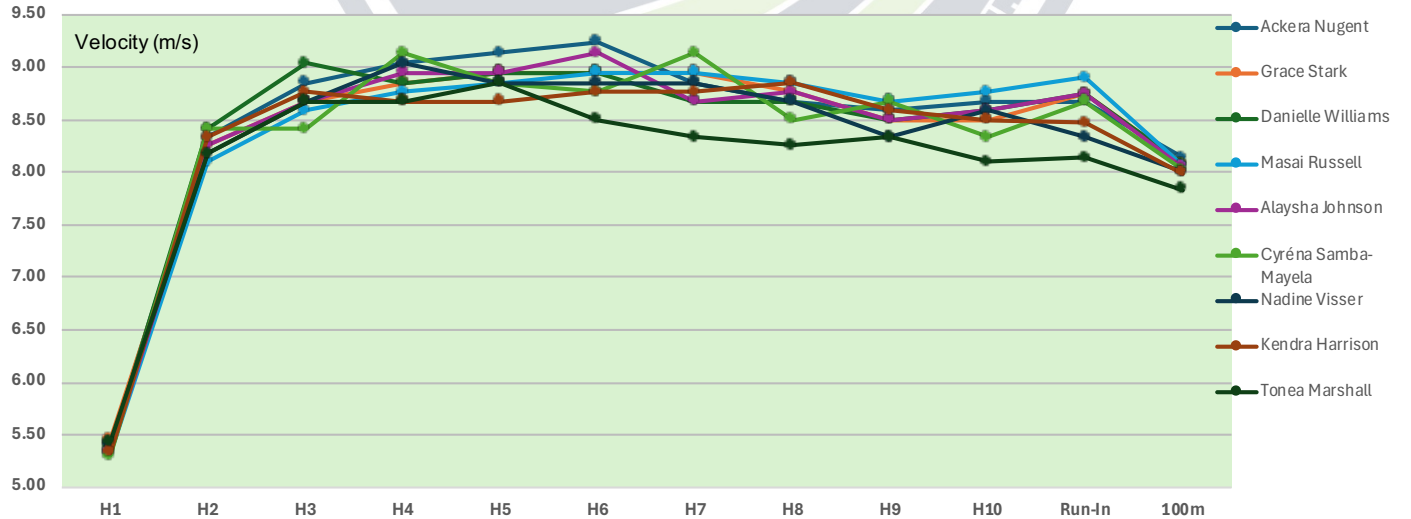
100m Hurdles

Date: 2024.08.25

Wind: -0.5 m/s

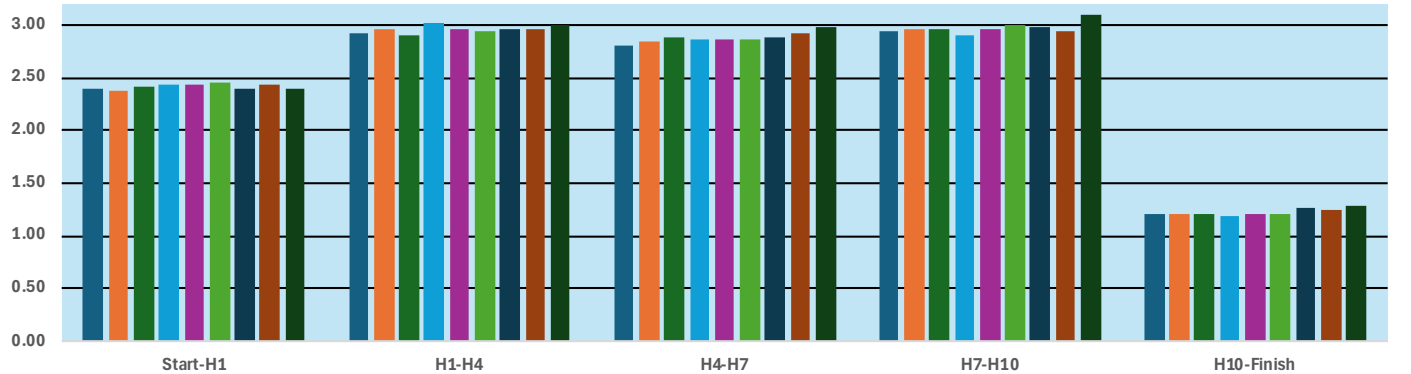
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Nugent, Ackera (JAM) (2002)	time		2.40	3.42	4.38	5.32	6.25	7.17	8.13	9.11	10.10	11.08		12.29	5 / 1			
	reaction time	0.147											1.21			2.92	2.81	2.95
	interval velocity		5.42	8.33	8.85	9.04	9.14	9.24	8.85	8.67	8.59	8.67	8.68	8.14		8.73	9.07	8.64
Stark, Grace (USA) (2001)	time		2.38	3.41	4.39	5.35	6.30	7.25	8.20	9.17	10.17	11.17		12.37	7 / 2			
	reaction time	0.142											1.20			2.97	2.85	2.97
	interval velocity		5.46	8.25	8.67	8.85	8.95	8.95	8.95	8.76	8.50	8.50	8.75	8.08		8.59	8.95	8.59
Williams, Danielle (JAM) (1992)	time		2.42	3.43	4.37	5.33	6.28	7.23	8.21	9.19	10.19	11.18		12.38	4 / 3			
	reaction time	0.129											1.20			2.91	2.88	2.97
	interval velocity		5.37	8.42	9.04	8.85	8.95	8.95	8.67	8.67	8.50	8.59	8.75	8.08		8.76	8.85	8.59
Russell, Masai (USA) (2000)	time		2.44	3.49	4.48	5.45	6.41	7.36	8.31	9.27	10.25	11.22		12.40	1 / 4			
	reaction time	0.151											1.18			3.01	2.86	2.91
	interval velocity		5.33	8.10	8.59	8.76	8.85	8.95	8.95	8.85	8.67	8.76	8.90	8.06		8.47	8.92	8.76
Johnson, Alaysha (USA) (1996)	time		2.44	3.47	4.45	5.40	6.35	7.28	8.26	9.23	10.23	11.22		12.42	6 / 5			
	reaction time	0.155											1.20			2.96	2.86	2.96
	interval velocity		5.33	8.25	8.67	8.95	8.95	9.14	8.67	8.76	8.50	8.59	8.75	8.05		8.61	8.92	8.61
Samba-Mayela, Cyréna (FRA) (2000)	time		2.45	3.46	4.47	5.40	6.36	7.33	8.26	9.26	10.24	11.26		12.47	8 / 6			
	reaction time	0.162											1.21			2.95	2.86	3.00
	interval velocity		5.31	8.42	8.42	9.14	8.85	8.76	9.14	8.50	8.67	8.33	8.68	8.02		8.64	8.92	8.50
Visser, Nadine (NED) (1995)	time		2.40	3.44	4.42	5.36	6.32	7.28	8.24	9.22	10.24	11.23		12.49	2 / 7			
	reaction time	0.144											1.26			2.96	2.88	2.99
	interval velocity		5.42	8.17	8.67	9.04	8.85	8.85	8.85	8.67	8.33	8.59	8.33	8.01		8.61	8.85	8.53
Harrison, Kendra (USA) (1992)	time		2.44	3.46	4.43	5.41	6.39	7.36	8.33	9.29	10.28	11.28		12.52	3 / 8			
	reaction time	0.153											1.24			2.97	2.92	2.95
	interval velocity		5.33	8.33	8.76	8.67	8.67	8.76	8.76	8.85	8.59	8.50	8.47	7.99		8.59	8.73	8.64
Marshall, Tonea (USA) (1998)	time		2.39	3.43	4.41	5.39	6.35	7.35	8.37	9.40	10.42	11.47		12.76	9 / 9			
	reaction time	0.149											1.29			3.00	2.98	3.10
	interval velocity		5.44	8.17	8.67	8.67	8.85	8.50	8.33	8.25	8.33	8.10	8.14	7.84		8.50	8.56	8.23



Time Intervals (s)

Hurdle Phases



Source: Omega Timing (Sun 25 Aug 2024 16:40) - diamond league race analysis
<https://www.omegatiming.com/File/0002040F0102030201FFFFFFFFFFFF6D.pdf>
Video: <https://www.youtube.com/watch?v=7bzFUwS3BSA>

2024 Kamila Skolimowska Memorial (Chorzów, POL)

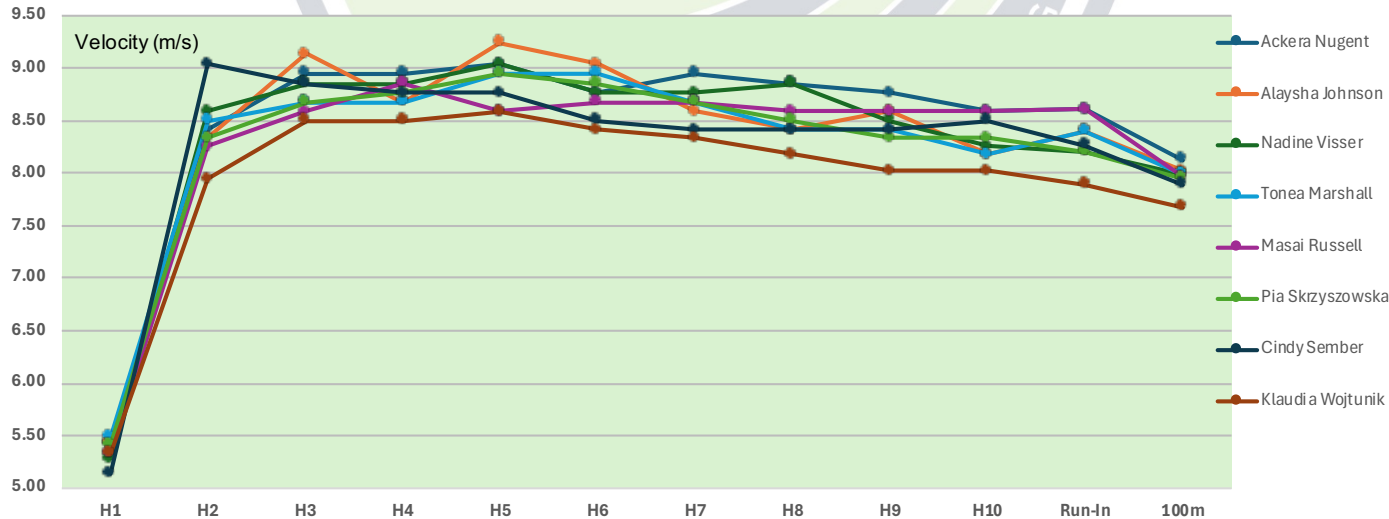
100m Hurdles

Date: 2024.08.25

Wind: 0.6 m/s

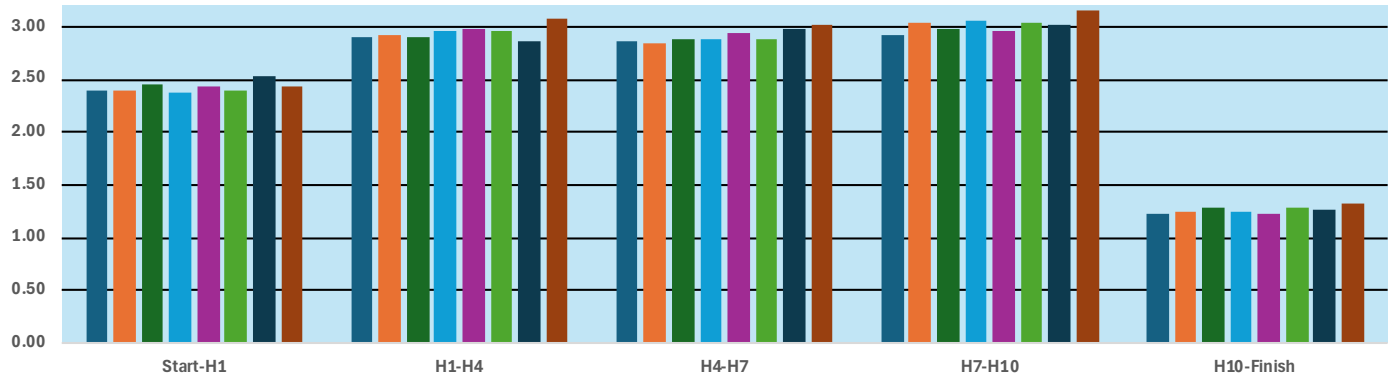
Heat B

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Nugent, Ackera (JAM) (2002)	time		2.39	3.40	4.35	5.30	6.24	7.21	8.16	9.12	10.09	11.08		12.30	3 / 1			
	reaction time	0.140											1.22			2.91	2.86	2.92
	interval velocity		5.44	8.42	8.95	8.95	9.04	8.76	8.95	8.85	8.76	8.59	8.61	8.13		8.76	8.92	8.73
Johnson, Alaysha (USA) (1996)	time		2.39	3.41	4.34	5.32	6.24	7.18	8.17	9.18	10.17	11.21		12.46	7 / 2			
	reaction time	0.145											1.25			2.93	2.85	3.04
	interval velocity		5.44	8.33	9.14	8.67	9.24	9.04	8.59	8.42	8.59	8.17	8.40	8.03		8.70	8.95	8.39
Visser, Nadine (NED) (1995)	time		2.46	3.45	4.41	5.37	6.31	7.28	8.25	9.21	10.21	11.24		12.52	4 / 3			
	reaction time	0.153											1.28			2.91	2.88	2.99
	interval velocity		5.28	8.59	8.85	8.85	9.04	8.76	8.76	8.85	8.50	8.25	8.20	7.99		8.76	8.85	8.53
Marshall, Tonea (USA) (1998)	time		2.37	3.37	4.35	5.33	6.28	7.23	8.21	9.22	10.23	11.27		12.52	8 / 4			
	reaction time	0.126											1.25			2.96	2.88	3.06
	interval velocity		5.49	8.50	8.67	8.67	8.95	8.95	8.67	8.42	8.42	8.17	8.40	7.99		8.61	8.85	8.33
Russell, Masai (USA) (2000)	time		2.44	3.47	4.46	5.42	6.41	7.39	8.37	9.36	10.35	11.34		12.56	5 / 5			
	reaction time	0.156											1.22			2.98	2.95	2.97
	interval velocity		5.33	8.25	8.59	8.85	8.59	8.67	8.67	8.59	8.59	8.59	8.61	7.96		8.56	8.64	8.59
Skrzyszowska, Pia (POL) (2001)	time		2.40	3.42	4.40	5.37	6.32	7.28	8.26	9.26	10.28	11.30		12.58	6 / 6			
	reaction time	0.119											1.28			2.97	2.89	3.04
	interval velocity		5.42	8.33	8.67	8.76	8.95	8.85	8.67	8.50	8.33	8.33	8.20	7.95		8.59	8.82	8.39
Sember, Cindy (GBR) (1994)	time		2.53	3.47	4.43	5.40	6.37	7.37	8.38	9.39	10.40	11.40		12.67	2 / 7			
	reaction time	0.150											1.27			2.87	2.98	3.02
	interval velocity		5.14	9.04	8.85	8.76	8.76	8.50	8.42	8.42	8.42	8.50	8.27	7.89		8.89	8.56	8.44
Wojtunik, Klaudia (POL) (1999)	time		2.44	3.51	4.51	5.51	6.50	7.51	8.53	9.57	10.63	11.69		13.02	9 / 8			
	reaction time	0.131											1.33			3.07	3.02	3.16
	interval velocity		5.33	7.94	8.50	8.50	8.59	8.42	8.33	8.17	8.02	8.02	7.89	7.68		8.31	8.44	8.07



Time Intervals (s)

Hurdle Phases



Source: Omega Timing (Sun 25 Aug 2024 15:19) - diamond league race analysis
<https://www.omegatiming.com/File/0002040F0102030102FFFFFFFFF6D.pdf>

Video: No Video

2024 Kamil Skolimowski Memorial (Chorzów, POL)

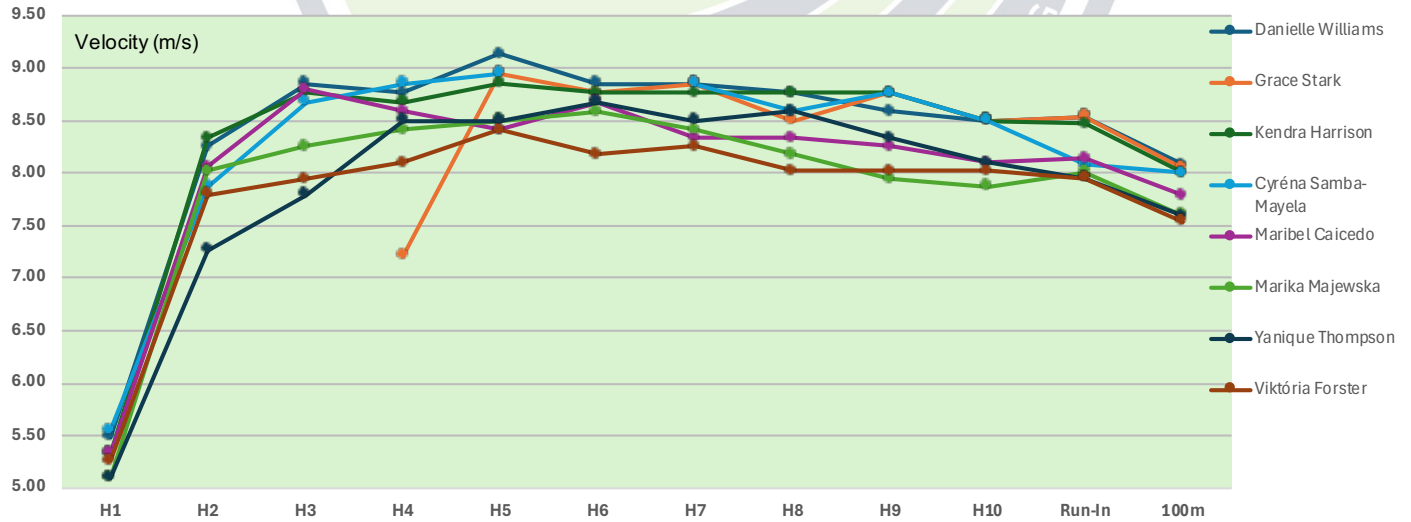
100m Hurdles

Date: 2024.08.25

Wind: -0.3 m/s

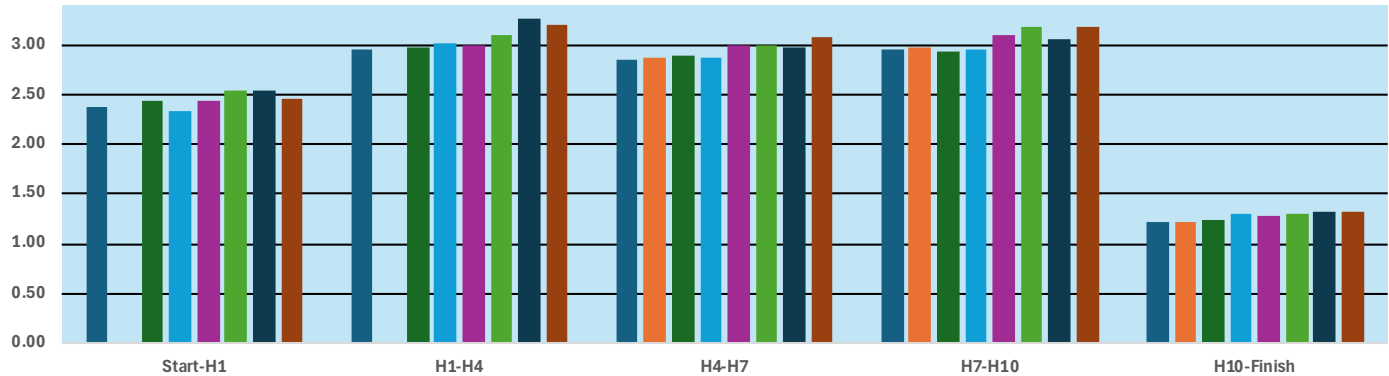
Heat A

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Williams, Danielle (JAM) (1992)	time		2.37	3.40	4.36	5.33	6.26	7.22	8.18	9.15	10.14	11.14		12.37	4 / 1			
	reaction time	0.116											1.23			2.96	2.85	2.96
	interval			1.03	0.96	0.97	0.93	0.96	0.96	0.97	0.99	1.00	1.23			8.61	8.95	8.61
Stark, Grace (USA) (2001)	time					5.34	6.29	7.26	8.22	9.22	10.19	11.19		12.42	6 / 2			
	reaction time	0.137															2.88	2.97
	interval						0.95	0.97	0.96	1.00	0.97	1.00	1.23				8.85	8.59
Harrison, Kendra (USA) (1992)	time		2.44	3.46	4.43	5.41	6.37	7.34	8.31	9.28	10.25	11.25		12.49	7 / 3			
	reaction time	0.186											1.24			2.97	2.90	2.94
	interval			1.02	0.97	0.98	0.96	0.97	0.97	0.97	0.97	1.00	1.24			8.59	8.79	8.67
Samba-Mayela, Cyréna (FRA) (2000)	time		2.34	3.42	4.40	5.36	6.31		8.23	9.22	10.19	11.19		12.49	5 / 3			
	reaction time	0.138							1.92	0.99	0.97	1.00	1.30			3.02	2.87	2.96
	interval			1.08	0.98	0.96	0.95		8.85	8.59	8.76	8.50	8.08	8.01		8.44	8.89	8.61
Caicedo, Maribel (ECU) (1998)	time		2.44	3.49	4.46	5.45	6.46	7.44	8.46	9.48	10.51	11.56		12.85	8 / 5			
	reaction time	0.158							1.02	1.02	1.03	1.05	1.29			3.01	3.01	3.10
	interval			1.05	0.97	0.99	1.01	0.98	1.02	1.02	1.03	1.05	1.29			8.47	8.47	8.23
Majewska, Marika (POL) (2002)	time		2.55	3.61	4.64	5.65	6.65	7.64	8.65	9.69	10.76	11.84		13.15	9 / 6			
	reaction time	0.155							1.01	1.04	1.07	1.08	1.31			3.10	3.00	3.19
	interval			1.06	1.03	1.01	1.00	0.99	1.01	1.04	1.07	1.08	1.31			8.23	8.50	7.99
Thompson, Yanique (JAM) (1996)	time		2.55	3.72	4.81	5.81	6.81	7.79	8.79	9.78	10.80	11.85		13.17	3 / 7			
	reaction time	0.147							1.00	0.99	1.02	1.05	1.32			3.26	2.98	3.06
	interval			1.17	1.09	1.00	1.00	0.98	1.00	0.99	1.02	1.05	1.32			7.82	8.56	8.33
Forster, Viktória (SVK) (2002)	time		2.47	3.56	4.63	5.68	6.69	7.73	8.76	9.82	10.88	11.94		13.26	2 / 8			
	reaction time	0.150							1.03	1.06	1.06	1.06	1.32			3.21	3.08	3.18
	interval			1.09	1.07	1.05	1.01	1.04	1.03	1.06	1.06	1.06	1.32			7.94	8.28	8.02
	time																	
	reaction time																	
	interval																	
	time																	
	reaction time																	
	interval																	



Time Intervals (s)

Hurdle Phases



Source: Omega Timing (Sun 25 Aug 2024 15:19) - diamond league race analysis
<https://www.omegatiming.com/File/0002040F0102030101FFFFFFFFFFFF6D.pdf>

Video: No Video

2024 Athletissima (Lausanne, SUI)

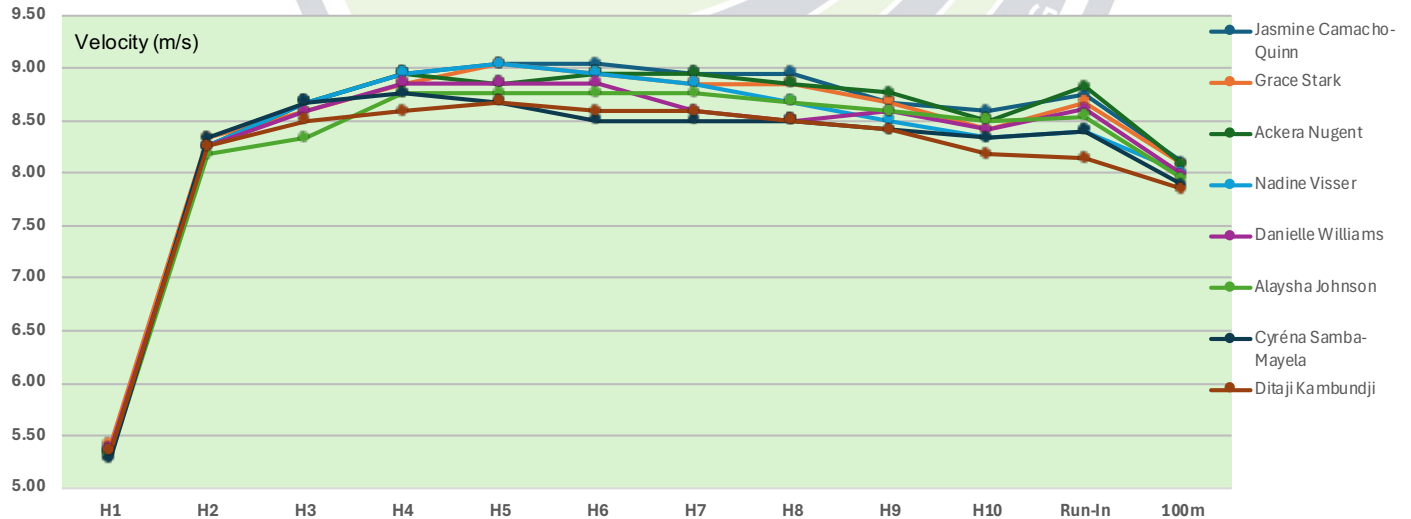
100m Hurdles

Date: 2024.08.22

Wind: -0.9 m/s

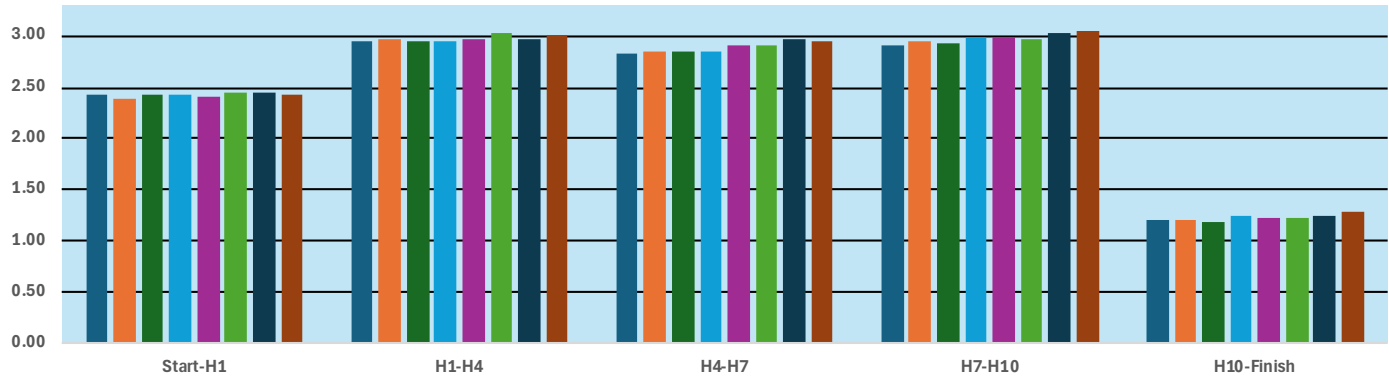
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Camacho-Quinn, Jasmine (PUR) (199)	time		2.44	3.47	4.45	5.40	6.34	7.28	8.23	9.18	10.16	11.15		12.35	5 / 1			
	reaction time	0.131											1.20			2.96	2.83	2.92
	interval velocity		5.33	8.25	8.67	8.95	9.04	9.04	8.95	8.95	8.67	8.59	8.75	8.10		8.61	9.01	8.73
Stark, Grace (USA) (2001)	time		2.40	3.42	4.41	5.37	6.31	7.26	8.22	9.18	10.16	11.17		12.38	7 / 2			
	reaction time	0.145											1.21			2.97	2.85	2.95
	interval velocity		5.42	8.33	8.59	8.85	9.04	8.95	8.85	8.85	8.67	8.42	8.68	8.08		8.59	8.95	8.64
Nugent, Ackera (JAM) (2002)	time		2.44	3.47	4.45	5.40	6.36	7.31	8.26	9.22	10.19	11.19		12.38	8 / 3			
	reaction time	0.159											1.19			2.96	2.86	2.93
	interval velocity		5.33	8.25	8.67	8.95	8.85	8.95	8.95	8.85	8.76	8.50	8.82	8.08		8.61	8.92	8.70
Visser, Nadine (NED) (1995)	time		2.43	3.46	4.44	5.39	6.33	7.28	8.24	9.22	10.22	11.24		12.49	6 / 4			
	reaction time	0.142											1.25			2.96	2.85	3.00
	interval velocity		5.35	8.25	8.67	8.95	9.04	8.95	8.85	8.67	8.50	8.33	8.40	8.01		8.61	8.95	8.50
Williams, Danielle (JAM) (1992)	time		2.42	3.45	4.44	5.40	6.36	7.32	8.31	9.31	10.30	11.31		12.53	1 / 5			
	reaction time	0.138											1.22			2.98	2.91	3.00
	interval velocity		5.37	8.25	8.59	8.85	8.85	8.85	8.59	8.50	8.59	8.42	8.61	7.98		8.56	8.76	8.50
Johnson, Alaysha (USA) (1996)	time		2.45	3.49	4.51	5.48	6.45	7.42	8.39	9.37	10.36	11.36		12.59	3 / 6			
	reaction time	0.164											1.23			3.03	2.91	2.97
	interval velocity		5.31	8.17	8.33	8.76	8.76	8.76	8.76	8.67	8.59	8.50	8.54	7.94		8.42	8.76	8.59
Samba-Mayela, Cyréna (FRA) (2000)	time		2.46	3.48	4.46	5.43	6.41	7.41	8.41	9.41	10.42	11.44		12.69	4 / 7			
	reaction time	0.144											1.25			2.97	2.98	3.03
	interval velocity		5.28	8.33	8.67	8.76	8.67	8.50	8.50	8.50	8.42	8.33	8.40	7.88		8.59	8.56	8.42
Kambundji, Ditaji (SUI) (2002)	time		2.43	3.46	4.46	5.45	6.43	7.42	8.41	9.41	10.42	11.46		12.75	2 / 8			
	reaction time	0.146											1.29			3.02	2.96	3.05
	interval velocity		5.35	8.25	8.50	8.59	8.67	8.59	8.59	8.50	8.42	8.17	8.14	7.84		8.44	8.61	8.36



Time Intervals (s)

Hurdle Phases



Source: Omega Timing (Thu 22 Aug 2024 20:27) - diamond league race analysis
<https://www.omegatiming.com/File/0002040E0102090101FFFFFFFFFFFF6D.pdf>

Video: https://www.youtube.com/watch?v=R4bPgGnG_Pw

2024 Olympic Games (Paris, FRA)

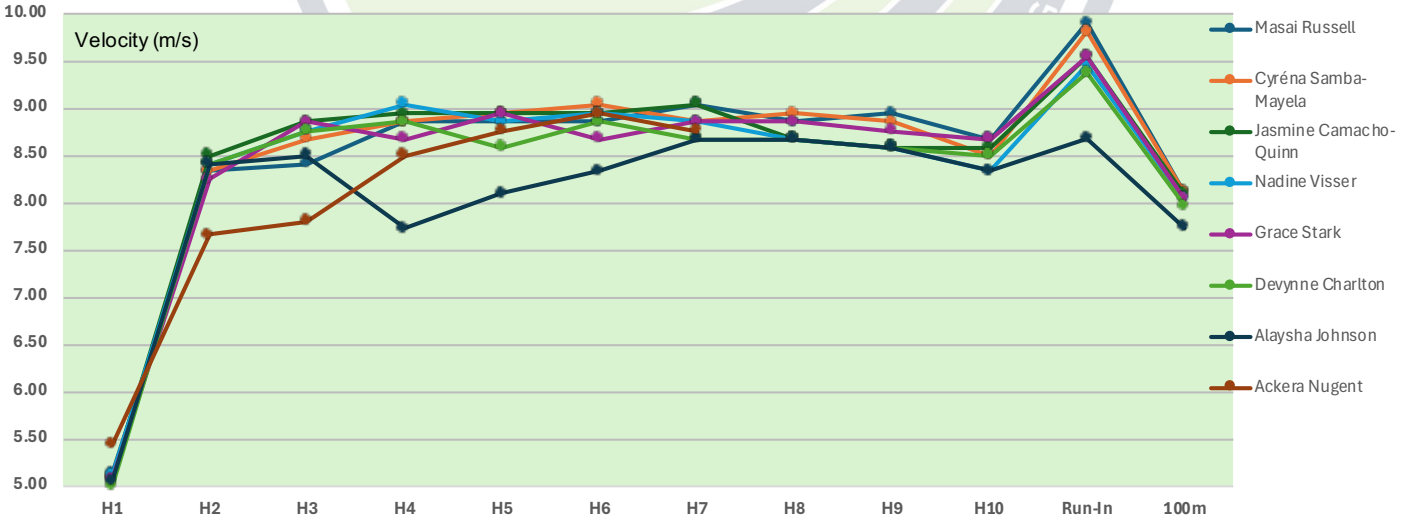
100m Hurdles

Date: 2024.08.10

Wind: -0.3 m/s

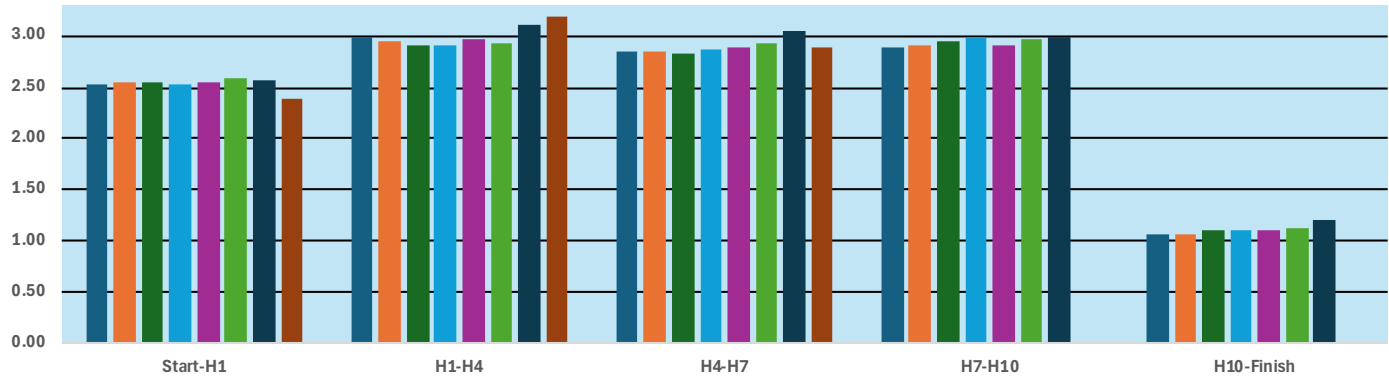
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Russell, Masai (USA) (2000)	time		2.53	3.55	4.56	5.52	6.48	7.44	8.38	9.34	10.29	11.27		12.33	5 / 1			
	reaction time	0.137		1.02	1.01	0.96	0.96	0.96	0.94	0.96	0.95	0.98	1.06			2.99	2.86	2.89
	interval velocity		5.14	8.33	8.42	8.85	8.85	8.85	9.04	8.85	8.95	8.67	9.91	8.11		8.53	8.92	8.82
Samba-Mayela, Cyréna (FRA) (2000)	time		2.55	3.57	4.55	5.51	6.46	7.40	8.36	9.31	10.27	11.27		12.34	2 / 2			
	reaction time	0.143		1.02	0.98	0.96	0.95	0.94	0.96	0.95	0.96	1.00	1.07			2.96	2.85	2.91
	interval velocity		5.10	8.33	8.67	8.85	8.95	9.04	8.85	8.95	8.85	8.50	9.81	8.10		8.61	8.95	8.76
Camacho-Quinn, Jasmine (PUR) (1999)	time		2.55	3.55	4.51	5.46	6.41	7.36	8.30	9.28	10.27	11.26		12.36	7 / 3			
	reaction time	0.173		1.00	0.96	0.95	0.95	0.95	0.94	0.98	0.99	0.99	1.10			2.91	2.84	2.96
	interval velocity		5.10	8.50	8.85	8.95	8.95	8.95	9.04	8.67	8.59	8.59	9.55	8.09		8.76	8.98	8.61
Visser, Nadine (NED) (1995)	time		2.54	3.55	4.52	5.46	6.42	7.37	8.33	9.31	10.30	11.32		12.43	3 / 4			
	reaction time	0.134		1.01	0.97	0.94	0.96	0.95	0.96	0.98	0.99	1.02	1.11			2.92	2.87	2.99
	interval velocity		5.12	8.42	8.76	9.04	8.85	8.95	8.85	8.67	8.59	8.33	9.46	8.05		8.73	8.89	8.53
Stark, Grace (USA) (2001)	time		2.56	3.59	4.55	5.53	6.48	7.46	8.42	9.38	10.35	11.33		12.43	4 / 5			
	reaction time	0.161		1.03	0.96	0.98	0.95	0.98	0.96	0.96	0.97	0.98	1.10			2.97	2.89	2.91
	interval velocity		5.08	8.25	8.85	8.67	8.95	8.67	8.85	8.85	8.76	8.67	9.55	8.05		8.59	8.82	8.76
Charlton, Devynne (BAH) (1995)	time		2.60	3.61	4.58	5.54	6.53	7.49	8.47	9.45	10.44	11.44		12.56	8 / 6			
	reaction time	0.203		1.01	0.97	0.96	0.99	0.96	0.98	0.98	0.99	1.00	1.12			2.94	2.93	2.97
	interval velocity		5.00	8.42	8.76	8.85	8.59	8.85	8.67	8.67	8.59	8.50	9.37	7.96		8.67	8.70	8.59
Johnson, Alaysha (USA) (1996)	time		2.57	3.58	4.58	5.68	6.73	7.75	8.73	9.71	10.70	11.72		12.93	6 / 7			
	reaction time	0.151		1.01	1.00	1.10	1.05	1.02	0.98	0.98	0.99	1.02	1.21			3.11	3.05	2.99
	interval velocity		5.06	8.42	8.50	7.73	8.10	8.33	8.67	8.67	8.59	8.33	8.68	7.73		8.20	8.36	8.53
Nugent, Ackera (JAM) (2002)	time		2.39	3.50	4.59	5.59	6.56	7.51	8.48					dnf	9 / --			
	reaction time	0.138		1.11	1.09	1.00	0.97	0.95	0.97							3.20	2.89	-8.48
	interval velocity		5.44	7.66	7.80	8.50	8.76	8.95	8.76							7.97	8.82	-3.01



Time Intervals (s)

Hurdle Phases



Source: Paris 2024 Olympic Games - Results Book (2024). p. 541
https://olympics.com/OG2024/pdf/OG2024/ATH/OG2024_ATH_B99_ATH-----pdf
Video: <https://www.youtube.com/watch?v=cwbYRoHitaw>

2024 Olympic Games (Paris, FRA)

100m Hurdles

Date: 2024.08.09

Wind: -0.7 m/s

Semi-Final 3

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Camacho-Quinn, Jasmine (PUR) (199)	time	2.44	3.46	4.43	5.39	6.32	7.27	8.23	9.19	10.17	11.15			12.35	5 / 1	2.95	2.84	2.92
	reaction time	0.161		1.02	0.97	0.96	0.93	0.95	0.96	0.96	0.98	0.98	1.20			8.64	8.98	8.73
	interval velocity		5.33	8.33	8.76	8.85	9.14	8.95	8.85	8.85	8.67	8.67	8.75	8.10				
Russell, Masai (USA) (2000)	time	2.41	3.47	4.46	5.43	6.39	7.34	8.30	9.26	10.23	11.21			12.42	7 / 2	3.02	2.87	2.91
	reaction time	0.155		1.06	0.99	0.97	0.96	0.95	0.96	0.96	0.97	0.98	1.21			8.44	8.89	8.76
	interval velocity		5.39	8.02	8.59	8.76	8.85	8.95	8.85	8.85	8.76	8.67	8.68	8.05				
Nugent, Ackera (JAM) (2002)	time	2.41	3.46	4.45	5.41	6.37	7.34	8.31	9.28	10.25	11.23			12.44	4 / 3	3.00	2.90	2.92
	reaction time	0.142		1.05	0.99	0.96	0.96	0.97	0.97	0.97	0.98	1.21				8.50	8.79	8.73
	interval velocity		5.39	8.10	8.59	8.85	8.85	8.76	8.76	8.76	8.76	8.67	8.68	8.04				
Samba-Mayela, Cyr�na (FRA) (2000)	time	2.42	3.44	4.44	5.41	6.38	7.33	8.29	9.26	10.24	11.23			12.52	6 / 4	2.99	2.88	2.94
	reaction time	0.147		1.02	1.00	0.97	0.97	0.95	0.96	0.97	0.98	0.99	1.29			8.53	8.85	8.67
	interval velocity		5.37	8.33	8.50	8.76	8.76	8.95	8.85	8.76	8.67	8.59	8.14	7.99				

Date: 2024.08.09

Wind: 0.4 m/s

Semi-Final 2

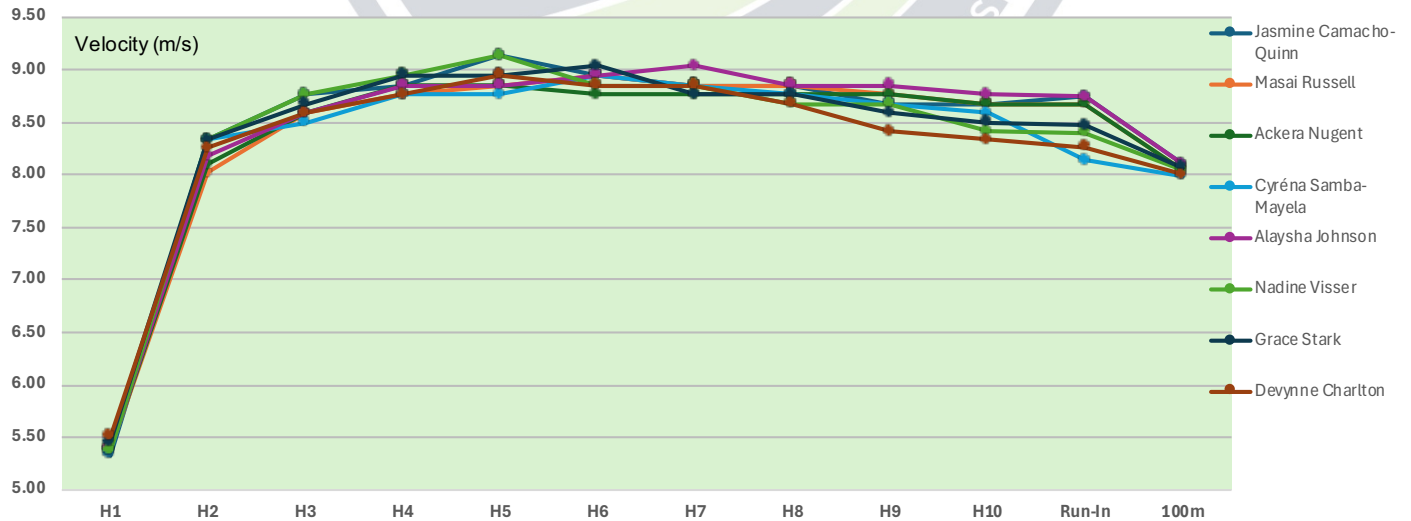
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Johnson, Alaysha (USA) (1996)	time	2.41	3.45	4.44	5.40	6.36	7.31	8.25	9.21	10.17	11.14			12.34	5 / 1	2.99	2.85	2.89
	reaction time	0.133		1.04	0.99	0.96	0.96	0.95	0.94	0.96	0.96	0.97	1.20			8.53	8.95	8.82
	interval velocity		5.39	8.17	8.59	8.85	8.85	8.95	9.04	8.85	8.85	8.76	8.75	8.10				
Visser, Nadine (NED) (1995)	time	2.42	3.44	4.41	5.36	6.29	7.25	8.21	9.19	10.17	11.18			12.43	7 / 2	2.94	2.85	2.97
	reaction time	0.143		1.02	0.97	0.95	0.93	0.96	0.96	0.98	0.98	1.01	1.25			8.67	8.95	8.59
	interval velocity		5.37	8.33	8.76	8.95	9.14	8.85	8.85	8.67	8.67	8.42	8.40	8.05				

Date: 2024.08.09

Wind: 0.5 m/s

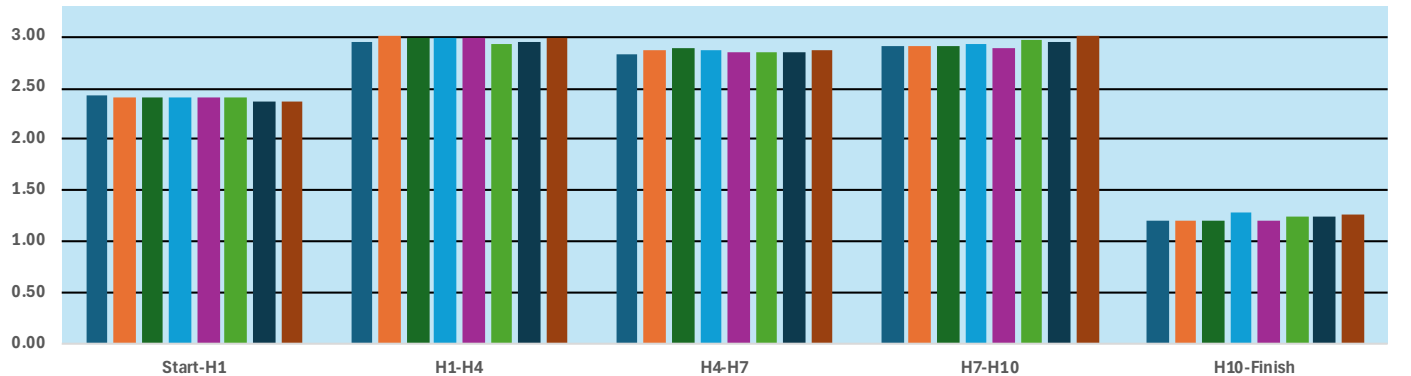
Semi-Final 1

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Stark, Grace (USA) (2001)	time	2.38	3.40	4.38	5.33	6.28	7.22	8.19	9.16	10.15	11.15			12.39	4 / 1	2.95	2.86	2.96
	reaction time	0.148		1.02	0.98	0.95	0.95	0.94	0.97	0.97	0.99	1.00	1.24			8.64	8.92	8.61
	interval velocity		5.46	8.33	8.67	8.95	8.95	9.04	8.76	8.76	8.59	8.50	8.47	8.07				
Charlton, Devynne (BAH) (1995)	time	2.36	3.39	4.38	5.35	6.30	7.26	8.22	9.20	10.21	11.23			12.50	7 / 2	2.99	2.87	3.01
	reaction time	0.138		1.03	0.99	0.97	0.95	0.96	0.96	0.98	1.01	1.02	1.27			8.53	8.89	8.47
	interval velocity		5.51	8.25	8.59	8.76	8.95	8.85	8.85	8.67	8.42	8.33	8.27	8.00				



Time Intervals (s)

Hurdle Phases



Source: Paris 2024 Olympic Games - Results Book (2024) . p. 546-48
https://olympics.com/OG2024/pdf/OG2024/ATH/OG2024_ATH_B99_ATH-----pdf

Video: <https://olympics.com/en/paris-2024/videos/track-and-field-day-14-morning-athletics-olympic-games-paris-2024>

2024 Resisprint International (La Chaux-de-Fonds, SUI) (TV Analysis)

100m Hurdles

Date: 2024.07.14 Wind: 1.6 m/s

A Final

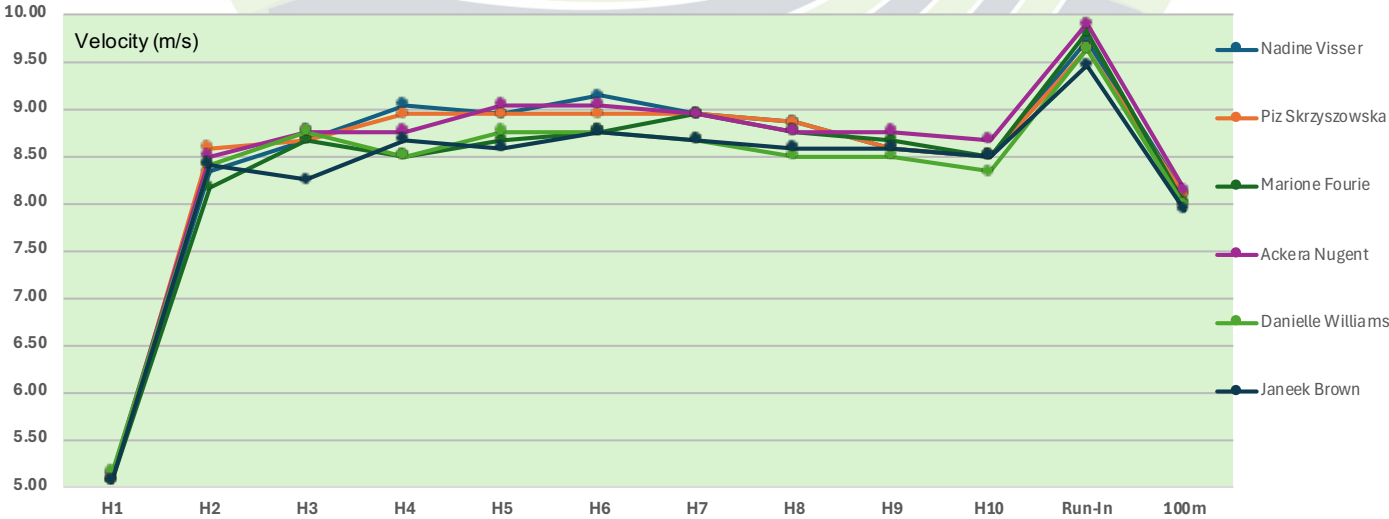
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Visser, Nadine (NED) (1995)	time	2.56	3.58	4.56	5.50	6.45	7.38	8.33	9.29	10.28	11.28		12.36	4 / 1			
	reaction time														2.94	2.83	2.95
	interval		1.02	0.98	0.94	0.95	0.93	0.95	0.96	0.99	1.00	1.08	NR PB		8.67	9.01	8.64
Skrzysowska, Pia (POL) (2001)	time	2.56	3.55	4.53	5.48	6.43	7.38	8.33	9.29	10.28	11.28		12.37	5 / 2			
	reaction time														2.92	2.85	2.95
	interval		0.99	0.98	0.95	0.95	0.95	0.95	0.96	0.99	1.00	1.09	PB		8.73	8.95	8.64
Fourie, Marione (RSA) (2002)	time	2.56	3.60	4.58	5.58	6.56	7.53	8.48	9.45	10.43	11.43		12.50	3 / 3			
	reaction time														3.02	2.90	2.95
	interval		1.04	0.98	1.00	0.98	0.97	0.95	0.97	0.98	1.00	1.07			8.44	8.79	8.64
	velocity	5.08	8.33	8.67	9.04	8.95	9.14	8.95	8.85	8.59	8.50	9.72	8.09				

2024 Jamaican National Senior Championships (Kingston, JAM) (TV Analysis)

Date: 2024.06.28 Wind: 0.1 m/s

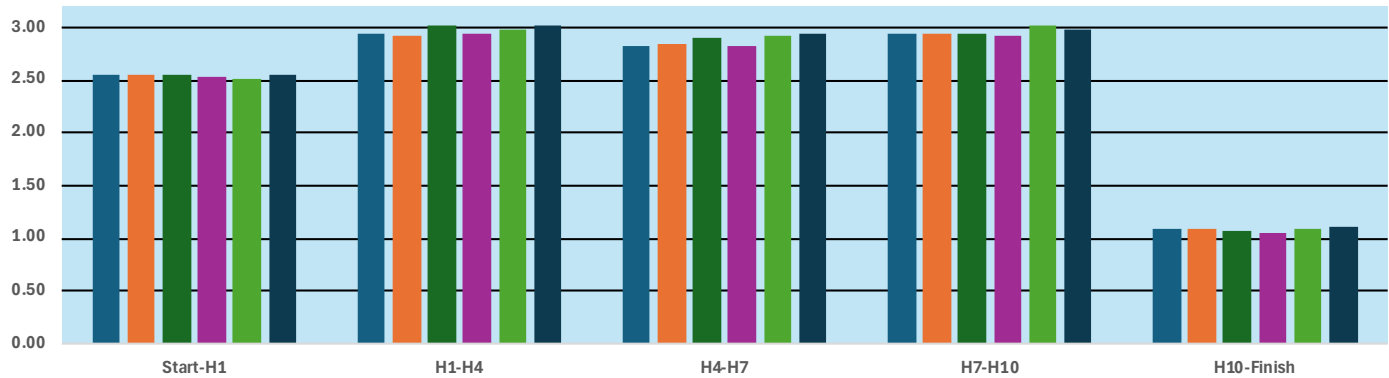
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Nugent, Ackera (JAM) (2002)	time	2.53	3.53	4.50	5.47	6.41	7.35	8.30	9.27	10.24	11.22		12.28	3 / 1			
	reaction time	0.145													2.94	2.83	2.92
	interval		1.00	0.97	0.97	0.94	0.94	0.95	0.97	0.97	0.98	1.06	NR PB		8.67	9.01	8.73
Williams, Danielle (JAM) (1992)	time	2.52	3.53	4.50	5.50	6.47	7.44	8.42	9.42	10.42	11.44		12.53	4 / 2			
	reaction time	0.168													2.98	2.92	3.02
	interval		1.01	0.97	1.00	0.97	0.97	0.98	1.00	1.00	1.02	1.09			8.56	8.73	8.44
Brown, Janeek (JAM) (1998)	time	2.56	3.57	4.60	5.58	6.57	7.54	8.52	9.51	10.50	11.50		12.61	2 / 3			
	reaction time	0.167													3.02	2.94	2.98
	interval		1.01	1.03	0.98	0.99	0.97	0.98	0.99	0.99	1.00	1.11			8.44	8.67	8.56
	velocity	5.08	8.42	8.25	8.67	8.59	8.76	8.67	8.59	8.59	8.50	9.46	7.93				



Time Intervals (s)

Hurdle Phases



Resisprint International
Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: Gun Flash
Source: <https://www.youtube.com/watch?v=uf8nMikb4Rk>

Jamaican National Senior Championships
Evaluated with: ObjectusVideo
Quality & Frame Rate: 1280 x 720 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=aUJ-AUyAfdM>

2024 FBK Games (Hengelo, NED) (TV Analysis)

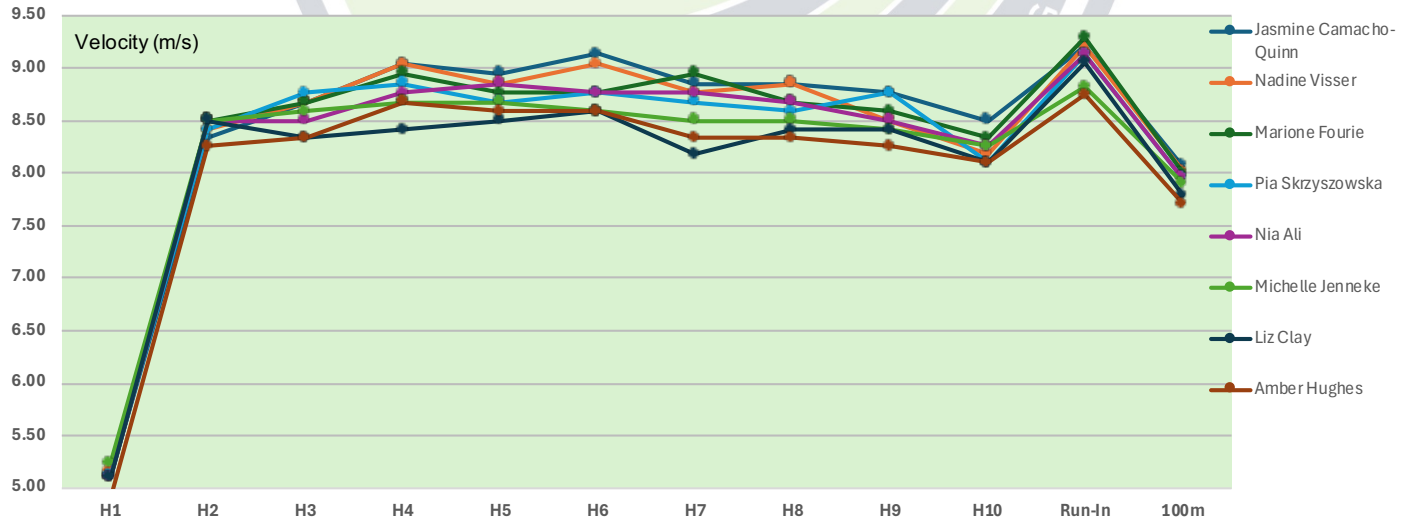
100m Hurdles

Date: 2024.07.07

Wind: 1.6 m/s

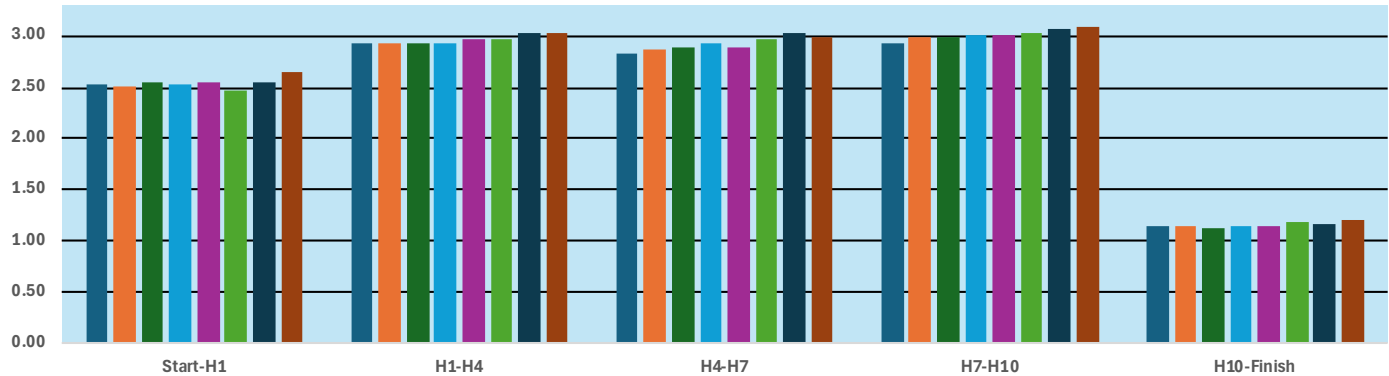
FINAL

				H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Camacho-Quinn, Jasmine (PUR) (199 time)	reaction time	0.163													12.39	4 / 1			
	interval			2.54	3.56	4.54	5.48	6.43	7.36	8.32	9.28	10.25	11.25				2.94	2.84	2.93
	velocity			5.12	8.33	8.67	9.04	8.95	9.14	8.85	8.85	8.76	8.50	9.21	8.07		8.67	8.98	8.70
Visser, Nadine (NED) (1995 time)	reaction time	0.133		2.52	3.53	4.51	5.45	6.41	7.35	8.32	9.28	10.28	11.32		12.46	5 / 2	2.93	2.87	3.00
	interval				1.01	0.98	0.94	0.96	0.94	0.97	0.96	1.00	1.04	1.14	NR PB		8.70	8.89	8.50
	velocity			5.16	8.42	8.67	9.04	8.85	9.04	8.76	8.85	8.50	8.17	9.21	8.03				
Fourie, Marione (RSA) (2002 time)	reaction time	0.163		2.55	3.55	4.53	5.48	6.45	7.42	8.37	9.35	10.34	11.36		12.49	7 / 3	2.93	2.89	2.99
	interval				1.00	0.98	0.95	0.97	0.97	0.95	0.98	0.99	1.02	1.13	NR PB		8.70	8.82	8.53
	velocity			5.10	8.50	8.67	8.95	8.76	8.76	8.95	8.67	8.59	8.33	9.29	8.01				
Skrzysowska, Pia (POL) (2001 time)	reaction time	0.000		2.54	3.55	4.52	5.48	6.46	7.43	8.41	9.40	10.37	11.42		12.57	6 / 4	2.94	2.93	3.01
	interval				1.01	0.97	0.96	0.98	0.97	0.98	0.99	0.97	1.05	1.15			8.67	8.70	8.47
	velocity			5.12	8.42	8.76	8.85	8.67	8.76	8.67	8.59	8.76	8.10	9.13	7.96				
Ali, Nia (USA) (1988 time)	reaction time	0.149		2.55	3.55	4.55	5.52	6.48	7.45	8.42	9.40	10.40	11.43		12.58	3 / 5	2.97	2.90	3.01
	interval				1.00	1.00	0.97	0.96	0.97	0.97	0.98	1.00	1.03	1.15			8.59	8.79	8.47
	velocity			5.10	8.50	8.50	8.76	8.85	8.76	8.76	8.67	8.50	8.25	9.13	7.95				
Jenneke, Michelle (AUS) (1993 time)	reaction time	0.129		2.48	3.48	4.47	5.45	6.43	7.42	8.42	9.42	10.43	11.46		12.65	9 / 6	2.97	2.97	3.04
	interval				1.00	0.99	0.98	0.98	0.99	1.00	1.00	1.01	1.03	1.19	PB		8.59	8.59	8.39
	velocity			5.24	8.50	8.59	8.67	8.67	8.59	8.50	8.50	8.42	8.25	8.82	7.91				
Clay, Liz (AUS) (1995 time)	reaction time	0.130		2.55	3.55	4.57	5.58	6.58	7.57	8.61	9.62	10.63	11.68		12.84	8 / 7	3.03	3.03	3.07
	interval				1.00	1.02	1.01	1.00	0.99	1.04	1.01	1.01	1.05	1.16			8.42	8.42	8.31
	velocity			5.10	8.50	8.33	8.42	8.50	8.59	8.17	8.42	8.42	8.10	9.05	7.79				
Hughes, Amber (USA) (1994 time)	reaction time	0.169		2.65	3.68	4.70	5.68	6.67	7.66	8.68	9.70	10.73	11.78		12.98	1 / 8	3.03	3.00	3.10
	interval				1.03	1.02	0.98	0.99	0.99	1.02	1.02	1.03	1.05	1.20			8.42	8.50	8.23
	velocity			4.91	8.25	8.33	8.67	8.59	8.59	8.33	8.33	8.25	8.10	8.75	7.70				



Time Intervals (s)

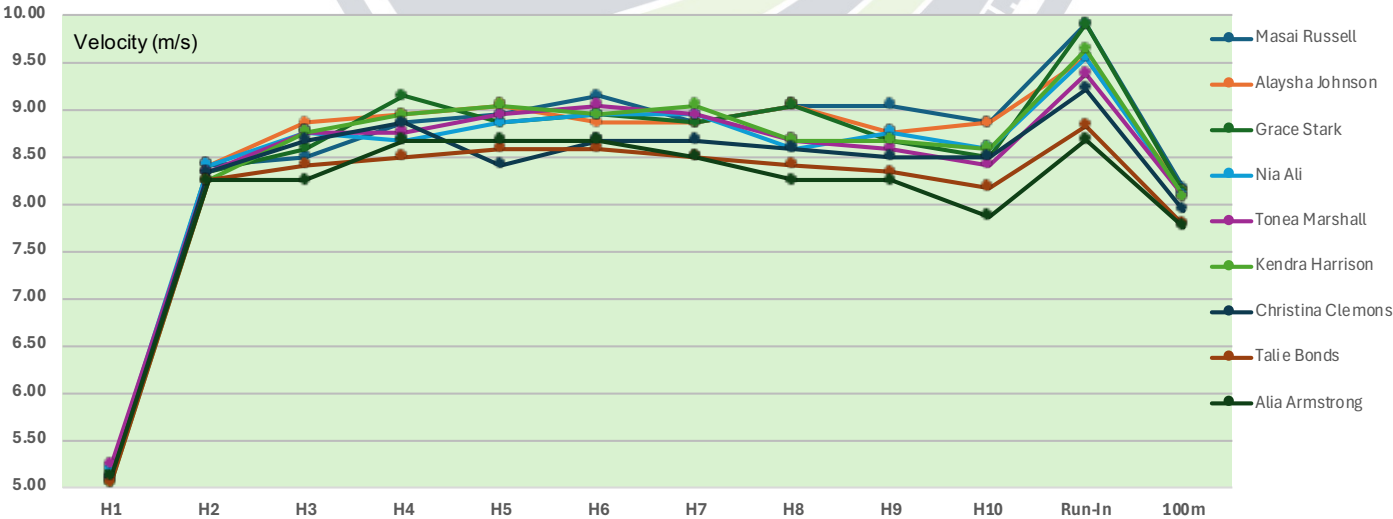
Hurdle Phases



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 60fps
Timing From: First Movement
Source: https://www.youtube.com/watch?v=TeZSsV7_S20

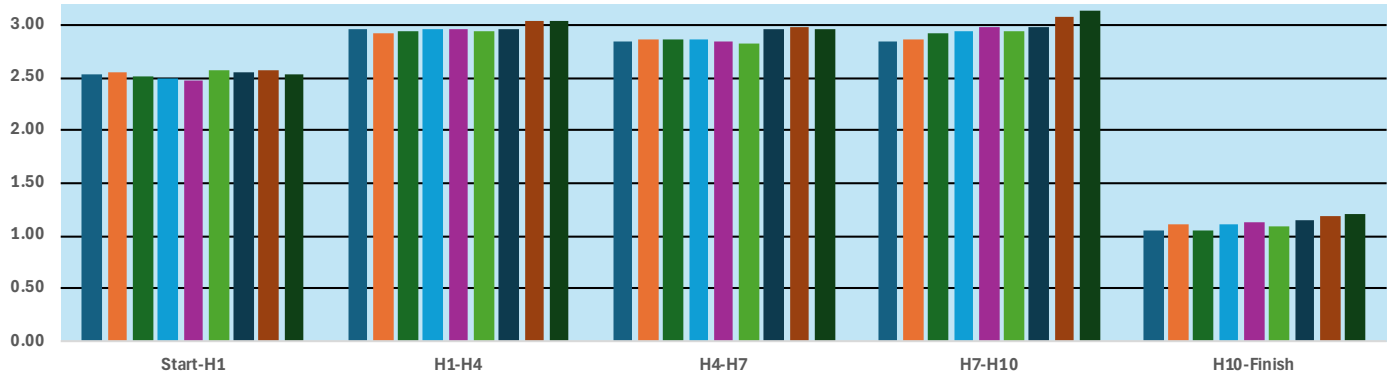
2024 USA Olympic Trials (Eugene, OR) (TV Analysis)

100m Hurdles		Date: 2024.06.30				Wind: 0.7 m/s				FINAL									
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10		
Russell, Masai (USA) (2000)	time	2.54	3.55	4.55	5.51	6.46	7.39	8.35	9.29	10.23	11.19		12.25	4 / 1	2.97	2.84	2.84		
	reaction time		1.01	1.00	0.96	0.95	0.93	0.96	0.94	0.94	0.96	1.06	PB						
	interval	5.12	8.42	8.50	8.85	8.95	9.14	8.85	9.04	9.04	8.85	9.91	8.16					8.59	8.98
Johnson, Alaysha (USA) (1996)	time	2.56	3.57	4.53	5.48	6.42	7.38	8.34	9.28	10.25	11.21		12.31	5 / 2	2.92	2.86	2.87		
	reaction time		1.01	0.96	0.95	0.94	0.96	0.96	0.94	0.97	0.96	1.10	PB						
	interval	5.08	8.42	8.85	8.95	9.04	8.85	8.85	9.04	8.76	8.85	9.55	8.12					8.73	8.92
Stark, Grace (USA) (2001)	time	2.52	3.54	4.53	5.46	6.42	7.37	8.33	9.27	10.25	11.25		12.31	8 / 3	2.94	2.87	2.92		
	reaction time		1.02	0.99	0.93	0.96	0.95	0.96	0.94	0.98	1.00	1.06	PB						
	interval	5.16	8.33	8.59	9.14	8.85	8.95	8.85	9.04	8.67	8.50	9.91	8.12					8.67	8.89
Ali, Nia (USA) (1988)	time	2.50	3.51	4.48	5.46	6.42	7.37	8.32	9.31	10.28	11.27		12.37	2 / 4	2.96	2.86	2.95		
	reaction time		1.01	0.97	0.98	0.96	0.95	0.95	0.99	0.97	0.99	1.10							
	interval	5.20	8.42	8.76	8.67	8.85	8.95	8.95	8.59	8.76	8.59	9.55	8.08					8.61	8.92
Marshall, Tonea (USA) (1998)	time	2.48	3.50	4.47	5.44	6.39	7.33	8.28	9.26	10.25	11.26		12.38	6 / 5	2.96	2.84	2.98		
	reaction time		1.02	0.97	0.97	0.95	0.94	0.95	0.98	0.99	1.01	1.12							
	interval	5.24	8.33	8.76	8.76	8.95	9.04	8.95	8.67	8.59	8.42	9.37	8.08					8.61	8.98
Harrison, Kendra (USA) (1992)	time	2.57	3.60	4.57	5.52	6.46	7.41	8.35	9.33	10.31	11.30		12.39	3 / 6	2.95	2.83	2.95		
	reaction time		1.03	0.97	0.95	0.94	0.95	0.94	0.98	0.98	0.99	1.09							
	interval	5.06	8.25	8.76	8.95	9.04	8.95	9.04	8.67	8.67	8.59	9.63	8.07					8.64	9.01
Clemons, Christina (USA) (1990)	time	2.55	3.57	4.55	5.51	6.52	7.50	8.48	9.47	10.47	11.47		12.61	7 / 7	2.96	2.97	2.99		
	reaction time		1.02	0.98	0.96	1.01	0.98	0.98	0.99	1.00	1.00	1.14							
	interval	5.10	8.33	8.67	8.85	8.42	8.67	8.67	8.59	8.50	8.50	9.21	7.93					8.61	8.59
Bonds, Talie (USA) (1998)	time	2.57	3.60	4.61	5.61	6.60	7.59	8.59	9.60	10.62	11.66		12.85	1 / 8	3.04	2.98	3.07		
	reaction time		1.03	1.01	1.00	0.99	0.99	1.00	1.01	1.02	1.04	1.19							
	interval	5.06	8.25	8.42	8.50	8.59	8.59	8.50	8.42	8.33	8.17	8.82	7.78					8.39	8.56
Armstrong, Alia (USA) (2000)	time	2.54	3.57	4.60	5.58	6.56	7.54	8.54	9.57	10.60	11.68		12.89	9 / 9	3.04	2.96	3.14		
	reaction time		1.03	1.03	0.98	0.98	0.98	1.00	1.03	1.03	1.08	1.21							
	interval	5.12	8.25	8.25	8.67	8.67	8.67	8.50	8.25	8.25	7.87	8.68	7.76					8.39	8.61



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=qv1FN-27qqs>

2024 USA Olympic Trials (Eugene, OR) (TV Analysis)

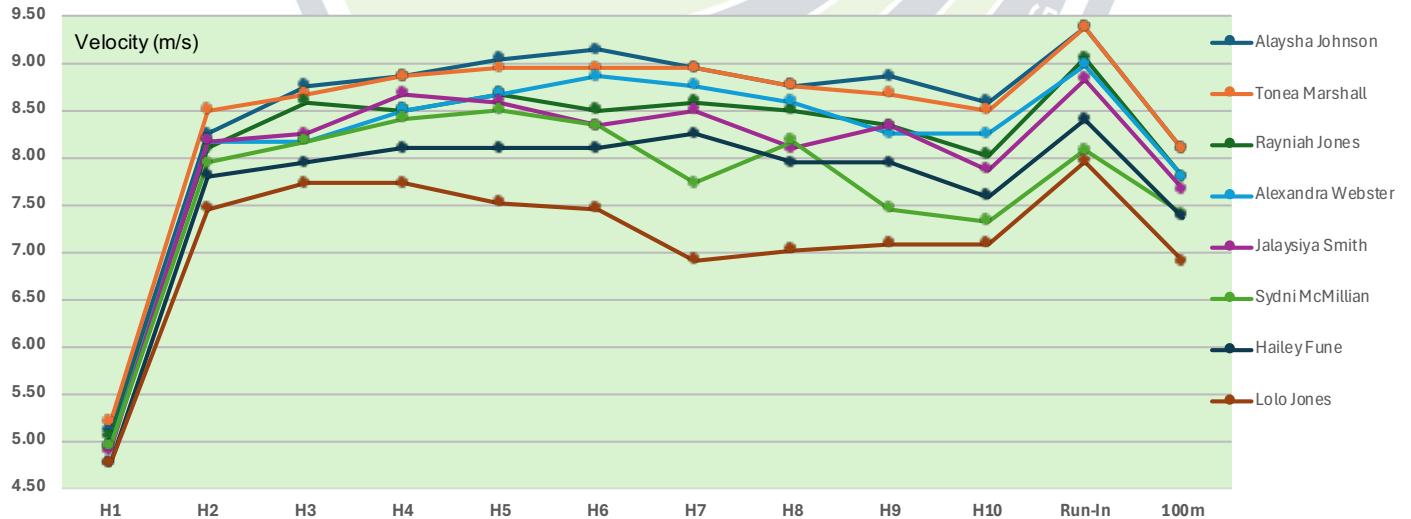
100m Hurdles

Date: 2024.06.29

Wind: 1.0 m/s

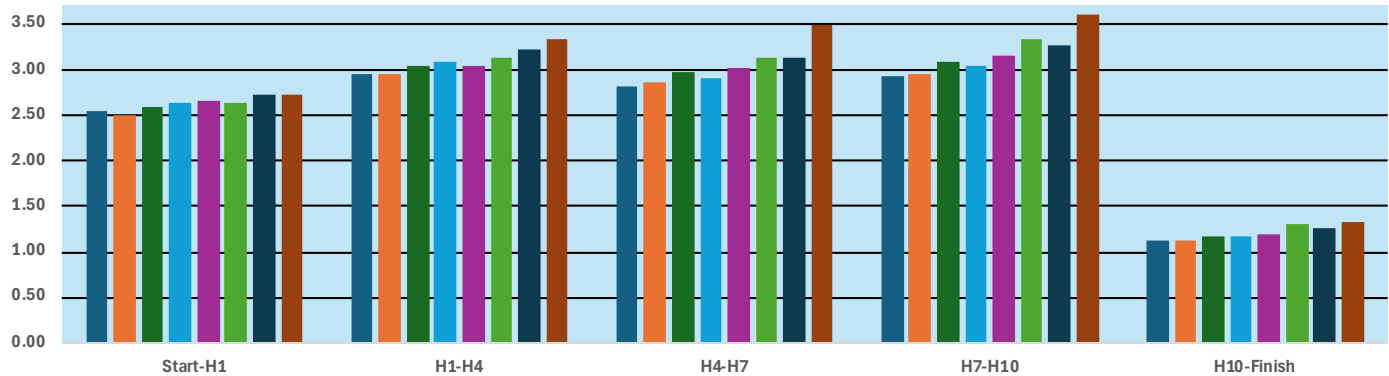
Semi-Final 2

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Johnson, Alaysha (USA) (1996)	time	2.54	3.57	4.54	5.50	6.44	7.37	8.32	9.29	10.25	11.24		12.36	4 / 1			
	reaction time														2.96	2.82	2.92
	interval		1.03	0.97	0.96	0.94	0.93	0.95	0.97	0.96	0.99	1.12			8.61	9.04	8.73
Marshall, Toneya (USA) (1998)	time	2.50	3.50	4.48	5.44	6.39	7.34	8.29	9.26	10.24	11.24		12.36	5 / 2			
	reaction time												PB		2.94	2.85	2.95
	interval		1.00	0.98	0.96	0.95	0.95	0.95	0.97	0.98	1.00	1.12	8.09		8.67	8.95	8.64
Jones, Rayniah (USA) (2001)	time	2.58	3.63	4.62	5.62	6.60	7.60	8.59	9.59	10.61	11.67		12.83	6 / 3			
	reaction time														3.04	2.97	3.08
	interval		1.05	0.99	1.00	0.98	1.00	0.99	1.00	1.02	1.06	1.16			8.39	8.59	8.28
Webster, Alexandra (USA) (2002)	time	2.63	3.67	4.71	5.71	6.69	7.65	8.62	9.61	10.64	11.67		12.84	7 / 4			
	reaction time														3.08	2.91	3.05
	interval		1.04	1.04	1.00	0.98	0.96	0.97	0.99	1.03	1.03	1.17			8.28	8.76	8.36
Smith, Jalaysiya (USA) (2003)	time	2.65	3.69	4.72	5.70	6.69	7.71	8.71	9.76	10.78	11.86		13.05	3 / 5			
	reaction time														3.05	3.01	3.15
	interval		1.04	1.03	0.98	0.99	1.02	1.00	1.05	1.02	1.08	1.19			8.36	8.47	8.10
McMillian, Sydni (USA) (2002)	time	2.63	3.70	4.74	5.75	6.75	7.77	8.87	9.91	11.05	12.21		13.51	9 / 6			
	reaction time														3.12	3.12	3.34
	interval		1.07	1.04	1.01	1.00	1.02	1.10	1.04	1.14	1.16	1.30			8.17	8.17	7.63
Fune, Hailey (USA) (1982)	time	2.73	3.82	4.89	5.94	6.99	8.04	9.07	10.14	11.21	12.33		13.58	2 / 7			
	reaction time														3.21	3.13	3.26
	interval		1.09	1.07	1.05	1.05	1.05	1.03	1.07	1.07	1.12	1.25			7.94	8.15	7.82
Jones, Lolo (USA) (1982)	time	2.73	3.87	4.97	6.07	7.20	8.34	9.57	10.78	11.98	13.18		14.50	1 / 8			
	reaction time														3.34	3.50	3.61
	interval		1.14	1.10	1.10	1.13	1.14	1.23	1.21	1.20	1.20	1.32			7.63	7.29	7.06
	velocity	4.76	7.46	7.73	7.73	7.52	7.46	6.91	7.02	7.08	7.08	7.95	6.90				



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=3FrtlWm3MUI>

2024 USA Olympic Trials (Eugene, OR) (TV Analysis)

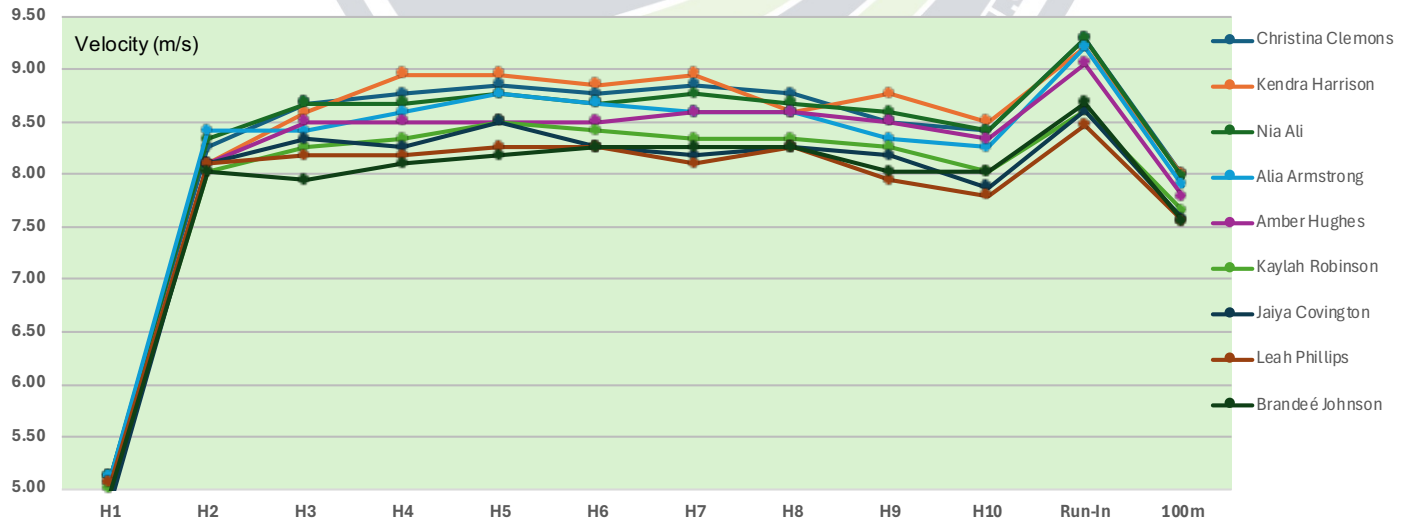
100m Hurdles

Date: 2024.06.29

Wind: 0.8 m/s

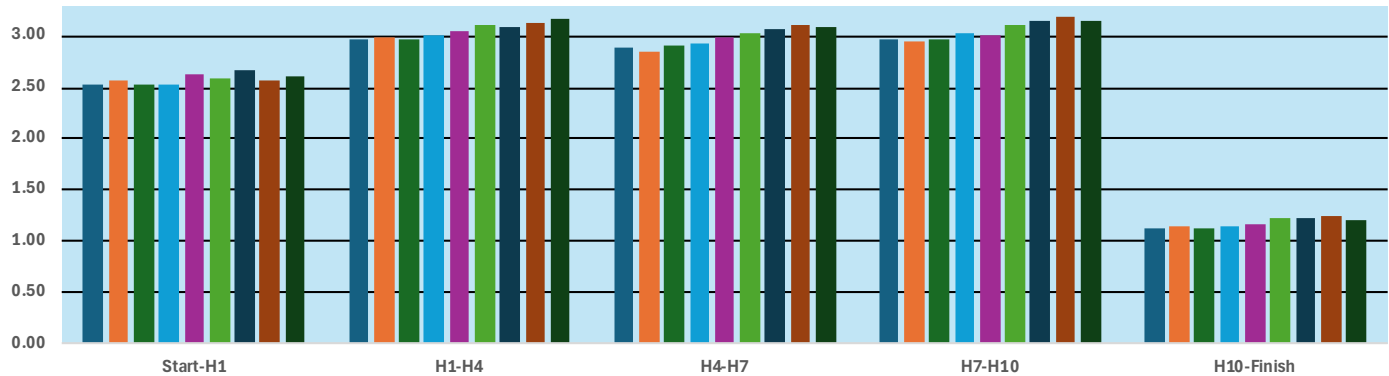
Semi-Final 1

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Clemons, Christina (USA) (1990)	time	2.54	3.57	4.55	5.52	6.48	7.45	8.41	9.38	10.38	11.39		12.52	6 / 1			
	reaction time											1.13			2.98	2.89	2.98
	interval velocity	5.12	8.25	8.67	8.76	8.85	8.76	8.85	8.76	8.50	8.42	9.29	7.99		8.56	8.82	8.56
Harrison, Kendra (USA) (1992)	time	2.57	3.62	4.61	5.56	6.51	7.47	8.42	9.41	10.38	11.38		12.52	7 / 2			
	reaction time											1.14			2.99	2.86	2.96
	interval velocity	5.06	8.10	8.59	8.95	8.95	8.85	8.95	8.59	8.76	8.50	9.21	7.99		8.53	8.92	8.61
Ali, Nia (USA) (1988)	time	2.54	3.56	4.54	5.52	6.49	7.47	8.44	9.42	10.41	11.42		12.55	1 / 3			
	reaction time											1.13			2.98	2.92	2.98
	interval velocity	5.12	8.33	8.67	8.67	8.76	8.67	8.76	8.67	8.59	8.42	9.29	7.97		8.56	8.73	8.56
Armstrong, Alia (USA) (2000)	time	2.54	3.55	4.56	5.55	6.52	7.50	8.49	9.48	10.50	11.53		12.67	4 / 4			
	reaction time											1.14			3.01	2.94	3.04
	interval velocity	5.12	8.42	8.42	8.59	8.76	8.67	8.59	8.59	8.33	8.25	9.21	7.89		8.47	8.67	8.39
Hughes, Amber (USA) (1994)	time	2.64	3.69	4.69	5.69	6.69	7.69	8.68	9.67	10.67	11.69		12.85	5 / 5			
	reaction time											1.16			3.05	2.99	3.01
	interval velocity	4.92	8.10	8.50	8.50	8.50	8.50	8.59	8.59	8.50	8.33	9.05	7.78		8.36	8.53	8.47
Robinson, Kaylah (USA) (1999)	time	2.60	3.66	4.69	5.71	6.71	7.72	8.74	9.76	10.79	11.85		13.07	3 / 6			
	reaction time											1.22			3.11	3.03	3.11
	interval velocity	5.00	8.02	8.25	8.33	8.50	8.42	8.33	8.33	8.25	8.02	8.61	7.65		8.20	8.42	8.20
Covington, Jaiya (USA) (2003)	time	2.67	3.72	4.74	5.77	6.77	7.80	8.84	9.87	10.91	11.99		13.21	9 / 7			
	reaction time											1.22			3.10	3.07	3.15
	interval velocity	4.87	8.10	8.33	8.25	8.50	8.25	8.17	8.25	8.17	7.87	8.61	7.57		8.23	8.31	8.10
Phillips, Leah (USA) (2002)	time	2.57	3.62	4.66	5.70	6.73	7.76	8.81	9.84	10.91	12.00		13.24	8 / 8			
	reaction time											1.24			3.13	3.11	3.19
	interval velocity	5.06	8.10	8.17	8.17	8.25	8.25	8.10	8.25	7.94	7.80	8.47	7.55		8.15	8.20	7.99
Johnson, Brandeé (USA) (1998)	time	2.61	3.67	4.74	5.79	6.83	7.86	8.89	9.92	10.98	12.04		13.25	2 / 9			
	reaction time											1.21			3.18	3.10	3.15
	interval velocity	4.98	8.02	7.94	8.10	8.17	8.25	8.25	8.25	8.02	8.02	8.68	7.55		8.02	8.23	8.10



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=TyAnmsGnxEq>

2024 USA Olympic Trials (Eugene, OR) (TV Analysis)

100m Hurdles

Date: 2024.06.28 Wind: 0.2 m/s

Heat 4

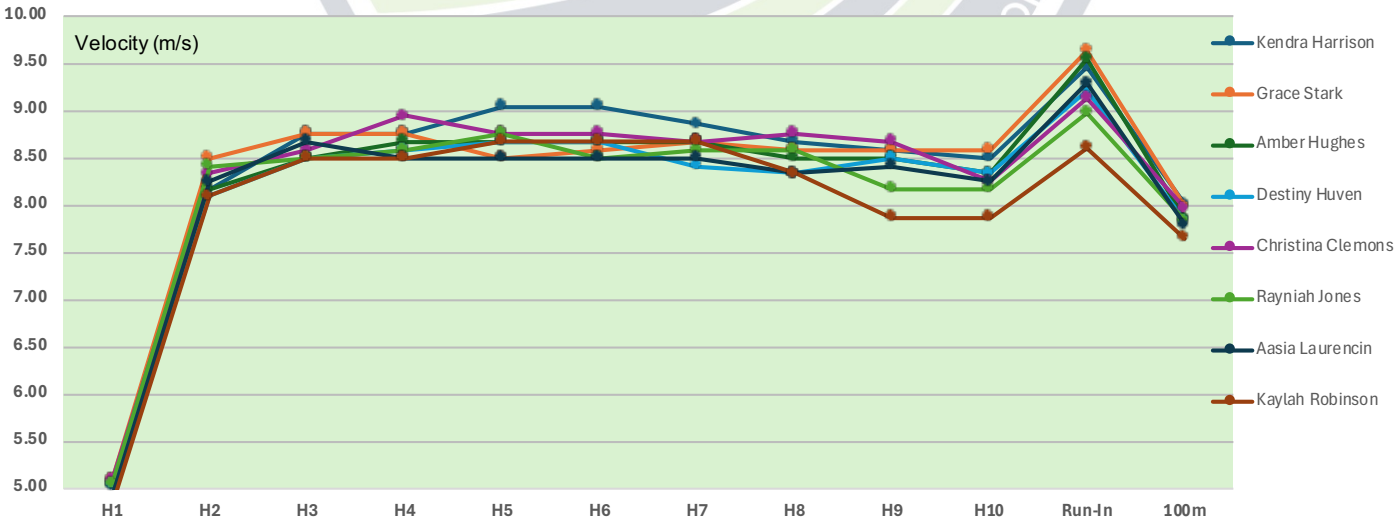
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Harrison, Kendra (USA) (1992)	time	2.59	3.63	4.60	5.57	6.51	7.45	8.41	9.39	10.38	11.38		12.49	3 / 1			
	reaction time											1.11			2.98	2.84	2.97
	interval velocity	5.02	8.17	8.76	8.76	9.04	9.04	8.85	8.67	8.59	8.50	9.46	8.01		8.56	8.98	8.59
Stark, Grace (USA) (2001)	time	2.55	3.55	4.52	5.49	6.49	7.48	8.46	9.45	10.44	11.43		12.52	8 / 2			
	reaction time											1.09			2.94	2.97	2.97
	interval velocity	5.10	8.50	8.76	8.76	8.50	8.59	8.67	8.59	8.59	8.59	9.63	7.99		8.67	8.59	8.59
Hughes, Amber (USA) (1994)	time	2.65	3.69	4.69	5.67	6.65	7.63	8.61	9.61	10.61	11.63		12.73	4 / 3			
	reaction time											1.10			3.02	2.94	3.02
	interval velocity	4.91	8.17	8.50	8.67	8.67	8.67	8.67	8.50	8.50	8.33	9.55	7.86		8.44	8.67	8.44
Huven, Destiny (USA) (2001)	time	2.58	3.63	4.63	5.62	6.60	7.58	8.59	9.61	10.61	11.63		12.77	7 / 4			
	reaction time											PB			3.04	2.97	3.04
	interval velocity	5.04	8.10	8.50	8.59	8.67	8.67	8.42	8.33	8.50	8.33	9.21	7.83		8.39	8.59	8.39

Date: 2024.06.28

Wind: 0.1 m/s

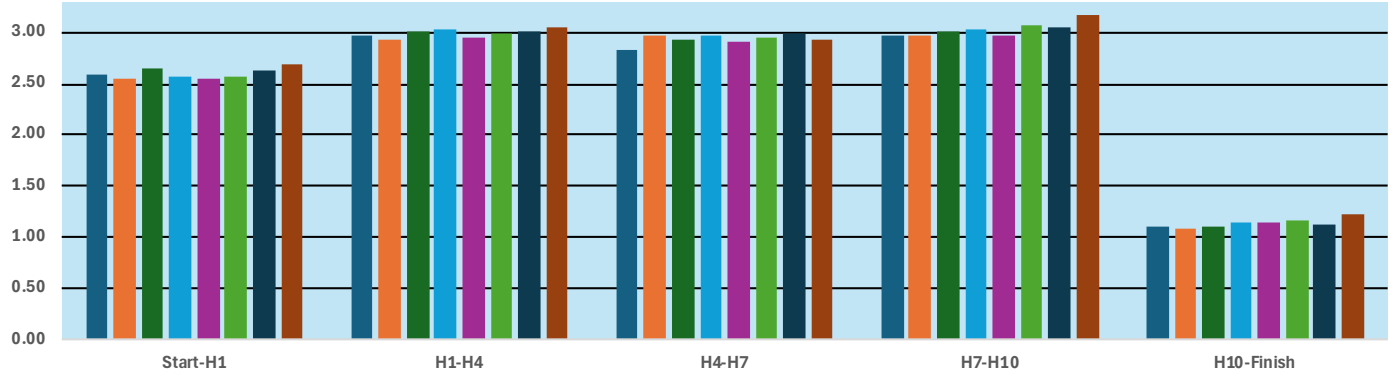
Heat 3

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Clemons, Christina (USA) (1990)	time	2.55	3.57	4.56	5.51	6.48	7.45	8.43	9.40	10.38	11.41		12.56	4 / 1			
	reaction time											1.15			2.96	2.92	2.98
	interval velocity	5.10	8.33	8.59	8.95	8.76	8.76	8.67	8.76	8.67	8.25	9.13	7.96		8.61	8.73	8.56
Jones, Rayniah (USA) (2001)	time	2.57	3.58	4.58	5.57	6.54	7.54	8.53	9.52	10.56	11.60		12.77	7 / 2			
	reaction time											1.17			3.00	2.96	3.07
	interval velocity	5.06	8.42	8.50	8.59	8.76	8.50	8.59	8.59	8.17	8.17	8.97	7.83		8.50	8.61	8.31
Laurencin, Aasia (USA) (2002)	time	2.64	3.67	4.65	5.65	6.65	7.65	8.65	9.67	10.68	11.71		12.84	2 / 3			
	reaction time											1.13			3.01	3.00	3.06
	interval velocity	4.92	8.25	8.67	8.50	8.50	8.50	8.50	8.33	8.42	8.25	9.29	7.79		8.47	8.50	8.33
Robinson, Kaylah (USA) (1999)	time	2.69	3.74	4.74	5.74	6.72	7.70	8.68	9.70	10.78	11.86		13.08	6 / 4			
	reaction time											1.22			3.05	2.94	3.18
	interval velocity	4.83	8.10	8.50	8.50	8.67	8.67	8.67	8.33	7.87	7.87	8.61	7.65		8.36	8.67	8.02



Time Intervals (s)

Hurdle Phases



Heat 4

Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=ut8nMiKh4Rk>

Heat 3

Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=aU- AUyAfdIM>

2024 USA Olympic Trials (Eugene, OR) (TV Analysis)

100m Hurdles

Date: 2024.06.28

Wind: 0.2 m/s

Heat 2

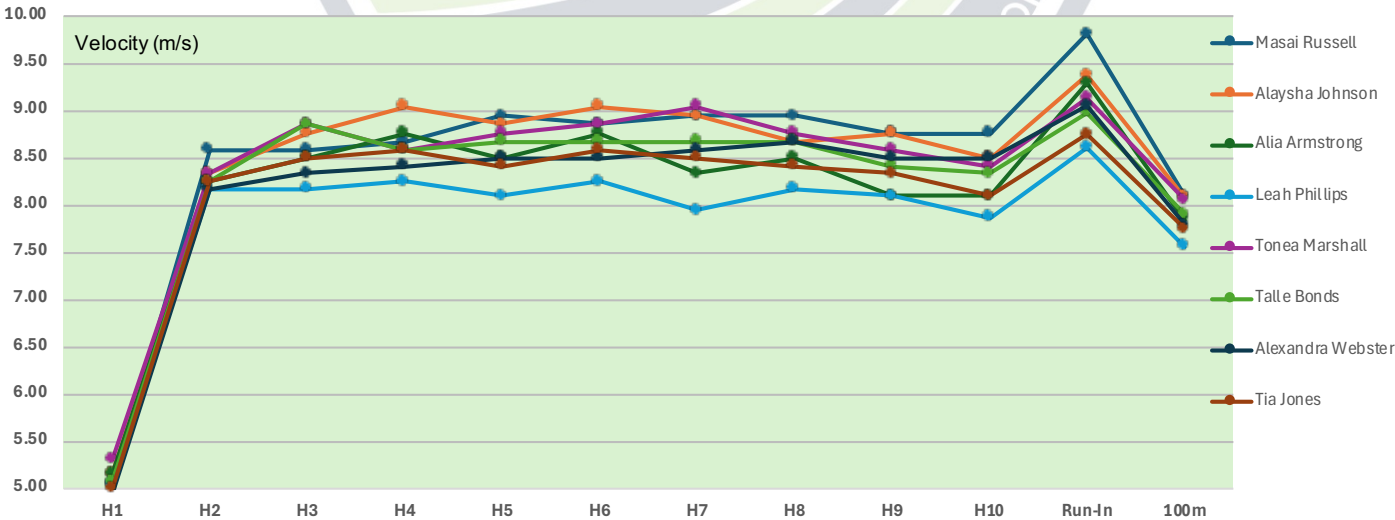
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Russell, Masai (USA) (2000)	time	2.57	3.56	4.55	5.53	6.48	7.44	8.39	9.34	10.31	11.28		12.35	5 / 1			
	reaction time		0.99	0.99	0.98	0.95	0.96	0.95	0.95	0.97	0.97	1.07	PB		2.96	2.86	2.89
	velocity	5.06	8.59	8.59	8.67	8.95	8.85	8.95	8.95	8.76	8.76	9.81	8.10		8.61	8.92	8.82
Johnson, Alaysha (USA) (1996)	time	2.52	3.54	4.51	5.45	6.41	7.35	8.30	9.28	10.25	11.25		12.37	4 / 2			
	reaction time		1.02	0.97	0.94	0.96	0.94	0.95	0.98	0.97	1.00	1.12			2.93	2.85	2.95
	velocity	5.16	8.33	8.76	9.04	8.85	9.04	8.95	8.67	8.76	8.50	9.38	8.08		8.70	8.95	8.64
Armstrong, Alia (USA) (2000)	time	2.52	3.55	4.55	5.52	6.52	7.49	8.51	9.51	10.56	11.61		12.74	2 / 3			
	reaction time		1.03	1.00	0.97	1.00	0.97	1.02	1.00	1.05	1.05	1.13			3.00	2.99	3.10
	velocity	5.16	8.25	8.50	8.76	8.50	8.76	8.33	8.50	8.10	8.10	9.29	7.85		8.50	8.53	8.23
Phillips, Leah (USA) (2002)	time	2.58	3.62	4.66	5.69	6.74	7.77	8.84	9.88	10.93	12.01		13.23	3 / 4			
	reaction time		1.04	1.04	1.03	1.05	1.03	1.07	1.04	1.05	1.08	1.22			3.11	3.15	3.17
	velocity	5.04	8.17	8.17	8.25	8.10	8.25	7.94	8.17	8.10	7.87	8.61	7.56		8.20	8.10	8.04

Date: 2024.06.28

Wind: 1.7 m/s

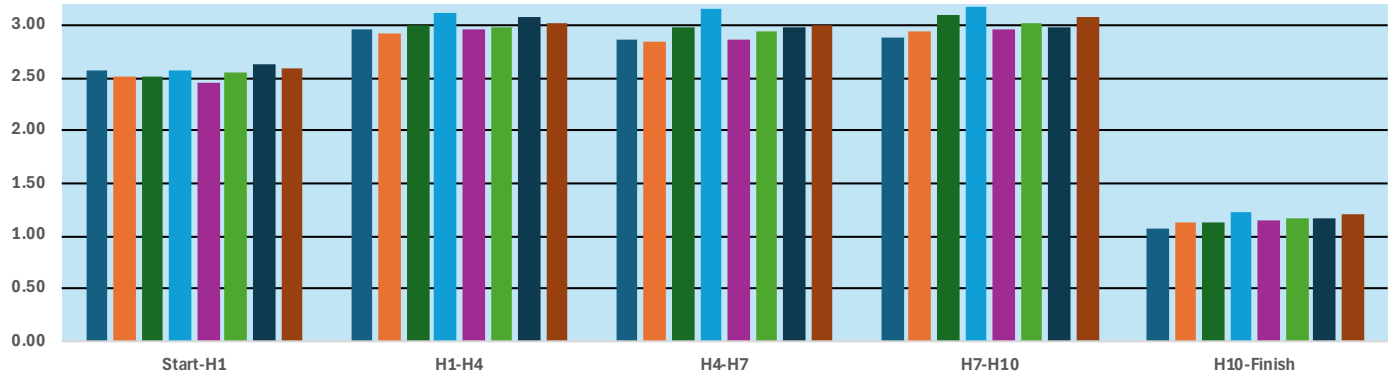
Heat 1

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Marshall, Tonea (USA) (1998)	time	2.45	3.47	4.43	5.42	6.39	7.35	8.29	9.26	10.25	11.26		12.41	5 / 1			
	reaction time		1.02	0.96	0.99	0.97	0.96	0.94	0.97	0.99	1.01	1.15	PB		2.97	2.87	2.97
	velocity	5.31	8.33	8.85	8.59	8.76	8.85	9.04	8.76	8.59	8.42	9.13	8.06		8.59	8.89	8.59
Bonds, Tallie (USA) (1998)	time	2.56	3.59	4.55	5.54	6.52	7.50	8.48	9.46	10.47	11.49		12.66	6 / 2			
	reaction time		1.03	0.96	0.99	0.98	0.98	0.98	0.98	1.01	1.02	1.17			2.98	2.94	3.01
	velocity	5.08	8.25	8.85	8.59	8.67	8.67	8.67	8.67	8.42	8.33	8.97	7.90		8.56	8.67	8.47
Webster, Alexandra (USA) (2002)	time	2.63	3.67	4.69	5.70	6.70	7.70	8.69	9.67	10.67	11.67		12.83	3 / 3			
	reaction time		1.04	1.02	1.01	1.00	1.00	0.99	0.98	1.00	1.00	1.16			3.07	2.99	2.98
	velocity	4.94	8.17	8.33	8.42	8.50	8.50	8.59	8.67	8.50	8.50	9.05	7.79		8.31	8.53	8.56
Jones, Tia (USA) (2000)	time	2.60	3.63	4.63	5.62	6.63	7.62	8.62	9.63	10.65	11.70		12.90	2 / 4			
	reaction time		1.03	1.00	0.99	1.01	0.99	1.00	1.01	1.02	1.05	1.20			3.02	3.00	3.08
	velocity	5.00	8.25	8.50	8.59	8.42	8.59	8.50	8.42	8.33	8.10	8.75	7.75		8.44	8.50	8.28



Time Intervals (s)

Hurdle Phases



Heat 2

Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=BHOIUyO18I8>

Heat 1

Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=vx8xFdOu3Ec>

2024 NCAA Championships (Eugene, OR) (TV Analysis)

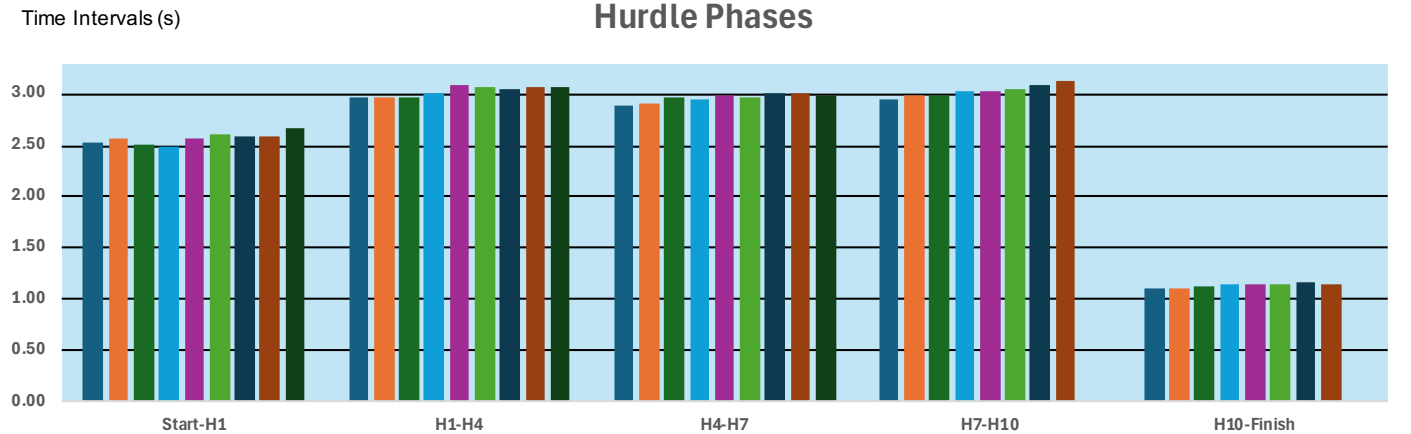
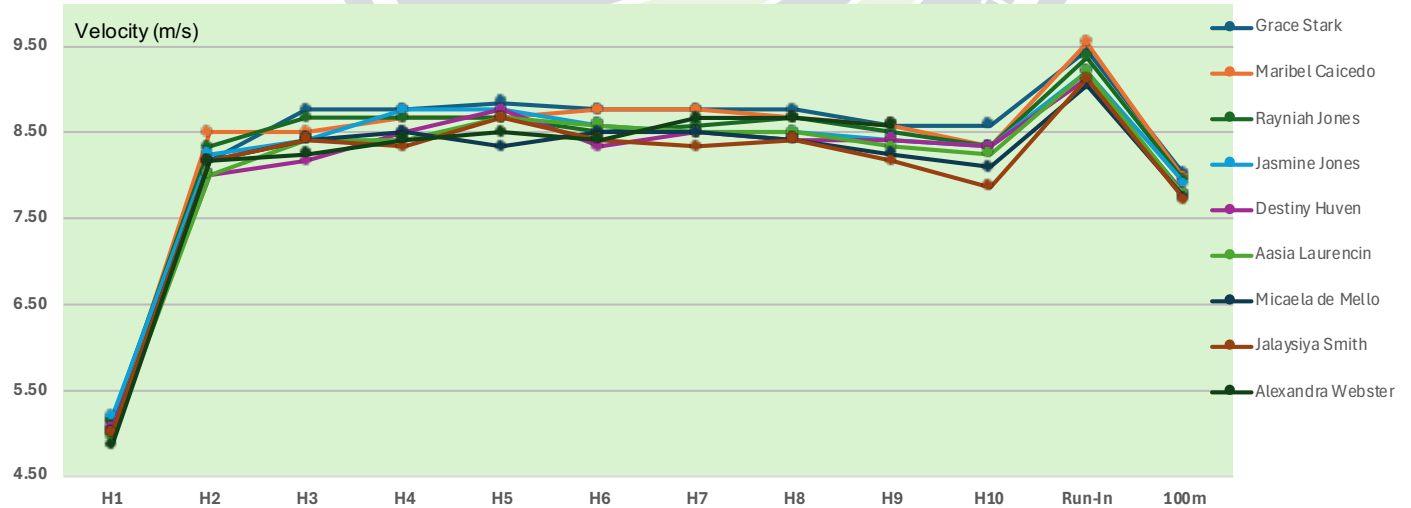
100m Hurdles

Date: 2024.06.08

Wind: -0.5 m/s

FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Stark, Grace (USA) (2001)	time	2.53	3.57	4.54	5.51	6.47	7.44	8.41	9.38	10.37	11.36		12.47	8 / 1			
	reaction time												PB		2.98	2.90	2.95
	interval		1.04	0.97	0.97	0.96	0.97	0.97	0.97	0.99	0.99	1.11	8.02		8.56	8.79	8.64
Caicedo, Maribel (ECU) (1998)	time	2.57	3.57	4.57	5.55	6.53	7.50	8.47	9.45	10.44	11.46		12.56	6 / 2			
	reaction time														2.98	2.92	2.99
	interval		1.00	1.00	0.98	0.98	0.97	0.97	0.98	0.99	1.02	1.10	7.96		8.56	8.73	8.53
Jones, Rayniah (USA) (2001)	time	2.52	3.54	4.52	5.50	6.48	7.48	8.47	9.45	10.45	11.47		12.59	4 / 3			
	reaction time												PB		2.98	2.97	3.00
	interval		1.02	0.98	0.98	0.98	1.00	0.99	0.98	1.00	1.02	1.12	7.94		8.56	8.59	8.50
Jones, Jasmine (USA) (2001)	time	2.50	3.53	4.54	5.51	6.48	7.47	8.47	9.47	10.48	11.50		12.64	3 / 4			
	reaction time												PB		3.01	2.96	3.03
	interval		1.03	1.01	0.97	0.97	0.99	1.00	1.00	1.01	1.02	1.14	7.91		8.47	8.61	8.42
Huven, Destiny (USA) (2001)	time	2.57	3.63	4.67	5.67	6.64	7.66	8.66	9.67	10.68	11.70		12.85	2 / 5			
	reaction time														3.10	2.99	3.04
	interval		1.06	1.04	1.00	0.97	1.02	1.00	1.01	1.01	1.02	1.15	7.78		8.23	8.53	8.39
Laurencin, Aasia (USA) (2002)	time	2.62	3.68	4.69	5.70	6.68	7.67	8.67	9.67	10.69	11.72		12.86	5 / 6			
	reaction time														3.08	2.97	3.05
	interval		1.06	1.01	1.01	0.98	0.99	1.00	1.00	1.02	1.03	1.14	7.78		8.28	8.59	8.36
de Mello, Micaela (BRA) (2000)	time	2.60	3.64	4.65	5.65	6.67	7.67	8.67	9.68	10.71	11.76		12.92	9 / 7			
	reaction time														3.05	3.02	3.09
	interval		1.04	1.01	1.00	1.02	1.00	1.00	1.01	1.03	1.05	1.16	7.74		8.36	8.44	8.25
Smith, Jalaysiya (USA) (2003)	time	2.60	3.64	4.65	5.67	6.65	7.66	8.68	9.69	10.73	11.81		12.96	7 / 8			
	reaction time														3.07	3.01	3.13
	interval		1.04	1.01	1.02	0.98	1.01	1.02	1.01	1.04	1.08	1.15	7.72		8.31	8.47	8.15
Webster, Alexandra (USA) (2002)	time	2.67	3.71	4.74	5.75	6.75	7.76	8.74	9.72	10.71			dnf	1 / 9			
	reaction time														3.08	2.99	
	interval		1.04	1.03	1.01	1.00	1.01	0.98	0.98	0.99					8.28	8.53	



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=ukW2iTopTIU>

2024 European Athletics Championships (Roma, ITA) (TV Analysis)

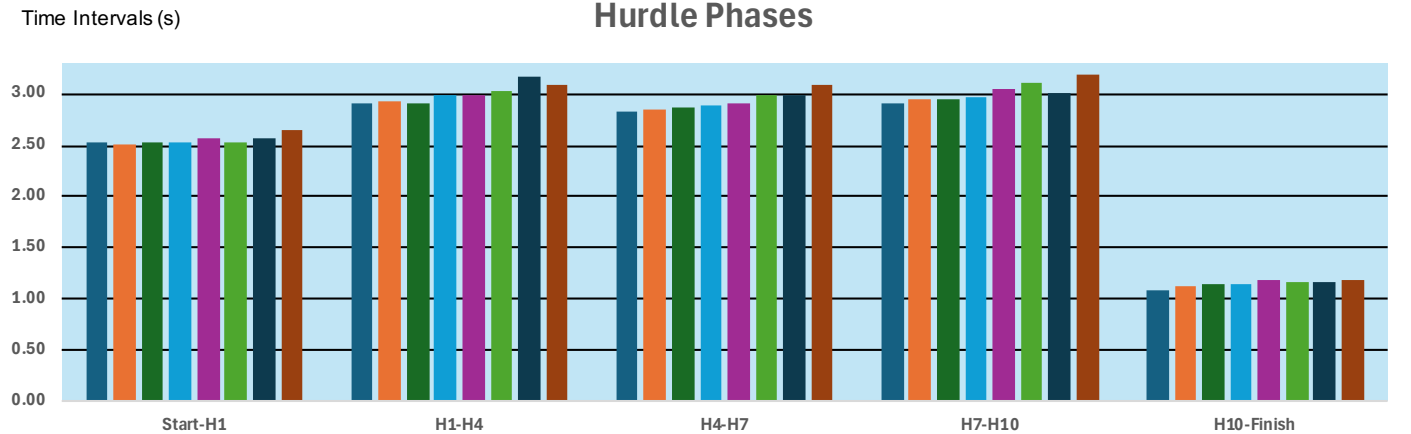
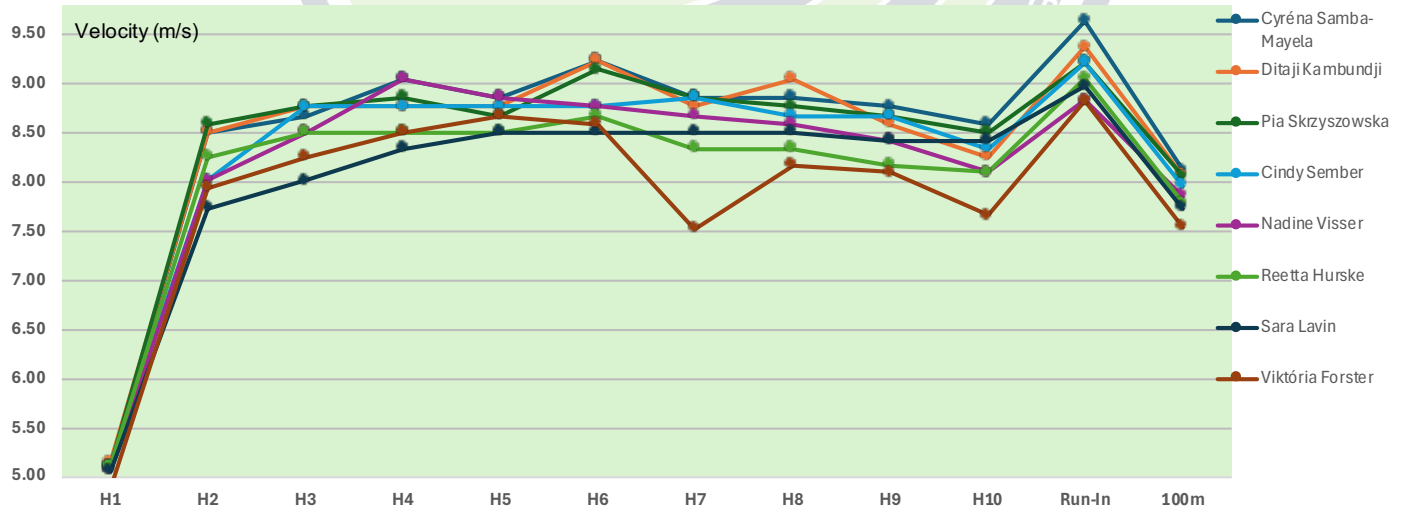
100m Hurdles

Date: 2024.06.08

Wind: 0.8 m/s

FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Samba-Mayela, Cyréna (FRA) (2000)	time		2.54	3.54	4.52	5.46	6.42	7.34	8.30	9.26	10.23	11.22		12.31	5 / 1	2.92	2.84	2.92
	reaction time	0.150		1.00	0.98	0.94	0.96	0.92	0.96	0.96	0.97	0.99	1.09	NR PB				
	interval velocity		5.12	8.50	8.67	9.04	8.85	9.24	8.85	8.85	8.76	8.59	9.63	8.12				
Kambundji, Ditaji (SUI) (2002)	time		2.52	3.52	4.49	5.46	6.43	7.35	8.32	9.26	10.25	11.28		12.40	8 / 2	2.94	2.86	2.96
	reaction time	0.159		1.00	0.97	0.97	0.97	0.92	0.97	0.94	0.99	1.03	1.12	NR PB				
	interval velocity		5.16	8.50	8.76	8.76	8.76	9.24	8.76	9.04	8.59	8.25	9.37	8.06				
Skrzysowska, Pia (POL) (2001)	time		2.54	3.53	4.50	5.46	6.44	7.37	8.33	9.30	10.28	11.28		12.42	6 / 3	2.92	2.87	2.95
	reaction time	0.151		0.99	0.97	0.96	0.98	0.93	0.96	0.97	0.98	1.00	1.14	PB				
	interval velocity		5.12	8.59	8.76	8.85	8.67	9.14	8.85	8.76	8.67	8.50	9.21	8.05				
Sember, Cindy (GBR) (1994)	time		2.54	3.60	4.57	5.54	6.51	7.48	8.44	9.42	10.40	11.42		12.56	7 / 4	3.00	2.90	2.98
	reaction time	0.175		1.06	0.97	0.97	0.97	0.97	0.96	0.98	0.98	1.02	1.14					
	interval velocity		5.12	8.02	8.76	8.76	8.76	8.76	8.85	8.67	8.67	8.33	9.21	7.96				
Visser, Nadine (NED) (1995)	time		2.57	3.63	4.63	5.57	6.53	7.50	8.48	9.47	10.48	11.53		12.72	3 / 5	3.00	2.91	3.05
	reaction time	0.150		1.06	1.00	0.94	0.96	0.97	0.98	0.99	1.01	1.05	1.19					
	interval velocity		5.06	8.02	8.50	9.04	8.85	8.76	8.67	8.59	8.42	8.10	8.82	7.86				
Hurske, Reetta (FIN) (1995)	time		2.54	3.57	4.57	5.57	6.57	7.55	8.57	9.59	10.63	11.68		12.84	9 / 6	3.03	3.00	3.11
	reaction time	0.145		1.03	1.00	1.00	1.00	0.98	1.02	1.02	1.04	1.05	1.16					
	interval velocity		5.12	8.25	8.50	8.50	8.50	8.67	8.33	8.33	8.17	8.10	9.05	7.79				
Lavin, Sarah (IRL) (1994)	time		2.57	3.67	4.73	5.75	6.75	7.75	8.75	9.75	10.76	11.77		12.94	4 / 7	3.18	3.00	3.02
	reaction time	0.141		1.10	1.06	1.02	1.00	1.00	1.00	1.00	1.01	1.01	1.17					
	interval velocity		5.06	7.73	8.02	8.33	8.50	8.50	8.50	8.50	8.42	8.42	8.97	7.73				
Forster, Viktória (SVK) (2002)	time		2.66	3.73	4.76	5.76	6.74	7.73	8.86	9.90	10.95	12.06		13.25	2 / 8	3.10	3.10	3.20
	reaction time	0.173		1.07	1.03	1.00	0.98	0.99	1.13	1.04	1.05	1.11	1.19					
	interval velocity		4.89	7.94	8.25	8.50	8.67	8.59	7.52	8.17	8.10	7.66	8.82	7.55				



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 24fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=5pQv2cUKIYY>

2024 Prefontaine Classic (Eugene, OR)

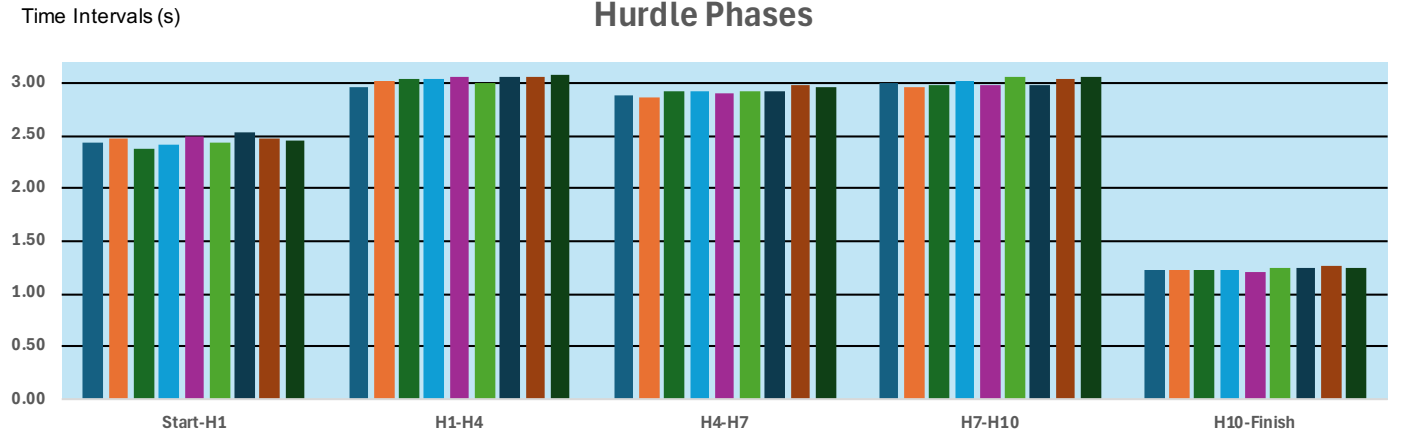
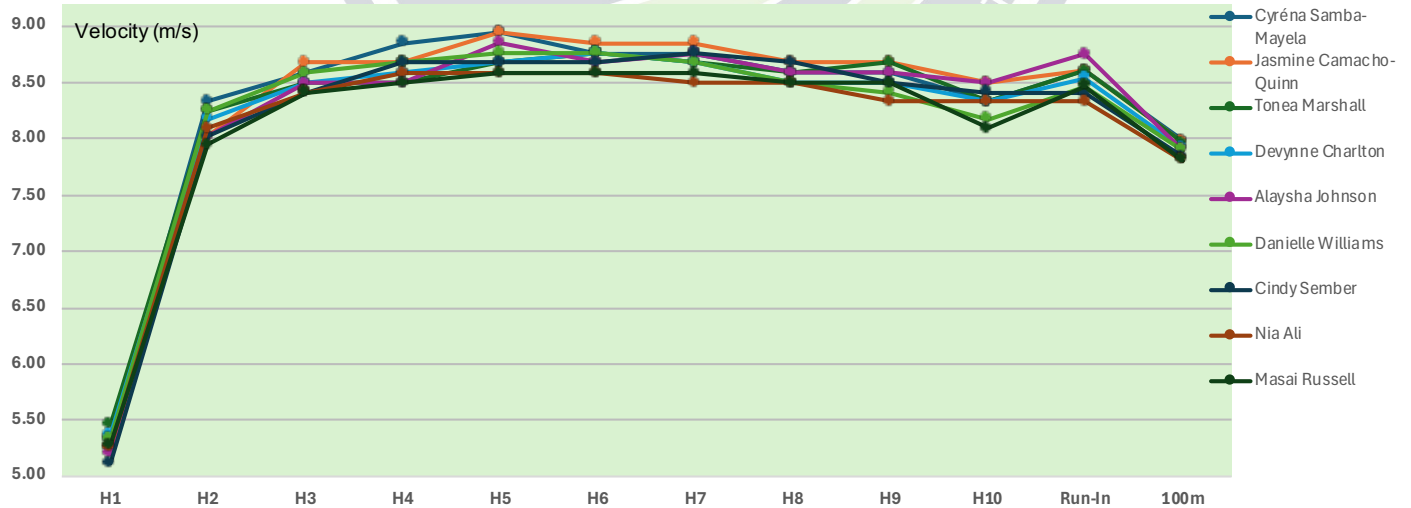
100m Hurdles

Date: 2024.05.25

Wind: -0.9 m/s

FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Samba-Mayela, Cyr�na (FRA) (2000)	time		2.44	3.46	4.45	5.41	6.36	7.33	8.30	9.29	10.28	11.30		12.52	8 / 1	2.97	2.89	3.00
	reaction time	0.132		1.02	0.99	0.96	0.95	0.97	0.97	0.99	0.99	1.02	1.22	=NR =PB				
	interval velocity		5.33	8.33	8.59	8.85	8.95	8.76	8.76	8.59	8.59	8.33	8.61	7.99				
Camacho-Quinn, Jasmine (PUR) (199)	time		2.47	3.53	4.51	5.49	6.44	7.40	8.36	9.34	10.32	11.32		12.54	6 / 2	3.02	2.87	2.96
	reaction time	0.148		1.06	0.98	0.98	0.95	0.96	0.96	0.98	0.98	1.00	1.22					
	interval velocity		5.26	8.02	8.67	8.67	8.95	8.85	8.85	8.67	8.67	8.50	8.61	7.97				
Marshall, Toney (USA) (1998)	time		2.38	3.41	4.41	5.41	6.39	7.36	8.34	9.33	10.31	11.33		12.55	4 / 3	3.03	2.93	2.99
	reaction time	0.128		1.03	1.00	1.00	0.98	0.97	0.98	0.99	0.98	1.02	1.22					
	interval velocity		5.46	8.25	8.50	8.50	8.67	8.76	8.67	8.59	8.67	8.33	8.61	7.97				
Charlton, Devynne (BAH) (1995)	time		2.42	3.46	4.46	5.45	6.43	7.40	8.38	9.38	10.38	11.40		12.63	3 / 4	3.03	2.93	3.02
	reaction time	0.138		1.04	1.00	0.99	0.98	0.97	0.98	1.00	1.00	1.02	1.23					
	interval velocity		5.37	8.17	8.50	8.59	8.67	8.76	8.67	8.50	8.50	8.33	8.54	7.92				
Johnson, Alaysha (USA) (1996)	time		2.50	3.56	4.56	5.56	6.52	7.50	8.47	9.46	10.45	11.45		12.65	2 / 5	3.06	2.91	2.98
	reaction time	0.162		1.06	1.00	1.00	0.96	0.98	0.97	0.99	0.99	1.00	1.20					
	interval velocity		5.20	8.02	8.50	8.50	8.85	8.67	8.76	8.59	8.59	8.50	8.75	7.91				
Williams, Danielle (JAM) (1992)	time		2.44	3.47	4.46	5.44	6.41	7.38	8.36	9.36	10.37	11.41		12.65	5 / 6	3.00	2.92	3.05
	reaction time	0.127		1.03	0.99	0.98	0.97	0.97	0.98	1.00	1.01	1.04	1.24					
	interval velocity		5.33	8.25	8.59	8.67	8.76	8.76	8.67	8.50	8.42	8.17	8.47	7.91				
Sember, Cindy (GBR) (1994)	time		2.54	3.60	4.61	5.59	6.57	7.55	8.52	9.50	10.50	11.51		12.76	9 / 7	3.05	2.93	2.99
	reaction time	0.175		1.06	1.01	0.98	0.98	0.98	0.97	0.98	1.00	1.01	1.25					
	interval velocity		5.12	8.02	8.42	8.67	8.67	8.67	8.76	8.67	8.50	8.42	8.40	7.84				
Ali, Nia (USA) (1988)	time		2.47	3.52	4.53	5.52	6.51	7.50	8.50	9.50	10.52	11.54		12.80	7 / 8	3.05	2.98	3.04
	reaction time	0.187		1.05	1.01	0.99	0.99	0.99	1.00	1.00	1.02	1.02	1.26					
	interval velocity		5.26	8.10	8.42	8.59	8.59	8.59	8.50	8.50	8.33	8.33	8.33	7.81				
Russell, Masai (USA) (2000)	time		2.46	3.53	4.54	5.54	6.53	7.52	8.51	9.51	10.51	11.56		12.80	1 / 9	3.08	2.97	3.05
	reaction time	0.141		1.07	1.01	1.00	0.99	0.99	0.99	1.00	1.00	1.05	1.24					
	interval velocity		5.28	7.94	8.42	8.50	8.59	8.59	8.59	8.50	8.50	8.10	8.47	7.81				



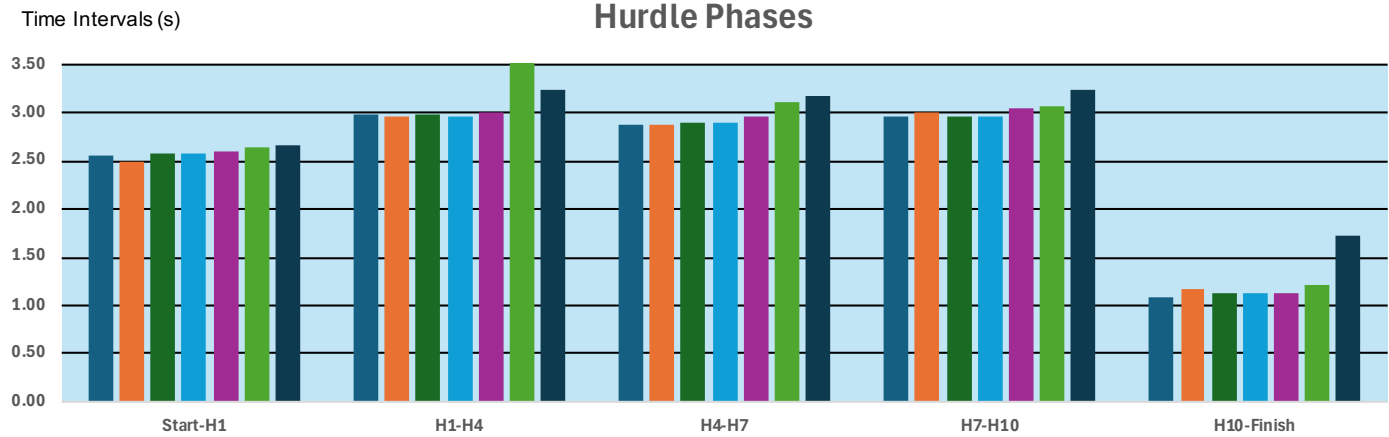
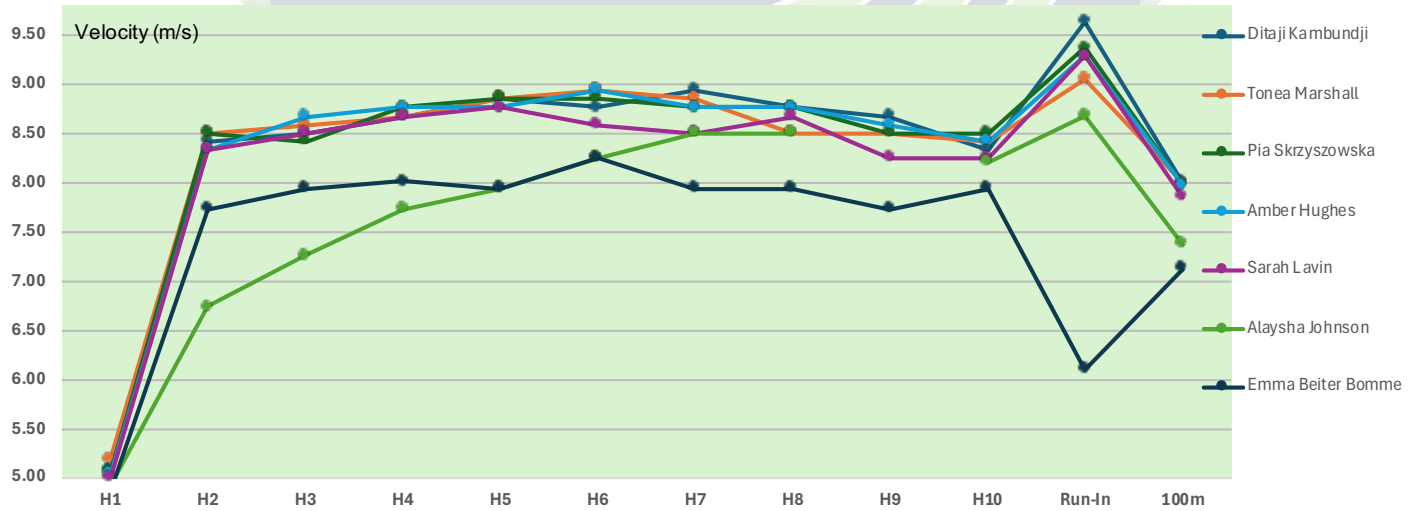
Source: Omega Timing (Sat 25 May 2024 13:52) - diamond league race analysis
<https://www.omegatiming.com/File/000204080102090101FFFFFFFFFFFF6D.pdf>

Video: <https://www.youtube.com/watch?v=QBZC81VW7k>

Biomechanical Analysis

2024 Seashore Doha Meeting (Doha, QAT) (TV Analysis)

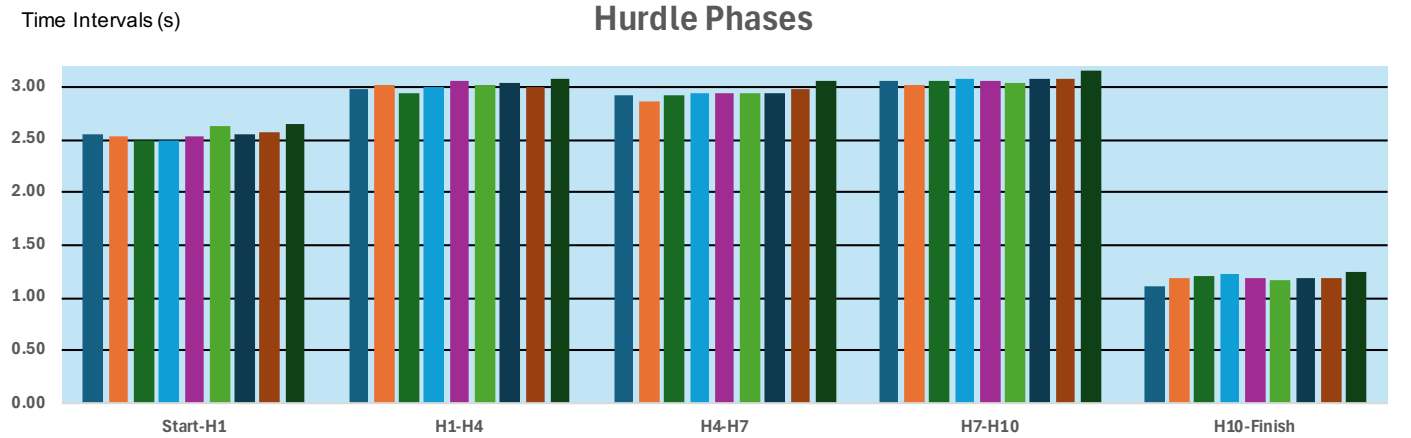
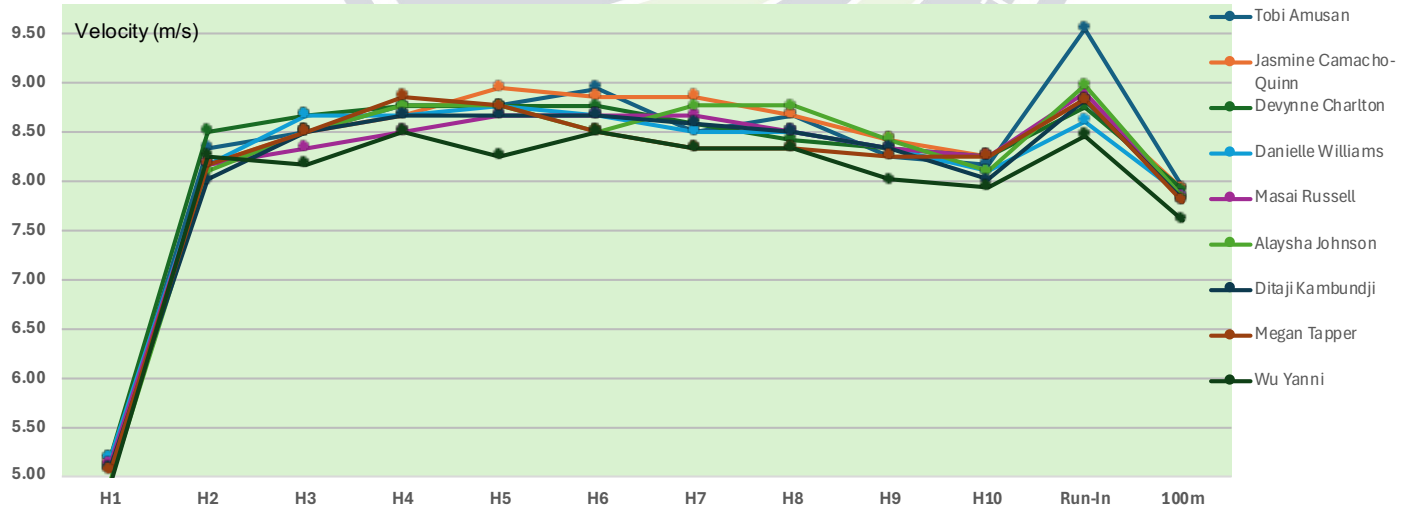
100m Hurdles			Date: 2024.05.10			Wind: 1.7 m/s			FINAL									
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Kambundji, Ditaji (SUI) (2002)	time		2.56	3.57	4.57	5.55	6.51	7.48	8.43	9.40	10.38	11.40		12.49	7 / 1			
	reaction time	0.127											1.09			2.99	2.88	2.97
	interval velocity		5.08	8.42	8.50	8.67	8.85	8.76	8.95	8.76	8.67	8.33	9.63	8.01		8.53	8.85	8.59
Marshall, Tonea (USA) (1998)	time		2.50	3.50	4.49	5.47	6.43	7.38	8.34	9.34	10.34	11.35		12.51	6 / 2			
	reaction time	0.119											1.16			2.97	2.87	3.01
	interval velocity		5.20	8.50	8.59	8.67	8.85	8.95	8.85	8.50	8.50	8.42	9.05	7.99		8.59	8.89	8.47
Skrzyszowska, Pia (POL) (2001)	time		2.57	3.57	4.58	5.55	6.51	7.47	8.44	9.41	10.41	11.41		12.53	3 / 3			
	reaction time	0.124											1.12			2.98	2.89	2.97
	interval velocity		5.06	8.50	8.42	8.76	8.85	8.85	8.76	8.76	8.50	8.50	9.38	7.98		8.56	8.82	8.59
Hughes, Amber (USA) (1994)	time		2.58	3.60	4.58	5.55	6.52	7.47	8.44	9.41	10.40	11.41		12.54	5 / 4			
	reaction time	0.150											1.13	PB		2.97	2.89	2.97
	interval velocity		5.04	8.33	8.67	8.76	8.76	8.95	8.76	8.76	8.59	8.42	9.29	7.97		8.59	8.82	8.59
Lavin, Sarah (IRL) (1994)	time		2.60	3.62	4.62	5.60	6.57	7.56	8.56	9.54	10.57	11.60		12.73	2 / 5			
	reaction time	0.127											1.13			3.00	2.96	3.04
	interval velocity		5.00	8.33	8.50	8.67	8.76	8.59	8.50	8.67	8.25	8.25	9.29	7.86		8.50	8.61	8.39
Johnson, Alaysha (USA) (1996)	time		2.64	3.90	5.07	6.17	7.24	8.27	9.27	10.27		12.34		13.55	4 / 6	no official time given		
	reaction time	0.137										2.07	1.21	DQ		3.53	3.10	3.07
	interval velocity		4.92	6.75	7.26	7.73	7.94	8.25	8.50	8.50		8.21	8.68	7.38		7.22	8.23	8.31
Bomme, Emma Beiter (DEN) (1998)	time		2.67	3.77	4.84	5.90	6.97	8.00	9.07	10.14	11.24	12.31		14.03	1 / 6			
	reaction time	0.149											1.72			3.23	3.17	3.24
	interval velocity		4.87	7.73	7.94	8.02	7.94	8.25	7.94	7.94	7.73	7.94	6.10	7.13		7.89	8.04	7.87



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=w8UoesrhAc>

2024 Yangtze River Delta Athletics Diamond Gala (Suzhou, CHN) (TV Analysis)

100m Hurdles			Date: 2024.04.27		Wind: 0.3 m/s												FINAL			
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10		
Amusan, Tobi (NGR) (1997)	time		2.55	3.57	4.57	5.54	6.51	7.46	8.46	9.44	10.47	11.51		12.61	6 / 4	no official time given				
	reaction time	0.123														2.99	2.92	3.05		
	interval		1.02	1.00	0.97	0.97	0.95	1.00	0.98	1.03	1.04	1.10				8.53	8.73	8.36		
Camacho-Quinn, Jasmine (PUR) (199)	time		2.53	3.57	4.57	5.55	6.50	7.46	8.42	9.40	10.41	11.44		12.63	5 / 2 1					
	reaction time	0.163														3.02	2.87	3.02		
	interval		1.04	1.00	0.98	0.95	0.96	0.96	0.98	1.01	1.03	1.19				8.44	8.89	8.44		
Charlton, Devynne (BAH) (1995)	time		2.50	3.50	4.48	5.45	6.42	7.39	8.38	9.39	10.41	11.44		12.64	4 / 3 2					
	reaction time	0.136														2.95	2.93	3.06		
	interval		1.00	0.98	0.97	0.97	0.97	0.99	1.01	1.02	1.03	1.20				8.64	8.70	8.33		
Williams, Danielle (JAM) (1992)	time		2.50	3.54	4.52	5.50	6.47	7.45	8.45	9.45	10.47	11.52		12.74	3 / 4 3					
	reaction time	0.123														3.00	2.95	3.07		
	interval		1.04	0.98	0.98	0.97	0.98	1.00	1.00	1.02	1.05	1.22				8.50	8.64	8.31		
Russell, Masai (USA) (2000)	time		2.53	3.57	4.59	5.59	6.57	7.55	8.53	9.53	10.55	11.58		12.76	7 / 5 4					
	reaction time	0.134														3.06	2.94	3.05		
	interval		1.04	1.02	1.00	0.98	0.98	0.98	1.00	1.02	1.03	1.18				8.33	8.67	8.36		
Johnson, Alaysha (USA) (1996)	time		2.62	3.67	4.67	5.64	6.61	7.61	8.58	9.55	10.56	11.61		12.78	1 / 6 5					
	reaction time	0.138														3.02	2.94	3.03		
	interval		1.05	1.00	0.97	0.97	1.00	0.97	0.97	1.01	1.05	1.17				8.44	8.67	8.42		
Kambundji, Ditaji (SUI) (2002)	time		2.55	3.61	4.61	5.59	6.57	7.55	8.54	9.54	10.56	11.62		12.81	2 / 7 6					
	reaction time	0.137														3.04	2.95	3.08		
	interval		1.06	1.00	0.98	0.98	0.98	0.99	1.00	1.02	1.06	1.19				8.39	8.64	8.28		
Tapper, Megan (JAM) (1994)	time		2.57	3.61	4.61	5.57	6.54	7.54	8.56	9.58	10.61	11.64		12.83	8 / 8 7					
	reaction time	0.123														3.00	2.99	3.08		
	interval		1.04	1.00	0.96	0.97	1.00	1.02	1.02	1.03	1.03	1.19				8.50	8.53	8.28		
Wu Yanni (CHN) (1997)	time		2.64	3.67	4.71	5.71	6.74	7.74	8.76	9.78	10.84	11.91		13.15	9 / 9 8					
	reaction time	0.166														3.07	3.05	3.15		
	interval		1.03	1.04	1.00	1.03	1.00	1.02	1.02	1.06	1.07	1.24				8.31	8.36	8.10		
	velocity		5.10	8.33	8.50	8.76	8.76	8.95	8.50	8.67	8.25	8.17	9.55							



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=7TDpZ0V2ioU>

2024 Xiamen Diamond League (Xiamen, CHN)

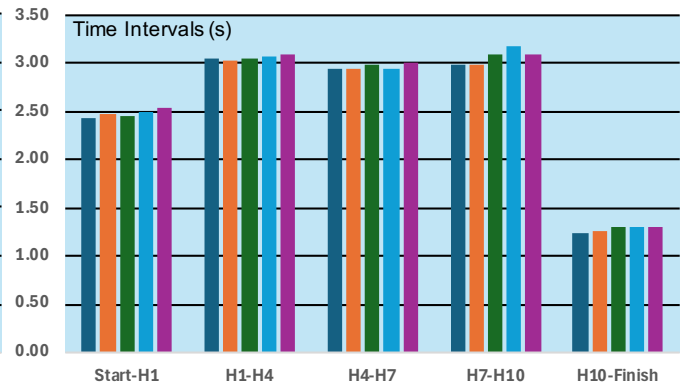
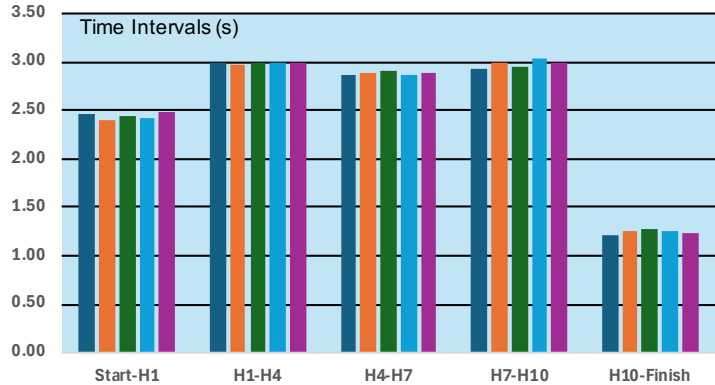
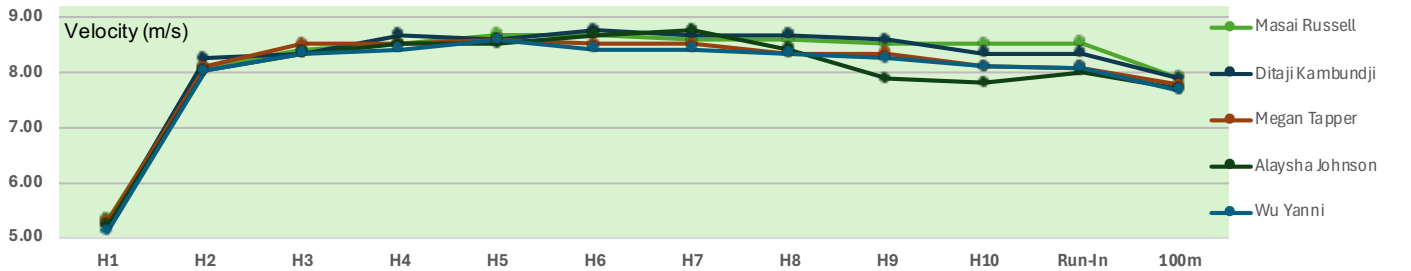
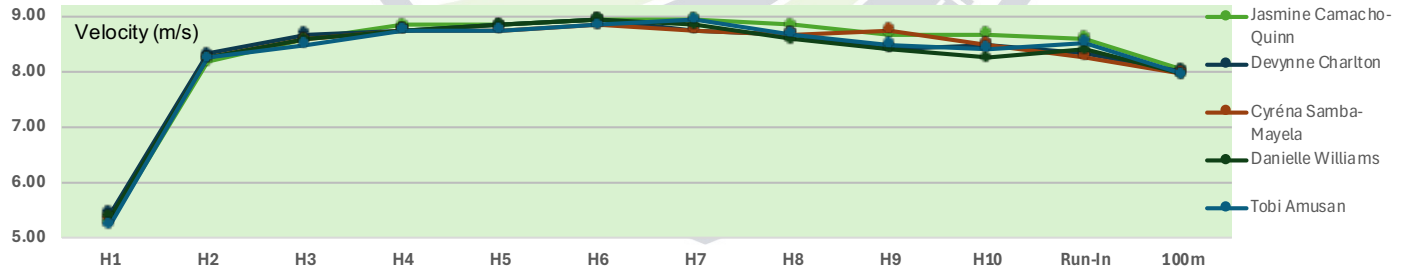
100m Hurdles

Date: 2024.04.20

Wind: -0.2 m/s

FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Camacho-Quinn, Jasmine (PUR) (199 time)	reaction time	0.163													5 / 1	2.99	2.86	2.92
	interval			1.04	0.99	0.96	0.96	0.95	0.95	0.96	0.98	0.98	1.22			8.53	8.92	8.73
	velocity		5.28	8.17	8.59	8.85	8.85	8.95	8.95	8.85	8.67	8.67	8.61	8.03				
Charlton, Devynne (BAH) (1995 time)	reaction time	0.144	2.39	3.41	4.39	5.36	6.32	7.27	8.24	9.22	10.23	11.23		12.49	6 / 2	2.97	2.88	2.99
	interval			1.02	0.98	0.97	0.96	0.95	0.97	0.98	1.01	1.00	1.26			8.59	8.85	8.53
	velocity		5.44	8.33	8.67	8.76	8.85	8.95	8.76	8.67	8.42	8.50	8.33	8.01				
Samba-Mayela, Cyréna (FRA) (2000 time)	reaction time	0.141	2.44	3.47	4.46	5.43	6.40	7.36	8.33	9.31	10.28	11.28		12.55	10 / 3	2.99	2.90	2.95
	interval			1.03	0.99	0.97	0.97	0.96	0.97	0.98	0.97	1.00	1.27	NR PB		8.53	8.79	8.64
	velocity		5.33	8.25	8.59	8.76	8.76	8.85	8.76	8.67	8.76	8.50	8.27	7.97				
Williams, Danielle (JAM) (1992 time)	reaction time	0.142	2.42	3.45	4.44	5.41	6.37	7.32	8.28	9.27	10.28	11.31		12.56	3 / 4	2.99	2.87	3.03
	interval			1.03	0.99	0.97	0.96	0.95	0.96	0.99	1.01	1.03	1.25			8.53	8.89	8.42
	velocity		5.37	8.25	8.59	8.76	8.85	8.95	8.85	8.59	8.42	8.25	8.40	7.96				
Amusan, Tobi (NGR) (1997 time)	reaction time	0.148	2.48	3.51	4.51	5.48	6.45	7.41	8.36	9.34	10.34	11.35		12.58	4 / 5	3.00	2.88	2.99
	interval			1.03	1.00	0.97	0.97	0.96	0.95	0.98	1.00	1.01	1.23			8.50	8.85	8.53
	velocity		5.24	8.25	8.50	8.76	8.76	8.85	8.95	8.67	8.50	8.42	8.54	7.95				
Russell, Masai (USA) (2000 time)	reaction time	0.155	2.44	3.49	4.50	5.50	6.48	7.46	8.45	9.44	10.44	11.44		12.67	9 / 6	3.06	2.95	2.99
	interval			1.05	1.01	1.00	0.98	0.98	0.99	0.99	1.00	1.00	1.23			8.33	8.64	8.53
	velocity		5.33	8.10	8.42	8.50	8.67	8.67	8.59	8.59	8.50	8.50	8.54	7.89				
Kambundji, Ditaji (SUI) (2002 time)	reaction time	0.152	2.48	3.51	4.53	5.51	6.50	7.47	8.45	9.43	10.42	11.44		12.70	2 / 7	3.03	2.94	2.99
	interval			1.03	1.02	0.98	0.99	0.97	0.98	0.98	0.99	1.02	1.26			8.42	8.67	8.53
	velocity		5.24	8.25	8.33	8.67	8.59	8.76	8.67	8.67	8.59	8.33	8.33	7.87				
Tapper, Megan (JAM) (1994 time)	reaction time	0.144	2.45	3.50	4.50	5.50	6.49	7.49	8.49	9.51	10.53	11.58		12.88	7 / 8	3.05	2.99	3.09
	interval			1.05	1.00	1.00	0.99	1.00	1.00	1.02	1.02	1.05	1.30			8.36	8.53	8.25
	velocity		5.31	8.10	8.50	8.50	8.59	8.50	8.50	8.33	8.33	8.10	8.08	7.76				
Johnson, Alaysha (USA) (1996 time)	reaction time	0.177	2.49	3.55	4.57	5.57	6.57	7.55	8.52	9.53	10.61	11.70		13.01	8 / 9	3.08	2.95	3.18
	interval			1.06	1.02	1.00	1.00	0.98	0.97	1.01	1.08	1.09	1.31			8.28	8.64	8.02
	velocity		5.22	8.02	8.33	8.50	8.50	8.67	8.76	8.42	7.87	7.80	8.02	7.69				
Wu Yanni (CHN) (1997 time)	reaction time	0.161	2.54	3.60	4.62	5.63	6.62	7.63	8.64	9.66	10.69	11.74		13.04	1 / 10	3.09	3.01	3.10
	interval			1.06	1.02	1.01	0.99	1.01	1.01	1.02	1.03	1.05	1.30			8.25	8.47	8.23
	velocity		5.12	8.02	8.33	8.42	8.59	8.42	8.42	8.33	8.25	8.10	8.08	7.67				



Source: Omega Timing (Sat 20 Apr 2024 19:19) - diamond league race analysis
<https://www.omegatiming.com/File/000204040101070101FFFFFFFFF6D.pdf>
Video: <https://www.youtube.com/watch?v=alyQHXC0LYw>

Men's 400m Hurdles

Benjamin, Rai (USA) (1997)										H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10
FINAL - 2024 USA Olympic Trials (Eugene, OR)										USATF and Karmarush (2024) - USA Olympic trials results and race analysis															
date		30-Jun		time	5.62	9.21	12.96	16.94	20.81	24.59	28.43	32.49	36.81	41.28			46.46	7 / 1							
reaction time				interval	3.59	3.75	3.98	3.87	3.78	3.84	4.06	4.32	4.47	5.18						11.32	11.49	12.85			
				velocity	8.01	9.75	9.33	8.79	9.04	9.26	9.11	8.62	8.10	7.83	7.72	8.61				9.28	9.14	8.17			
H1 lead leg		R		strides	20	13	13	13	13	13	13	13	13	13	16.5	153.5									

Benjamin, Rai (USA) (1997)													H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10							
FINAL - 2024 Olympic Games (Paris, FRA)													Paris 2024 Olympic Games - Results Book (2024)																						
date		9-Aug		time		5.62		9.21		12.82		16.50		20.32		24.15		28.02		32.02		36.39		40.96		46.46		8 / 1							
reaction time		0.171		interval		3.59		3.61		3.68		3.82		3.83		3.87		4.00		4.37		4.57		5.50		10.88		11.52		12.94					
				velocity		8.01		9.75		9.70		9.51		9.16		9.14		9.04		8.75		8.01		7.66		7.27		8.61		9.65		9.11		8.11	
H1 lead leg		R		strides		20		13		13		13		13		13		13		13		13		14		17		155							

dos Santos, Alison (BRA) (2000)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10
FINAL - 2024 Bislett Games (Oslo, NOR)												Omega Timing (2024) - diamond league race analysis					
date	30-May	time	5.77	9.37	12.98	16.58	20.38	24.39	28.42	32.63	36.90	41.37	46.63	5 / 1			
reaction time	0.182	interval		3.60	3.61	3.60	3.80	4.01	4.03	4.21	4.27	4.47	5.26		10.81	11.84	12.95
		velocity	7.80	9.72	9.70	9.72	9.21	8.73	8.68	8.31	8.20	7.83	7.60	8.58	9.71	8.87	8.11
H1 lead leg	L	strides	20	13	12	12	12	12	13	13	13	13	16.5	149.5			

Benjamin, Rai (USA) (1997)														H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10				
FINAL - USATF LA Grand Prix (Los Angeles, CA) (TV Analysis)														Henson (2024) - Athlete First: 2024 year end hurdle report																			
date		18-May		time		5.84		13.18		16.95		20.75		28.56		32.60		36.87		41.41		46.64		5 / 1		11.11		11.61		12.85			
reaction time		0.207		interval		3.67		3.67		3.77		3.80		7.81		4.04		4.27		4.54		5.23		7.65		8.58		9.45		9.04		8.17	
H1 lead leg		R		strides		20		13		13		13		13		13		13		13		17		128									

Benjamin, Rai (USA) (1997)					H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10
FINAL - 2024 Herculis Meeting International d'Athlétisme (Monaco, MON)															Henson (2024) - Athlete First: 2024 year end hurdle report					
date		12-Jul		time	5.68	9.25	12.88	16.55	20.33	24.40	28.55	32.71	37.00	41.45		46.67	5 / 1			
reaction time		0.188		interval		3.57	3.63	3.67	3.78	4.07	4.15	4.16	4.29	4.45	5.22			10.87	12.00	12.90
				velocity	7.92	9.80	9.64	9.54	9.26	8.60	8.43	8.41	8.16	7.87	7.66	8.57		9.66	8.75	8.14
H1 lead leg		R		strides	20	13	13	12	13	14	13	13	13	13	17	154				

Warholm, Karsten (NOR) (1996)													H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10
FINAL - 2024 Bislett Games (Oslo, NOR)													Omega Timing (2024) - diamond league race analysis															
date		30-May	time	5.70	9.21	12.81	16.45	20.22	24.19	28.19	32.40	36.83	41.37	46.70		7 / 2												
reaction time		0.157	interval		3.51	3.60	3.64	3.77	3.97	4.00	4.21	4.43	4.54	5.33					10.75	11.74	13.18							
			velocity	7.89	9.97	9.72	9.62	9.28	8.82	8.75	8.31	7.90	7.71	7.50	8.57					9.77	8.94	7.97						
H1 lead leg		L	strides	20	13	13	13	13	13	13	13	14	14	18	157													

Warholm, Karsten (NOR) (1996)													H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10		
FINAL - 2024 Herculis Meeting International d'Athlétisme (Monaco, MON)																														
date		12-Jul		time	5.66	9.20	12.79	16.48	20.31	24.25	28.30	32.50	36.88	41.41	Henson (2024) - Athlete First: 2024 year end hurdle report															
reaction time		0.164		interval		3.54	3.59	3.69	3.83	3.94	4.05	4.20	4.38	4.53	5.32	46.73		7 / 2									10.82	11.82	13.11	
				velocity	7.95	9.89	9.75	9.49	9.14	8.88	8.64	8.33	7.99	7.73	7.52	8.56														
H1 lead leg		L		strides	20	13	13	13	13	13	13	13	13	13	15	18	157											9.70	8.88	8.01

dos Santos, Alison (BRA) (2000)														H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10
FINAL - 2024 Seahorse Doha Meeting (Doha, QAT)														Omega Timing (2024) - diamond league race analysis															
date		10-May		time	5.67	9.24	12.89	16.61	20.53	24.58	28.66	32.88	37.18	41.61					46.86	5 / 1									
reaction time		0.148	interval	5.67	3.57	3.65	3.72	3.92	4.05	4.08	4.22	4.30	4.43	5.25	46.86				10.94	12.05	12.95								
			velocity	7.94	9.80	9.59	9.41	8.93	8.64	8.58	8.29	8.14	7.90	7.62	8.54				9.60	8.71	8.11								
H1 lead leg		L	strides	20	13	12	12	13	13	13	13	13	13	13	16.2	151.2													

Warholm, Karsten (NOR) (1996)													H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10
FINAL - 2024 Kamila Skolimowska Memorial (Silesia, POL)													Omega Timing (2024) - diamond league race analysis															
date		25-Aug	time	5.64	9.26	12.93	16.66	20.49	24.44	28.54	32.71	37.00	41.58	46.95		8 / 1												
reaction time		0.154	interval		3.62	3.67	3.73	3.83	3.95	4.10	4.17	4.29	4.58	5.37					11.02	11.88	13.04							
			velocity	7.98	9.67	9.54	9.38	9.14	8.86	8.54	8.39	8.16	7.64	7.45	8.52				9.53	8.84	8.05							
H1 lead leg		L	strides	20	13	13	13	13	13	13	13	13	15	17.7	156.7													

Warholm, Karsten (NOR) (1996)						H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10
FINAL - 2024 European Athletics Championships (Roma, ITA)										European Athletics (2024) - 2024 european athletics championships - results book											
date	11-Jun	time				5.62	9.12	12.81	16.51	20.35	24.24	28.21	32.36	36.93	41.56		46.98	8 / 1			
reaction time	0.184	interval					3.50	3.69	3.70	3.84	3.89	3.97	4.15	4.57	4.63	5.42	CR		10.89	11.70	13.35
		velocity				8.01	10.00	9.49	9.46	9.11	9.00	8.82	8.43	7.66	7.56	7.38	8.51		9.64	8.97	7.87
H1 lead leg	L	strides				20	13	13	13	13	13	13	13	14	14	18	157				

dos Santos, Alison (BRA) (2000)													H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10
FINAL - 2024 Bauhaus Galan (Stockholm, SWE) (TV Analysis)													Omega Timing (2024) - diamond league race analysis															
date		2-Jun		time	5.80	9.50	13.06	16.70	20.53	24.47	28.60	32.87	37.27	41.80														
reaction time		0.164	interval		3.70	3.56	3.64	3.83	3.94	4.13	4.27	4.40	4.53	5.21	47.01	5 / 1				10.90	11.90	13.20						
		velocity		7.76	9.46	9.83	9.62	9.14	8.88	8.47	8.20	7.95	7.73	7.68	8.51			9.63	8.82	7.95								
H1 lead leg		L	strides		20	13	12	12	12	12	13	13	13	13	16.2			149.2										

Warholm, Karsten (NOR) (1996)													H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10
FINAL - 2024 Olympic Games (Paris, FRA)													Paris 2024 Olympic Games - Results Book (2024)															
date		9-Aug	time	5.51	9.09	12.73	16.41	20.18	24.03	27.99	32.15	36.58	41.44	47.06		7 / 2					10.90	11.58	13.45					
reaction time		0.152	interval	3.58	3.64	3.68	3.77	3.85	3.96	4.16	4.43	4.86	5.62								9.63	9.07	7.81					
		velocity		8.17	9.78	9.62	9.51	9.28	9.09	8.84	8.41	7.90	7.20	7.12	8.50													
H1 lead leg		L	strides	20	13	13	13	13	13	13	13	13	15	18	157													

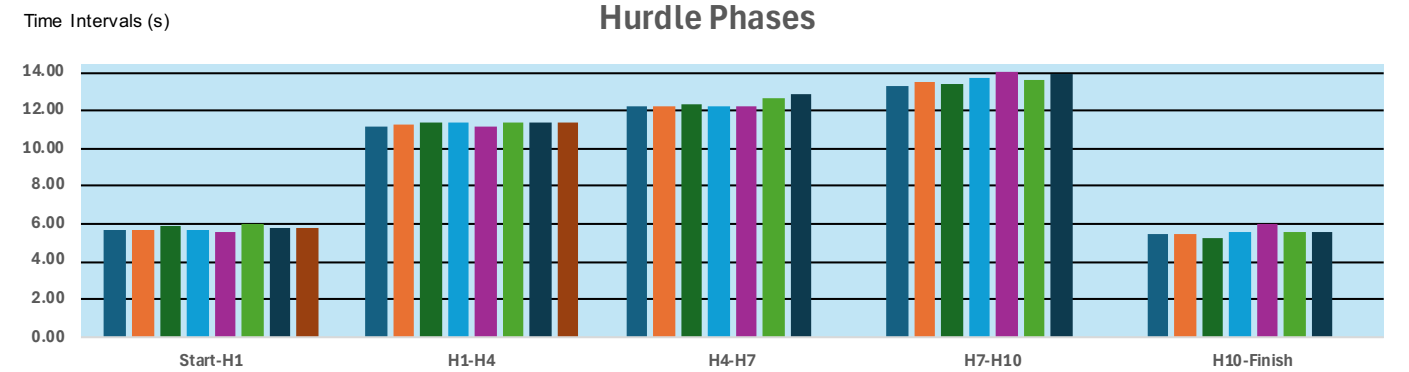
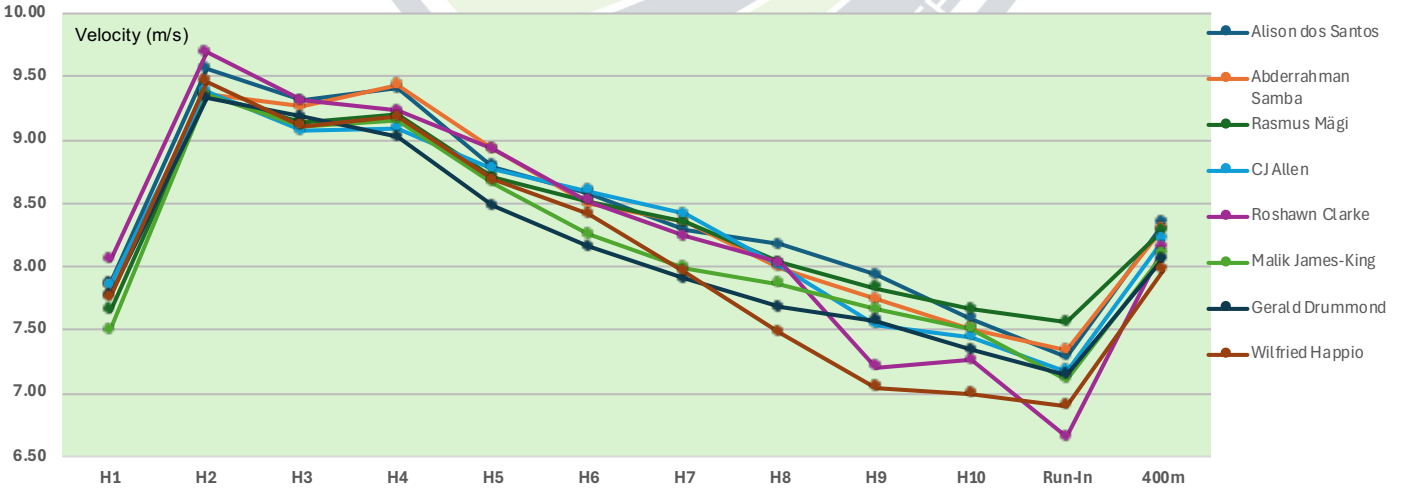
2024 Memorial van damme (Brussels, BEL)

Men's 400m Hurdles

Date 2024.09.14

FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
dos Santos, Alison (BRA) (2000)	time	5.72	9.38	13.14	16.86	20.84	24.92	29.14	33.42	37.83	42.44		47.93	6 / 1			
	reaction time	0.151													11.14	12.28	13.30
	interval		3.66	3.76	3.72	3.98	4.08	4.22	4.28	4.41	4.61	5.49			9.43	8.55	7.89
	velocity	7.87	9.56	9.31	9.41	8.79	8.58	8.29	8.18	7.94	7.59	7.29	8.35				
Samba, Abderrahman (QAT) (1995)	H1 lead leg	L	20	13	12	12	12	13	13	13	13	16	149				
	time	5.73	9.47	13.25	16.96	20.88	25.00	29.19	33.57	38.09	42.75		48.20	4 / 2			
	reaction time	0.170													11.23	12.23	13.56
	interval		3.74	3.78	3.71	3.92	4.12	4.19	4.38	4.52	4.66	5.45			9.35	8.59	7.74
Mägi, Rasmus (EST) (1992)	H1 lead leg	R	21	13	13	13	13	13	14	14	14	17.2	158.2				
	time	5.88	9.62	13.45	17.25	21.27	25.38	29.57	33.93	38.40	42.97		48.26	8 / 3			
	reaction time	0.160													11.37	12.32	13.40
	interval		3.74	3.83	3.80	4.02	4.11	4.19	4.36	4.47	4.57	5.29			9.23	8.52	7.84
Allen, CJ (USA) (1995)	H1 lead leg	R	20	13	13	13	13	13	14	14	14	17	157				
	time	5.73	9.46	13.32	17.17	21.16	25.23	29.39	33.76	38.40	43.10		48.68	3 / 4			
	reaction time	0.144													11.44	12.22	13.71
	interval		3.73	3.86	3.85	3.99	4.07	4.16	4.37	4.64	4.70	5.58			9.18	8.59	7.66
Clarke, Roshawn (JAM) (2004)	H1 lead leg	L	20	13	13	13	13	13	14	15	14	17.5	158.5				
	time	5.59	9.20	12.96	16.75	20.67	24.78	29.03	33.39	38.25	43.07		49.08	5 / 5			
	reaction time	0.176													11.16	12.28	14.04
	interval		3.61	3.76	3.79	3.92	4.11	4.25	4.36	4.86	4.82	6.01			9.41	8.55	7.48
James-King, Malik (JAM) (1999)	H1 lead leg	R	21	13	13	13	14	14	15	16	15	18.7	165.7				
	time	6.00	9.74	13.58	17.40	21.44	25.68	30.06	34.51	39.08	43.74		49.37	7 / 6			
	reaction time	0.153													11.40	12.66	13.68
	interval		3.74	3.84	3.82	4.04	4.24	4.38	4.45	4.57	4.66	5.63			9.21	8.29	7.68
Drummond, Gerald (CRC) (1994)	H1 lead leg	R	22	14	14	14	15	15	15	15	15	18	171				
	time	5.79	9.54	13.35	17.23	21.36	25.65	30.08	34.64	39.26	44.03		49.63	1 / 7			
	reaction time	0.221													11.44	12.85	13.95
	interval		3.75	3.81	3.88	4.13	4.29	4.43	4.56	4.62	4.77	5.60			9.18	8.17	7.53
Happio, Wilfried (FRA) (1998)	H1 lead leg	R	21	14	14	14	14	14	15	15	15	18	168				
	time	5.80	9.50	13.34	17.15	21.18	25.34	29.74	34.42	39.39	44.39		50.19	2 / 8			
	reaction time	0.151													11.35	12.59	14.65
	interval		3.70	3.84	3.81	4.03	4.16	4.40	4.68	4.97	5.00	5.80			9.25	8.34	7.17
	H1 lead leg	L	20	13	13	13	13	13	14	14	15	18	159				
	time	5.80	9.50	13.34	17.15	21.18	25.34	29.74	34.42	39.39	44.39		50.19	2 / 8			
	reaction time	0.151													11.35	12.59	14.65
	interval		3.70	3.84	3.81	4.03	4.16	4.40	4.68	4.97	5.00	5.80			9.25	8.34	7.17



Source: Omega Timing (Sat 14 Sep 2024 20:07) - diamond league race analysis
<https://www.omegatiming.com/File/000204120102150101FFFFFFFFFFFF6D.pdf>
Video: <https://www.youtube.com/watch?v=WGDQuYGmMik>

Biomechanical Analysis

2024 Weltklasse (Zürich, SUI)

Men's 400m Hurdles														FINAL				
Date 2024.09.05																		
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Clarke, Roshawn (JAM) (2004)	time		5.67	9.31	12.99	16.73	20.55	24.53	28.65	32.92	37.39	42.02		47.49	3 / 1			
	reaction time	0.177														11.06	11.92	13.37
	interval			3.64	3.68	3.74	3.82	3.98	4.12	4.27	4.47	4.63	5.47			9.49	8.81	7.85
	velocity		7.94	9.62	9.51	9.36	9.16	8.79	8.50	8.20	7.83	7.56	7.31	8.42				
H1 lead leg	R		21	13			14	14	14	14	15	15	19	139				
Samba, Abderrahman (QAT) (1995)	time		5.73	9.39	13.05	16.80	20.63	24.58	28.72	33.04	37.57	42.18		47.58	4 / 2			
	reaction time	0.177														11.07	11.92	13.46
	interval			3.66	3.66	3.75	3.83	3.95	4.14	4.32	4.53	4.61	5.40			9.49	8.81	7.80
	velocity		7.85	9.56	9.56	9.33	9.14	8.86	8.45	8.10	7.73	7.59	7.41	8.41				
H1 lead leg	R		21	13			13	13	13	13	14	14	17.2	131.2				
Mägi, Rasmus (EST) (1992)	time		5.89	9.59	13.39	17.21	21.14	25.16	29.35	33.76	38.28	42.81		48.02	8 / 3			
	reaction time	0.175														11.32	12.14	13.46
	interval			3.70	3.80	3.82	3.93	4.02	4.19	4.41	4.52	4.53	5.21			9.28	8.65	7.80
	velocity		7.64	9.46	9.21	9.16	8.91	8.71	8.35	7.94	7.74	7.73	7.68	8.33				
H1 lead leg	R		20	13			13	13	13	14		14	17	117				
Ducos, Clement (FRA) (2001)	time		5.72	9.28	12.91	16.65	20.54	24.54	28.78	33.14	37.57	42.30		48.02	5 / 4			
	reaction time	0.162														10.93	12.13	13.52
	interval			3.56	3.63	3.74	3.89	4.00	4.24	4.36	4.43	4.73	5.72			9.61	8.66	7.77
	velocity		7.87	9.83	9.64	9.36	9.00	8.75	8.25	8.03	7.90	7.40	6.99	8.33				
H1 lead leg	L		20	13	13	13	13	13	14	14	15	15	18	161				
Allen, CJ (USA) (1995)	time		5.78	9.50	13.28	17.15	21.09	25.10	29.18	33.46	37.94	42.58		48.20	2 / 5			
	reaction time	0.131														11.37	12.03	13.40
	interval			3.72	3.78	3.87	3.94	4.01	4.08	4.28	4.48	4.64	5.62			9.23	8.73	7.84
	velocity		7.79	9.41	9.26	9.04	8.88	8.73	8.58	8.18	7.81	7.54	7.12	8.30				
H1 lead leg	L		20	13			13	13	13		14	15	17.7	118.7				
Drummond, Gerald (CRC) (1994)	time		5.74	9.44	13.17	16.97	21.00	25.22	29.64	34.32	39.14	44.01		49.59	7 / 6			
	reaction time	0.168														11.23	12.67	14.37
	interval			3.70	3.73	3.80	4.03	4.22	4.42	4.68	4.82	4.87	5.58			9.35	8.29	7.31
	velocity		7.84	9.46	9.38	9.21	8.68	8.29	7.92	7.48	7.26	7.19	7.17	8.07				
H1 lead leg	R		20	13			14	14	14	15	15		105					
Bonvin, Julien (SUI) (1999)	time		5.84	9.51	13.24	17.11	21.10	25.27	29.69	34.33	39.19	44.17		50.04	1 / 7			
	reaction time	0.176														11.27	12.58	14.48
	interval			3.67	3.73	3.87	3.99	4.17	4.42	4.64	4.86	4.98	5.87			9.32	8.35	7.25
	velocity		7.71	9.54	9.38	9.04	8.77	8.39	7.92	7.54	7.20	7.03	6.81	7.99				
H1 lead leg	L		21	13			13	13	14	14	15	15		118				
dos Santos, Alison (BRA) (2000)	time		5.77	9.39	13.07	16.80	20.73							dnf	6 / --			
	reaction time	0.153														11.03		
	interval			3.62	3.68	3.73	3.93									9.52		
	velocity		7.80	9.67	9.51	9.38	8.91											
H1 lead leg	L		20	13	12	12	12							69				

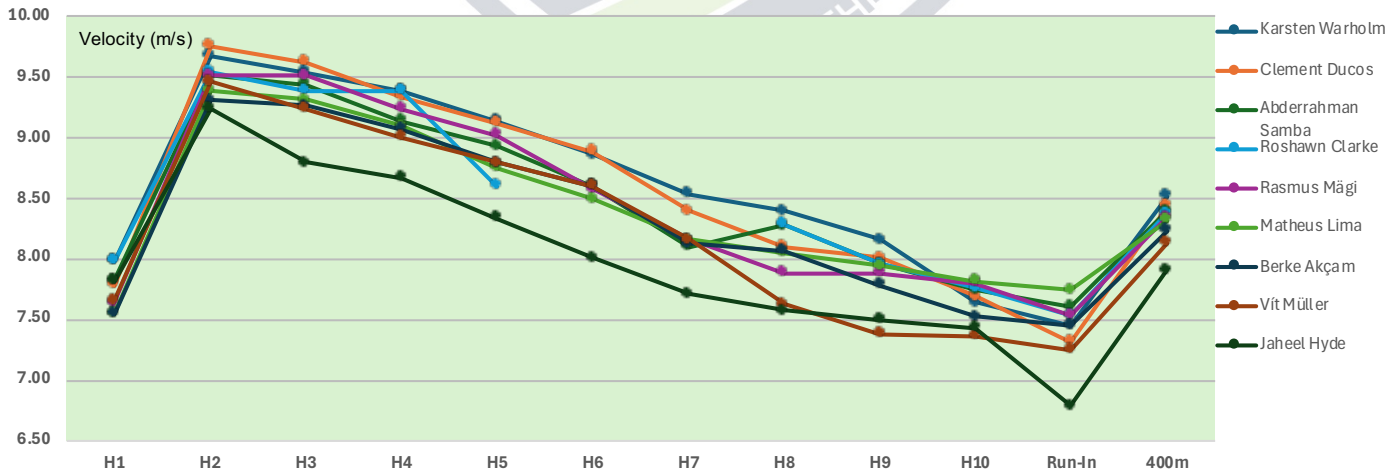
2024 Kamila Skolimowska Memorial (Silesia, POL)

Men's 400m Hurdles

Date 2024.08.25

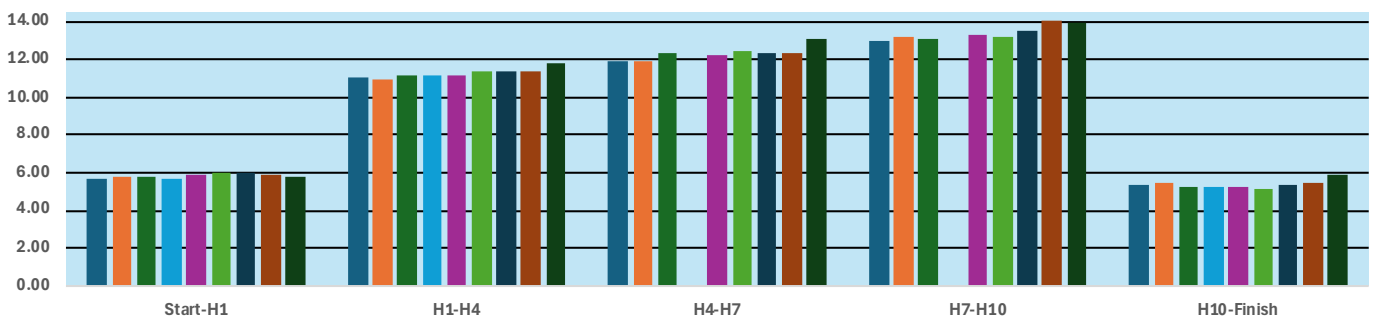
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Warholm, Karsten (NOR) (1996)	time		5.64	9.26	12.93	16.66	20.49	24.44	28.54	32.71	37.00	41.58		46.95	8 / 1			
	reaction time	0.154																
	interval			3.62	3.67	3.73	3.83	3.95	4.10	4.17	4.29	4.58	5.37			11.02	11.88	13.04
	velocity		7.98	9.67	9.54	9.38	9.14	8.86	8.54	8.39	8.16	7.64	7.45	8.52		9.53	8.84	8.05
Ducos, Clement (FRA) (2001)	time		5.78	9.37	13.01	16.76	20.60	24.54	28.71	33.03	37.40	41.95		47.42	5 / 2			
	reaction time	0.179																
	interval			3.59	3.64	3.75	3.84	3.94	4.17	4.32	4.37	4.55	5.47	PB		10.98	11.95	13.24
	velocity		7.79	9.75	9.62	9.33	9.11	8.88	8.39	8.10	8.01	7.69	7.31	8.44		9.56	8.79	7.93
Samba, Abderrahman (QAT) (1995)	time		5.75	9.43	13.14	16.97	20.89	24.96	29.28	33.51	37.91	42.43		47.69	7 / 3			
	reaction time	0.203																
	interval			3.68	3.71	3.83	3.92	4.07	4.32	4.23	4.40	4.52	5.26			11.22	12.31	13.15
	velocity		7.83	9.51	9.43	9.14	8.93	8.60	8.10	8.27	7.95	7.74	7.60	8.39		9.36	8.53	7.98
Clarke, Roshawn (JAM) (2004)	time		5.64	9.31	13.04	16.77	20.84			33.52	37.92	42.43		47.74	6 / 4			
	reaction time	0.188								12.68	4.40	4.51	5.31			11.13		
	interval			3.67	3.73	3.73	4.07									9.43		
	velocity		7.98	9.54	9.38	9.38	8.60			8.28	7.95	7.76	7.53	8.38				
Mägi, Rasmus (EST) (1992)	time		5.89	9.57	13.25	17.04	20.92	25.00	29.29	33.73	38.17	42.66		47.97	9 / 5			
	reaction time	0.178																
	interval			3.68	3.68	3.79	3.88	4.08	4.29	4.44	4.44	4.49	5.31			11.15	12.25	13.37
	velocity		7.64	9.51	9.51	9.23	9.02	8.58	8.16	7.88	7.88	7.80	7.53	8.34		9.42	8.57	7.85
Lima, Matheus (BRA) (2003)	time		5.96	9.69	13.45	17.30	21.30	25.42	29.71	34.06	38.47	42.95		48.12	4 / 6			
	reaction time	0.175																
	interval			3.73	3.76	3.85	4.00	4.12	4.29	4.35	4.41	4.48	5.17	PB		11.34	12.41	13.24
	velocity		7.55	9.38	9.31	9.09	8.75	8.50	8.16	8.05	7.94	7.81	7.74	8.31		9.26	8.46	7.93
Akçam, Berke (TUR) (2002)	time		5.96	9.72	13.50	17.36	21.34	25.41	29.72	34.06	38.56	43.21		48.58	3 / 7			
	reaction time	0.162																
	interval			3.76	3.78	3.86	3.98	4.07	4.31	4.34	4.50	4.65	5.37			11.40	12.36	13.49
	velocity		7.55	9.31	9.26	9.07	8.79	8.60	8.12	8.06	7.78	7.53	7.45	8.23		9.21	8.50	7.78
Müller, Vit (CZE) (1996)	time		5.88	9.58	13.37	17.26	21.24	25.31	29.60	34.19	38.93	43.68		49.20	1 / 8			
	reaction time	0.163																
	interval			3.70	3.79	3.89	3.98	4.07	4.29	4.59	4.74	4.75	5.52			11.38	12.34	14.08
	velocity		7.65	9.46	9.23	9.00	8.79	8.60	8.16	7.63	7.38	7.37	7.25	8.13		9.23	8.51	7.46
Hyde, Jaheel (JAM) (1997)	time		5.76	9.55	13.53	17.57	21.77	26.14	30.68	35.30	39.97	44.68		50.57	2 / 9			
	reaction time	0.151																
	interval			3.79	3.98	4.04	4.20	4.37	4.54	4.62	4.67	4.71	5.89			11.81	13.11	14.00
	velocity		7.81	9.23	8.79	8.66	8.33	8.01	7.71	7.58	7.49	7.43	6.79	7.91		8.89	8.01	7.50
	H1 lead leg	L												134				



Time Intervals (s)

Hurdle Phases



Source: Omega Timing (Sun 25 Aug 2024 15:55) - diamond league race analysis

<https://www.omegatiming.com/File/0002040F01010B0101FFFFFFFFFFFF6D.pdf>

Video: <https://www.youtube.com/watch?v=3sP3r5lXlOs&t=33s&pp=ygUac2lsZXNpYSAyMDI0IG1hdzIh1cmRsZXNM%3D>

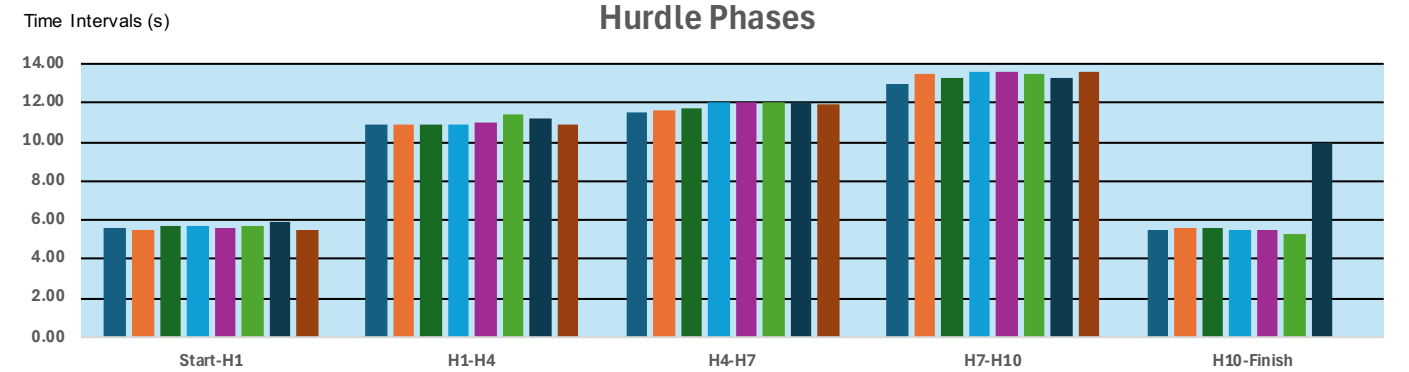
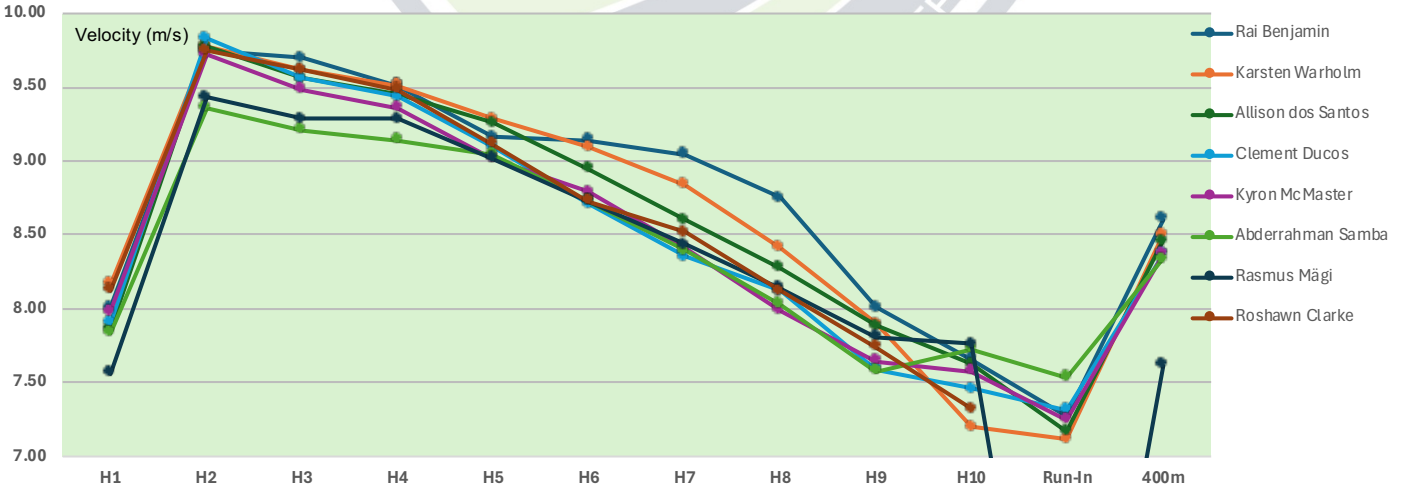
2024 Olympic Games (Paris, FRA)

Men's 400m Hurdles

Date 2024.08.09

FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Benjamin, Rai (USA) (1997)	time		5.62	9.21	12.82	16.50	20.32	24.15	28.02	32.02	36.39	40.96		46.46	8 / 1			
	reaction time	0.171														10.88	11.52	12.94
	interval		8.01	3.59	3.61	3.68	3.82	3.83	3.87	4.00	4.37	4.57	5.50			9.65	9.11	8.11
	velocity		8.01	9.75	9.70	9.51	9.28	9.14	9.04	8.75	8.01	7.66	7.27	8.61				
Warholm, Karsten (NOR) (1996)	time		5.51	9.09	12.73	16.41	20.18	24.03	27.99	32.15	36.58	41.44		47.06	7 / 2			
	reaction time	0.152														10.90	11.58	13.45
	interval		8.17	3.58	3.64	3.68	3.77	3.85	3.96	4.16	4.43	4.86	5.62			9.63	9.07	7.81
	velocity		8.17	9.78	9.62	9.51	9.28	9.09	8.84	8.41	7.90	7.20	7.12	8.50				
dos Santos, Alison (BRA) (2000)	time		5.72	9.30	12.96	16.66	20.44	24.35	28.42	32.65	37.09	41.68		47.26	3 / 3			
	reaction time	0.167														10.94	11.76	13.26
	interval		7.87	3.58	3.66	3.70	3.78	3.91	4.07	4.23	4.44	4.59	5.58			9.60	8.93	7.92
	velocity		7.87	9.78	9.56	9.46	9.26	8.95	8.60	8.27	7.88	7.63	7.17	8.46				
Ducos, Clement (FRA) (2001)	time		5.69	9.25	12.91	16.62	20.47	24.49	28.68	32.99	37.60	42.29		47.76	5 / 4			
	reaction time	0.162														10.93	12.06	13.61
	interval		7.91	3.56	3.66	3.71	3.85	4.02	4.19	4.31	4.61	4.69	5.47			9.61	8.71	7.71
	velocity		7.91	9.83	9.56	9.43	9.09	8.71	8.35	8.12	7.59	7.46	7.31	8.38				
McMaster, Kyron (IVB) (1997)	time		5.64	9.24	12.93	16.67	20.55	24.53	28.69	33.07	37.65	42.27		47.79	6 / 5			
	reaction time	0.143														11.03	12.02	13.58
	interval		3.60	3.69	3.74	3.88	3.98	4.16	4.38	4.58	4.62	4.53	5.52			9.52	8.74	7.73
	velocity		7.98	9.72	9.49	9.36	9.02	8.79	8.41	7.99	7.64	7.58	7.25	8.37				
Samba, Abderrahman (QAT) (1995)	time		5.74	9.48	13.28	17.11	20.98	24.99	29.16	33.52	38.14	42.67		47.98	2 / 6			
	reaction time	0.169														11.37	12.05	13.51
	interval		3.74	3.80	3.83	3.83	3.87	4.01	4.17	4.36	4.62	4.53	5.31			9.23	8.71	7.77
	velocity		7.84	9.36	9.21	9.14	9.04	8.73	8.39	8.03	7.58	7.73	7.53	8.34				
Mägi, Rasmus (EST) (1992)	time		5.95	9.66	13.43	17.20	21.08	25.09	29.24	33.54	38.02	42.53		52.53	4 / 7			
	reaction time	0.175														11.25	12.04	13.29
	interval		7.56	3.71	3.77	3.77	3.88	4.01	4.15	4.30	4.48	4.51	10.00			9.33	8.72	7.90
	velocity		7.56	9.43	9.28	9.28	9.02	8.73	8.43	8.14	7.81	7.76	4.00	7.61				
Clarke, Roshawn (JAM) (2004)	time		5.54	9.13	12.77	16.46	20.30	24.31	28.42	32.73	37.25	42.03		dnf	9 / --			
	reaction time	0.195														10.92	11.96	13.61
	interval		8.12	3.59	3.64	3.69	3.84	4.01	4.11	4.31	4.52	4.78				9.62	8.78	7.71
	velocity		8.12	9.75	9.62	9.49	9.11	8.73	8.52	8.12	7.74	7.32						
	H1 lead leg	R	20	13	13	13	13	13	13	13	13	13	14	155				
	H1 lead leg	L	20	13	13	13	13	13	13	13	13	15	18	157				
	H1 lead leg	L	21	13	13	13	13	13	14	14	14	14	17	159				
	H1 lead leg	R	21	13	13	13	13	13	13	13	14	14	17	144				
	H1 lead leg	R	20	13	13	13	13	13	13	13	14	14	4.00	7.61				
	H1 lead leg	R	21	14	13	13	13	14	14	15	15	15		147				



Source: Paris 2024 Olympic Games - Results Book (2024). p. 216
https://olympics.com/OG2024/pdf/OG2024_ATH_B99_ATH-----pdf
Video: https://www.youtube.com/watch?v=ZEs1FBHF_d8

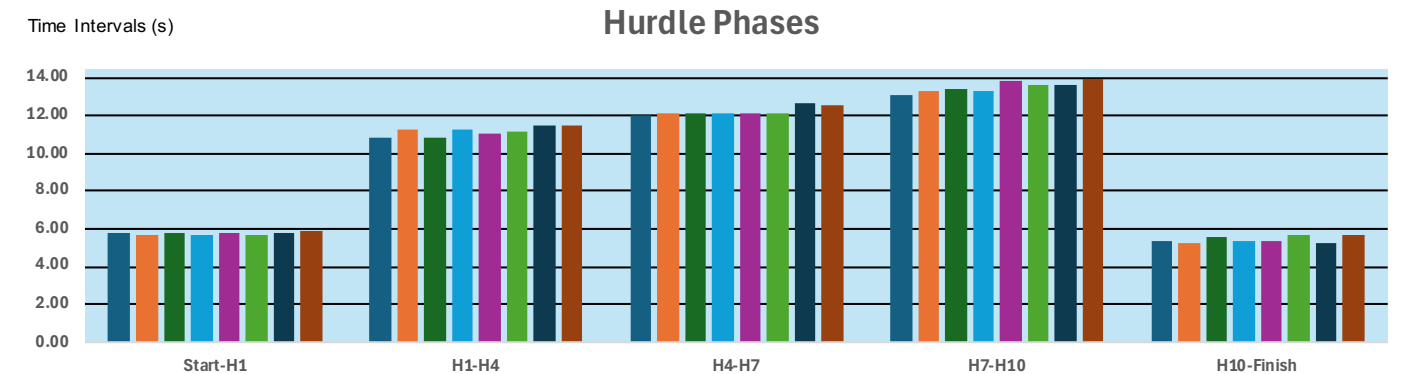
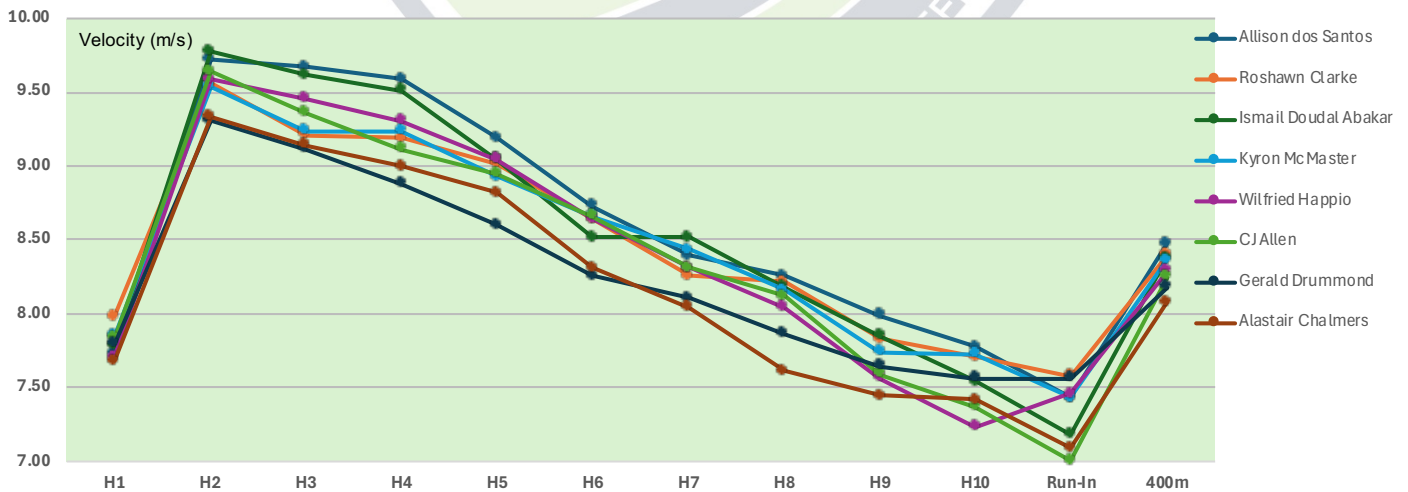
2024 London Athletics Meet (London, GBR)

Men's 400m Hurdles

Date 2024.07.20

FINAL

				H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
dos Santos, Alison (BRA) (2000)	time			5.82	9.42	13.04	16.69	20.50	24.51	28.68	32.92	37.30	41.80		47.18	6 / 1			
	reaction time	0.178	interval		3.60	3.62	3.65	3.81	4.01	4.17	4.24	4.38	4.50	5.38			10.87	11.99	13.12
	velocity		strides	7.73	9.72	9.67	9.59	9.19	8.73	8.39	8.25	7.99	7.78	7.43	8.48		9.66	8.76	8.00
	H1 lead leg	L		20	13	12	12	12			13	13	13	16.2	124.2				
Clarke, Roshawn (JAM) (2004)	time			5.64	9.30	13.10	16.91	20.79	24.84	29.08	33.34	37.81	42.35		47.63	3 / 2			
	reaction time	0.187	interval		3.66	3.80	3.81	3.88	4.05	4.24	4.26	4.47	4.54	5.28			11.27	12.17	13.27
	velocity		strides	7.98	9.56	9.21	9.19	9.02	8.64	8.25	8.22	7.83	7.71	7.58	8.40		9.32	8.63	7.91
	H1 lead leg	R		21	13	13	13	13	14	14	14	15	15	18	163				
Abakar, Ismail Doudai (QAT) (2004)	time			5.78	9.36	13.00	16.68	20.55	24.66	28.77	33.05	37.51	42.15		47.72	8 / 3			
	reaction time	0.198	interval		3.58	3.64	3.68	3.87	4.11	4.11	4.28	4.46	4.64	5.57	PB		10.90	12.09	13.38
	velocity		strides	7.79	9.78	9.62	9.51	9.04	8.52	8.52	8.18	7.85	7.54	7.18	8.38		9.63	8.68	7.85
	H1 lead leg	L		20	13	13	13	13			13	13	14	17.2	129.2				
McMaster, Kyron (IVB) (1997)	time			5.73	9.40	13.19	16.98	20.90	24.94	29.09	33.38	37.90	42.43		47.81	5 / 4			
	reaction time	0.150	interval		3.67	3.79	3.79	3.92	4.04	4.15	4.29	4.52	4.53	5.38			11.25	12.11	13.34
	velocity		strides	7.85	9.54	9.23	9.23	8.93	8.66	8.43	8.16	7.74	7.73	7.43	8.37		9.33	8.67	7.87
	H1 lead leg	L		21	13	13	13	13	13	13	13	14	14	17	157				
Happio, Wilfried (FRA) (1998)	time			5.84	9.49	13.19	16.95	20.82	24.87	29.08	33.43	38.06	42.90		48.26	4 / 5			
	reaction time	0.153	interval		3.65	3.70	3.76	3.87	4.05	4.21	4.35	4.63	4.84	5.36			11.11	12.13	13.82
	velocity		strides	7.71	9.59	9.46	9.31	9.04	8.64	8.31	8.05	7.56	7.23	7.46	8.29		9.45	8.66	7.60
	H1 lead leg	L		20	13	13	13	13	13	13	13	14	14	17.2	156.2				
Allen, CJ (USA) (1995)	time			5.74	9.37	13.11	16.95	20.86	24.90	29.11	33.42	38.03	42.78		48.49	7 / 6			
	reaction time	0.146	interval		3.63	3.74	3.84	3.91	4.04	4.21	4.31	4.61	4.75	5.71			11.21	12.16	13.67
	velocity		strides	7.84	9.64	9.36	9.11	8.95	8.66	8.31	8.12	7.59	7.37	7.01	8.25		9.37	8.63	7.68
	H1 lead leg	L		20	13	13	13	13			14			18	104				
Drummond, Gerald (CRC) (1994)	time			5.77	9.53	13.37	17.31	21.38	25.62	29.94	34.39	38.97	43.60		48.89	1 / 7			
	reaction time	0.205	interval		3.76	3.84	3.94	4.07	4.24	4.32	4.45	4.58	4.63	5.29			11.54	12.63	13.66
	velocity		strides	7.80	9.31	9.11	8.88	8.60	8.25	8.10	7.87	7.64	7.56	7.56	8.18		9.10	8.31	7.69
	H1 lead leg	L		21	14	14	14	14			15	15	15	18	140				
Chalmers, Alastair (GBR) (2000)	time			5.86	9.61	13.44	17.33	21.30	25.51	29.86	34.46	39.16	43.88		49.52	2 / 8			
	reaction time	0.153	interval		3.75	3.83	3.89	3.97	4.21	4.35	4.60	4.70	4.72	5.64			11.47	12.53	14.02
	velocity		strides	7.68	9.33	9.14	9.00	8.82	8.31	8.05	7.61	7.45	7.42	7.09	8.08		9.15	8.38	7.49
	H1 lead leg	L		20	13	13	13	13			15			18	105				

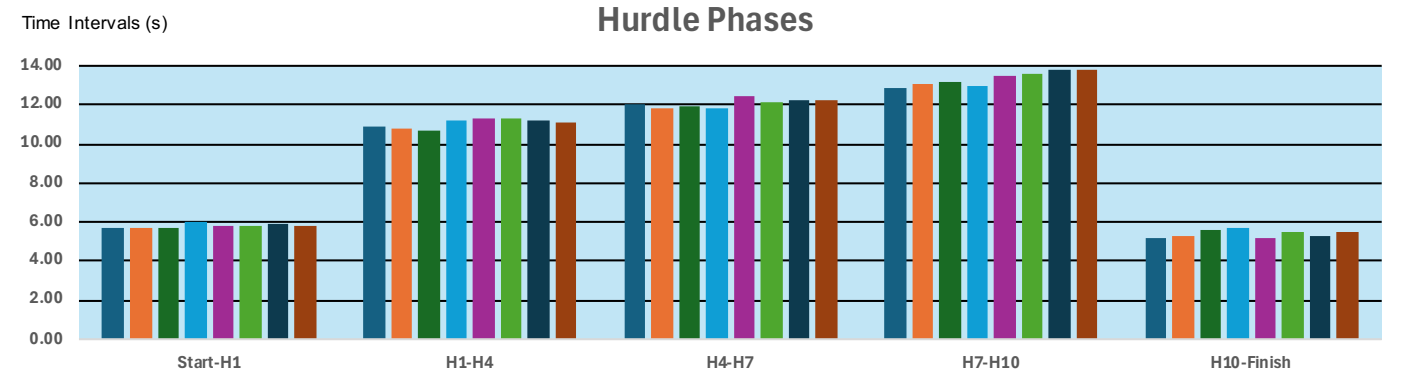
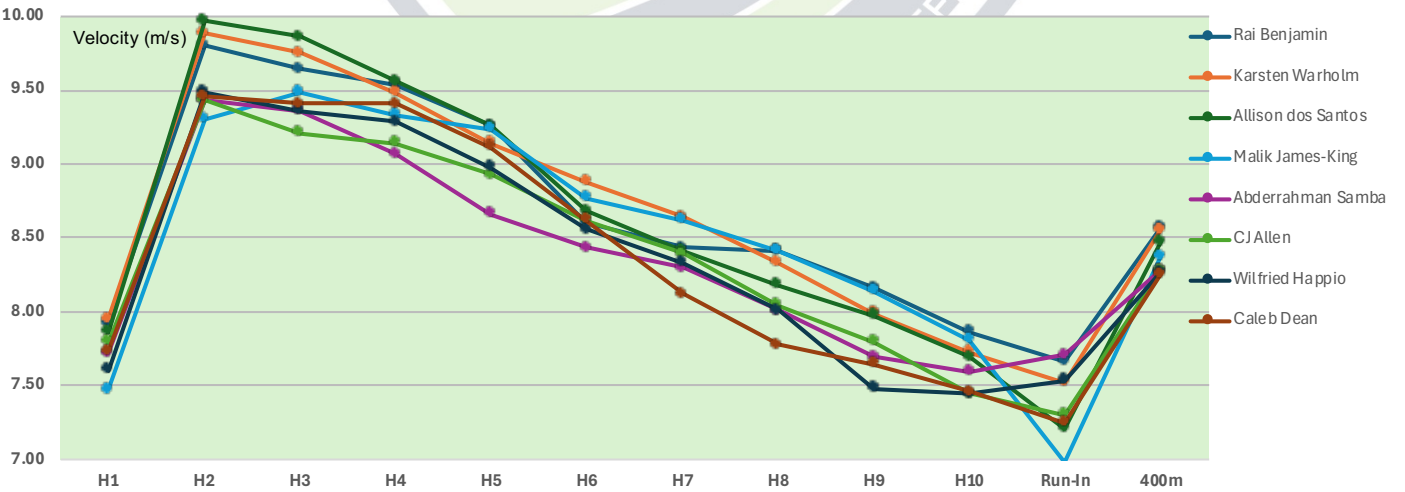


Source: Omega Timing (Sat 20 Jul 2024 14:46) - diamond league race analysis
<https://www.omegatiming.com/File/0002040D01020B0101FFFFFFFFFFFF6D.pdf>
Video: <https://www.youtube.com/watch?v=RdICGcoKrrI>

Biomechanical Analysis

2024 Herculis Meeting International d'Athlétisme (Monaco, MON)

Men's 400m Hurdles															FINAL			
Date 2024.07.12																		
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Benjamin, Rai (USA) (1997)	time		5.68	9.25	12.88	16.55	20.33	24.40	28.55	32.71	37.00	41.45		46.67	5 / 1			
	reaction time	0.188	interval	3.57	3.63	3.67	3.78	4.07	4.15	4.16	4.29	4.45	5.22			10.87	12.00	12.90
			velocity	7.92	9.80	9.64	9.54	9.26	8.60	8.43	8.41	8.16	7.87	7.66	8.57	9.66	8.75	8.14
	H1 lead leg	R	strides	20	13	13	12	13	14	13	13	13	13	17	154			
Warholm, Karsten (NOR) (1996)	time		5.66	9.20	12.79	16.48	20.31	24.25	28.30	32.50	36.88	41.41		46.73	7 / 2			
	reaction time	0.164	interval	3.54	3.59	3.69	3.83	3.94	4.05	4.20	4.38	4.53	5.32			10.82	11.82	13.11
			velocity	7.95	9.89	9.75	9.49	9.14	8.88	8.64	8.33	7.99	7.73	7.52	8.56	9.70	8.88	8.01
	H1 lead leg	L	strides	20	13	13	13	13	13	13	13	13	15	18	157			
dos Santos, Alison (BRA) (2000)	time		5.72	9.23	12.78	16.44	20.22	24.25	28.41	32.69	37.08	41.63		47.18	6 / 3			
	reaction time	0.161	interval	3.51	3.55	3.66	3.78	4.03	4.16	4.28	4.39	4.55	5.55			10.72	11.97	13.22
			velocity	7.87	9.97	9.86	9.56	9.26	8.68	8.41	8.18	7.97	7.69	7.21	8.48	9.79	8.77	7.94
	H1 lead leg	L	strides	20	13	12	12	13	13	13	13	13	13	17	151			
James-King, Malik (JAM) (1999)	time		6.02	9.78	13.47	17.22	21.01	25.00	29.06	33.22	37.52	42.00		47.73	3 / 4			
	reaction time	0.150	interval	3.76	3.69	3.75	3.79	3.99	4.06	4.16	4.30	4.48	5.73			11.20	11.84	12.94
			velocity	7.48	9.31	9.49	9.33	9.23	8.77	8.62	8.41	8.14	7.81	6.98	8.38	9.38	8.87	8.11
	H1 lead leg	L	strides	23	14	14	14	14	14	15	15	15	19.5	157.5				
Samba, Abderrahman (QAT) (1995)	time		5.83	9.54	13.28	17.14	21.18	25.33	29.55	33.92	38.47	43.08		48.27	8 / 5			
	reaction time	0.179	interval	3.71	3.74	3.86	3.92	4.15	4.22	4.37	4.55	4.61	5.19			11.31	12.41	13.53
			velocity	7.72	9.43	9.36	9.07	8.66	8.43	8.29	8.01	7.69	7.59	7.71	8.29	9.28	8.46	7.76
	H1 lead leg	R	strides	21	13	13	13	13	13	13	13	13	14	17	156			
Allen, CJ (USA) (1995)	time		5.77	9.48	13.28	17.11	21.03	25.09	29.26	33.61	38.10	42.80		48.28	2 / 6			
	reaction time	0.160	interval	3.71	3.80	3.83	3.92	4.06	4.17	4.35	4.49	4.70	5.48			11.34	12.15	13.54
			velocity	7.80	9.43	9.21	9.14	8.93	8.62	8.39	8.05	7.80	7.45	7.30	8.29	9.26	8.64	7.75
	H1 lead leg	L	strides	20	13	13	13	13	13	14	15	15	17.7	146.7				
Happio, Wilfried (FRA) (1998)	time		5.92	9.61	13.35	17.12	21.02	25.11	29.31	33.68	38.36	43.06		48.37	1 / 7			
	reaction time	0.161	interval	3.69	3.74	3.77	3.90	4.09	4.20	4.37	4.68	4.70	5.31			11.20	12.19	13.75
			velocity	7.60	9.49	9.36	9.28	8.97	8.56	8.33	8.01	7.48	7.45	7.53	8.27	9.38	8.61	7.64
	H1 lead leg	L	strides	20	13	13	13	13	13	13	14	14	17.2	143.2				
Dean, Caleb (USA) (2001)	time		5.82	9.52	13.24	16.96	20.80	24.86	29.17	33.67	38.25	42.94		48.46	4 / 8			
	reaction time	0.174	interval	3.70	3.72	3.84	4.06	4.31	4.50	4.58	4.69	5.52				11.14	12.21	13.77
			velocity	7.73	9.46	9.41	9.41	9.11	8.62	8.12	7.78	7.64	7.46	7.25	8.25	9.43	8.60	7.63
	H1 lead leg	R	strides	21	13	13	13	13	14	14	15	15	17.7	161.7				



Source: Omega Timing (Fri 12 Jul 2024 20:09) - diamond league race analysis
<https://www.omegatiming.com/File/0002040C0102020101FFFFFFFFFFFF6D.pdf>
Video: <https://www.youtube.com/watch?v=LsWpCsUhkYw>

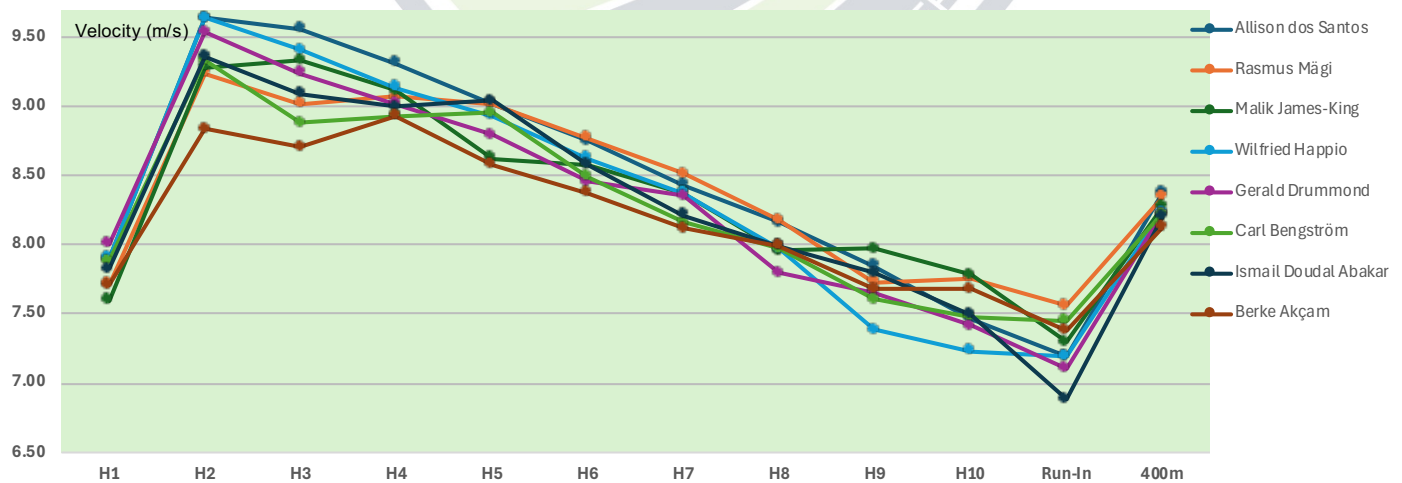
2024 Meeting de Paris (Paris, FRA)

Men's 400m Hurdles

Date 2024.07.07

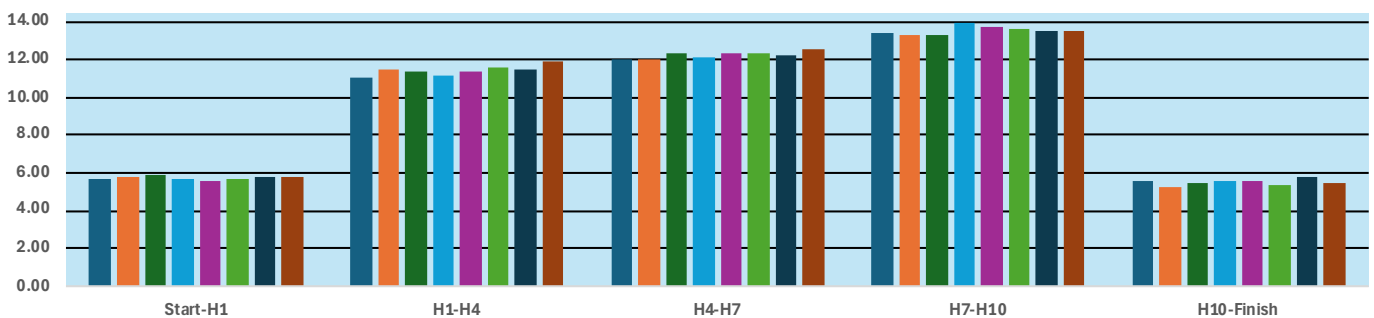
FINAL

				H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
dos Santos, Alison (BRA) (2000)	time			5.70	9.33	12.99	16.75	20.63	24.63	28.78	33.07	37.53	42.22		47.78	6 / 1			
	reaction time	0.168	interval		3.63	3.66	3.76	3.88	4.00	4.15	4.29	4.46	4.69	5.56			11.05	12.03	13.44
			velocity	7.89	9.64	9.56	9.31	9.02	8.75	8.43	8.16	7.85	7.46	7.19	8.37		9.50	8.73	7.81
	H1 lead leg	L	strides	20	13	12	12	12	12	13	13	13	13	16.7	149.7				
Mägi, Rasmus (EST) (1992)	time			5.83	9.62	13.50	17.36	21.24	25.23	29.34	33.62	38.15	42.66		47.95	3 / 2			
	reaction time	0.168	interval		3.79	3.88	3.86	3.88	3.99	4.11	4.28	4.53	4.51	5.29			11.53	11.98	13.32
			velocity	7.72	9.23	9.02	9.07	9.02	8.77	8.52	8.18	7.73	7.76	7.56	8.34		9.11	8.76	7.88
	H1 lead leg	R	strides	20	13	13	13	13	13	13	13	14	14	17	130				
James-King, Malik (JAM) (1999)	time			5.92	9.69	13.44	17.28	21.34	25.42	29.60	34.00	38.39	42.89		48.37	7 / 3			
	reaction time	0.172	interval		3.77	3.75	3.84	4.06	4.08	4.18	4.40	4.39	4.50	5.48			11.36	12.32	13.29
			velocity	7.60	9.28	9.33	9.11	8.62	8.58	8.37	7.95	7.97	7.78	7.30	8.27		9.24	8.52	7.90
	H1 lead leg	R	strides	22	14	14	14	14	14	15	15	15	15	18	170				
Happio, Wilfried (FRA) (1998)	time			5.69	9.32	13.04	16.87	20.79	24.85	29.03	33.42	38.16	43.00		48.56	5 / 4			
	reaction time	0.151	interval		3.63	3.72	3.83	3.92	4.06	4.18	4.39	4.74	4.84	5.56			11.18	12.16	13.97
			velocity	7.91	9.64	9.41	9.14	8.93	8.62	8.37	7.97	7.38	7.23	7.19	8.24		9.39	8.63	7.52
	H1 lead leg	L	strides	20	13	13	13	13	13	13	13	14	15	18	158				
Drummond, Gerald (CRC) (1994)	time			5.62	9.29	13.08	16.96	20.94	25.08	29.27	33.76	38.33	43.05		48.68	2 / 5			
	reaction time	0.217	interval		3.67	3.79	3.88	3.98	4.12	4.19	4.49	4.57	4.72	5.63			11.34	12.31	13.78
			velocity	8.01	9.54	9.23	9.02	8.79	8.45	8.35	7.80	7.66	7.42	7.10	8.22		9.26	8.53	7.62
	H1 lead leg	L	strides	21	14	14	14	14	14	15	15	15	15	18	140				
Bengtström, Carl (SWE) (2000)	time			5.71	9.46	13.40	17.32	21.23	25.35	29.64	34.03	38.63	43.31		48.68	4 / 6			
	reaction time	0.179	interval		3.75	3.94	3.92	3.91	4.12	4.29	4.39	4.60	4.68	5.37			11.61	12.32	13.67
			velocity	7.88	9.33	8.88	8.93	8.95	8.50	8.16	7.97	7.61	7.48	7.45	8.22		9.04	8.52	7.68
	H1 lead leg	L	strides	22	14	14	14	14	14	15	15	15	15	19	142				
Abakar, Ismail Doudai (QAT) (2004)	time			5.75	9.49	13.34	17.23	21.10	25.18	29.44	33.82	38.31	42.98		48.79	1 / 7			
	reaction time	0.192	interval		3.74	3.85	3.89	3.87	4.08	4.26	4.38	4.49	4.67	5.81			11.48	12.21	13.54
			velocity	7.83	9.36	9.09	9.00	9.04	8.58	8.22	7.99	7.80	7.49	6.88	8.20		9.15	8.60	7.75
	H1 lead leg	L	strides	20	13	13	13	13	13	13	13	13	15	17.2	130.2				
Akçam, Berke (TUR) (2002)	time			5.84	9.80	13.82	17.74	21.82	26.00	30.31	34.69	39.25	43.81		49.23	8 / 8			
	reaction time	0.144	interval		3.96	4.02	3.92	4.08	4.18	4.31	4.38	4.56	4.56	5.42			11.90	12.57	13.50
			velocity	7.71	8.84	8.71	8.93	8.58	8.37	8.12	7.99	7.68	7.68	7.38	8.13		8.82	8.35	7.78
	H1 lead leg	L	strides	21	13	13	13	13	14	14	15	15	15	146					



Time Intervals (s)

Hurdle Phases



Source: Omega Timing (Sun 7 Jul 2024 16:09) - diamond league race analysis

<https://www.omegatiming.com/File/0002040B01010B0101FFFFFFFF6D.pdf>Video: <https://www.youtube.com/watch?v=YVBd4iDkv28>

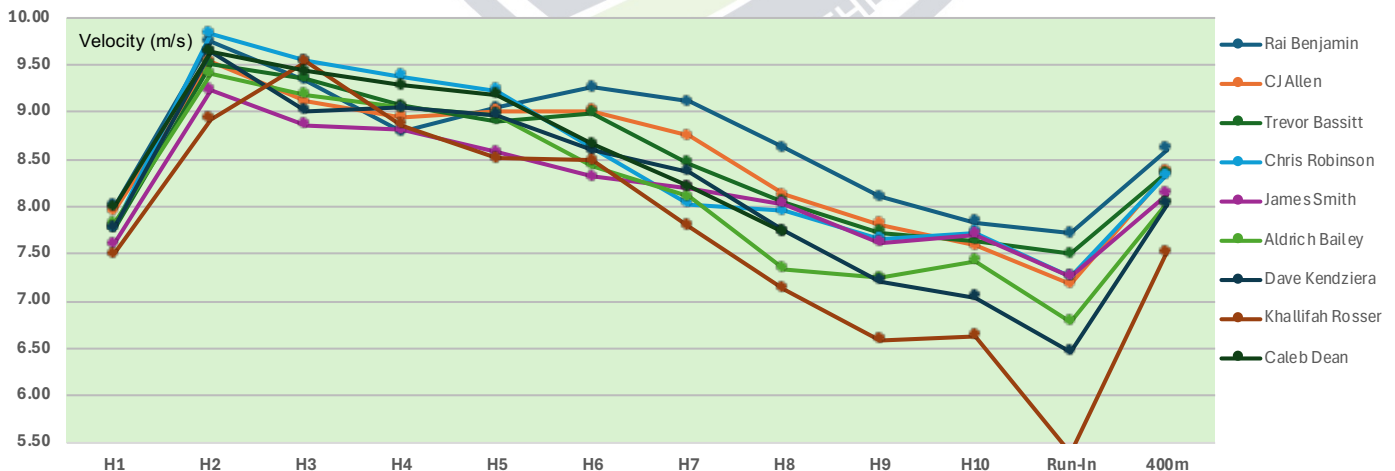
2024 USA Olympic Trials (Eugene, OR)

Men's 400m Hurdles

Date 2024.06.30

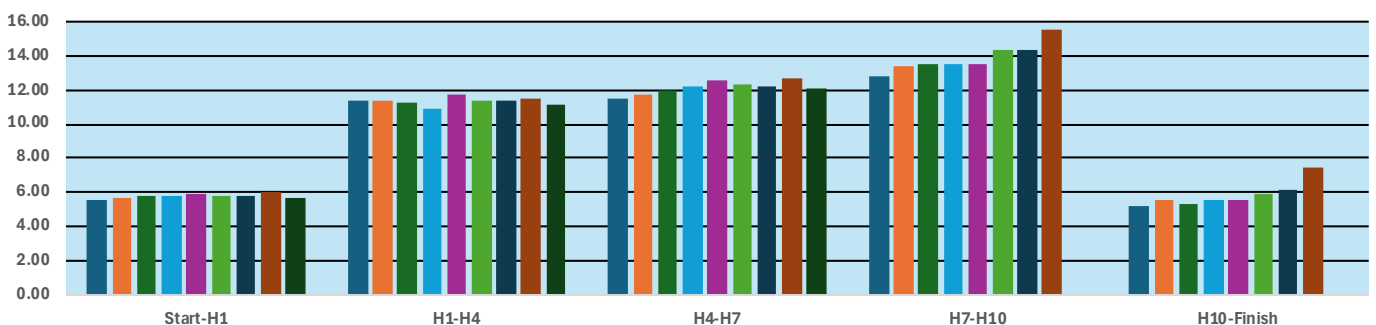
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Benjamin, Rai (USA) (1997)	time		5.62	9.21	12.96	16.94	20.81	24.59	28.43	32.49	36.81	41.28		46.46	7 / 1			
	reaction time			3.59	3.75	3.98	3.87	3.78	3.84	4.06	4.32	4.47	5.18			11.32	11.49	12.85
	velocity		8.01	9.75	9.33	8.79	9.04	9.26	9.11	8.62	8.10	7.83	7.72	8.61		9.28	9.14	8.17
	H1 lead leg	R	20	13	13	13	13	13	13	13	13	13	16.5	153.5				
Allen, CJ (USA) (1995)	time		5.66	9.33	13.17	17.08	20.96	24.84	28.84	33.15	37.63	42.24		47.81	8 / 2			
	reaction time			3.67	3.84	3.91	3.88	3.88	4.00	4.31	4.48	4.61	5.57			11.42	11.76	13.40
	velocity		7.95	9.54	9.11	8.95	9.02	9.02	8.75	8.12	7.81	7.59	7.18	8.37		9.19	8.93	7.84
	H1 lead leg	L	20	13	13	13	13	13	14	14	14	14	18	159				
Bassitt, Trevor (USA) (1998)	time		5.79	9.47	13.21	17.07	21.00	24.89	29.03	33.38	37.91	42.49		47.82	6 / 3			
	reaction time			3.68	3.74	3.86	3.93	3.89	4.14	4.35	4.53	4.58	5.33			11.28	11.96	13.46
	velocity		7.77	9.51	9.36	9.07	8.91	9.00	8.45	8.05	7.73	7.64	7.50	8.36		9.31	8.78	7.80
	H1 lead leg	R	20	13	13	13	13	13	13	13	14	14	17	156				
Robinson, Chris (USA) (2001)	time		5.78	9.34	13.01	16.74	20.53	24.59	28.95	33.35	37.92	42.45		47.96	4 / 4			
	reaction time			3.56	3.67	3.73	3.79	4.06	4.36	4.40	4.57	4.53	5.51			10.96	12.21	13.50
	velocity		7.79	9.83	9.54	9.38	9.23	8.62	8.03	7.95	7.66	7.73	7.26	8.34		9.58	8.60	7.78
	H1 lead leg	R	13	13	13	13	14	14	15	15	15	15	18.5	143.5				
Smith, James (USA) (2000)	time		5.91	9.70	13.65	17.62	21.70	25.91	30.18	34.54	39.13	43.67		49.18	1 / 5			
	reaction time			3.79	3.95	3.97	4.08	4.21	4.27	4.36	4.59	4.54	5.51			11.71	12.56	13.49
	velocity		7.61	9.23	8.86	8.82	8.58	8.31	8.20	8.03	7.63	7.71	7.26	8.13		8.97	8.36	7.78
	H1 lead leg	L	21	13	13	13	13	14	14	15	15	15	18	164				
Bailey, Aldrich (USA) (1994)	time		5.75	9.47	13.28	17.15	21.05	25.20	29.52	34.29	39.12	43.83		49.73	3 / 6			
	reaction time			3.72	3.81	3.87	3.90	4.15	4.32	4.77	4.83	4.71	5.90			11.40	12.37	14.31
	velocity		7.83	9.41	9.19	9.04	8.97	8.43	8.10	7.34	7.25	7.43	6.78	8.04		9.21	8.49	7.34
	H1 lead leg	L	21	13	13	13	13	13	14	14	14	14	17.5	159.5				
Kendziera, Dave (USA) (1994)	time		5.78	9.41	13.29	17.16	21.06	25.13	29.31	33.83	38.68	43.65		49.84	2 / 7			
	reaction time			3.63	3.88	3.87	3.90	4.07	4.18	4.52	4.85	4.97	6.19			11.38	12.15	14.34
	velocity		7.79	9.64	9.02	9.04	8.97	8.60	8.37	7.74	7.22	7.04	6.46	8.03		9.23	8.64	7.32
	H1 lead leg	R	20	13	13	13	13	13	13	14	15	16	18	161				
Rosser, Khallifah (USA) (1995)	time		6.00	9.92	13.59	17.54	21.65	25.77	30.26	35.17	40.48	45.76		53.18	9 / 8			
	reaction time			3.92	3.67	3.95	4.11	4.12	4.49	4.91	5.31	5.28	7.42			11.54	12.72	15.50
	velocity		7.50	8.93	9.54	8.86	8.52	8.50	7.80	7.13	6.59	6.63	5.39	7.52		9.10	8.25	6.77
	H1 lead leg	R	20	13	13	13	13		13		15	15		115				
Dean, Caleb (USA) (2001)	time		5.63	9.26	12.97	16.74	20.55	24.59	28.85	33.38				dnf	5 / --			
	reaction time			3.63	3.71	3.77	3.81	4.04	4.26	4.53						11.11	12.11	
	velocity		7.99	9.64	9.43	9.28	9.19	8.66	8.22	7.73						9.45	8.67	
	H1 lead leg	R	20	13	13	13	13	13	14	14				113				



Time Intervals (s)

Hurdle Phases



Source: USATF and Karmarush (Sun 30 Jun 2024) - USA Olympic trials results and race analysis

<https://results.usatf.org/2024trials/>Video: https://www.youtube.com/watch?v=TdnFfD_dMTE

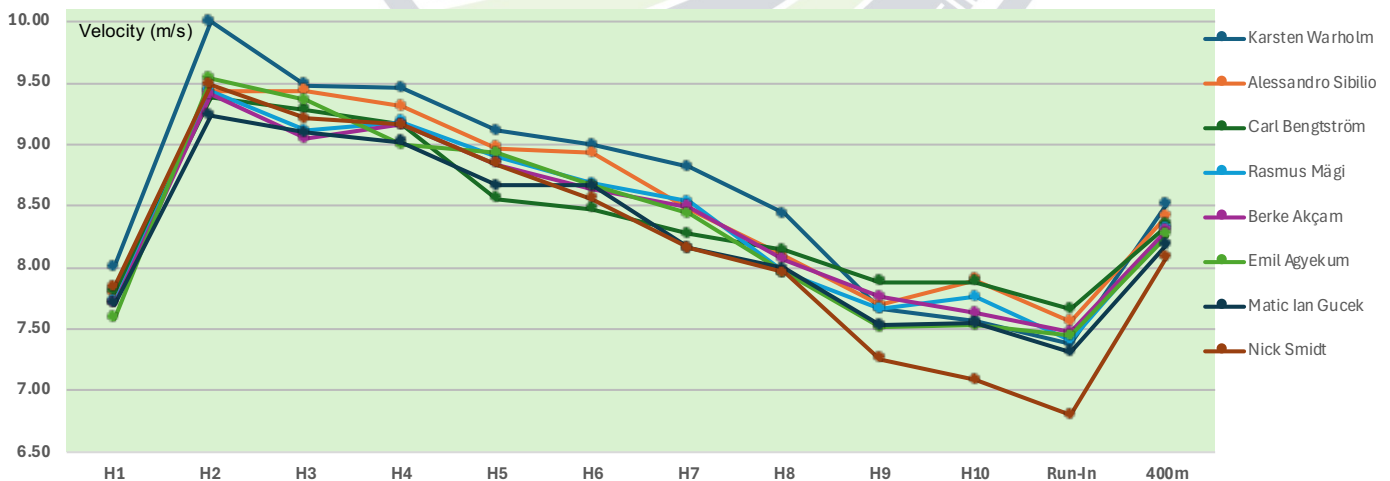
2024 European Athletics Championships (Roma, ITA)

Men's 400m Hurdles

Date 2024.06.11

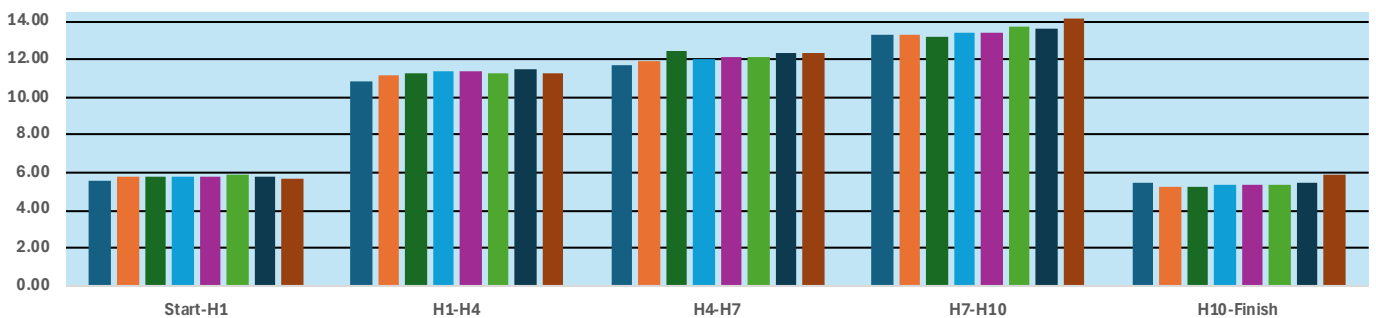
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Warholm, Karsten (NOR) (1996)	time		5.62	9.12	12.81	16.51	20.35	24.24	28.21	32.36	36.93	41.56		46.98	8 / 1			
	reaction time	0.184																
	interval		8.01	10.00	3.69	3.70	3.84	3.89	3.97	4.15	4.57	4.63	5.42	CR		10.89	11.70	13.35
	velocity		8.01	10.00	9.49	9.46	9.11	9.00	8.82	8.43	7.66	7.56	7.38	8.51		9.64	8.97	7.87
Sibilio, Alessandro (ITA) (1999)	time		5.78	9.49	13.20	16.96	20.86	24.78	28.91	33.23	37.78	42.21		47.50	7 / 2			
	reaction time	0.174																
	interval		7.79	9.43	9.43	9.31	8.97	8.93	8.47	8.10	7.69	7.90	5.29	NR		11.18	11.95	13.30
	velocity		7.79	9.43	9.43	9.31	8.97	8.93	8.47	8.10	7.69	7.90	7.56	8.42		9.39	8.79	7.89
Bengtström, Carl (SWE) (2000)	time		5.77	9.50	13.27	17.09	21.18	25.31	29.54	33.84	38.28	42.72		47.94	9 / 3			
	reaction time	0.167																
	interval		7.80	9.38	9.28	9.16	8.56	8.47	8.27	8.14	7.88	7.88	5.22	NR		11.32	12.45	13.18
	velocity		7.80	9.38	9.28	9.16	8.56	8.47	8.27	8.14	7.88	7.88	7.66	8.34		9.28	8.43	7.97
Mägi, Rasmus (EST) (1992)	time		5.83	9.54	13.38	17.19	21.12	25.15	29.25	33.65	38.22	42.73		48.13	5 / 4			
	reaction time	0.138																
	interval		7.72	9.43	9.11	9.19	8.91	8.68	8.54	7.95	7.66	7.76	7.41	8.31		11.36	12.06	13.48
	velocity		7.72	9.43	9.11	9.19	8.91	8.68	8.54	7.95	7.66	7.76	7.41	8.31		9.24	8.71	7.79
Akçam, Berke (TUR) (2002)	time		5.84	9.56	13.43	17.25	21.21	25.26	29.38	33.72	38.23	42.82		48.17	6 / 5			
	reaction time	0.172																
	interval		7.71	9.41	9.04	9.16	8.84	8.64	8.50	8.06	7.76	7.63	7.48	8.30		11.41	12.13	13.44
	velocity		7.71	9.41	9.04	9.16	8.84	8.64	8.50	8.06	7.76	7.63	7.48	8.30		9.20	8.66	7.81
Agyekum, Emil (GER) (1999)	time		5.93	9.60	13.34	17.23	21.15	25.19	29.34	33.74	38.40	43.05		48.42	3 / 6			
	reaction time	0.179																
	interval		7.59	9.54	9.36	9.00	8.93	8.66	8.43	7.95	7.51	7.53	7.45	8.26		11.30	12.11	13.71
	velocity		7.59	9.54	9.36	9.00	8.93	8.66	8.43	7.95	7.51	7.53	7.45	8.26		9.29	8.67	7.66
Gucek, Matic Ian (SLO) (2003)	time		5.84	9.63	13.48	17.36	21.40	25.44	29.73	34.11	38.76	43.40		48.87	2 / 7			
	reaction time	0.158																
	interval		7.71	9.23	9.09	9.02	8.66	8.66	8.16	7.99	7.53	7.54	5.47	8.18		11.52	12.37	13.67
	velocity		7.71	9.23	9.09	9.02	8.66	8.66	8.16	7.99	7.53	7.54	7.31	8.18		9.11	8.49	7.68
Smidt, Nick (NED) (1997)	time		5.74	9.43	13.23	17.05	21.01	25.10	29.39	33.79	38.61	43.55		49.43	4 / 8			
	reaction time	0.182																
	interval		7.84	9.49	9.21	9.16	8.84	8.56	8.16	7.95	7.26	7.09	5.88	8.09		11.31	12.34	14.16
	velocity		7.84	9.49	9.21	9.16	8.84	8.56	8.16	7.95	7.26	7.09	6.80	8.09		9.28	8.51	7.42



Time Intervals (s)

Hurdle Phases



Source: European Athletics (2024). 2024 European athletics championships - results book. p. 116

<https://european-athletics.directus.app/assets/fe31f746-d9d1-4555-8899-d095f5843ff0/Results%20Book%20-%20European%20Athletics%20Championships%202024.pdf>Video: <https://www.youtube.com/watch?v=2nFwXiZ9RJA>

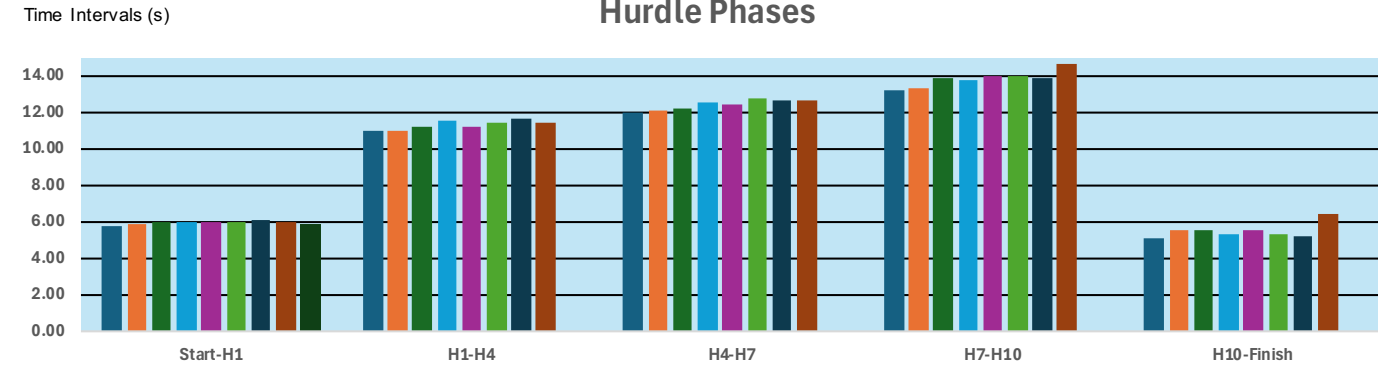
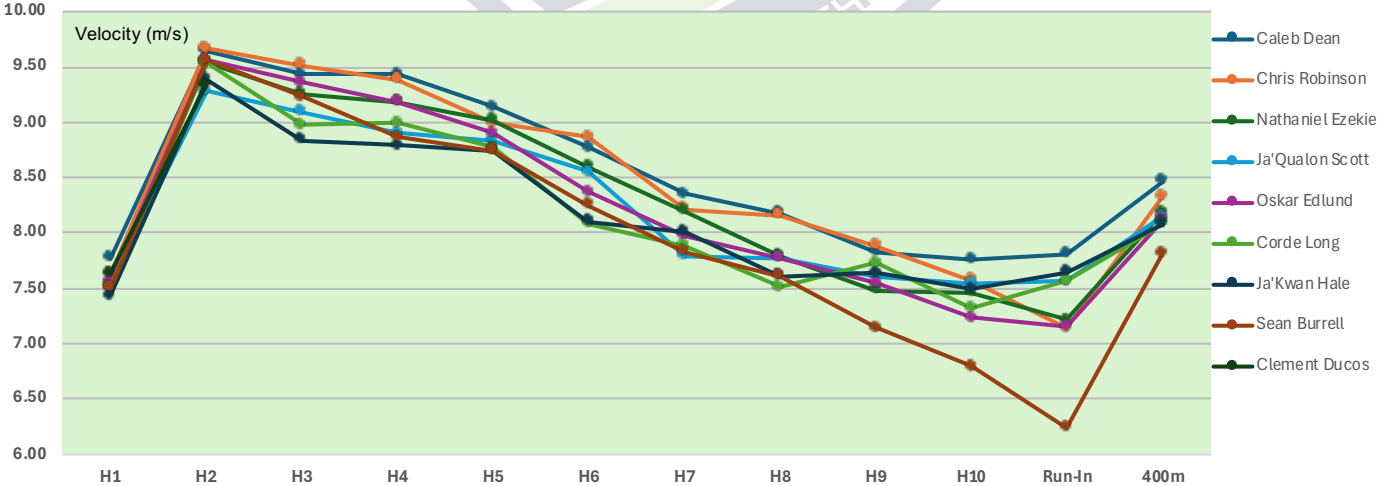
2024 NCAA Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date 2024.06.07

FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Dean, Caleb (USA) (2001)	time		5.79	9.42	13.13	16.84	20.67	24.66	28.85	33.13	37.60	42.11		47.23	6 / 1			
	reaction time																	
	interval			3.63	3.71	3.71	3.83	3.99	4.19	4.28	4.47	4.51	5.12	PB		11.05	12.01	13.26
	velocity		7.77	9.64	9.43	9.43	9.14	8.77	8.35	8.18	7.83	7.76	7.81	8.47		9.50	8.74	7.92
Robinson, Chris (USA) (2001)	H1 lead leg	R	20	13	13	13	13	13	14	14	14	14	18	159				
	time		5.90	9.52	13.20	16.93	20.82	24.77	29.03	33.32	37.76	42.38		47.98	8 / 2			
	reaction time																	
	interval			3.62	3.68	3.73	3.89	3.95	4.26	4.29	4.44	4.62	5.60			11.03	12.10	13.35
Ezekiel, Nathaniel (NGR) (2003)	velocity		7.63	9.67	9.51	9.38	9.00	8.86	8.22	8.16	7.88	7.58	7.14	8.34		9.52	8.68	7.87
	H1 lead leg	R	13	13	13	13	13	13	14	14	15	15	18.5	141.5				
	time		6.00	9.67	13.45	17.26	21.14	25.21	29.48	33.97	38.65	43.34		48.88	5 / 3			
	reaction time																	
Scott, Ja'Qualon (USA) (2001)	interval			3.67	3.78	3.81	3.88	4.07	4.27	4.49	4.68	4.69	5.54			11.26	12.22	13.86
	velocity		7.50	9.54	9.26	9.19	9.02	8.60	8.20	7.80	7.48	7.46	7.22	8.18		9.33	8.59	7.58
	H1 lead leg	R	21	13	13	13	13	13	13	14	14	14	17	158				
	time		5.96	9.73	13.58	17.51	21.47	25.56	30.05	34.55	39.15	43.79		49.08	1 / 4			
Edlund, Oskar (SWE) (2002)	reaction time																	
	interval			3.77	3.85	3.93	3.96	4.09	4.49	4.50	4.60	4.64	5.29	PB		11.55	12.54	13.74
	velocity		7.55	9.28	9.09	8.91	8.84	8.56	7.80	7.78	7.61	7.54	7.56	8.15		9.09	8.37	7.64
	H1 lead leg	R	21	13	13	13	13	13	14	14	14	14	18	160				
Long, Corde (USA) (2002)	time		5.95	9.61	13.35	17.16	21.09	25.27	29.66	34.16	38.80	43.64		49.23	9 / 5			
	reaction time																	
	interval			3.66	3.74	3.81	3.93	4.18	4.39	4.50	4.64	4.84	5.59			11.21	12.50	13.98
	velocity		7.56	9.56	9.36	9.19	8.91	8.37	7.97	7.78	7.54	7.23	7.16	8.13		9.37	8.40	7.51
Hale, Ja'Kwan (USA) (2000)	H1 lead leg	L	13	13	13	13	13	14	14	15	15	15	18.5	143.5				
	time		5.99	9.66	13.56	17.45	21.44	25.77	30.21	34.87	39.40	44.18		49.47	3 / 6			
	reaction time																	
	interval			3.67	3.90	3.89	3.99	4.33	4.44	4.66	4.53	4.78	5.29			11.46	12.76	13.97
Burrell, Sean (USA) (2002)	velocity		7.51	9.54	8.97	9.00	8.77	8.08	7.88	7.51	7.73	7.32	7.56	8.09		9.16	8.23	7.52
	H1 lead leg	L	21	13	13	13	13	14	14	14	14	14	17	160				
	time		6.05	9.78	13.74	17.72	21.72	26.04	30.41	35.01	39.59	44.26		49.49	2 / 7			
	reaction time																	
Ducos, Clement (FRA) (2001)	interval			3.73	3.96	3.98	4.00	4.32	4.37	4.60	4.58	4.67	5.23			11.67	12.69	13.85
	velocity		7.44	9.38	8.84	8.79	8.75	8.10	8.01	7.61	7.64	7.49	7.65	8.08		9.00	8.27	7.58
	H1 lead leg	R	20	13	14	14	13	14	14	15	15	15	18	165				
	time		6.00	9.66	13.45	17.40	21.40	25.64	30.11	34.71	39.61	44.76		51.17	4 / 8			
Ducos, Clement (FRA) (2001)	reaction time																	
	interval			3.66	3.79	3.95	4.00	4.24	4.47	4.60	4.90	5.15	6.41			11.40	12.71	14.65
	velocity		7.50	9.56	9.23	8.86	8.75	8.25	7.83	7.61	7.14	6.80	6.24	7.82		9.21	8.26	7.17
	H1 lead leg	R	22	13	14	14	14	15	15	15	15	16		153				
Ducos, Clement (FRA) (2001)	time		5.89	9.64										dnf	7 / --			
	reaction time																	
	interval			3.75														
	velocity		7.64	9.33														
Ducos, Clement (FRA) (2001)	H1 lead leg	L	20	13										33				
	time																	
	interval																	
	velocity																	

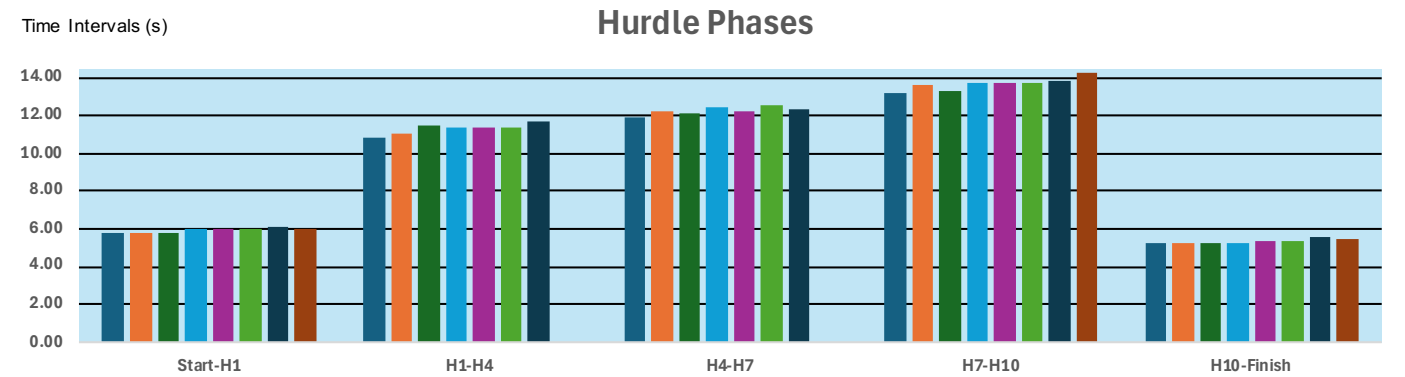
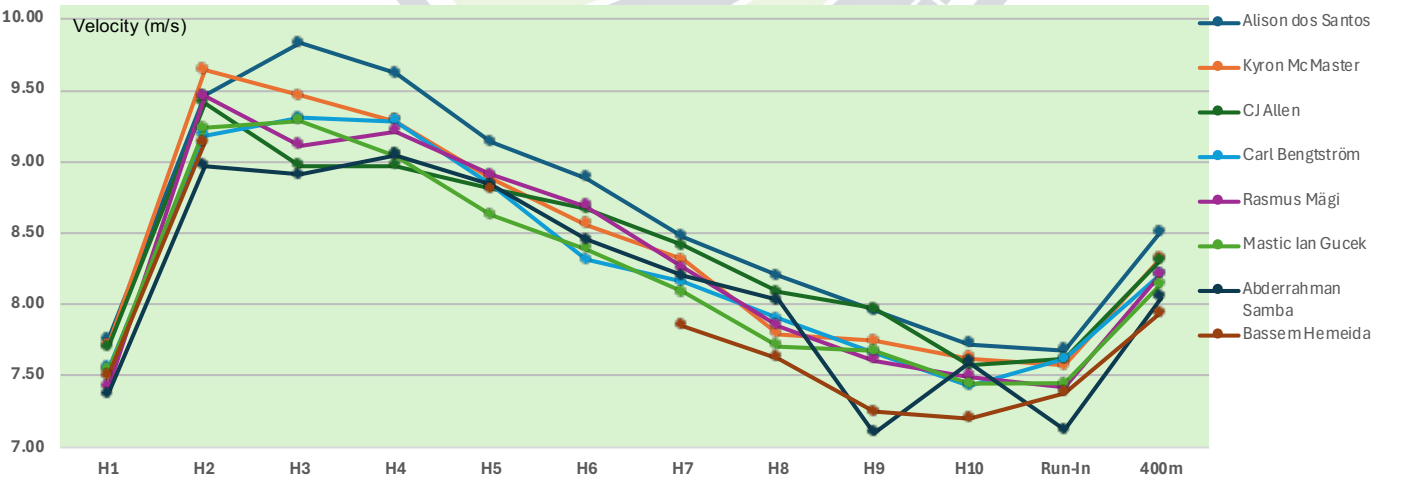


Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: Gun Flash
Source: <https://www.youtube.com/watch?v=Qnc3eAf3Kas&pp=ygUjd29ybGQoaW5kb29vGF0aGxldGlvcyAvMDI0IGh1cmRsZXNM%3D>

Biomechanical Analysis

2024 Bauhaus Galan (Stockholm, SWE) (TV Analysis)

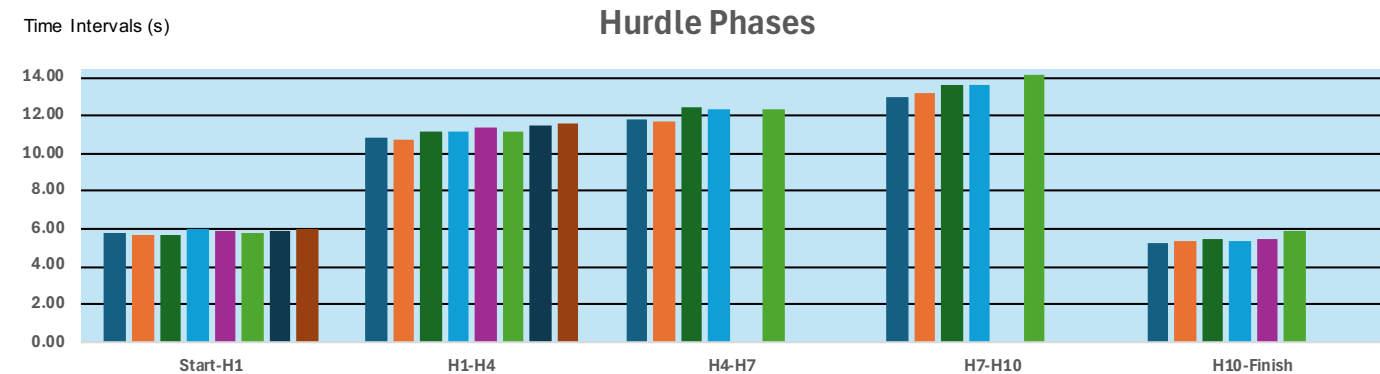
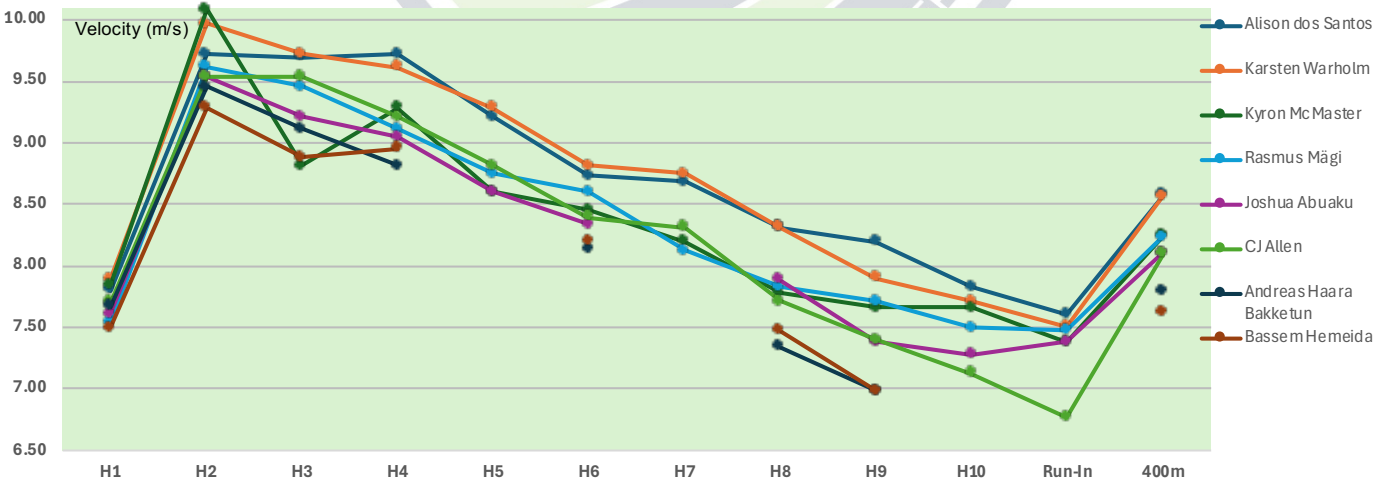
Men's 400m Hurdles		Date 2024.06.02												FINAL				
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10	
dos Santos, Alison (BRA) (2000)	time	5.80	9.50	13.06	16.70	20.53	24.47	28.60	32.87	37.27	41.80		47.01	5 / 1				
	reaction time	0.164	interval	3.70	3.56	3.64	3.83	3.94	4.13	4.27	4.40	4.53	5.21		10.90	11.90	13.20	
			velocity	7.76	9.46	9.83	9.62	9.14	8.88	8.47	8.20	7.95	7.73	7.68	8.51	9.63	8.82	7.95
	H1 lead leg	L	strides	20	13	12	12	12	13	13	13	13	16.2	149.2				
McMaster, Kyron (IVB) (1997)	time	5.83	9.46	13.16	16.93	20.87	24.96	29.17	33.66	38.18	42.77		48.05	7 / 2				
	reaction time	0.157	interval	3.63	3.70	3.77	3.94	4.09	4.21	4.49	4.52	4.59	5.28		11.10	12.24	13.60	
			velocity	7.72	9.64	9.46	9.28	8.88	8.56	8.31	7.80	7.74	7.63	7.58	8.32	9.46	8.58	7.72
	H1 lead leg	L	strides	21	13	13	13	13	13	14	14	14	17.2	158.2				
Allen, CJ (USA) (1995)	time	5.84	9.56	13.46	17.36	21.33	25.37	29.53	33.86	38.25	42.87		48.12	4 / 3				
	reaction time	0.135	interval	3.72	3.90	3.90	3.97	4.04	4.16	4.33	4.39	4.62	5.25		11.52	12.17	13.34	
			velocity	7.71	9.41	8.97	8.97	8.82	8.66	8.41	8.08	7.97	7.58	7.62	8.31	9.11	8.63	7.87
	H1 lead leg	L	strides	13	13	13	13	13	13	14	14	15	17.5	151.5				
Bengtström, Carl (SWE) (2000)	time	5.96	9.77	13.53	17.30	21.26	25.47	29.76	34.19	38.76	43.47		48.72	6 / 4				
	reaction time	0.182	interval	3.81	3.76	3.77	3.96	4.21	4.29	4.43	4.57	4.71	5.25		11.34	12.46	13.71	
			velocity	7.55	9.19	9.31	9.28	8.84	8.31	8.16	7.90	7.66	7.43	7.62	8.21	9.26	8.43	7.66
	H1 lead leg	L	strides	24	14	14	14	14	15	15	15	15	19	174				
Mägi, Rasmus (EST) (1992)	time	6.06	9.76	13.60	17.40	21.33	25.36	29.60	34.06	38.66	43.33		48.72	3 / 5				
	reaction time	0.147	interval	3.70	3.84	3.80	3.93	4.03	4.24	4.46	4.60	4.67	5.39		11.34	12.20	13.73	
			velocity	7.43	9.46	9.11	9.21	8.91	8.68	8.25	7.85	7.61	7.49	7.42	8.21	9.26	8.61	7.65
	H1 lead leg	R	strides	21	13	13	13	13	13	14	14	14	17.7	158.7				
Gucek, Matic Ian (SLO) (2003)	time	5.97	9.76	13.53	17.40	21.46	25.63	29.96	34.50	39.06	43.76		49.13	8 / 6				
	reaction time	0.151	interval	3.79	3.77	3.87	4.06	4.17	4.33	4.54	4.56	4.70	5.37		11.43	12.56	13.80	
			velocity	7.54	9.23	9.28	9.04	8.62	8.39	8.08	7.71	7.68	7.45	7.45	8.14	9.19	8.36	7.61
	H1 lead leg	R	strides	22	14	14	14	14	14	15	15	15	18.5	169.5				
Samba, Abderrahmane (QAT) (1995)	time	6.10	10.00	13.93	17.80	21.76	25.90	30.17	34.53	39.46	44.07		49.69	2 / 7				
	reaction time	0.187	interval	3.90	3.93	3.87	3.96	4.14	4.27	4.36	4.93	4.61	5.62		11.70	12.37	13.90	
			velocity	7.38	8.97	8.91	9.04	8.84	8.45	8.20	8.03	7.10	7.59	7.12	8.05	8.97	8.49	7.55
	H1 lead leg	L	strides	20	13	13	13	13	14	15	15	14	18	161				
Hemeida, Bassem (QAT) (2000)	time	6.00	9.83			21.76		30.68	35.27	40.10	44.96		50.38	1 / 8				
	reaction time	0.154	interval			11.93		8.92	4.59	4.83	4.86	5.42					14.28	
			velocity			8.80		7.85	7.63	7.25	7.20	7.38	7.94				7.35	
	H1 lead leg	R	strides	21	13				14	15	15	18	96					



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 24fps
Timing From: First Movement
Source: https://www.youtube.com/watch?v=g_bM2GefB-A&pp=ygUJhc3RvY2lob2xtIGRvYWV1bmQqbGVhZ3VlIDlwMiQqbmlj

2024 Bislett Games (Oslo, NOR) (TV Analysis)

Men's 400m Hurdles		Date 2024.05.30										FINAL							
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10	
dos Santos, Alison (BRA) (2000)	time		5.77	9.37	12.98	16.58	20.38	24.39	28.42	32.63	36.90	41.37		46.63	5 / 1				
	reaction time	0.182	interval	3.60	3.61	3.60	3.80	4.01	4.03	4.21	4.27	4.47	5.26				10.81	11.84	12.95
		velocity	7.80	9.72	9.70	9.72	9.21	8.73	8.68	8.31	8.20	7.83	7.60	8.58			9.71	8.87	8.11
	H1 lead leg	L	strides	20	13	12	12	12	12	13	13	13	16.5	149.5					
Warholm, Karsten (NOR) (1996)	time		5.70	9.21	12.81	16.45	20.22	24.19	28.19	32.40	36.83	41.37		46.70	7 / 2				
	reaction time	0.157	interval	3.51	3.60	3.64	3.77	3.97	4.00	4.21	4.43	4.54	5.33				10.75	11.74	13.18
		velocity	7.89	9.97	9.72	9.62	9.28	8.82	8.75	8.31	7.90	7.71	7.50	8.57			9.77	8.94	7.97
	H1 lead leg	L	strides	20	13	13	13	13	13	13	14	14	18	157					
McMaster, Kyrn (IVB) (1997)	time		5.74	9.21	13.18	16.95	21.02	25.16	29.43	33.93	38.50	43.07		48.49	6 / 3				
	reaction time	0.145	interval	3.47	3.97	3.77	4.07	4.14	4.27	4.50	4.57	4.57	5.42				11.21	12.48	13.64
		velocity	7.84	10.09	8.82	9.28	8.60	8.45	8.20	7.78	7.66	7.66	7.38	8.25			9.37	8.41	7.70
	H1 lead leg	L	strides	21	13	13	13	13	13	14	14	14	141						
Mägi, Rasmus (EST) (1992)	time		5.97	9.61	13.31	17.15	21.15	25.22	29.53	34.00	38.54	43.21		48.56	8 / 4				
	reaction time	0.213	interval	3.64	3.70	3.84	4.00	4.07	4.31	4.47	4.54	4.67	5.35				11.18	12.38	13.68
		velocity	7.54	9.62	9.46	9.11	8.75	8.60	8.12	7.83	7.71	7.49	7.48	8.24			9.39	8.48	7.68
	H1 lead leg	R	strides	21	13	13	13	13	13	14	14	14	141						
Abuaku, Joshua (GER) (1996)	time		5.91	9.58	13.38	17.25	21.32	25.52		34.40	39.14	43.95		49.37	3 / 5				
	reaction time	0.173	interval	3.67	3.80	3.87	4.07	4.20		8.88	4.74	4.81	5.42				11.34		
		velocity	7.61	9.54	9.21	9.04	8.60	8.33		7.88	7.38	7.28	7.38	8.10			9.26		
	H1 lead leg	L	strides	20	13	13	13	13	13		15	15		115					
Allen, CJ (USA) (1995)	time		5.84	9.51	13.18	16.98	20.95	25.12	29.33	33.87	38.60	43.51		49.42	4 / 6				
	reaction time	0.154	interval	3.67	3.67	3.80	3.97	4.17	4.21	4.54	4.73	4.91	5.91				11.14	12.35	14.18
		velocity	7.71	9.54	9.54	9.21	8.82	8.39	8.31	7.71	7.40	7.13	6.77	8.09			9.43	8.50	7.40
	H1 lead leg	L	strides	21	13	13	13	13	14	14	15	15	15	146					
Bakketun, Andreas Haara (NOR) (200)	time		5.87	9.57	13.41	17.38		25.99		35.53	40.54			51.32	1 / 7				
	reaction time	0.174	interval	3.70	3.84	3.97		8.61		9.54	5.01						11.51		
		velocity	7.67	9.46	9.11	8.82		8.13		7.34	6.99			7.79			9.12		
	H1 lead leg	R	strides	21	14	14	14				15			78					
Hemeida, Bassem (QAT) (2000)	time		6.00	9.77	13.71	17.62		26.16		35.53	40.54			52.41	2 / 8				
	reaction time	0.171	interval	3.77	3.94	3.91		8.54		9.37	5.01						11.62		
		velocity	7.50	9.28	8.88	8.95		8.20		7.47	6.99			7.63			9.04		
	H1 lead leg	R	strides	21	13	13	14				15			76					

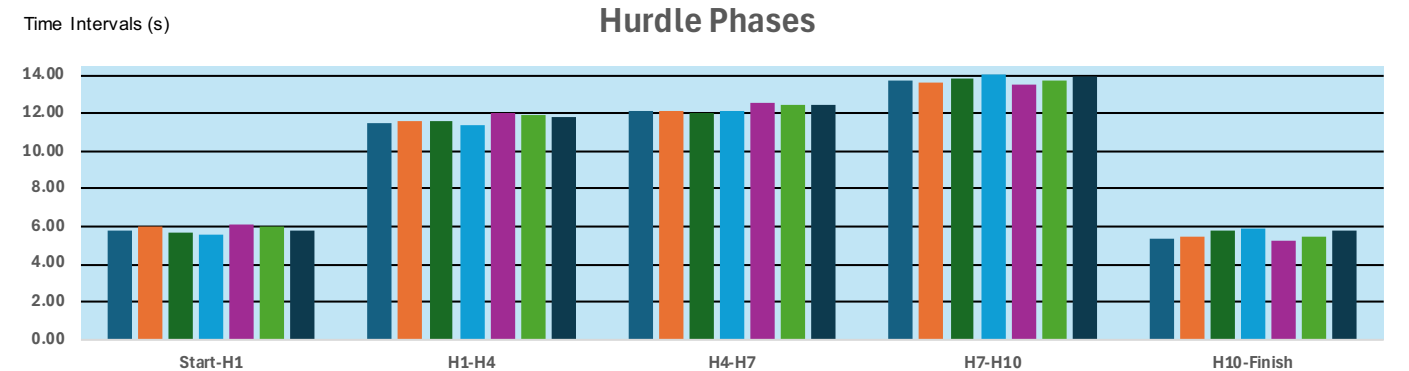
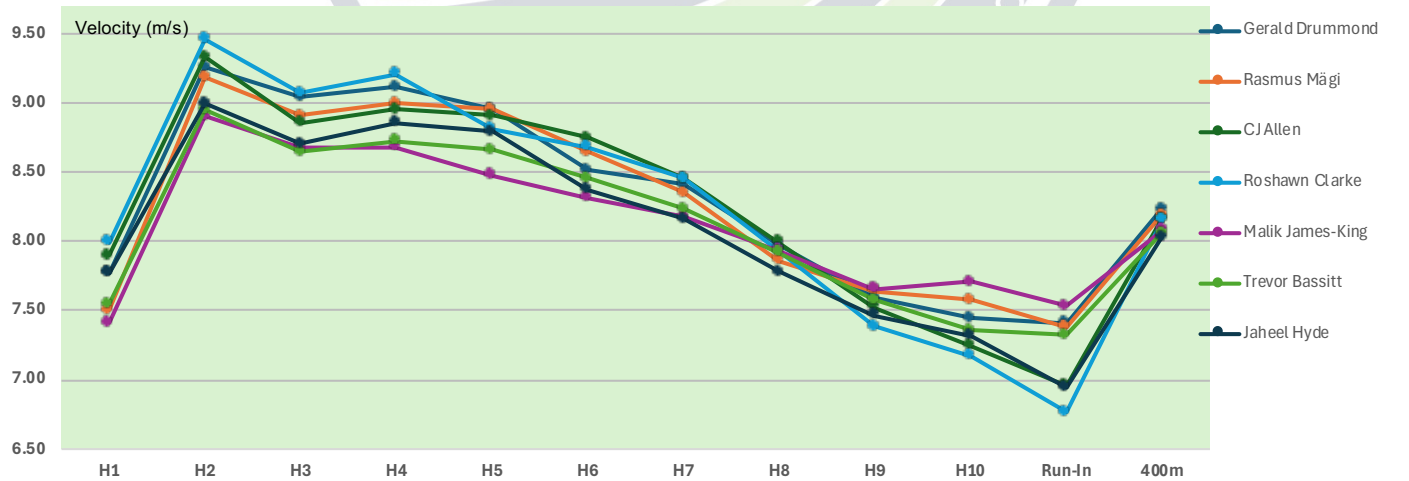


Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 24fps
Timing From: First Movement
Source: https://www.youtube.com/watch?v=AQUHZwF_T94

Biomechanical Analysis

2024 Prefontaine Classic (Eugene, OR)

Men's 400m Hurdles			Date 2024.05.25										FINAL					
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Drummond, Gerald (CRC) (1994)	time		5.79	9.57	13.44	17.28	21.19	25.30	29.46	33.85	38.46	43.16		48.56	8 / 1	11.49	12.18	13.70
	reaction time	0.211											5.40					
	interval		3.78	3.87	3.84	3.91	4.11	4.16	4.39	4.61	4.70	7.41	8.24					
	velocity	7.77	9.26	9.04	9.11	8.95	8.52	8.41	7.97	7.59	7.45	7.41	8.24					
Mägi, Rasmus (EST) (1992)	time		6.00	9.81	13.74	17.63	21.54	25.59	29.78	34.23	38.81	43.43		48.85	7 / 2	11.63	12.15	13.65
	reaction time	0.209											5.42					
	interval		3.81	3.93	3.89	3.91	4.05	4.19	4.45	4.58	4.62	7.38	8.19					
	velocity	7.50	9.19	8.91	9.00	8.95	8.64	8.35	7.87	7.64	7.58	7.38	8.19					
Allen, CJ (USA) (1995)	time		5.70	9.45	13.40	17.31	21.24	25.24	29.38	33.76	38.41	43.24		48.99	6 / 3	11.61	12.07	13.86
	reaction time	0.114											5.75					
	interval		3.75	3.95	3.91	3.93	4.00	4.14	4.38	4.65	4.83	6.96	8.16					
	velocity	7.89	9.33	8.86	8.95	8.91	8.75	8.45	7.99	7.53	7.25	6.96	8.16					
Clarke, Roshawn (JAM) (2004)	time		5.63	9.33	13.19	16.99	20.96	24.99	29.13	33.54	38.28	43.16		49.07	5 / 4	11.36	12.14	14.03
	reaction time	0.186											5.91					
	interval		3.70	3.86	3.80	3.97	4.03	4.14	4.41	4.74	4.88	6.77	8.15					
	velocity	7.99	9.46	9.07	9.21	8.82	8.68	8.45	7.94	7.38	7.17	6.77	8.15					
James-King, Malik (JAM) (1999)	time		6.07	10.00	14.03	18.06	22.19	26.40	30.68	35.09	39.66	44.20		49.51	3 / 5	11.99	12.62	13.52
	reaction time	0.144											5.31					
	interval		3.93	4.03	4.03	4.13	4.21	4.28	4.41	4.57	4.54	7.53	8.08					
	velocity	7.41	8.91	8.68	8.68	8.47	8.31	8.18	7.94	7.66	7.71	7.53	8.08					
Bassitt, Trevor (USA) (1998)	time		5.96	9.87	13.92	17.93	21.97	26.11	30.36	34.78	39.40	44.16		49.62	4 / 6	11.97	12.43	13.80
	reaction time	0.187											5.46					
	interval		3.91	4.05	4.01	4.04	4.14	4.25	4.42	4.62	4.76	7.33	8.06					
	velocity	7.55	8.95	8.64	8.73	8.66	8.45	8.24	7.92	7.58	7.35	7.33	8.06					
Hyde, Jaheel (JAM) (1997)	time		5.79	9.68	13.70	17.65	21.63	25.81	30.10	34.60	39.29	44.07		49.83	9 / 7	11.86	12.45	13.97
	reaction time	0.188											5.76					
	interval		3.89	4.02	3.95	3.98	4.18	4.29	4.50	4.69	4.78	6.94	8.03					
	velocity	7.77	9.00	8.71	8.86	8.79	8.37	8.16	7.78	7.46	7.32	6.94	8.03					
H1 lead leg					14	14	14	14	14	14	15	15		114		8.85	8.43	7.52



Source: Omega Timing (Sat 25 May 2024 13:16) - diamond league race analysis
<https://www.omegatiming.com/File/000204080103040101FFFFFFFFFFFF6D.pdf>
Video: <https://www.youtube.com/watch?v=Kult6B4fyIU>

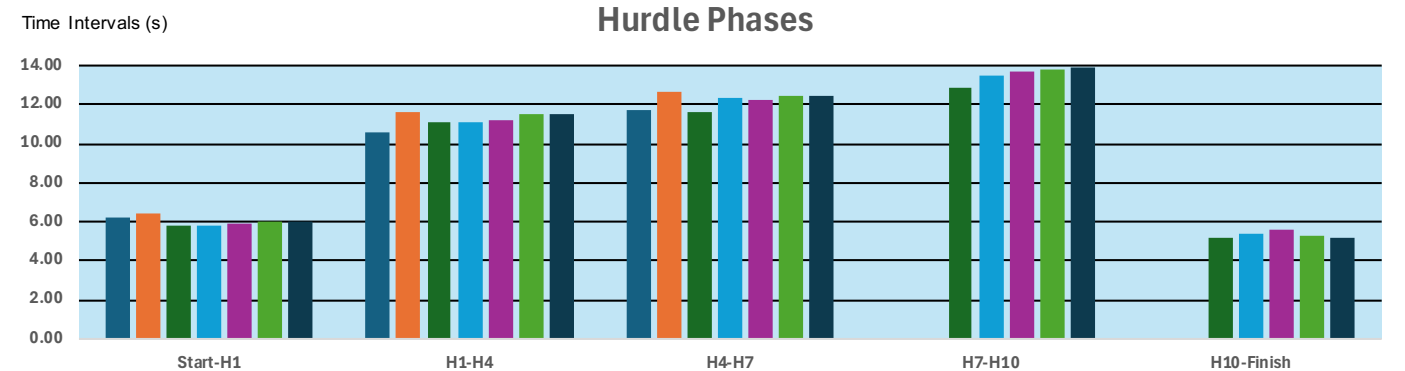
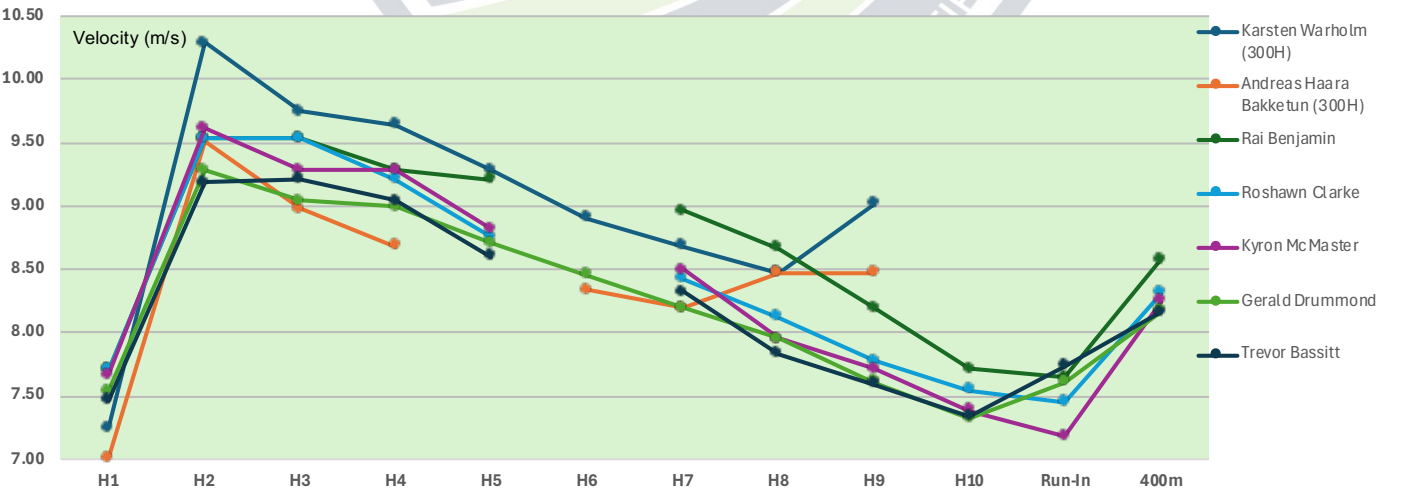
Biomechanical Analysis

2024 Trond Mohn Games (Bergen, NOR) (300m Hurdles) (TV Analysis)

Men's 400m Hurdles											FINAL			
Date 2024.05.22											Lane / Place			
		H1	H2	H3	H4	H5	H6	H7	Run-In	300m				
Warholm, Karsten (NOR) (1996)	time	6.21	9.61	13.20	16.83	20.60	24.53	28.56		33.28	7 / 1			
	reaction time													
	interval		3.40	3.59	3.63	3.77	3.93	4.03	4.72					
	velocity	7.25	10.29	9.75	9.64	9.28	8.91	8.68	8.47	9.01				
Bakketun, Andreas Haara (NOR) (200)	H1 lead leg	L	22	13	13	13	13	13	17	117				
	time	6.42	10.10	14.00	18.03		26.43	30.70		35.42	6 / 2			
	reaction time			3.68	3.90	4.03	8.40	4.27	4.72	PB				
	interval	7.01	9.51	8.97	8.68		8.33	8.20	8.47					
	H1 lead leg	R	24	13	14	14		15	17.7	97.7				
	velocity													
	strides													

2024 USATF LA Grand Prix (Los Angeles, CA) (TV Analysis)

Men's 400m Hurdles													Date 2024.05.18				FINAL			
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10		
Benjamin, Rai (USA) (1997)	time		5.84	9.51	13.18	16.95	20.75		28.56	32.60	36.87	41.41		46.64	5 / 1					
	reaction time	0.207															11.11	11.61	12.85	
	interval			3.67	3.67	3.77	3.80		7.81	4.04	4.27	4.54	5.23				9.45	9.04	8.17	
	velocity		7.71	9.54	9.54	9.28	9.21		8.96	8.66	8.20	7.71	7.65	8.58						
Clarke, Roshawn (JAM) (2004)	H1 lead leg	R	20	13	13	13	13			13	13	13	17	128						
	time		5.84	9.51	13.18	16.98	20.98		29.29	33.60	38.10	42.74		48.11	6 / 2					
	reaction time	0.245															11.14	12.31	13.45	
	interval			3.67	3.67	3.80	4.00		8.31	4.31	4.50	4.64	5.37				9.43	8.53	7.81	
velocity		7.71	9.54	9.54	9.21	8.75		8.42	8.12	7.78	7.54	7.45	8.31							
McMaster, Kyron (IVB) (1997)	H1 lead leg	R	21	13	13	13	14			14	15	15	18.2	136.2						
	time		5.87	9.51	13.28	17.05	21.02		29.26	33.66	38.20	42.94		48.51	7 / 3					
	reaction time	0.220															11.18	12.21	13.68	
	interval			3.64	3.77	3.77	3.97		8.24	4.40	4.54	4.74	5.57				9.39	8.60	7.68	
velocity		7.67	9.62	9.28	9.28	8.82		8.50	7.95	7.71	7.38	7.18	8.25							
Drummond, Gerald (CRC) (1994)	H1 lead leg	L	21	13	13	13	13			14	14	14	17.2	132.2						
	time		5.97	9.74	13.61	17.50	21.52	25.66	29.93	34.33	38.93	43.71		48.97	1 / 4					
	reaction time	0.245															11.53	12.43	13.78	
	interval			3.77	3.87	3.89	4.02	4.14	4.27	4.40	4.60	4.78	5.26				9.11	8.45	7.62	
velocity		7.54	9.28	9.04	9.00	8.71	8.45	8.20	7.95	7.61	7.32	7.60	8.17							
Bassitt, Trevor (USA) (1998)	H1 lead leg	L	21	14	14	14	14	14	14	15	15	15	18	168						
	time		6.03	9.84	13.64	17.51	21.58		29.99	34.46	39.07	43.84		49.01	8 / 5					
	reaction time	0.218															11.48	12.48	13.85	
	interval			3.81	3.80	3.87	4.07		8.41	4.47	4.61	4.77	5.17				9.15	8.41	7.58	
velocity		7.46	9.19	9.21	9.04	8.60		8.32	7.83	7.59	7.34	7.74	8.16							
	H1 lead leg	R	21	13	13	13	13			13	14	14	16.5	130.5						
	time																			
	reaction time																			
	interval																			



Trond Mohn Games
Evaluated with: ObjectusVideo
Quality & Frame Rate: 1280 x 720 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=KpNvRQPHTQg>

USATF LA Grand Prix
Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: Gun Flash
Source: <https://www.youtube.com/watch?v=z8lrmw9tQPg>

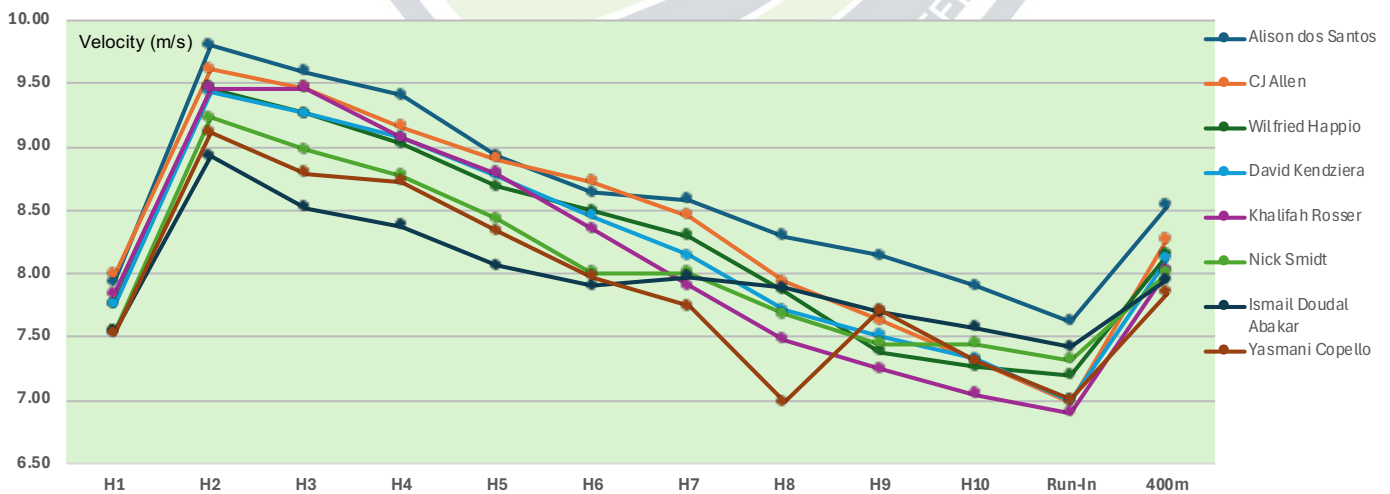
2024 Seashore Doha Meeting (Doha, QAT)

Men's 400m Hurdles

Date 2024.05.10

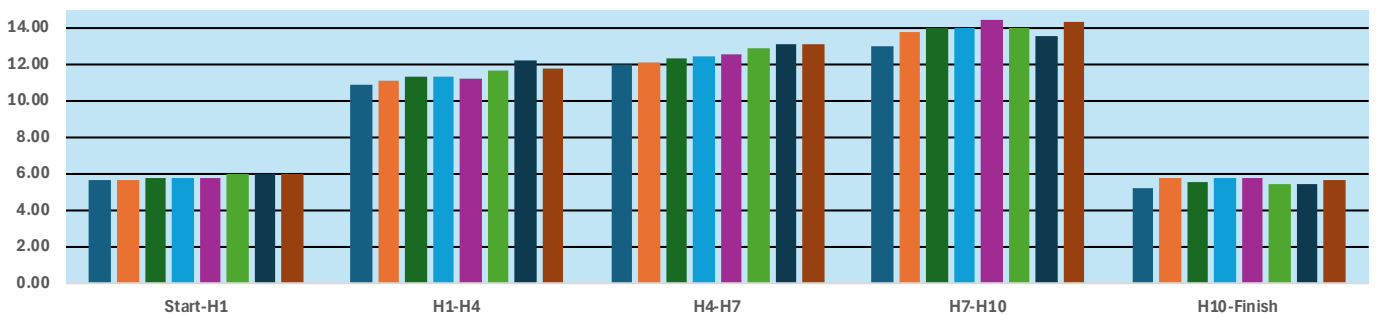
FINAL

				H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
dos Santos, Alison (BRA) (2000)	time			5.67	9.24	12.89	16.61	20.53	24.58	28.66	32.88	37.18	41.61		46.86	5 / 1			
	reaction time	0.148	interval		3.57	3.65	3.72	3.92	4.05	4.08	4.22	4.30	4.43	5.25			10.94	12.05	12.95
			velocity	7.94	9.80	9.59	9.41	8.93	8.64	8.58	8.29	8.14	7.90	7.62	8.54		9.60	8.71	8.11
	H1 lead leg	L	strides	20	13	12	12	13	13	13	13	13	13	16.2	151.2				
Allen, CJ (USA) (1995)	time			5.63	9.27	12.97	16.79	20.72	24.73	28.87	33.28	37.87	42.66		48.39	6 / 2			
	reaction time	0.139	interval		3.64	3.70	3.82	3.93	4.01	4.14	4.41	4.59	4.79	5.73			11.16	12.08	13.79
			velocity	7.99	9.62	9.46	9.16	8.91	8.73	8.45	7.94	7.63	7.31	6.98	8.27		9.41	8.69	7.61
	H1 lead leg	L	strides	20	13	13	13	13	13	13	14	14	15	17.5	158.5				
Happio, Wilfried (FRA) (1998)	time			5.80	9.50	13.28	17.16	21.19	25.31	29.53	33.98	38.72	43.54		49.10	4 / 3			
	reaction time	0.151	interval		3.70	3.78	3.88	4.03	4.12	4.22	4.45	4.74	4.82	5.56			11.36	12.37	14.01
			velocity	7.76	9.46	9.26	9.02	8.68	8.50	8.29	7.87	7.38	7.26	7.19	8.15		9.24	8.49	7.49
	H1 lead leg	L	strides	20	13	13	13	13	13	13	15	15	15	17.7	132.7				
Kendziera, David (USA) (1994)	time			5.81	9.52	13.30	17.16	21.15	25.29	29.59	34.13	38.79	43.57		49.29	8 / 4			
	reaction time	0.165	interval		3.71	3.78	3.86	3.99	4.14	4.30	4.54	4.66	4.78	5.72			11.35	12.43	13.98
			velocity	7.75	9.43	9.26	9.07	8.77	8.45	8.14	7.71	7.51	7.32	6.99	8.12		9.25	8.45	7.51
	H1 lead leg	R	strides	20	13	13	13	13	13	13	14	14	14	18	158				
Rosser, Khalifah (USA) (1995)	time			5.74	9.44	13.14	17.00	20.98	25.17	29.60	34.28	39.11	44.08		49.88	7 / 5			
	reaction time	0.153	interval		3.70	3.70	3.86	3.98	4.19	4.43	4.68	4.83	4.97	5.80			11.26	12.60	14.48
			velocity	7.84	9.46	9.46	9.07	8.79	8.35	7.90	7.48	7.25	7.04	6.90	8.02		9.33	8.33	7.25
	H1 lead leg	R	strides	20	13	13	13	13	13	13	15	15	15	17.7	132.7				
Smidt, Nick (NED) (1997)	time			5.97	9.76	13.66	17.65	21.80	26.17	30.54	35.10	39.80	44.50		49.97	1 / 6			
	reaction time	0.194	interval		3.79	3.90	3.99	4.15	4.37	4.37	4.56	4.70	4.70	5.47			11.68	12.89	13.96
			velocity	7.54	9.23	8.97	8.77	8.43	8.01	8.01	7.68	7.45	7.45	7.31	8.00		8.99	8.15	7.52
	H1 lead leg	L	strides	20	13	13	13	13	14			15	15	18	134				
Abakar, Ismail Doudai (QAT) (2004)	time			5.97	9.89	14.00	18.18	22.52	26.95	31.34	35.78	40.33	44.95		50.34	3 / 7			
	reaction time	0.167	interval		3.92	4.11	4.18	4.34	4.43	4.39	4.44	4.55	4.62	5.39			12.21	13.16	13.61
			velocity	7.54	8.93	8.52	8.37	8.06	7.90	7.97	7.88	7.69	7.58	7.42	7.95		8.60	7.98	7.71
	H1 lead leg	L	strides	20	13	13	13	13	13	13	13	13	13	16.5	140.5				
Copello, Yasmani (TUR) (1987)	time			5.98	9.82	13.80	17.81	22.01	26.40	30.92	35.93	40.47	45.26		50.97	2 / 8			
	reaction time	0.222	interval		3.84	3.98	4.01	4.20	4.39	4.52	5.01	4.54	4.79	5.71			11.83	13.11	14.34
			velocity	7.53	9.11	8.79	8.73	8.33	7.97	7.74	6.99	7.71	7.31	7.01	7.85		8.88	8.01	7.32
	H1 lead leg	R	strides	20	13	13	13	13	13	13	15	15	15	18	133				



Time Intervals (s)

Hurdle Phases



Source: Omega Timing (Fri 10 May 2024 20:42) - diamond league race analysis
<https://www.omegatiming.com/File/0002040601010D0101FFFFFFFFFFFF6D.pdf>

Video: <https://www.youtube.com/watch?v=ngkVbyr6G0g>

Women's 400m Hurdles

2024 Top 10 Times - Women's 400m Hurdles

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10
McLaughlin-Levrone, Sydney (USA)																	
FINAL - 2024 Olympic Games (Paris, FRA)																	
date	8-Aug	time	5.91	9.79	13.81	17.86	22.02	26.29	30.72	35.24	39.89	44.71	50.37	5 / 1			
reaction time	0.139	interval		3.88	4.02	4.05	4.16	4.27	4.43	4.52	4.65	4.82	5.66			11.95	12.86
		velocity	7.61	9.02	8.71	8.64	8.41	8.20	7.90	7.74	7.53	7.26	7.07			8.79	8.16
H1 lead leg	R	strides	22	14	14	14	14	14	14	15	15	15	19			7.51	
McLaughlin-Levrone, Sydney (USA)																	
FINAL - 2024 USA Olympic Trials (Eugene, OR)																	
date	30-Jun	time	6.08	9.99	14.05	18.19	22.45	26.89	31.44	36.12	40.79	45.44	50.65	5 / 1			
reaction time		interval		3.91	4.06	4.14	4.26	4.44	4.55	4.68	4.67	4.65	5.21			12.11	13.25
		velocity	7.40	8.95	8.62	8.45	8.22	7.88	7.69	7.48	7.49	7.53	7.68			8.67	7.92
H1 lead leg	R	strides	22	14	14	14	14	15	15	15	15	15	18			7.50	
Boi, Femke (NED) (2000)																	
A FINAL - 2024 Resisprint International (La Chaux-de-Fonds, SUI) (TV Analysis)																	
date	14-Jul	time	6.16	10.09	14.16	18.20	22.40	26.68	31.10	35.77	40.50	45.33	50.95	4 / 1			
reaction time		interval		3.93	4.07	4.04	4.20	4.28	4.42	4.67	4.73	4.83	5.62			12.04	12.90
		velocity	7.31	8.91	8.60	8.66	8.33	8.18	7.92	7.49	7.40	7.25	7.12			8.72	8.14
H1 lead leg	L	strides	22	14	14	14	14	14	14	15	15	15	19			7.38	
Boi, Femke (NED) (2000)																	
FINAL - 2024 London Athletics Meet (London, GBR)																	
date	20-Jun	time	6.22	10.14	14.10	18.13	22.32	26.71	31.21	35.88	40.70	45.55	51.30	6 / 1			
reaction time	0.175	interval		3.92	3.96	4.03	4.19	4.39	4.50	4.67	4.82	4.85	5.75			11.91	13.08
		velocity	7.23	8.93	8.84	8.68	8.35	7.97	7.78	7.49	7.26	7.22	6.96			8.82	8.03
H1 lead leg	L	strides	22	14	14	14	14	14	14	15	15	15	19			7.32	
Cockrell, Anna (USA) (1997)																	
FINAL - 2024 Olympic Games (Paris, FRA)																	
date	8-Aug	time	6.10	9.98	13.94	18.09	22.40	26.72	31.28	35.96	40.84	45.84	51.87	7 / 2			
reaction time	0.158	interval		3.88	3.96	4.15	4.31	4.32	4.56	4.68	4.88	5.00	6.03			11.99	13.19
		velocity	7.38	9.02	8.84	8.43	8.12	8.10	7.68	7.48	7.17	7.00	6.63			8.76	7.96
H1 lead leg	R	strides	22	13	14	14	14	14	14	15	15	15	19			7.21	
McLaughlin-Levrone, Sydney (USA)																	
Semi-Final 2 - 2024 Olympic Games (Paris, FRA)																	
date	6-Aug	time	6.03	10.05	14.28	18.62	22.97	27.38	31.90	36.62	41.54	46.49	52.13	7 / 1			
reaction time	0.154	interval		4.02	4.23	4.34	4.35	4.41	4.52	4.72	4.92	4.95	5.64			12.59	13.28
		velocity	7.46	8.71	8.27	8.06	8.05	7.94	7.74	7.42	7.11	7.07	7.09			8.34	7.91
H1 lead leg	R	strides	22	14	15	15	14	14	14	15	16	15	18			7.20	
Boi, Femke (NED) (2000)																	
FINAL - 2024 Kamila Skolimowska Memorial (Silesia, POL)																	
date	25-Aug	time	6.28	10.30	14.38	18.63	23.00	27.47	32.14	36.93	41.81	46.67	52.13	6 / 1			
reaction time	0.158	interval		4.02	4.08	4.25	4.37	4.47	4.67	4.79	4.88	4.86	5.46			12.35	13.51
		velocity	7.17	8.71	8.58	8.24	8.01	7.83	7.49	7.31	7.17	7.20	7.33			8.50	7.77
H1 lead leg	L	strides	22	14	14	14	14	14	14	15	15	15	18.2			7.23	
Boi, Femke (NED) (2000)																	
FINAL - 2024 Olympic Games (Paris, FRA)																	
date	8-Aug	time	6.13	10.00	13.93	17.99	22.16	26.48	31.00	35.74	40.70	45.90	52.15	6 / 3			
reaction time	0.165	interval		3.87	3.93	4.06	4.17	4.32	4.52	4.74	4.96	5.20	6.25			11.86	13.01
		velocity	7.34	9.04	8.91	8.62	8.39	8.10	7.74	7.38	7.06	6.73	6.40			8.85	8.07
H1 lead leg	L	strides	22	14	14	14	14	14	14	15	15	16	19			7.05	
Boi, Femke (NED) (2000)																	
FINAL - 2024 Athletissima (Lausanne, SUI)																	
date	22-Aug	time	6.25	10.30	14.42	18.61	22.92	27.40	31.98	36.72	41.55	46.53	52.25	5 / 1			
reaction time	0.182	interval		4.05	4.12	4.19	4.31	4.48	4.58	4.74	4.83	4.98	5.72			12.36	13.37
		velocity	7.20	8.64	8.50	8.35	8.12	7.81	7.64	7.38	7.25	7.03	6.99			8.50	7.85
H1 lead leg	L	strides	22	14	14	14	14	14	14	15	15	15	18.7			7.22	
Jones, Jasmine (USA) (2001)																	
FINAL - 2024 Olympic Games (Paris, FRA)																	
date	8-Aug	time	6.02	9.99	14.03	18.17	22.45	26.86	31.51	36.21	41.16	46.31	52.29	9 / 4			
reaction time	0.157	interval		3.97	4.04	4.14	4.28	4.41	4.65	4.70	4.95	5.15	5.98			12.15	13.34
		velocity	7.48	8.82	8.66	8.45	8.18	7.94	7.53	7.45	7.07	6.80	6.69			8.64	7.87
H1 lead leg	R	strides	22	14	14	14	14	14	15	15	15	16	18.7			7.09	
McLaughlin-Levrone, Sydney (USA)																	
Semi-Final 1 - 2024 USA Olympic Trials (Eugene, OR)																	
date	29-Jun	time	6.16	10.13	14.20	18.40	22.70	27.10	31.75	36.52	41.53	46.55	52.48	6 / 1			
reaction time		interval		3.97	4.07	4.20	4.30	4.40	4.65	4.77	5.01	5.02	5.93			12.24	13.35
		velocity	7.31	8.82	8.60	8.33	8.14	7.95	7.53	7.34	6.99	6.97	6.75			8.58	7.87
H1 lead leg	R	strides	22	14	14	14	14	15	15	15	15	16	18			7.09	
Boi, Femke (NED) (2000)																	
FINAL - 2024 European Championships (Roma, ITA)																	
date	11-Jun	time	6.40	10.38	14.48	18.66	22.98	27.43	32.08	36.92	41.91	46.91	52.49	6 / 1			
reaction time	0.180	interval		3.98	4.10	4.18	4.32	4.45	4.65	4.84	4.99	5.00	5.58			12.26	13.42
		velocity	7.03	8.79	8.54	8.37	8.10	7.87	7.53	7.23	7.01	7.00	7.17			8.56	7.82
H1 lead leg	L	strides	22	14	14	14	14	14	14	15	15	15	19			7.08	

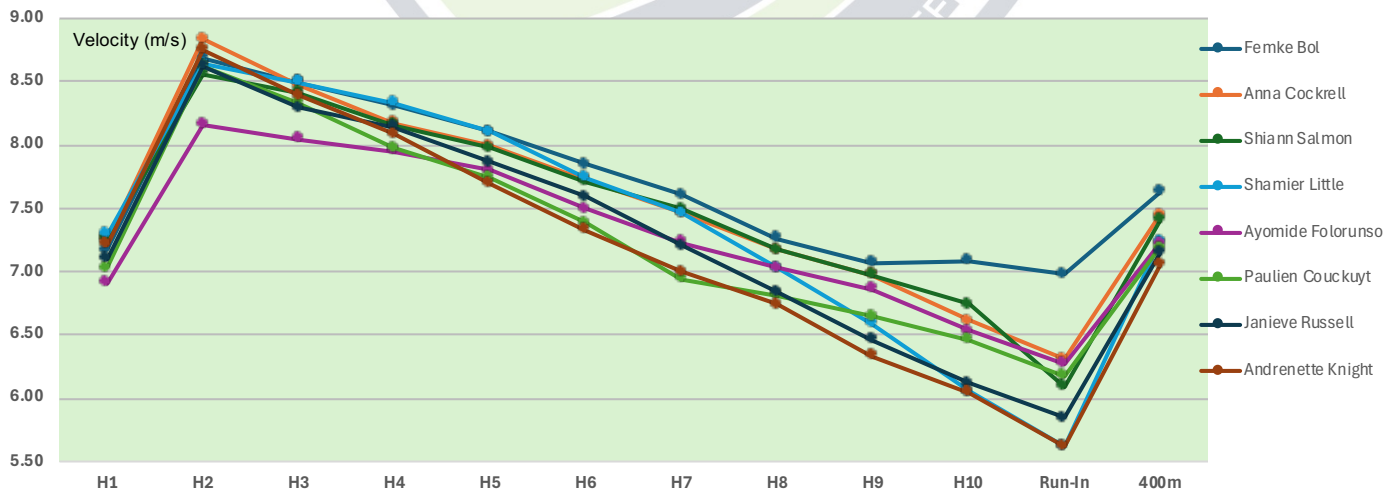
2024 Memorial van damme (Brussels, BEL)

Women's 400m Hurdles

Date 2024.09.14

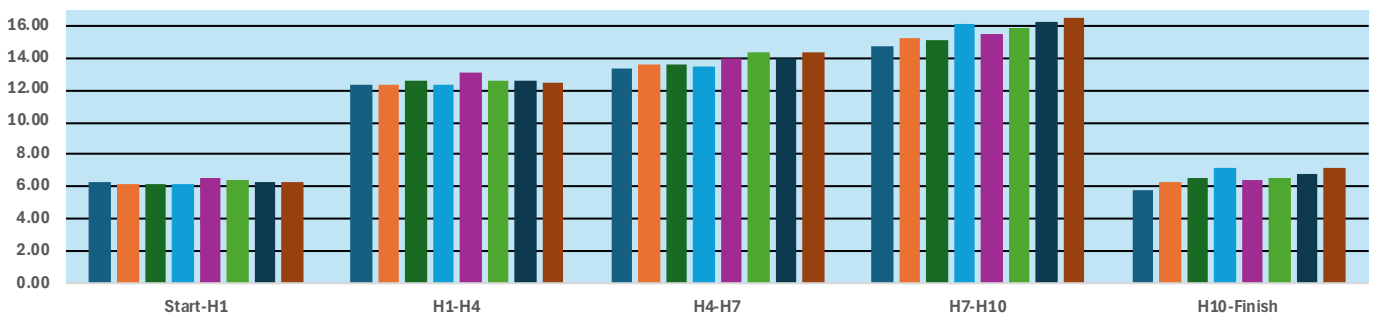
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Bol, Femke (NED) (2000)	time		6.27	10.30	14.42	18.63	22.95	27.41	32.01	36.83	41.78	46.72		52.45	5 / 1			
	reaction time	0.213																
	interval		7.18	4.03	4.12	4.21	4.32	4.46	4.60	4.82	4.95	4.94	5.73			12.36	13.38	14.71
	velocity		7.18	8.68	8.50	8.31	8.10	7.85	7.61	7.26	7.07	7.09	6.98	7.63		8.50	7.85	7.14
Cockrell, Anna (USA) (1997)	time		6.21	10.17	14.30	18.58	22.96	27.49	32.18	37.06	42.08	47.37		53.71	4 / 2			
	reaction time	0.168																
	interval		7.25	3.96	4.13	4.28	4.38	4.53	4.69	4.88	5.02	5.29	6.34			12.37	13.60	15.19
	velocity		7.25	8.84	8.47	8.18	7.99	7.73	7.46	7.17	6.97	6.62	6.31	7.45		8.49	7.72	6.91
Salmon, Shiann (JAM) (1999)	time		6.19	10.28	14.44	18.73	23.12	27.66	32.33	37.21	42.23	47.42		53.99	7 / 3			
	reaction time	0.197																
	interval		7.27	4.09	4.16	4.29	4.39	4.54	4.67	4.88	5.02	5.19	6.57			12.54	13.60	15.09
	velocity		7.27	8.56	8.41	8.16	7.97	7.71	7.49	7.17	6.97	6.74	6.09	7.41		8.37	7.72	6.96
Little, Shamier (USA) (1995)	time		6.17	10.22	14.34	18.54	22.86	27.38	32.07	37.05	42.36	48.14		55.26	6 / 4			
	reaction time	0.199																
	interval		7.29	4.05	4.12	4.20	4.32	4.52	4.69	4.98	5.31	5.78	7.12			12.37	13.53	16.07
	velocity		7.29	8.64	8.50	8.33	8.10	7.74	7.46	7.03	6.59	6.06	5.62	7.24		8.49	7.76	6.53
Folorunso, Ayomide (ITA) (1996)	time		6.51	10.80	15.15	19.55	24.04	28.71	33.55	38.53	43.63	48.99		55.37	8 / 5			
	reaction time	0.204																
	interval		6.91	4.29	4.35	4.40	4.49	4.67	4.84	4.98	5.10	5.36	6.38			13.04	14.00	15.44
	velocity		6.91	8.16	8.05	7.95	7.80	7.49	7.23	7.03	6.86	6.53	6.27	7.22		8.05	7.50	6.80
Couckuyt, Paulien (BEL) (1997)	time		6.40	10.46	14.66	19.05	23.57	28.31	33.35	38.49	43.76	49.18		55.66	1 / 6			
	reaction time	0.172																
	interval		7.03	4.06	4.20	4.39	4.52	4.74	5.04	5.14	5.27	5.42	6.48			12.65	14.30	15.83
	velocity		7.03	8.62	8.33	7.97	7.74	7.38	6.94	6.81	6.64	6.46	6.17	7.19		8.30	7.34	6.63
Russell, Janieve (JAM) (1993)	time		6.34	10.40	14.62	18.92	23.37	27.98	32.84	37.96	43.38	49.10		55.94	3 / 7			
	reaction time	0.174																
	interval		7.10	4.06	4.22	4.30	4.45	4.61	4.86	5.12	5.42	5.72	6.84			12.58	13.92	16.26
	velocity		7.10	8.62	8.29	8.14	7.87	7.59	7.20	6.84	6.46	6.12	5.85	7.15		8.35	7.54	6.46
Knight, Andrenette (JAM) (1996)	time		6.24	10.24	14.41	18.74	23.29	28.07	33.07	38.26	43.79	49.58		56.70	2 / 8			
	reaction time	0.165																
	interval		7.21	4.00	4.17	4.33	4.55	4.78	5.00	5.19	5.53	5.79	7.12			12.50	14.33	16.51
	velocity		7.21	8.75	8.39	8.08	7.69	7.32	7.00	6.74	6.33	6.04	5.62	7.05		8.40	7.33	6.36



Time Intervals (s)

Hurdle Phases



Source: Omega Timing (Sat 14 Sep 2024 21:55) - diamond league race analysis
<https://www.omegatiming.com/File/0002041201011A0101FFFFFFFFFFFF6D.pdf>

Video: <https://www.youtube.com/watch?v=CL8-iUBRYIq>

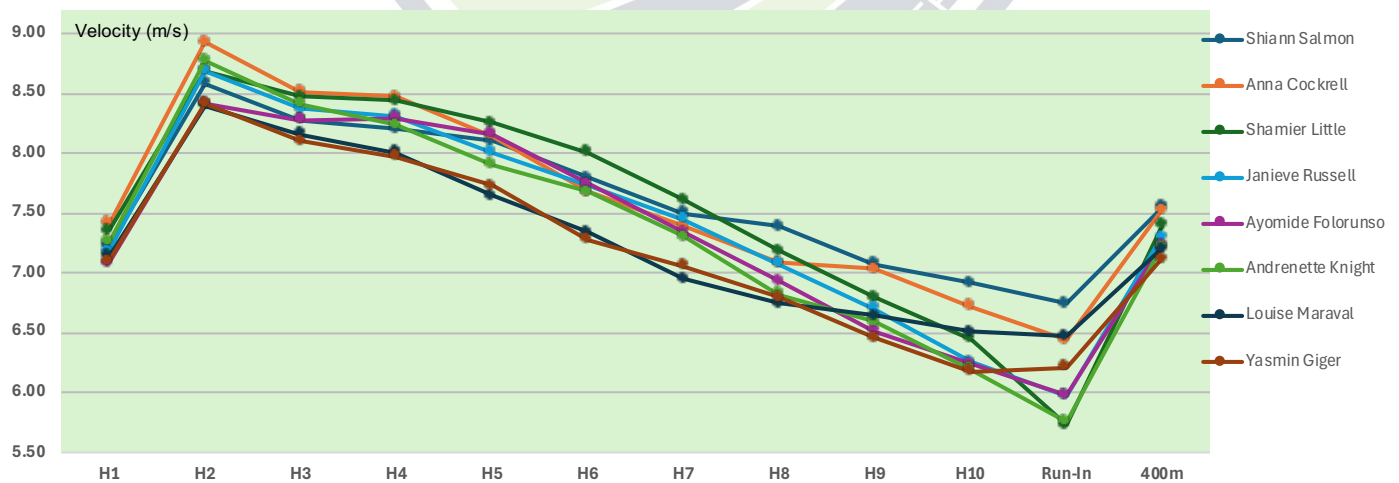
2024 Weltklasse (Zürich, SUI)

Women's 400m Hurdles

Date 2024.09.05

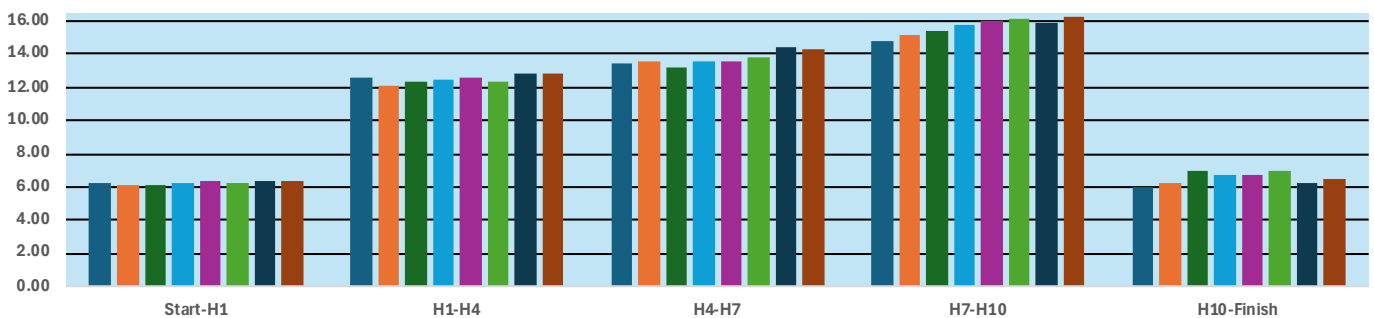
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Salmon, Shiann (JAM) (1999)	time		6.23	10.31	14.54	18.81	23.13	27.62	32.29	37.03	41.98	47.04		52.97	6 / 1			
	reaction time	0.176																
	interval		7.22	4.08	4.23	4.27	4.32	4.49	4.67	4.74	4.95	5.06	5.93	PB		12.58	13.48	14.75
	velocity		7.22	8.58	8.27	8.20	8.10	7.80	7.49	7.38	7.07	6.92	6.75	7.55		8.35	7.79	7.12
Cockrell, Anna (USA) (1997)	time		6.07	9.99	14.10	18.23	22.53	27.09	31.83	36.77	41.75	46.96		53.17	4 / 2			
	reaction time	0.152																
	interval		7.41	3.92	4.11	4.13	4.30	4.56	4.74	4.94	4.98	5.21	6.21			12.16	13.60	15.13
	velocity		7.41	8.93	8.52	8.47	8.14	7.68	7.38	7.09	7.03	6.72	6.44	7.52		8.63	7.72	6.94
Little, Shamier (USA) (1995)	time		6.12	10.15	14.28	18.43	22.67	27.04	31.64	36.51	41.66	47.09		54.07	5 / 3			
	reaction time	0.174																
	interval		7.35	4.03	4.13	4.15	4.24	4.37	4.60	4.87	5.15	5.43	6.98			12.31	13.21	15.45
	velocity		7.35	8.68	8.47	8.43	8.25	8.01	7.61	7.19	6.80	6.45	5.73	7.40		8.53	7.95	6.80
Russell, Janieve (JAM) (1993)	time		6.26	10.29	14.47	18.68	23.05	27.58	32.28	37.23	42.45	48.05		54.75	7 / 4			
	reaction time	0.185																
	interval		7.19	4.03	4.18	4.21	4.37	4.53	4.70	4.95	5.22	5.60	6.70			12.42	13.60	15.77
	velocity		7.19	8.68	8.37	8.31	8.01	7.73	7.45	7.07	6.70	6.25	5.97	7.31		8.45	7.72	6.66
Folorunso, Ayomide (ITA) (1996)	time		6.35	10.51	14.74	18.96	23.25	27.77	32.54	37.59	42.96	48.57		55.26	2 / 5			
	reaction time	0.205																
	interval		7.09	4.16	4.23	4.22	4.29	4.52	4.77	5.05	5.37	5.61	6.69			12.61	13.58	16.03
	velocity		7.09	8.41	8.27	8.29	8.16	7.74	7.34	6.93	6.52	6.24	5.98	7.24		8.33	7.73	6.55
Knight, Andrenette (JAM) (1996)	time		6.20	10.19	14.35	18.60	23.03	27.59	32.38	37.51	42.82	48.47		55.42	3 / 6			
	reaction time	0.176																
	interval		3.99	4.16	4.25	4.43	4.56	4.79	5.13	5.31	5.65	6.95				12.40	13.78	16.09
	velocity		7.26	8.77	8.41	8.24	7.90	7.68	7.31	6.82	6.59	6.19	5.76	7.22		8.47	7.62	6.53
Maraval, Louise (FRA) (2001)	time		6.30	10.47	14.76	19.13	23.71	28.48	33.52	38.71	43.98	49.36		55.54	8 / 7			
	reaction time	0.145																
	interval		7.14	4.17	4.29	4.37	4.58	4.77	5.04	5.19	5.27	5.38	6.18			12.83	14.39	15.84
	velocity		7.14	8.39	8.16	8.01	7.64	7.34	6.94	6.74	6.64	6.51	6.47	7.20		8.18	7.30	6.63
Giger, Yasmin (SUI) (1999)	time		6.34	10.50	14.82	19.21	23.74	28.55	33.51	38.66	44.08	49.75		56.19	1 / 8			
	reaction time	0.155																
	interval		7.10	4.16	4.32	4.39	4.53	4.81	4.96	5.15	5.42	5.67	6.44			12.87	14.30	16.24
	velocity		7.10	8.41	8.10	7.97	7.73	7.28	7.06	6.80	6.46	6.17	6.21	7.12		8.16	7.34	6.47



Time Intervals (s)

Hurdle Phases



Source: Omega Timing (Thu 5 Sep 2024 21:14) - diamond league race analysis

<https://www.omegatiming.com/File/000204110101090101FFFFFFFFFFFF6D.pdf>Video: <https://www.youtube.com/watch?v=9SEifmc7JA>

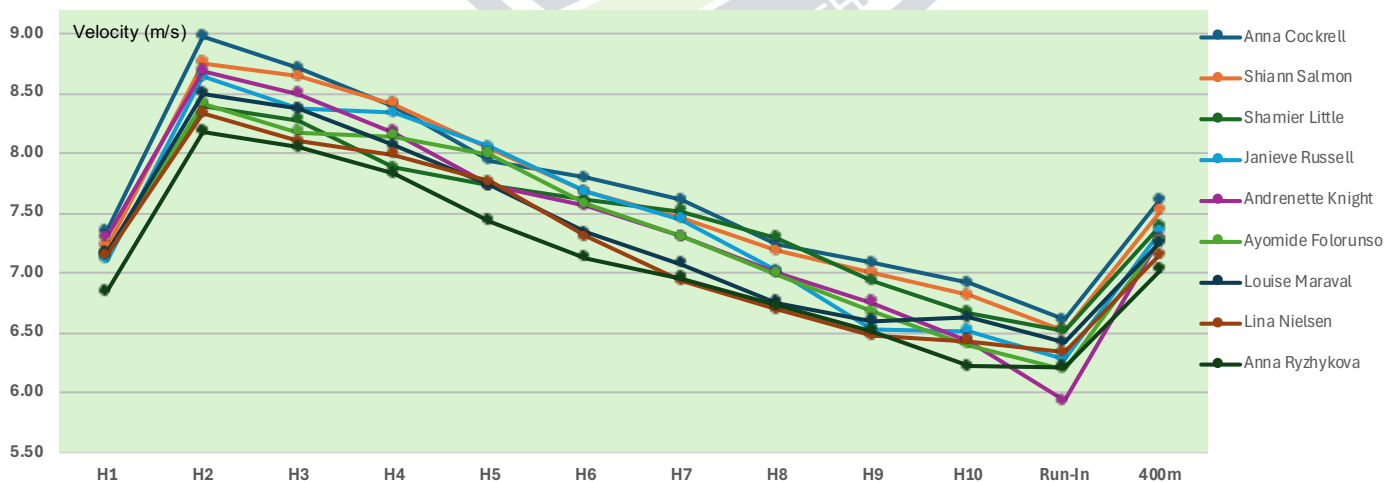
2024 Golden Gala • Pietro Mennea (Roma, ITA)

Women's 400m Hurdles

Date 2024.08.30

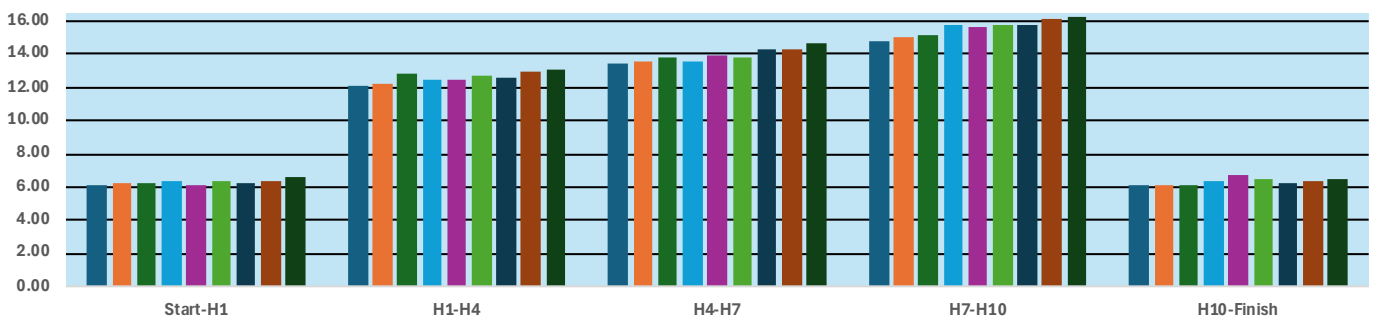
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Cockrell, Anna (USA) (1997)	time		6.12	10.02	14.04	18.21	22.62	27.11	31.71	36.54	41.48	46.54		52.59	4 / 1			
	reaction time	0.161														12.09	13.50	14.83
	interval		7.35	3.90	4.02	4.17	4.41	4.49	4.60	4.83	4.94	5.06	6.05			8.68	7.78	7.08
	velocity																	
Salmon, Shiann (JAM) (1999)	time		6.23	10.23	14.28	18.44	22.80	27.36	32.05	36.92	41.92	47.06		53.20	5 / 2			
	reaction time	0.200														12.21	13.61	15.01
	interval		7.22	4.00	4.05	4.16	4.36	4.56	4.69	4.87	5.00	5.14	6.14			8.60	7.71	7.00
	velocity																	
Little, Shamier (USA) (1995)	time		6.28	10.45	14.68	19.12	23.65	28.25	32.91	37.71	42.76	48.01		54.15	8 / 3			
	reaction time	0.234														12.84	13.79	15.10
	interval		7.17	4.17	4.23	4.44	4.53	4.60	4.66	4.80	5.05	5.25	6.14			8.18	7.61	6.95
	velocity																	
Russell, Janieve (JAM) (1993)	time		6.33	10.38	14.56	18.76	23.11	27.67	32.37	37.36	42.72	48.09		54.46	3 / 4			
	reaction time	0.182														12.43	13.61	15.72
	interval		7.11	4.05	4.18	4.20	4.35	4.56	4.70	4.99	5.36	5.37	6.37			8.45	7.71	6.68
	velocity																	
Knight, Andrenette (JAM) (1996)	time		6.16	10.19	14.31	18.59	23.12	27.75	32.54	37.54	42.72	48.16		54.90	7 / 5			
	reaction time	0.176														12.43	13.95	15.62
	interval		7.31	4.03	4.12	4.28	4.53	4.63	4.79	5.00	5.18	5.44	6.74			8.45	7.53	6.72
	velocity																	
Folorunso, Ayomide (ITA) (1996)	time		6.29	10.45	14.73	19.03	23.41	28.03	32.82	37.83	43.07	48.54		55.00	2 / 6			
	reaction time	0.168														12.74	13.79	15.72
	interval		7.15	4.16	4.28	4.30	4.38	4.62	4.79	5.01	5.24	5.47	6.46			8.24	7.61	6.68
	velocity																	
Maraval, Louise (FRA) (2001)	time		6.28	10.40	14.58	18.92	23.45	28.22	33.17	38.35	43.65	48.93		55.16	6 / 7			
	reaction time	0.150														12.64	14.25	15.76
	interval		7.17	4.12	4.18	4.34	4.53	4.77	4.95	5.18	5.30	5.28	6.23			8.31	7.37	6.66
	velocity																	
Nielsen, Lina (GBR) (1996)	time		6.29	10.49	14.81	19.19	23.70	28.49	33.54	38.77	44.18	49.62		55.93	1 / 8			
	reaction time	0.140														12.90	14.35	16.08
	interval		7.15	4.20	4.32	4.38	4.51	4.79	5.05	5.23	5.41	5.44	6.31			8.14	7.32	6.53
	velocity																	
Ryzhykova, Anna (UKR) (1989)	time		6.57	10.85	15.20	19.67	24.38	29.29	34.32	39.52	44.89	50.52		56.96	9 / 9			
	reaction time	0.221														13.10	14.65	16.20
	interval		6.85	4.28	4.35	4.47	4.71	4.91	5.03	5.20	5.37	5.63	6.44			8.02	7.17	6.48
	velocity																	



Time Intervals (s)

Hurdle Phases



Source: Omega Timing (Fri 30 Aug 2024 22:34) - diamond league race analysis

<https://www.omegatiming.com/File/000204100103070101FFFFFFFF6D.pdf>Video: <https://www.youtube.com/watch?v=PJAKc9ns9ow>

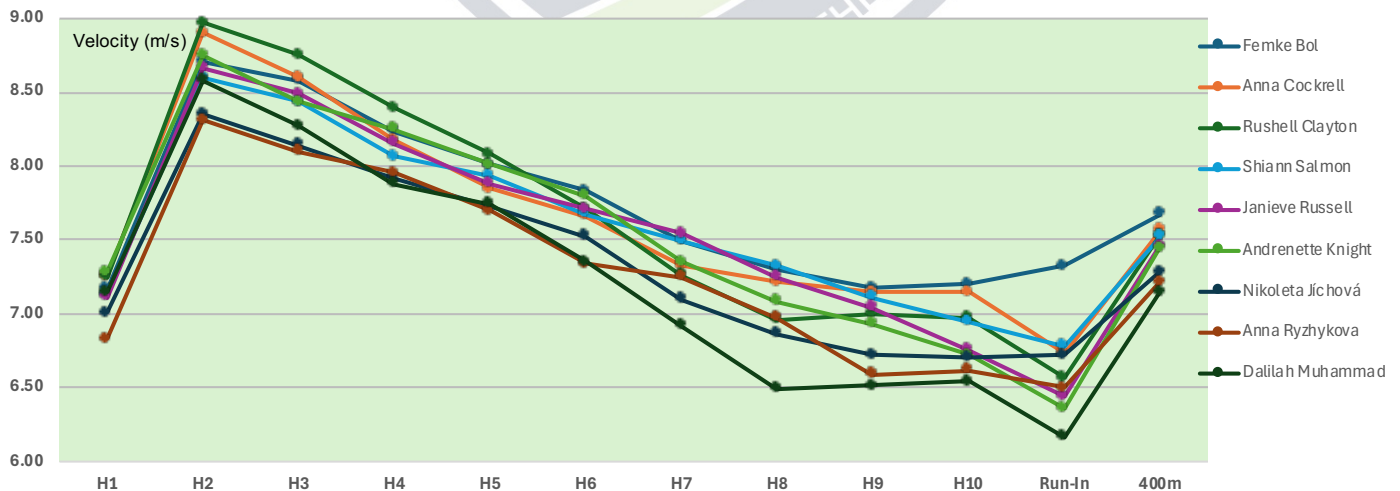
2024 Kamila Skolimowska Memorial (Silesia, POL)

Women's 400m Hurdles

Date 2024.08.25

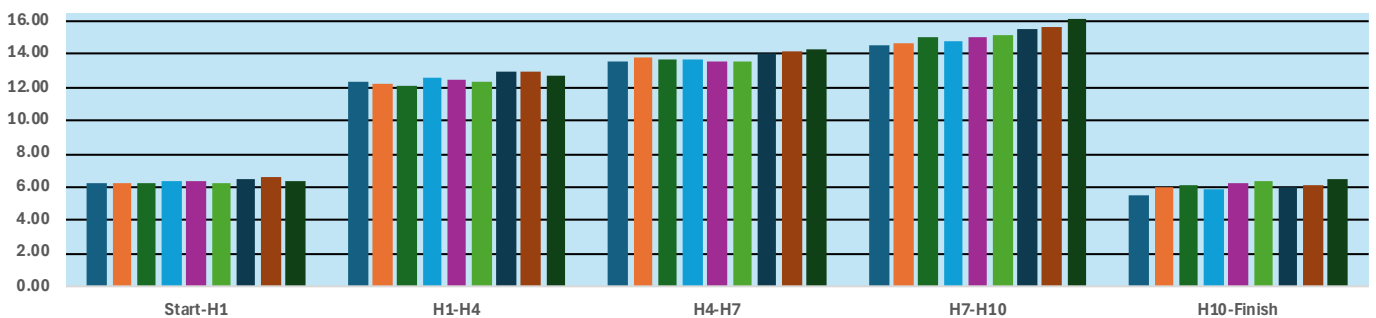
FINAL

				H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Bol, Femke (NED) (2000)	time			6.28	10.30	14.38	18.63	23.00	27.47	32.14	36.93	41.81	46.67		52.13	6 / 1			
	reaction time	0.158	interval		4.02	4.08	4.25	4.37	4.47	4.67	4.79	4.88	4.86	5.46			12.35	13.51	14.53
			velocity	7.17	8.71	8.58	8.24	8.01	7.83	7.49	7.31	7.17	7.20	7.33	7.67		8.50	7.77	7.23
	H1 lead leg	L	strides	22	14	14	14	14	14	14	15	15	15	18.2	169.2				
Cockrell, Anna (USA) (1997)	time			6.20	10.13	14.20	18.48	22.94	27.51	32.29	37.14	42.04	46.94		52.88	5 / 2			
	reaction time	0.167	interval		3.93	4.07	4.28	4.46	4.57	4.78	4.85	4.90	4.90	5.94			12.28	13.81	14.65
			velocity	7.26	8.91	8.60	8.18	7.85	7.66	7.32	7.22	7.14	7.14	6.73	7.56		8.55	7.60	7.17
	H1 lead leg	L	strides	22	13	13	14	14	14	14	15	15	15	19	168				
Clayton, Rushell (JAM) (1992)	time			6.21	10.11	14.11	18.28	22.61	27.15	31.97	37.00	42.00	47.02		53.11	7 / 3			
	reaction time	0.131	interval		3.90	4.00	4.17	4.33	4.54	4.82	5.03	5.00	5.02	6.09			12.07	13.69	15.05
			velocity	7.25	8.97	8.75	8.39	8.08	7.71	7.26	6.96	7.00	6.97	6.57	7.53		8.70	7.67	6.98
	H1 lead leg	L	strides	22	14	14	14	14	15	15	16	16	16	19	175				
Salmon, Shiann (JAM) (1999)	time			6.31	10.38	14.53	18.87	23.28	27.84	32.51	37.29	42.21	47.25		53.15	8 / 4			
	reaction time	0.229	interval		4.07	4.15	4.34	4.41	4.56	4.67	4.78	4.92	5.04	5.90			12.56	13.64	14.74
			velocity	7.13	8.60	8.43	8.06	7.94	7.68	7.49	7.32	7.11	6.94	6.78	7.53		8.36	7.70	7.12
	H1 lead leg	L	strides	22	14	14	14	14	15	15	16	16	16	19	175				
Russell, Janieve (JAM) (1993)	time			6.33	10.37	14.49	18.78	23.22	27.76	32.40	37.23	42.20	47.38		53.59	4 / 5			
	reaction time	0.160	interval		4.04	4.12	4.29	4.44	4.54	4.64	4.83	4.97	5.18	6.21			12.45	13.62	14.98
			velocity	7.11	8.66	8.50	8.16	7.88	7.71	7.54	7.25	7.04	6.76	6.44	7.46		8.43	7.71	7.01
	H1 lead leg	R	strides	23	15	15	15	15	16	16	16	17	17	19.7	184.7				
Knight, Andrenette (JAM) (1996)	time			6.18	10.18	14.33	18.57	22.94	27.43	32.19	37.13	42.18	47.39		53.68	3 / 6			
	reaction time	0.166	interval		4.00	4.15	4.24	4.37	4.49	4.76	4.94	5.05	5.21	6.29			12.39	13.62	15.20
			velocity	7.28	8.75	8.43	8.25	8.01	7.80	7.35	7.09	6.93	6.72	6.36	7.45		8.47	7.71	6.91
	H1 lead leg	R	strides	22	15	15	15	15	15	16	16	16	16	20	181				
Jíchová, Nikoleta (CZE) (2000)	time			6.42	10.61	14.91	19.33	23.86	28.51	33.44	38.54	43.75	48.97		54.92	1 / 7			
	reaction time	0.169	interval		4.19	4.30	4.42	4.53	4.65	4.93	5.10	5.21	5.22	5.95			12.91	14.11	15.53
			velocity	7.01	8.35	8.14	7.92	7.73	7.53	7.10	6.86	6.72	6.70	6.72	7.28		8.13	7.44	6.76
	H1 lead leg	R	strides	22	15	15	15	15				16		98					
Ryzhykova, Anna (UKR) (1989)	time			6.59	10.80	15.12	19.52	24.07	28.84	33.67	38.69	44.00	49.29		55.44	2 / 8			
	reaction time	0.188	interval		4.21	4.32	4.40	4.55	4.77	4.83	5.02	5.31	5.29	6.15			12.93	14.15	15.62
			velocity	6.83	8.31	8.10	7.95	7.69	7.34	7.25	6.97	6.59	6.62	6.50	7.22		8.12	7.42	6.72
	H1 lead leg	R	strides	21	14	14	14					16		79					
Muhammad, Dalilah (USA) (1990)	time			6.30	10.38	14.61	19.05	23.57	28.33	33.39	38.78	44.15	49.50		55.99	9 / 9			
	reaction time	0.163	interval		4.08	4.23	4.44	4.52	4.76	5.06	5.39	5.37	5.35	6.49			12.75	14.34	16.11
			velocity	7.14	8.58	8.27	7.88	7.74	7.35	6.92	6.49	6.52	6.54	6.16	7.14		8.24	7.32	6.52
	H1 lead leg	R	strides	22	14	14	15	15	15	15	16	16		142					



Time Intervals (s)

Hurdle Phases



Source: Omega Timing (Sun 25 Aug 2024 16:08) - diamond league race analysis

<https://www.omegatiming.com/File/0002040E0102060101FFFFFFFFFFFF6D.pdf>Video: <https://www.youtube.com/watch?v=7bzFUwS3BSA>

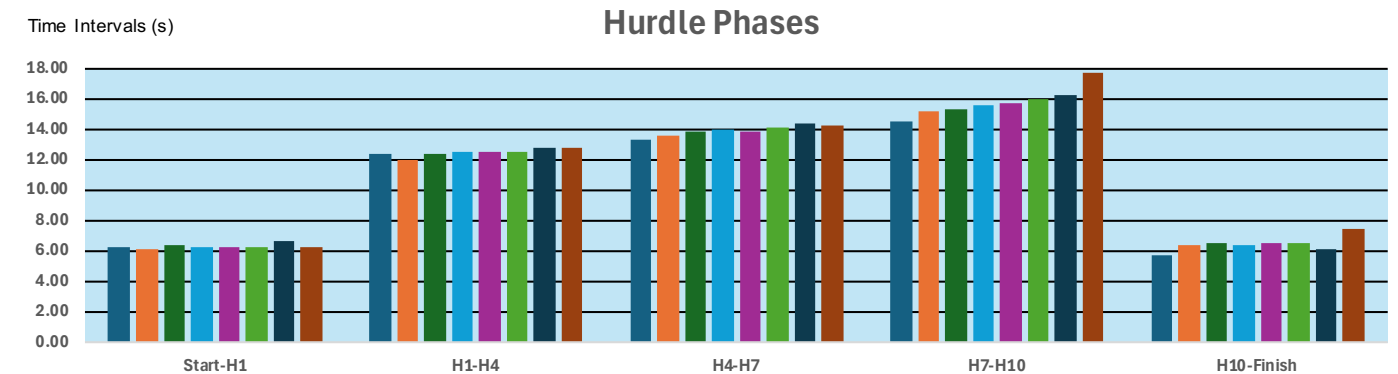
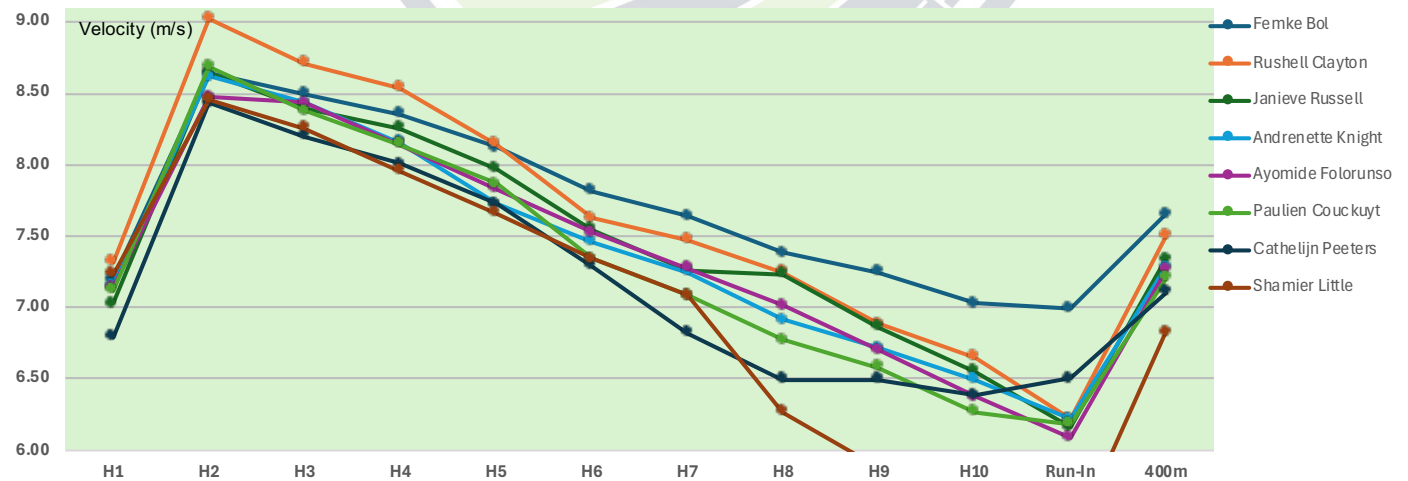
2024 Athletissima (Lausanne, SUI)

Women's 400m Hurdles

Date 2024.08.22

FINAL

				H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Bol, Femke (NED) (2000)	time			6.25	10.30	14.42	18.61	22.92	27.40	31.98	36.72	41.55	46.53		52.25	5 / 1			
	reaction time	0.182	interval		4.05	4.12	4.19	4.31	4.48	4.58	4.74	4.83	4.98	5.72			12.36	13.37	14.55
	velocity			7.20	8.64	8.50	8.35	8.12	7.81	7.64	7.38	7.25	7.03	6.99	7.66		8.50	7.85	7.22
	H1 lead leg	L	strides	22	14	14	14	14	14	14	15	15	15	18.7	169.7				
Clayton, Rushell (JAM) (1992)	time			6.15	10.03	14.05	18.15	22.45	27.04	31.72	36.55	41.63	46.89		53.32	4 / 2			
	reaction time	0.159	interval		3.88	4.02	4.10	4.30	4.59	4.68	4.83	5.08	5.26	6.43			12.00	13.57	15.17
	velocity			7.32	9.02	8.71	8.54	8.14	7.63	7.48	7.25	6.89	6.65	6.22	7.50		8.75	7.74	6.92
	H1 lead leg	L	strides	22	14	14	14	14	15	15	15	16	16	19	174				
Russell, Janieve (JAM) (1993)	time			6.40	10.45	14.62	18.86	23.25	27.89	32.71	37.55	42.65	47.99		54.48	3 / 3			
	reaction time	0.180	interval		4.05	4.17	4.24	4.39	4.64	4.82	4.84	5.10	5.34	6.49			12.46	13.85	15.28
	velocity			7.03	8.64	8.39	8.25	7.97	7.54	7.26	7.23	6.86	6.55	6.16	7.34		8.43	7.58	6.87
	H1 lead leg	R	strides	23	15	15	15	15			16	16	17	20	152				
Knight, Andrenette (JAM) (1996)	time			6.29	10.35	14.50	18.79	23.32	28.01	32.84	37.90	43.11	48.50		54.93	7 / 4			
	reaction time	0.182	interval		4.06	4.15	4.29	4.53	4.69	4.83	5.06	5.21	5.39	6.43			12.50	14.05	15.66
	velocity			7.15	8.62	8.43	8.16	7.73	7.46	7.25	6.92	6.72	6.49	6.22	7.28		8.40	7.47	6.70
	H1 lead leg	L	strides	22	14	14	14	15	15	15	16	16	16	19.5	176.5				
Folorunso, Ayomide (ITA) (1996)	time			6.30	10.43	14.58	18.88	23.35	28.00	32.81	37.80	43.02	48.51		55.08	8 / 5			
	reaction time	0.203	interval		4.13	4.15	4.30	4.47	4.65	4.81	4.99	5.22	5.49	6.57			12.58	13.93	15.70
	velocity			7.14	8.47	8.43	8.14	7.83	7.53	7.28	7.01	6.70	6.38	6.09	7.26		8.35	7.54	6.69
	H1 lead leg	R	strides	23	15	15	15	15	16	16	16	16	17	21	185				
Couckuyt, Paulien (BEL) (1997)	time			6.32	10.35	14.53	18.83	23.28	28.05	32.99	38.16	43.48	49.06		55.53	1 / 6			
	reaction time	0.193	interval		4.03	4.18	4.30	4.45	4.77	4.94	5.17	5.32	5.58	6.47			12.51	14.16	16.07
	velocity			7.12	8.68	8.37	8.14	7.87	7.34	7.09	6.77	6.58	6.27	6.18	7.20		8.39	7.42	6.53
	H1 lead leg	L	strides	23	15	15	15	15			16	17	17	21.5	154.5				
Peeters, Cathelijn (NED) (1996)	time			6.62	10.77	15.04	19.41	23.94	28.74	33.87	39.26	44.65	50.13		56.28	2 / 7			
	reaction time	0.244	interval		4.15	4.27	4.37	4.53	4.80	5.13	5.39	5.39	5.48	6.15			12.79	14.46	16.26
	velocity			6.80	8.43	8.20	8.01	7.73	7.29	6.82	6.49	6.49	6.39	6.50	7.11		8.21	7.26	6.46
	H1 lead leg	R	strides	23	15	15	15	15			17	17	17		134				
Little, Shamier (USA) (1995)	time			6.22	10.36	14.60	19.00	23.57	28.34	33.28	38.86	44.81	51.08		58.57	6 / 8			
	reaction time	0.203	interval		4.14	4.24	4.40	4.57	4.77	4.94	5.58	5.95	6.27	7.49			12.78	14.28	17.80
	velocity			7.23	8.45	8.25	7.95	7.66	7.34	7.09	6.27	5.88	5.58	5.34	6.83		8.22	7.35	5.90
	H1 lead leg	R	strides	23	15	15	15	15			17	18	18		136				



Source: Omega Timing (Thu 22 Aug 2024 21:39) - diamond league race analysis
<https://www.omegatiming.com/File/0002040E01020D0101FFFFFFFFFFFF6D.pdf>

Video: <https://www.youtube.com/watch?v=cjXbp4TIEoQ>

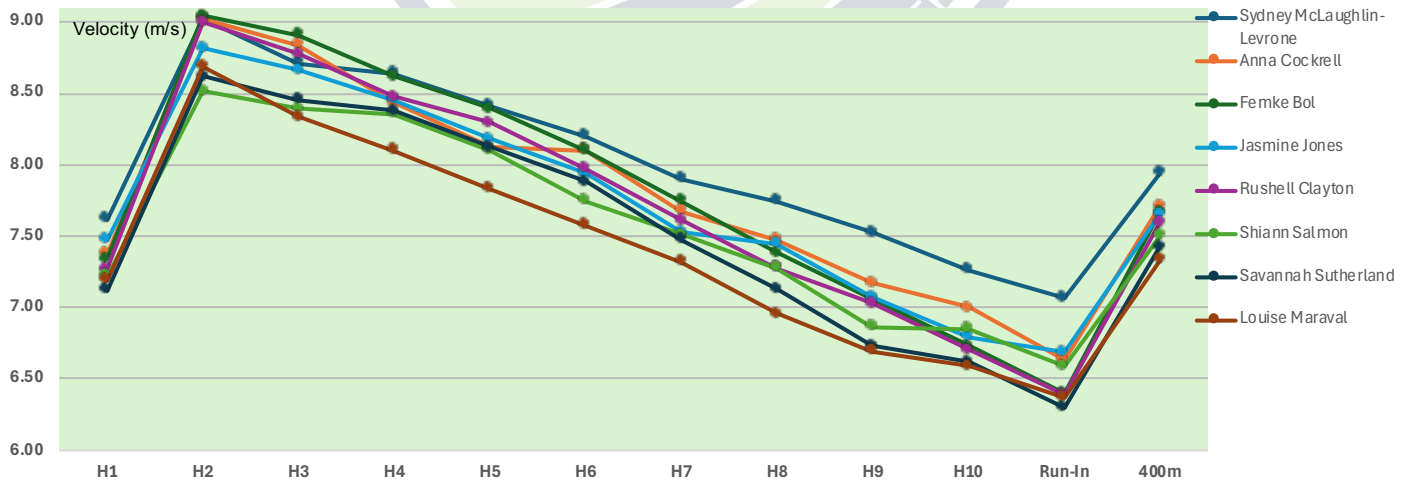
2024 Olympic Games (Paris, FRA)

Women's 400m Hurdles

Date 2024.08.08

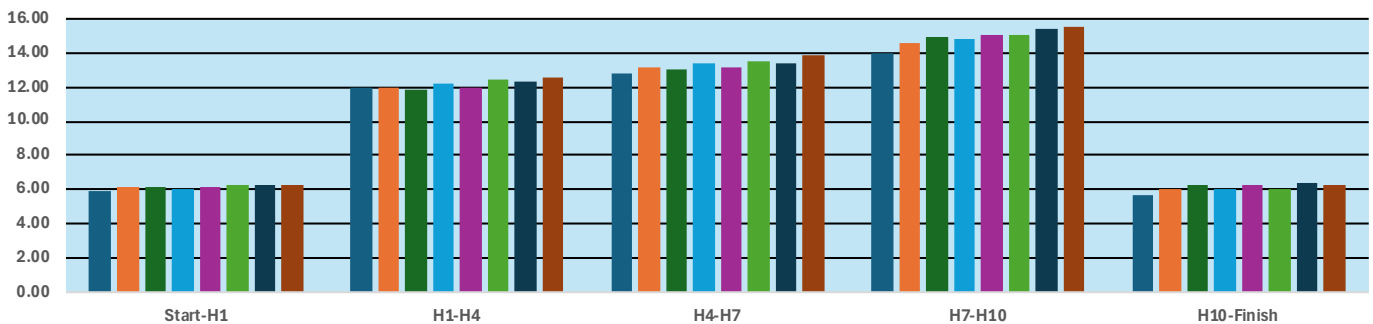
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
McLaughlin-Levrone, Sydney (USA)	(time)		5.91	9.79	13.81	17.86	22.02	26.29	30.72	35.24	39.89	44.71		50.37	5 / 1			
	reaction time	0.139		3.88	4.02	4.05	4.16	4.27	4.43	4.52	4.65	4.82	5.66	WR		11.95	12.86	13.99
	interval velocity		7.61	9.02	8.71	8.64	8.41	8.20	7.90	7.74	7.53	7.26	7.07	7.94		8.79	8.16	7.51
	H1 lead leg	R	22	14	14	14	14	14	14	15	15	15	19	170				
Cockrell, Anna (USA) (1997)	(time)		6.10	9.98	13.94	18.09	22.40	26.72	31.28	35.96	40.84	45.84		51.87	7 / 2			
	reaction time	0.158		3.88	3.96	4.15	4.31	4.32	4.56	4.68	4.88	5.00	6.03	PB		11.99	13.19	14.56
	interval velocity		7.38	9.02	8.84	8.43	8.12	8.10	7.68	7.48	7.17	7.00	6.63	7.71		8.76	7.96	7.21
	H1 lead leg	R	22	13	14	14	14	14	14	15	15	15	19	169				
Bol, Femke (NED) (2000)	(time)		6.13	10.00	13.93	17.99	22.16	26.48	31.00	35.74	40.70	45.90		52.15	6 / 3			
	reaction time	0.165		3.87	3.93	4.06	4.17	4.32	4.52	4.74	4.96	5.20	6.25			11.86	13.01	14.90
	interval velocity		7.34	9.04	8.91	8.62	8.39	8.10	7.74	7.38	7.06	6.73	6.40	7.67		8.85	8.07	7.05
	H1 lead leg	L	22	14	14	14	14	14	14	15	15	16	19	171				
Jones, Jasmine (USA) (2001)	(time)		6.02	9.99	14.03	18.17	22.45	26.86	31.51	36.21	41.16	46.31		52.29	9 / 4			
	reaction time	0.157		3.97	4.04	4.14	4.28	4.41	4.65	4.70	4.95	5.15	5.98	PB		12.15	13.34	14.80
	interval velocity		7.48	8.82	8.66	8.45	8.18	7.94	7.53	7.45	7.07	6.80	6.69	7.65		8.64	7.87	7.09
	H1 lead leg	R	22	14	14	14	14	14	15	15	15	16	18.7	156.7				
Clayton, Rushell (JAM) (1992)	(time)		6.19	10.08	14.07	18.20	22.42	26.81	31.41	36.22	41.20	46.42		52.68	8 / 5			
	reaction time	0.142		3.89	3.99	4.13	4.22	4.39	4.60	4.81	4.98	5.22	6.26			12.01	13.21	15.01
	interval velocity		7.27	9.00	8.77	8.47	8.29	7.97	7.61	7.28	7.03	6.70	6.39	7.59		8.74	7.95	7.00
	H1 lead leg	L	22	14	14	14	14	15	15	15	15	16	19	158				
Salmon, Shiann (JAM) (1999)	(time)		6.23	10.34	14.51	18.70	23.02	27.54	32.20	37.01	42.11	47.22		53.29	2 / 6			
	reaction time	0.207		4.11	4.17	4.19	4.32	4.52	4.66	4.81	5.10	5.11	6.07			12.47	13.50	15.02
	interval velocity		7.22	8.52	8.39	8.35	8.10	7.74	7.51	7.28	6.86	6.85	6.59	7.51		8.42	7.78	6.99
	H1 lead leg	L	22	14	14	14	14	15	15	16	16	16	19	175				
Sutherland, Savannah (CAN) (2003)	(time)		6.32	10.38	14.52	18.70	23.01	27.45	32.13	37.04	42.24	47.53		53.88	3 / 7			
	reaction time	0.157		4.06	4.14	4.18	4.31	4.44	4.68	4.91	5.20	5.29	6.35			12.38	13.43	15.40
	interval velocity		7.12	8.62	8.45	8.37	8.12	7.88	7.48	7.13	6.73	6.62	6.30	7.42		8.48	7.82	6.82
	H1 lead leg	R	23	15	15	15	15	15	15	16	16	16	16	161				
Maraval, Louise (FRA) (2001)	(time)		6.26	10.29	14.49	18.81	23.28	27.90	32.68	37.71	42.94	48.25		54.53	4 / 8			
	reaction time	0.166		4.03	4.20	4.32	4.47	4.62	4.78	5.03	5.23	5.31	6.28			12.55	13.87	15.57
	interval velocity		7.19	8.68	8.33	8.10	7.83	7.58	7.32	6.96	6.69	6.59	6.37	7.34		8.37	7.57	6.74
	H1 lead leg	R	23	15	15	15	15	16	16	16	17	17	17	165				



Time Intervals (s)

Hurdle Phases



Source: Paris 2024 Olympic Games - Results Book (2024). p. 565

https://olympics.com/OG2024/pdf/OG2024_ATH/OG2024_ATH_B99_ATH-----pdfVideo: <https://www.youtube.com/watch?v=cTXAvUfKrQ>

2024 Olympic Games (Paris, FRA)

Women's 400m Hurdles

Date 2024.08.06

Semi-Final 3

		H1H2H3H4H5H6H7H8H9H10											Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Bol, Femke (NED) (2000)	time		6.24	10.18	14.24	18.35	22.61	27.03	31.64	36.50	41.55	46.62		52.57	6 / 1			
	reaction time	0.194																
	interval		7.21	3.94	4.06	4.11	4.26	4.42	4.61	4.86	5.05	5.07	5.95			12.11	13.29	14.98
	velocity		8.88	8.62	8.52	8.22	7.92	7.59	7.20	6.93	6.90	6.72	7.61			8.67	7.90	7.01
Cockrell, Anna (USA) (1997)	time		6.14	10.10	14.25	18.59	23.06	27.52	32.13	36.91	41.87	46.91		52.90	7 / 2			
	reaction time	0.178																
	interval		7.33	3.96	4.15	4.34	4.47	4.46	4.61	4.78	4.96	5.04	5.99			12.45	13.54	14.78
	velocity		8.84	8.43	8.06	7.83	7.85	7.59	7.32	7.06	6.94	6.68	7.56			8.43	7.75	7.10
Salmon, Shiann (JAM) (1999)	time		6.13	10.16	14.26	18.45	22.80	27.35	32.04	36.82	41.81	46.95		53.13	5 / 3			
	reaction time	0.182																
	interval		7.34	4.03	4.10	4.19	4.35	4.55	4.69	4.78	4.99	5.14	6.18	PB		12.32	13.59	14.91
	velocity		8.68	8.54	8.35	8.05	7.69	7.46	7.32	7.01	6.81	6.47	7.53			8.52	7.73	7.04
Sutherland, Savannah (CAN) (2003)	time		6.26	10.35	14.50	18.76	23.10	27.57	32.21	37.01	42.13	47.56		53.80	4 / 4			
	reaction time	0.145																
	interval		7.19	4.09	4.15	4.26	4.34	4.47	4.64	4.80	5.12	5.43	6.24			12.50	13.45	15.35
	velocity		8.56	8.43	8.22	8.06	7.83	7.54	7.29	6.84	6.45	6.41	7.43			8.40	7.81	6.84

Date 2024.08.06

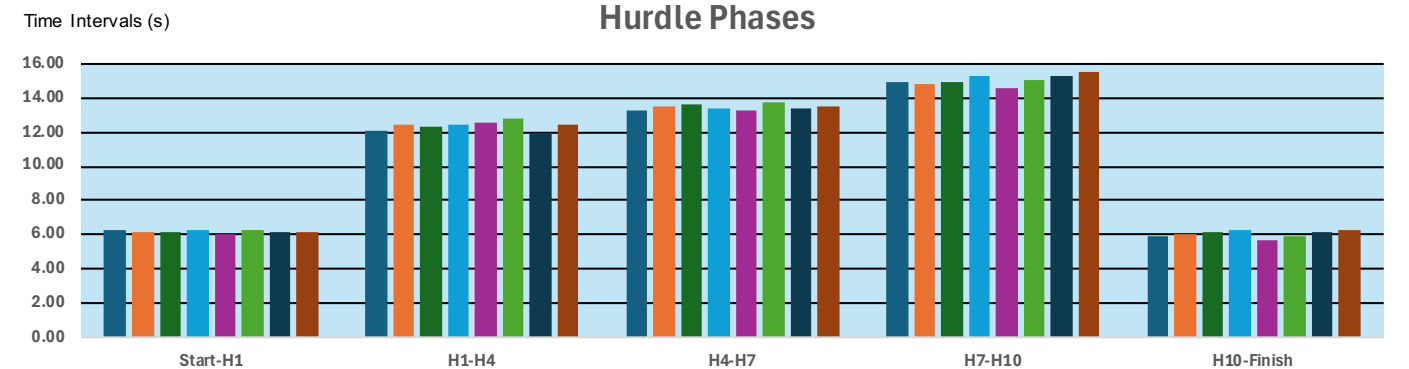
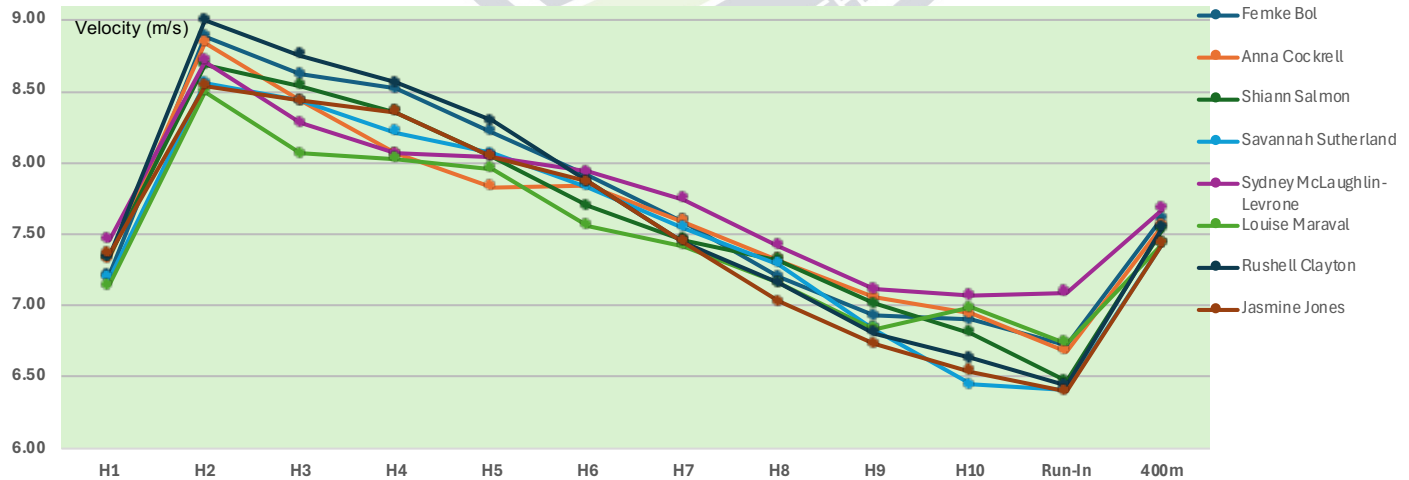
Semi-Final 2

		H1H2H3H4H5H6H7H8H9H10											Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
McLaughlin-Levrone, Sydney (USA) (2001)	time		6.03	10.05	14.28	18.62	22.97	27.38	31.90	36.62	41.54	46.49		52.13	7 / 1			
	reaction time	0.154																
	interval		7.46	4.02	4.23	4.34	4.35	4.41	4.52	4.72	4.92	4.95	5.64			12.59	13.28	14.59
	velocity		8.71	8.27	8.06	8.05	7.94	7.74	7.42	7.11	7.07	7.09	7.67			8.34	7.91	7.20
Maraval, Louise (FRA) (2001)	time		6.30	10.42	14.76	19.12	23.52	28.15	32.87	37.76	42.88	47.89		53.83	4 / 2			
	reaction time	0.160																
	interval		7.14	4.12	4.34	4.36	4.40	4.63	4.72	4.89	5.12	5.01	5.94			12.82	13.75	15.02
	velocity		8.50	8.06	8.03	7.95	7.56	7.42	7.16	6.84	6.99	6.73	7.43			8.19	7.64	6.99

Date 2024.08.06

Semi-Final 1

		H1H2H3H4H5H6H7H8H9H10											Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Clayton, Rushell (JAM) (1992)	time		6.13	10.02	14.02	18.11	22.33	26.78	31.48	36.37	41.51	46.79		53.00	5 / 1			
	reaction time	0.152																
	interval		7.34	3.89	4.00	4.09	4.22	4.45	4.70	4.89	5.14	5.28	6.21			11.98	13.37	15.31
	velocity		9.00	8.75	8.56	8.29	7.87	7.45	7.16	6.81	6.63	6.44	7.55			8.76	7.85	6.86
Jones, Jasmine (USA) (2001)	time		6.11	10.21	14.36	18.55	22.90	27.35	32.05	37.03	42.23	47.58		53.83	7 / 2			
	reaction time	0.166																
	interval		7.36	4.10	4.15	4.19	4.35	4.45	4.70	4.98	5.20	5.35	6.25			12.44	13.50	15.53
	velocity		8.54	8.43	8.35	8.05	7.87	7.45	7.03	6.73	6.54	6.40	7.43			8.44	7.78	6.76



Source: Paris 2024 Olympic Games - Results Book (2024). p. 570-572
https://olympics.com/OG2024/pdf/OG2024/ATH/OG2024_ATH_B99_ATH.pdf

Video: <https://olympics.com/en/paris-2024/videos/track-and-field-day-11-afternoon-athletics-olympic-games-paris-2024>

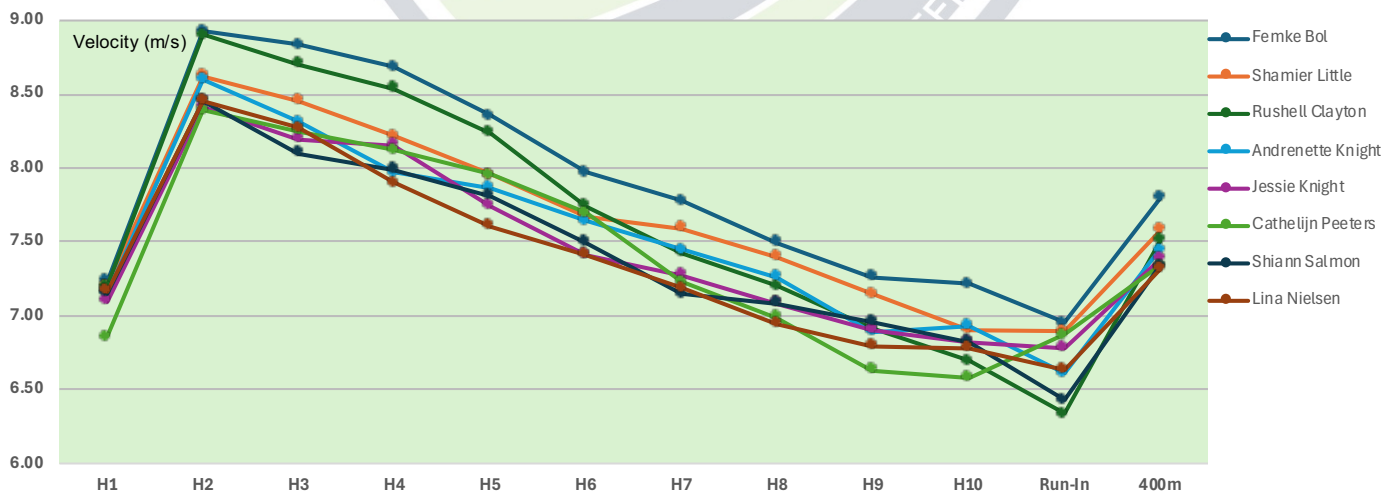
2024 London Athletics Meet (London, GBR)

Women's 400m Hurdles

Date 2024.07.20

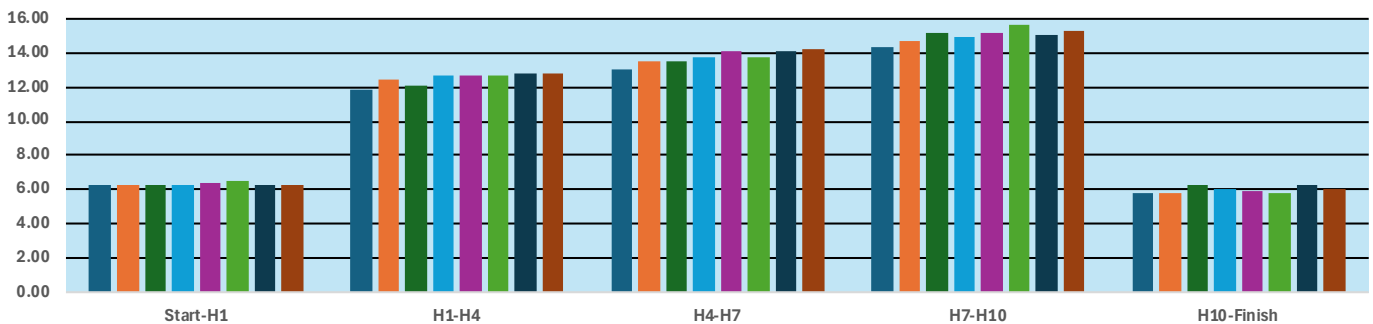
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Bol, Femke (NED) (2000)	time		6.22	10.14	14.10	18.13	22.32	26.71	31.21	35.88	40.70	45.55		51.30	6 / 1			
	reaction time	0.175																
	interval		7.23	3.92	3.96	4.03	4.19	4.39	4.50	4.67	4.82	4.85	5.75			11.91	13.08	14.34
	velocity		7.23	8.93	8.84	8.68	8.35	7.97	7.78	7.49	7.26	7.22	6.96	7.80		8.82	8.03	7.32
Little, Shamier (USA) (1995)	time		6.25	10.31	14.45	18.71	23.11	27.67	32.28	37.01	41.91	46.98		52.78	5 / 2			
	reaction time	0.207																
	interval		7.20	4.06	4.14	4.26	4.40	4.56	4.61	4.73	4.90	5.07	5.80			12.46	13.57	14.70
	velocity		7.20	8.62	8.45	8.22	7.95	7.68	7.59	7.40	7.14	6.90	6.90	7.58		8.43	7.74	7.14
Clayton, Rushell (JAM) (1992)	time		6.25	10.18	14.20	18.30	22.55	27.07	31.78	36.64	41.70	46.93		53.24	4 / 3			
	reaction time	0.132																
	interval		7.20	3.93	4.02	4.10	4.25	4.52	4.71	4.86	5.06	5.23	6.31			12.05	13.48	15.15
	velocity		7.20	8.91	8.71	8.54	8.24	7.74	7.43	7.20	6.92	6.69	6.34	7.51		8.71	7.79	6.93
Knight, Andrenette (JAM) (1996)	time		6.29	10.36	14.57	18.96	23.41	27.99	32.69	37.51	42.59	47.64		53.69	8 / 4			
	reaction time	0.170																
	interval		7.15	4.07	4.21	4.39	4.45	4.58	4.70	4.82	5.08	5.05	6.05			12.67	13.73	14.95
	velocity		7.15	8.60	8.31	7.97	7.87	7.64	7.45	7.26	6.89	6.93	6.61	7.45		8.29	7.65	7.02
Knight, Jessie (GBR) (1994)	time		6.34	10.50	14.77	19.06	23.58	28.30	33.11	38.05	43.12	48.25		54.15	1 / 5			
	reaction time	0.159																
	interval		4.16	4.27	4.31	4.40	4.52	4.72	4.81	4.94	5.07	5.13	5.90			12.72	14.05	15.14
	velocity		7.10	8.41	8.20	8.16	7.74	7.42	7.28	7.09	6.90	6.82	6.78	7.39		8.25	7.47	6.94
Peeters, Cathelijn (NED) (1996)	time		6.56	10.73	14.97	19.28	23.68	28.23	33.07	38.08	43.36	48.68		54.50	2 / 6			
	reaction time	0.196																
	interval		4.17	4.24	4.29	4.40	4.55	4.84	5.01	5.28	5.32	5.82				12.72	13.79	15.61
	velocity		6.86	8.39	8.25	8.12	7.95	7.69	7.23	6.99	6.63	6.58	6.87	7.34		8.25	7.61	6.73
Salmon, Shiann (JAM) (1999)	time		6.29	10.43	14.75	19.13	23.61	28.28	33.18	38.12	43.15	48.28		54.50	3 / 7			
	reaction time	0.169																
	interval		4.14	4.32	4.38	4.48	4.67	4.90	4.94	5.03	5.13	6.22				12.84	14.05	15.10
	velocity		7.15	8.45	8.10	7.99	7.81	7.49	7.14	7.09	6.96	6.82	6.43	7.34		8.18	7.47	6.95
Nielsen, Lina (GBR) (1996)	time		6.28	10.42	14.65	19.08	23.68	28.40	33.27	38.31	43.46	48.62		54.65	7 / 8			
	reaction time	0.147																
	interval		7.17	4.14	4.23	4.43	4.60	4.72	4.87	5.04	5.15	5.16	6.03			12.80	14.19	15.35
	velocity		7.17	8.45	8.27	7.90	7.61	7.42	7.19	6.94	6.80	6.78	6.63	7.32		8.20	7.40	6.84



Time Intervals (s)

Hurdle Phases



Source: Omega Timing (Sat 20 Jul 2024 14:08) - diamond league race analysis

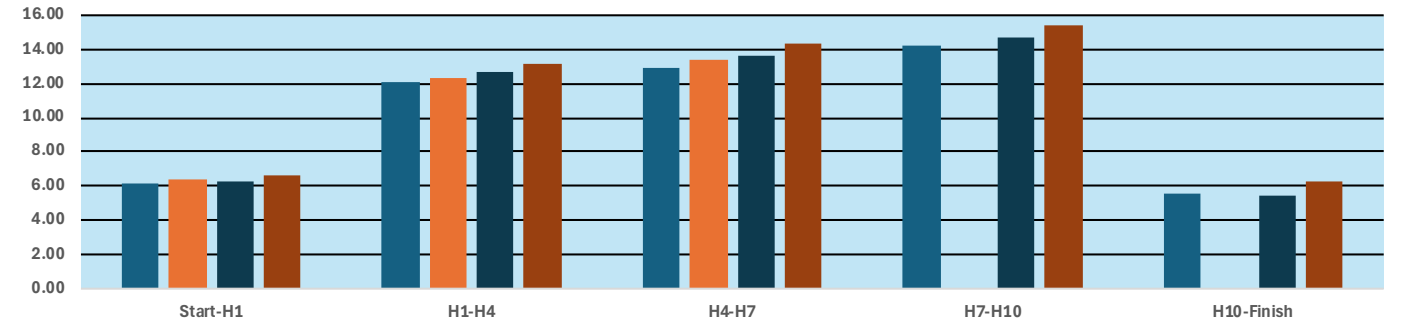
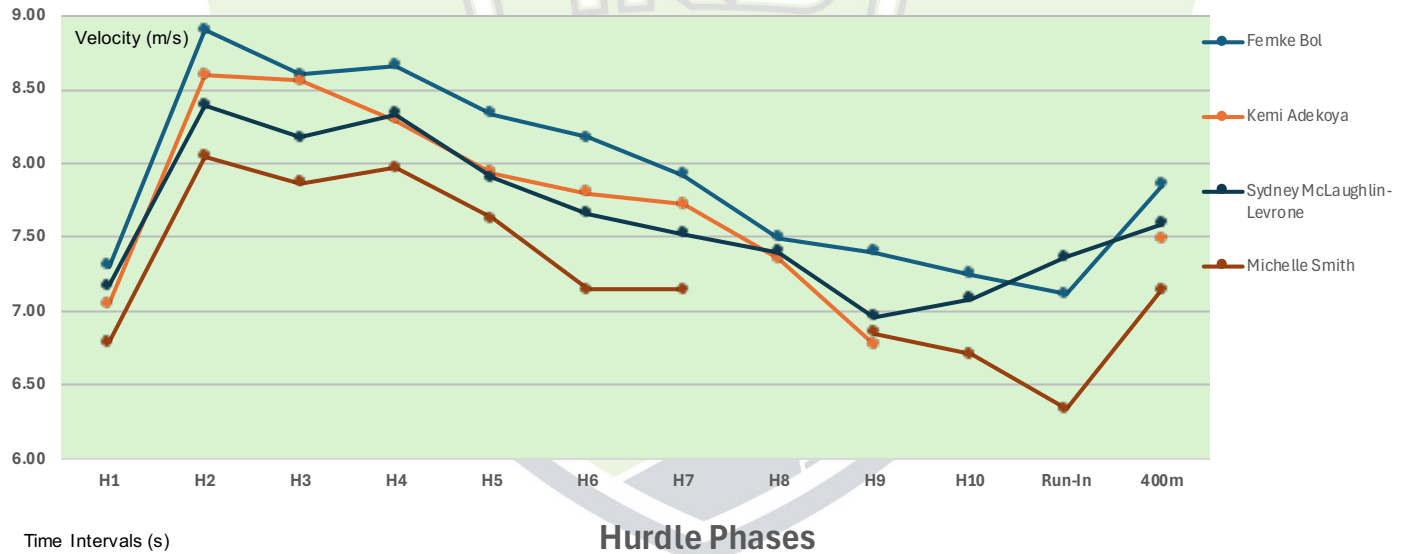
<https://www.omegatiming.com/File/0002040D0101090101FFFFFFFFFFFF6D.pdf>Video: <https://www.youtube.com/watch?v=dhxm3vNiVU>

2024 Resisprint International (La Chaux-de-Fonds, SUI) (TV Analysis)

Women's 400m Hurdles		Date 2024.07.14											A Final				
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Bol, Femke (NED) (2000)	time	6.16	10.09	14.16	18.20	22.40	26.68	31.10	35.77	40.50	45.33		50.95	4 / 1	12.04	12.90	14.23
	reaction time																
	interval		3.93	4.07	4.04	4.20	4.28	4.42	4.67	4.73	4.83	5.62	AR				
	velocity	7.31	8.91	8.60	8.66	8.33	8.18	7.92	7.49	7.40	7.25	7.12	7.85				
	H1 lead leg	L	22	14	14	14	14	14	15	15	15	19	170				
Adekoya, Kemi (BRN) (1993)	time	6.38	10.45	14.54	18.76	23.17	27.66	32.19	36.95	42.12			53.41	5 / 2	12.38	13.43	
	reaction time																
	interval		4.07	4.09	4.22	4.41	4.49	4.53	4.76	5.17							
	velocity	7.05	8.60	8.56	8.29	7.94	7.80	7.73	7.35	6.77			7.49				
	H1 lead leg	R	23	15	15	15	15	15	15	15	16		144				

2024 The Edwin Moses Legends Meet (Atlanta, GA) (TV Analysis)

		Date 2024.05.31											FINAL				
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
McLaughlin-Levrone, Sydney (USA)	time	6.27	10.44	14.72	18.92	23.35	27.92	32.57	37.30	42.33	47.27		52.70	6 / 1	12.65	13.65	14.70
	reaction time																
	interval		4.17	4.28	4.20	4.43	4.57	4.65	4.73	5.03	4.94	5.43					
	velocity	7.18	8.39	8.18	8.33	7.90	7.66	7.53	7.40	6.96	7.09	7.37	7.59				
H1 lead leg	R	strides	22	15	15	15	15	15	15	16	16	18	177		8.30	7.69	7.14
Smith, Michelle (ISV) (2006)	time	6.63	10.98	15.43	19.82	24.41	29.31	34.21		44.43	49.65		55.96	7 / 2	13.19	14.39	15.44
	reaction time																
	interval		4.35	4.45	4.39	4.59	4.90	4.90		10.22	5.22	6.31	NR PB				
	velocity	6.79	8.05	7.87	7.97	7.63	7.14	7.14		6.85	6.70	6.34	7.15				
	H1 lead leg	R	strides	23	15	15	15	15	16	16		17	132				



Resisprint International
Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=LJHzF5oO4y8&pp=ygUJWMjAyNCBzYSBjaG9peCBkZSBmb25kcw%3D%3D>

The Edwin Moses Legends Meet
Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 60fps
Timing From: Gun Flash
Source: <https://www.youtube.com/watch?v=aIphiAoI0GE&pp=ygUJmMjAyNCBzYyBpbHltcGllIERyaWEscyB0cmFjayBhbmQgZmllbGQ%3D>

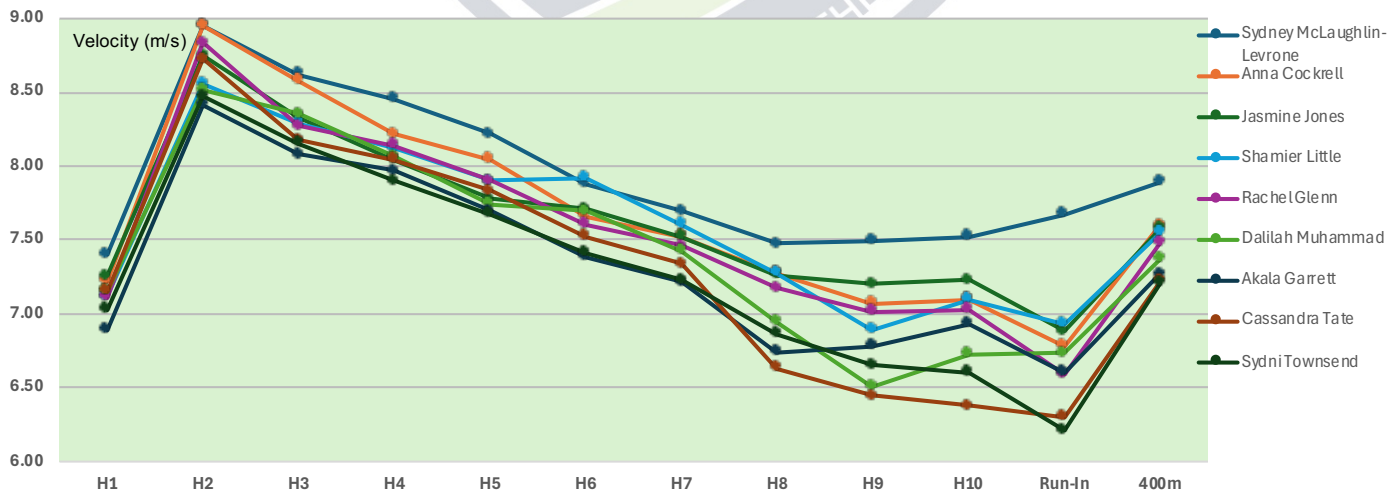
2024 USA Olympic Trials (Eugene, OR)

Women's 400m Hurdles

Date 2024.06.30

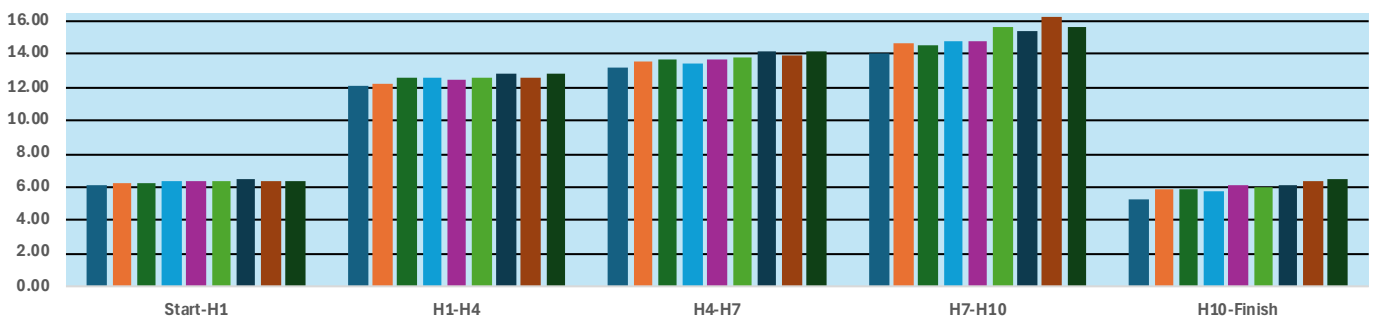
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
McLaughlin-Levrone, Sydney (USA)	(time)		6.08	9.99	14.05	18.19	22.45	26.89	31.44	36.12	40.79	45.44		50.65	5 / 1			
	reaction time			3.91	4.06	4.14	4.26	4.44	4.55	4.68	4.67	4.65	5.21	WR		12.11	13.25	14.00
	interval velocity		7.40	8.95	8.62	8.45	8.22	7.88	7.69	7.48	7.49	7.53	7.68	7.90		8.67	7.92	7.50
	H1 lead leg R	strides	22	14	14	14	14	15	15	15	15	15	18	171				
Cockrell, Anna (USA) (1997)	(time)		6.23	10.14	14.22	18.48	22.83	27.40	32.05	36.86	41.81	46.74		52.64	6 / 2			
	reaction time			3.91	4.08	4.26	4.35	4.57	4.65	4.81	4.95	4.93	5.90	PB		12.25	13.57	14.69
	interval velocity		7.22	8.95	8.58	8.22	8.05	7.66	7.53	7.28	7.07	7.10	6.78	7.60		8.57	7.74	7.15
	H1 lead leg R	strides	22	14	14	14	14	15	15	15	15	15	19	172				
Jones, Jasmine (USA) (2001)	(time)		6.20	10.20	14.40	18.75	23.25	27.79	32.44	37.26	42.12	46.96		52.77	8 / 3			
	reaction time			4.00	4.20	4.35	4.50	4.54	4.65	4.82	4.86	4.84	5.81	PB		12.55	13.69	14.52
	interval velocity		7.26	8.75	8.33	8.05	7.78	7.71	7.53	7.26	7.20	7.23	6.88	7.58		8.37	7.67	7.23
	H1 lead leg R	strides	14	15	14	15	15	15	15	15	15	15	18.2	151.2				
Little, Shamier (USA) (1995)	(time)		6.32	10.41	14.63	18.94	23.37	27.79	32.39	37.20	42.28	47.21		52.98	7 / 4			
	reaction time			4.09	4.22	4.31	4.43	4.42	4.60	4.81	5.08	4.93	5.77			12.62	13.45	14.82
	interval velocity		7.12	8.56	8.29	8.12	7.90	7.92	7.61	7.28	6.89	7.10	6.93	7.55		8.32	7.81	7.09
	H1 lead leg R	strides	23	15	15	15	15	15	15	15	16	16	19.2	179.2				
Glenn, Rachel (USA) (2002)	(time)		6.33	10.29	14.52	18.82	23.25	27.85	32.54	37.42	42.41	47.39		53.46	4 / 5			
	reaction time			3.96	4.23	4.30	4.43	4.60	4.69	4.88	4.99	4.98	6.07	PB		12.49	13.72	14.85
	interval velocity		7.11	8.84	8.27	8.14	7.90	7.61	7.46	7.17	7.01	7.03	6.59	7.48		8.41	7.65	7.07
	H1 lead leg R	strides	21	14	14	14	14	14	14	15	15	15	18.7	168.7				
Muhammad, Dalilah (USA) (1990)	(time)		6.29	10.40	14.59	18.93	23.45	28.00	32.71	37.75	43.13	48.33		54.27	9 / 6			
	reaction time			4.11	4.19	4.34	4.52	4.55	4.71	5.04	5.38	5.20	5.94			12.64	13.78	15.62
	interval velocity		7.15	8.52	8.35	8.06	7.74	7.69	7.43	6.94	6.51	6.73	6.73	7.37		8.31	7.62	6.72
	H1 lead leg R	strides	15	15	15	15	15	15	15	15	16	16	19.2	156.2				
Garrett, Akala (USA) (2005)	(time)		6.53	10.69	15.02	19.41	23.96	28.70	33.55	38.74	43.90	48.95		55.01	1 / 7			
	reaction time			4.16	4.33	4.39	4.55	4.74	4.85	5.19	5.16	5.05	6.06			12.88	14.14	15.40
	interval velocity		6.89	8.41	8.08	7.97	7.69	7.38	7.22	6.74	6.78	6.93	6.60	7.27		8.15	7.43	6.82
	H1 lead leg R	strides	23	15	15	15	15	15	16	16	17	17	19.5	183.5				
Tate, Cassandra (USA) (1990)	(time)		6.29	10.30	14.58	18.93	23.40	28.05	32.82	38.10	43.53	49.02		55.37	2 / 8			
	reaction time			4.01	4.28	4.35	4.47	4.65	4.77	5.28	5.43	5.49	6.35			12.64	13.89	16.20
	interval velocity		7.15	8.73	8.18	8.05	7.83	7.53	7.34	6.63	6.45	6.38	6.30	7.22		8.31	7.56	6.48
	H1 lead leg R	strides	22	14	14	15	15	15	16	16	16	17	20	180				
Townsend, Sydni (USA) (2000)	(time)		6.40	10.53	14.82	19.25	23.81	28.53	33.37	38.47	43.73	49.03		55.47	3 / 9			
	reaction time			4.13	4.29	4.43	4.56	4.72	4.84	5.10	5.26	5.30	6.44			12.85	14.12	15.66
	interval velocity		7.03	8.47	8.16	7.90	7.68	7.42	7.23	6.86	6.65	6.60	6.21	7.21		8.17	7.44	6.70
	H1 lead leg L	strides	23	16	16	16	16	17	17	17	17	18	22.5	195.5				



Time Intervals (s)

Hurdle Phases



Source: USATF and Karmarush (Sun 30 Jun 2024) - USA Olympic trials results and race analysis

<https://results.usatf.org/2024trials/>Video: <https://www.youtube.com/watch?v=5WJswSQsoYw>

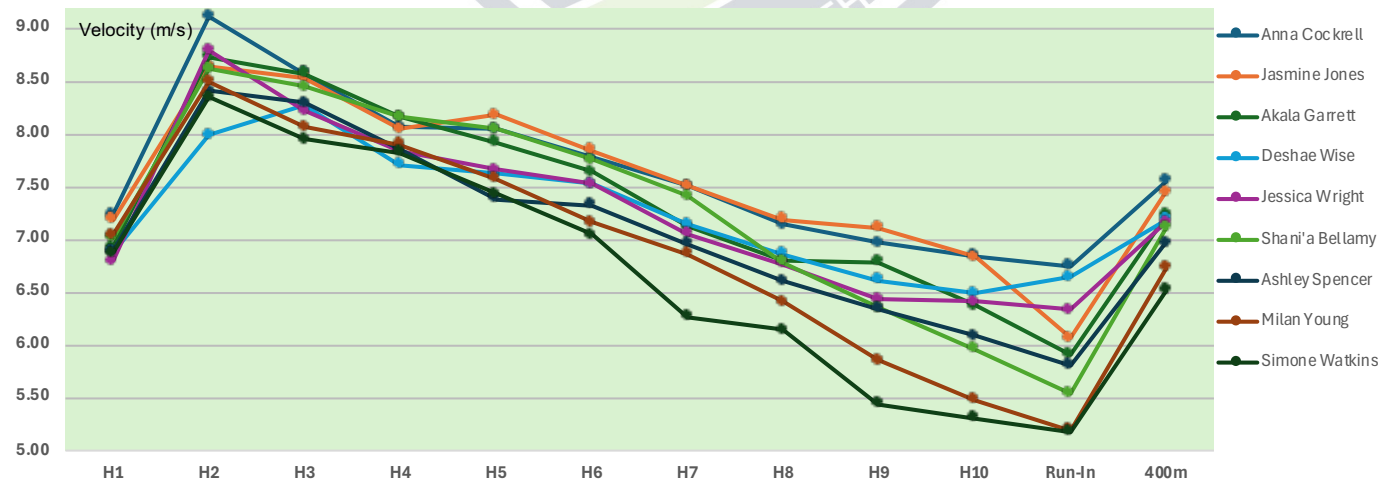
2024 USA Olympic Trials (Eugene, OR)

Women's 400m Hurdles

Date 2024.06.29

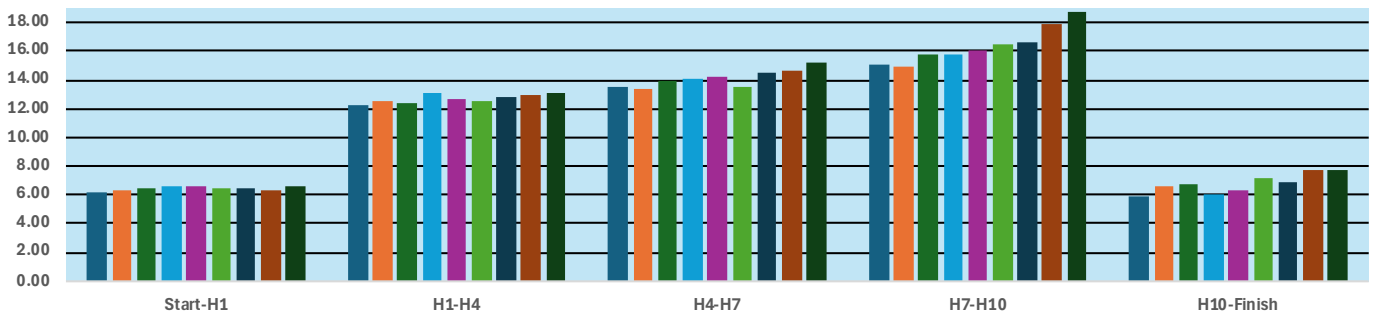
Semi-Final 3

				H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10			
Cockrell, Anna (USA) (1997)	time			6.22	10.06	14.14	18.48	22.83	27.33	31.99	36.89	41.91	47.02		52.95	5 / 1	12.26	13.51	15.03			
	reaction time				3.84	4.08	4.34	4.35	4.50	4.66	4.90	5.02	5.11	5.93	PB							
	velocity			7.23	9.11	8.58	8.06	8.05	7.78	7.51	7.14	6.97	6.85	6.75	7.55					8.56	7.77	6.99
	H1 lead leg	R	strides	22	14	14	14	14	14	14	15	15	15	15	19					171		
Jones, Jasmine (USA) (2001)	time			6.26	10.31	14.41	18.76	23.04	27.50	32.16	37.03	41.95	47.07		53.66	6 / 2	12.50	13.40	14.91			
	reaction time				4.05	4.10	4.35	4.28	4.46	4.66	4.87	4.92	5.12	6.59								
	velocity			7.19	8.64	8.54	8.05	8.18	7.85	7.51	7.19	7.11	6.84	6.07	7.45					8.40	7.84	7.04
	H1 lead leg	R	strides		14	14	14	14	15	15	15	15	16	19	151							
Garrett, Akala (USA) (2005)	time			6.49	10.50	14.58	18.87	23.29	27.87	32.78	37.92	43.08	48.57		55.34	8 / 3	12.38	13.91	15.79			
	reaction time				4.01	4.08	4.29	4.42	4.58	4.91	5.14	5.16	5.49	6.77								
	velocity			6.93	8.73	8.58	8.16	7.92	7.64	7.13	6.81	6.78	6.38	5.91	7.23					8.48	7.55	6.65
	H1 lead leg	R	strides		15	15	15	15	16	16	17	17	17	20	163							
Wise, Deshae (USA) (1999)	time			6.54	10.92	15.15	19.69	24.28	28.93	33.83	38.93	44.22	49.61		55.63	9 / 4	13.15	14.14	15.78			
	reaction time				4.38	4.23	4.54	4.59	4.65	4.90	5.10	5.29	5.39	6.02								
	velocity			6.88	7.99	8.27	7.71	7.63	7.53	7.14	6.86	6.62	6.49	6.64	7.19					7.98	7.43	6.65
	H1 lead leg	L	strides		16	16	16	16	16	16	16	17	17	19.7	165.7							
Wright, Jessica (USA) (2000)	time			6.62	10.60	14.86	19.32	23.89	28.54	33.50	38.67	44.11	49.57		55.88	4 / 5	12.70	14.18	16.07			
	reaction time				3.98	4.26	4.46	4.57	4.65	4.96	5.17	5.44	5.46	6.31								
	velocity			6.80	8.79	8.22	7.85	7.66	7.53	7.06	6.77	6.43	6.41	6.34	7.16					8.27	7.40	6.53
	H1 lead leg	L	strides	24	15	16	16	16	16	17	17	18	18	22	195							
Bellamy, Shani'a (USA) (2002)	time			6.41	10.47	14.61	18.90	23.25	27.76	32.48	37.64	43.15	49.02		56.24	7 / 6	12.49	13.58	16.54			
	reaction time				4.06	4.14	4.29	4.35	4.51	4.72	5.16	5.51	5.87	7.22								
	velocity			7.02	8.62	8.45	8.16	8.05	7.76	7.42	6.78	6.35	5.96	5.54	7.11					8.41	7.73	6.35
	H1 lead leg	L	strides		15	15	15	15	15	16	16	16	17	20.2	160.2							
Spencer, Ashley (USA) (1993)	time			6.53	10.69	14.91	19.36	24.10	28.88	33.91	39.21	44.73	50.48		57.37	1 / 7	12.83	14.55	16.57			
	reaction time				4.16	4.22	4.45	4.74	4.78	5.03	5.30	5.52	5.75	6.89								
	velocity			6.89	8.41	8.29	7.87	7.38	7.32	6.96	6.60	6.34	6.09	5.81	6.97					8.18	7.22	6.34
	H1 lead leg	L	strides	23	15	15	15	15	15	16	16		17	20	167							
Young, Milan (USA) (1999)	time			6.39	10.51	14.85	19.28	23.90	28.79	33.89	39.35	45.33	51.72		59.43	3 / 8	12.89	14.61	17.83			
	reaction time				4.12	4.34	4.43	4.62	4.89	5.10	5.46	5.98	6.39	7.71								
	velocity			7.04	8.50	8.06	7.90	7.58	7.16	6.86	6.41	5.85	5.48	5.19	6.73					8.15	7.19	5.89
	H1 lead leg	R	strides	23	15	15	15	15	15	15	16	16	18	21	168							
Watkins, Simone (USA) (2001)	time			6.55	10.74	15.14	19.61	24.32	29.29	34.87	40.57	47.00	53.60		61.33	2 / 9	13.06	15.26	18.73			
	reaction time				4.19	4.40	4.47	4.71	4.97	5.58	5.70	6.43	6.60	7.73								
	velocity			6.87	8.35	7.95	7.83	7.43	7.04	6.27	6.14	5.44	5.30	5.17	6.52					8.04	6.88	5.61
	H1 lead leg	L	strides	23	15	15	15	15	16	16	17		18	20	170							



Time Intervals (s)

Hurdle Phases



Source: USATF and Karmarush (Sat 29 Jun 2024) - USA Olympic trials results and race analysis

<https://results.usatf.org/2024trials/>

Video: <https://www.youtube.com/watch?v=DT61nLKTrNI>

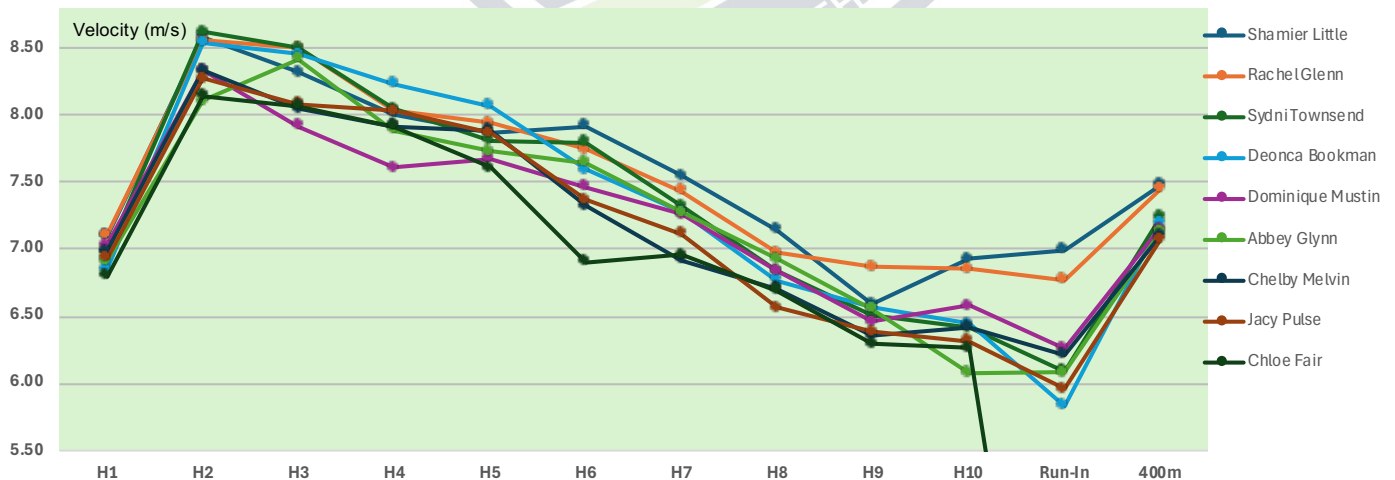
2024 USA Olympic Trials (Eugene, OR)

Women's 400m Hurdles

Date 2024.06.29

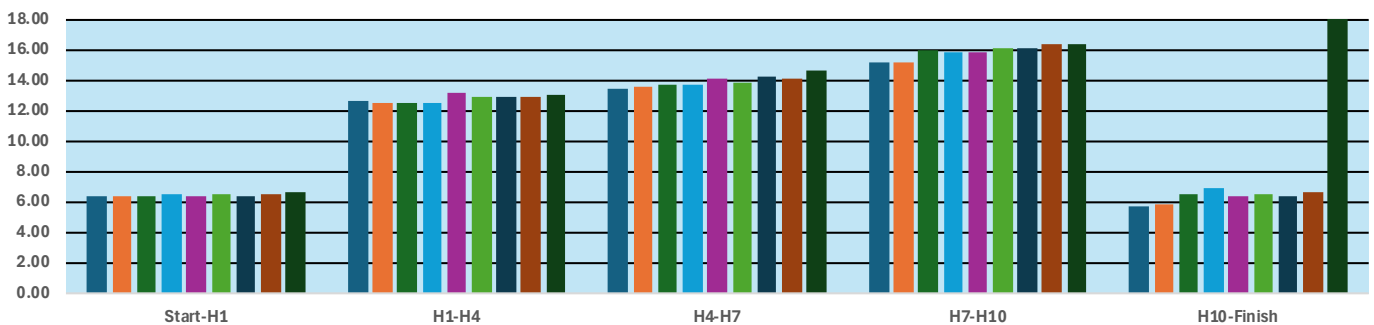
Semi-Final 2

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Little, Shamier (USA) (1995)	time		6.34	10.42	14.63	19.00	23.45	27.87	32.51	37.41	42.72	47.77		53.49	7 / 1			
	reaction time																	
	interval			4.08	4.21	4.37	4.45	4.42	4.64	4.90	5.31	5.05	5.72			12.66	13.51	15.26
	velocity		7.10	8.58	8.31	8.01	7.87	7.92	7.54	7.14	6.59	6.93	6.99	7.48		8.29	7.77	6.88
	H1 lead leg	R	23	15	15	15	15	15	15	15	16	16	19	179				
Glenn, Rachel (USA) (2002)	time		6.33	10.42	14.54	18.90	23.31	27.83	32.54	37.56	42.66	47.77		53.68	5 / 2			
	reaction time																	
	interval			4.09	4.12	4.36	4.41	4.52	4.71	5.02	5.10	5.11	5.91	PB		12.57	13.64	15.23
	velocity		7.11	8.56	8.50	8.03	7.94	7.74	7.43	6.97	6.86	6.85	6.77	7.45		8.35	7.70	6.89
	H1 lead leg	L	21	14	14	13	14	14	15	15	15	15	18.2	168.2				
Townsend, Sydni (USA) (2000)	time		6.45	10.51	14.63	18.98	23.46	27.95	32.73	37.85	43.23	48.69		55.26	8 / 3			
	reaction time																	
	interval			4.06	4.12	4.35	4.48	4.49	4.78	5.12	5.38	5.46	6.57			12.53	13.75	15.96
	velocity		6.98	8.62	8.50	8.05	7.81	7.80	7.32	6.84	6.51	6.41	6.09	7.24		8.38	7.64	6.58
	H1 lead leg	L	23	16	16	16	16	16	17	17	18	18	22.7	195.7				
Bookman, Deonca (USA) (1995)	time		6.57	10.67	14.81	19.06	23.40	28.01	32.82	37.99	43.32	48.75		55.61	6 / 4			
	reaction time																	
	interval			4.10	4.14	4.25	4.34	4.61	4.81	5.17	5.33	5.43	6.86			12.49	13.76	15.93
	velocity		6.85	8.54	8.45	8.24	8.06	7.59	7.28	6.77	6.57	6.45	5.83	7.19		8.41	7.63	6.59
	H1 lead leg	R	24	16	16	16	16	17	18	18	18	19	23.2	201.2				
Mustin, Dominique (USA) (2002)	time		6.40	10.60	15.02	19.62	24.18	28.87	33.69	38.81	44.23	49.55		55.94	4 / 5			
	reaction time																	
	interval			4.20	4.42	4.60	4.56	4.69	4.82	5.12	5.42	5.32	6.39			13.22	14.07	15.86
	velocity		7.03	8.33	7.92	7.61	7.68	7.46	7.26	6.84	6.46	6.58	6.26	7.15		7.94	7.46	6.62
	H1 lead leg	R	22	15	15	15	15	15	15	16	16	16	19.2	179.2				
Glynn, Abbey (USA) (2001)	time		6.51	10.83	14.99	19.43	23.96	28.54	33.35	38.40	43.74	49.50		56.08	9 / 6			
	reaction time																	
	interval			4.32	4.16	4.44	4.53	4.58	4.81	5.05	5.34	5.76	6.58			12.92	13.92	16.15
	velocity		6.91	8.10	8.41	7.88	7.73	7.64	7.28	6.93	6.55	6.08	6.08	7.13		8.13	7.54	6.50
	H1 lead leg	L		15	15	15	15	15	15	15	16	18		139				
Melvin, Chelby (USA) (2003)	time		6.44	10.64	14.99	19.41	23.85	28.63	33.69	38.91	44.42	49.87		56.31	2 / 7			
	reaction time																	
	interval			4.20	4.35	4.42	4.44	4.78	5.06	5.22	5.51	5.45	6.44	PB		12.97	14.28	16.18
	velocity		6.99	8.33	8.05	7.92	7.88	7.32	6.92	6.70	6.35	6.42	6.21	7.10		8.10	7.35	6.49
	H1 lead leg	R	22	15	15	15	15	16	16	17	17	17	20.2	185.2				
Pulse, Jacy (USA) (2001)	time		6.49	10.72	15.05	19.41	23.86	28.61	33.53	38.86	44.34	49.88		56.59	3 / 8			
	reaction time																	
	interval			4.23	4.33	4.36	4.45	4.75	4.92	5.33	5.48	5.54	6.71			12.92	14.12	16.35
	velocity		6.93	8.27	8.08	8.03	7.87	7.37	7.11	6.57	6.39	6.32	5.96	7.07		8.13	7.44	6.42
	H1 lead leg	R	23	15	15	15	15	17	17	17	17	17	21	189				
Fair, Chloe (USA) (2001)	time		6.62	10.92	15.26	19.68	24.28	29.35	34.38	39.61	45.17	50.76		73.14	1 / 9			
	reaction time																	
	interval			4.30	4.34	4.42	4.60	5.07	5.03	5.23	5.56	5.59	22.38			13.06	14.70	16.38
	velocity		6.80	8.14	8.06	7.92	7.61	6.90	6.96	6.69	6.29	6.26	1.79	5.47		8.04	7.14	6.41
	H1 lead leg	L	25	16	16	16	17	17	17	18	18	18		178				



Time Intervals (s)

Hurdle Phases



Source: USATF and Karmarush (Sat 29 Jun 2024) - USA Olympic trials results and race analysis

<https://results.usatf.org/2024trials/>Video: https://www.youtube.com/watch?v=llmPZ-nf_vQ

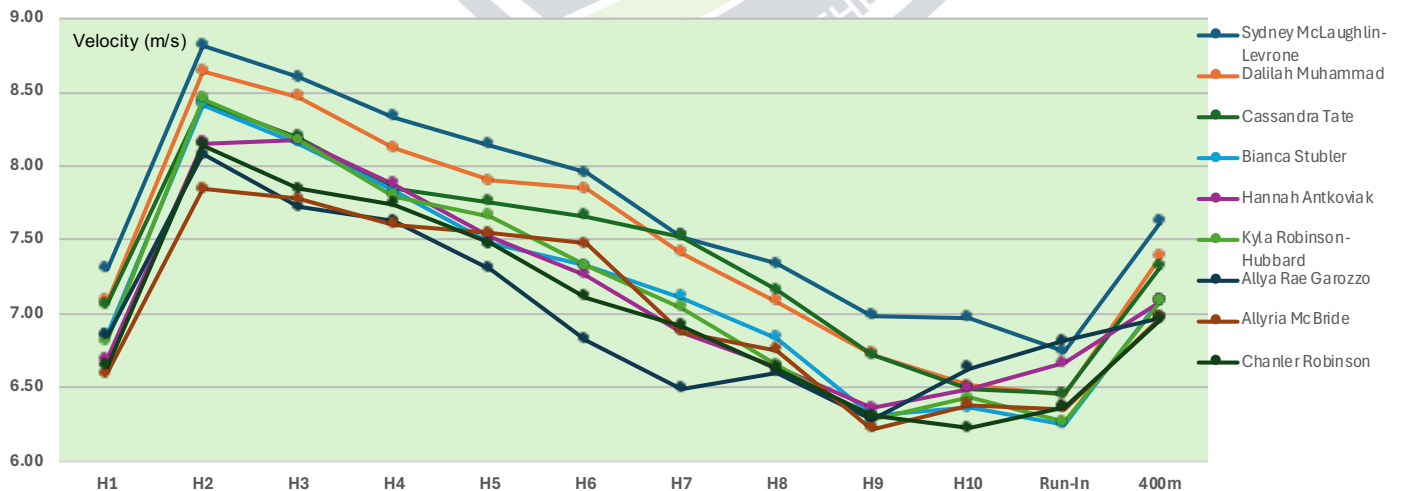
2024 USA Olympic Trials (Eugene, OR)

Women's 400m Hurdles

Date 2024.06.29

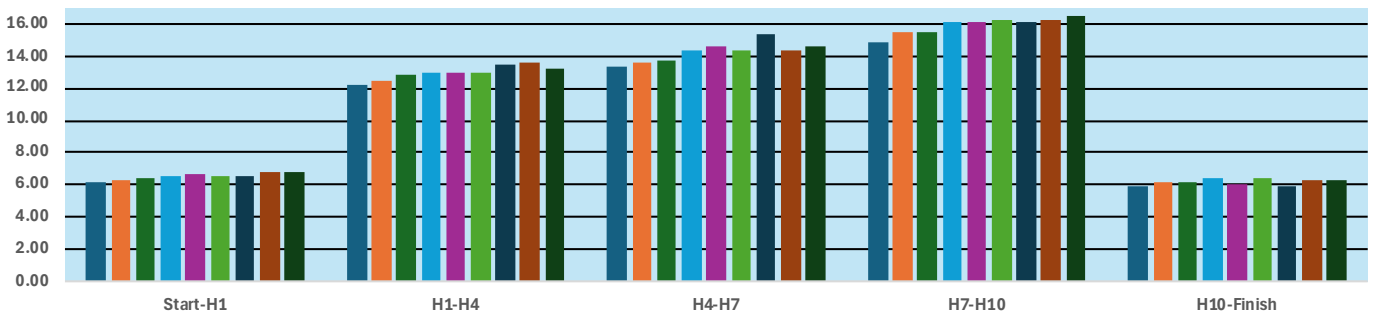
Semi-Final 1

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
McLaughlin-Levrone, Sydney (USA)	time		6.16	10.13	14.20	18.40	22.70	27.10	31.75	36.52	41.53	46.55		52.48	6 / 1			
	reaction time			3.97	4.07	4.20	4.30	4.40	4.65	4.77	5.01	5.02	5.93			12.24	13.35	14.80
	interval velocity		7.31	8.82	8.60	8.33	8.14	7.95	7.53	7.34	6.99	6.97	6.75	7.62		8.58	7.87	7.09
	H1 lead leg R	strides	22	14	14	14	14	15	15	15	15	16	18	172				
Muhammad, Dalilah (USA) (1990)	time		6.35	10.40	14.53	18.84	23.27	27.73	32.45	37.39	42.59	47.96		54.16	5 / 2			
	reaction time			4.05	4.13	4.31	4.43	4.46	4.72	4.94	5.20	5.37	6.20			12.49	13.61	15.51
	interval velocity		7.09	8.64	8.47	8.12	7.90	7.85	7.42	7.09	6.73	6.52	6.45	7.39		8.41	7.71	6.77
	H1 lead leg R	strides	22	15	15	15	15	15	15	15	16	16	20	179				
Tate, Cassandra (USA) (1990)	time		6.37	10.52	14.79	19.25	23.76	28.33	32.98	37.87	43.08	48.47		54.66	8 / 3			
	reaction time			4.15	4.27	4.46	4.51	4.57	4.65	4.89	5.21	5.39	6.19			12.88	13.73	15.49
	interval velocity		7.06	8.43	8.20	7.85	7.76	7.66	7.53	7.16	6.72	6.49	6.46	7.32		8.15	7.65	6.78
	H1 lead leg R	strides		15	15	15	15	15	15	15	16	16	19.2	156.2				
Stubler, Bianca (USA) (1999)	time		6.56	10.72	15.01	19.48	24.16	28.94	33.86	38.98	44.52	50.02		56.42	2 / 4			
	reaction time			4.16	4.29	4.47	4.68	4.78	4.92	5.12	5.54	5.50	6.40			12.92	14.38	16.16
	interval velocity		6.86	8.41	8.16	7.83	7.48	7.32	7.11	6.84	6.32	6.36	6.25	7.09		8.13	7.30	6.50
	H1 lead leg R	strides	23	15	15	15	16	16	16	16	17	17	21.5	187.5				
Antkoviak, Hannah (USA) (2003)	time		6.72	11.01	15.29	19.73	24.38	29.20	34.29	39.56	45.06	50.45		56.45	7 / 5			
	reaction time			4.29	4.28	4.44	4.65	4.82	5.09	5.27	5.50	5.39	6.00			13.01	14.56	16.16
	interval velocity		6.70	8.16	8.18	7.88	7.53	7.26	6.88	6.64	6.36	6.49	6.67	7.09		8.07	7.21	6.50
	H1 lead leg L	strides	24	15	15	15	15	15	17	17	17	17		167				
Robinson-Hubbard, Kyla (USA) (2001)	time		6.60	10.74	15.02	19.51	24.08	28.86	33.83	39.09	44.66	50.10		56.48	4 / 6			
	reaction time			4.14	4.28	4.49	4.67	4.78	4.97	5.26	5.57	5.44	6.38			12.91	14.32	16.27
	interval velocity		6.82	8.45	8.18	7.80	7.66	7.32	7.04	6.65	6.28	6.43	6.27	7.08		8.13	7.33	6.45
	H1 lead leg L	strides	23	16	16	16	16	16	16	17	17	17	20	190				
Garozzo, Aliya Rae (USA) (2001)	time		6.57	10.90	15.43	20.02	24.81	29.94	35.33	40.63	46.20	51.48		57.35	1 / 7			
	reaction time			4.33	4.53	4.59	4.79	5.13	5.39	5.30	5.57	5.28	5.87			13.45	15.31	16.15
	interval velocity		6.85	8.08	7.73	7.63	7.31	6.82	6.49	6.60	6.28	6.63	6.81	6.97		7.81	6.86	6.50
	H1 lead leg R	strides	23	15	15	15	15	16	16	16	16	16	19	182				
McBride, Allyria (USA) (2004)	time		6.82	11.28	15.78	20.38	25.02	29.70	34.79	39.97	45.60	51.08		57.37	9 / 8			
	reaction time			4.46	4.50	4.60	4.64	4.68	5.09	5.18	5.63	5.48	6.29			13.56	14.41	16.29
	interval velocity		6.60	7.85	7.78	7.61	7.54	7.48	6.88	6.76	6.22	6.39	6.36	6.97		7.74	7.29	6.45
	H1 lead leg L	strides		16	16	15	15	16	16	17	17		128					
Robinson, Chanler (USA) (2001)	time		6.77	11.07	15.53	20.05	24.73	29.65	34.71	39.99	45.54	51.16		57.44	3 / 9			
	reaction time			4.30	4.46	4.52	4.68	4.92	5.06	5.28	5.55	5.62	6.28			13.28	14.66	16.45
	interval velocity		6.65	8.14	7.85	7.74	7.48	7.11	6.92	6.63	6.31	6.23	6.37	6.96		7.91	7.16	6.38
	H1 lead leg L	strides	25	16	16	15	16	16	16	16	17	17	20	190				



Time Intervals (s)

Hurdle Phases



Source: USATF and Karmarush (Sat 29 Jun 2024) - USA Olympic trials results and race analysis

<https://results.usatf.org/2024trials/>Video: <https://www.youtube.com/watch?v=4Qbn6Yy0HQ>

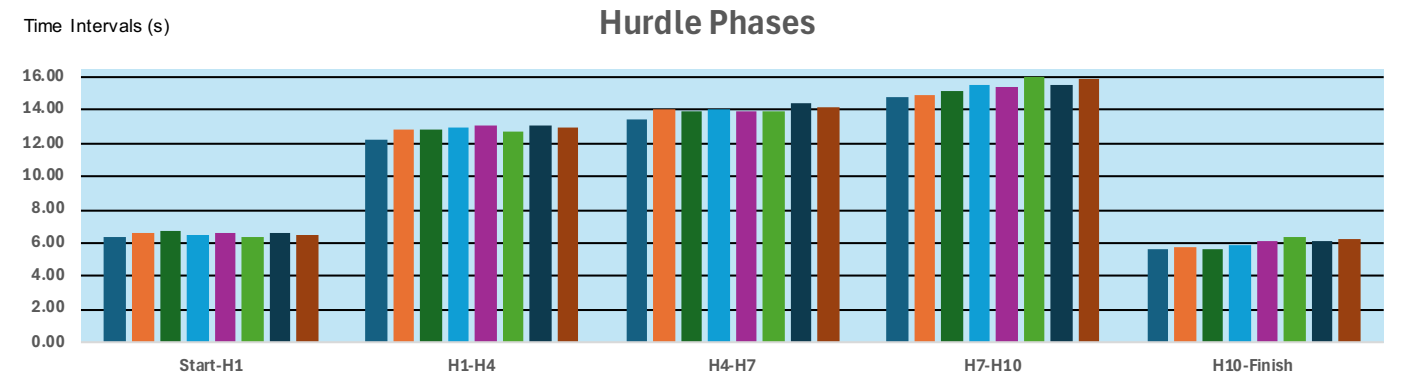
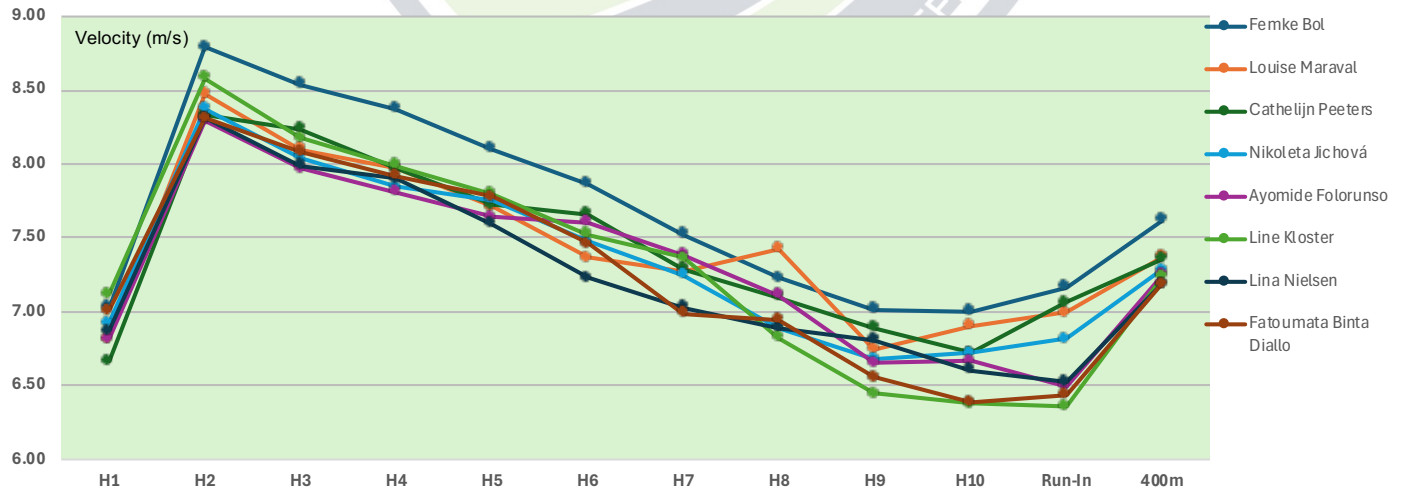
2024 European Athletics Championships (Roma, ITA)

Women's 400m Hurdles

Date 2024.06.11

FINAL

				H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Bol, Femke (NED) (2000)	time			6.40	10.38	14.48	18.66	22.98	27.43	32.08	36.92	41.91	46.91		52.49	6 / 1			
	reaction time	0.180	interval		3.98	4.10	4.18	4.32	4.45	4.65	4.84	4.99	5.00	5.58	CR		12.26	13.42	14.83
	velocity			7.03	8.79	8.54	8.37	8.10	7.87	7.53	7.23	7.01	7.00	7.17	7.62		8.56	7.82	7.08
	H1 lead leg	L	strides	22	14	14	14	14	14	14	15	15	15	19	170				
Maraval, Louise (FRA) (2001)	time			6.60	10.73	15.05	19.44	23.98	28.73	33.54	38.25	43.44	48.51		54.23	7 / 2			
	reaction time	0.211	interval		4.13	4.32	4.39	4.54	4.75	4.81	4.71	5.19	5.07	5.72	PB		12.84	14.10	14.97
	velocity			6.82	8.47	8.10	7.97	7.71	7.37	7.28	7.43	6.74	6.90	6.99	7.38		8.18	7.45	7.01
	H1 lead leg	R	strides	23	15	15			16	16			17	20	122				
Peeters, Cathelijn (NED) (1996)	time			6.75	10.95	15.20	19.59	24.12	28.69	33.49	38.42	43.50	48.71		54.37	9 / 3			
	reaction time	0.266	interval		4.20	4.25	4.39	4.53	4.57	4.80	4.93	5.08	5.21	5.66			12.84	13.90	15.22
	velocity			6.67	8.33	8.24	7.97	7.73	7.66	7.29	7.10	6.89	6.72	7.07	7.36		8.18	7.55	6.90
	H1 lead leg	R	strides	23	15	15	15	15	15	16			17	20	151				
Jíchová, Nikoleta (CZE) (2000)	time			6.50	10.68	15.03	19.49	24.00	28.68	33.51	38.59	43.83	49.04		54.91	4 / 4			
	reaction time	0.254	interval		4.18	4.35	4.46	4.51	4.68	4.83	5.08	5.24	5.21	5.87			12.99	14.02	15.53
	velocity			6.92	8.37	8.05	7.85	7.76	7.48	7.25	6.89	6.68	6.72	6.81	7.28		8.08	7.49	6.76
	H1 lead leg	R	strides	22	15	15			15				16	20.5	103.5				
Folorunso, Ayomide (ITA) (1996)	time			6.60	10.82	15.21	19.69	24.27	28.87	33.61	38.53	43.79	49.04		55.2	2 / 5			
	reaction time	0.173	interval		4.22	4.39	4.48	4.58	4.60	4.74	4.92	5.26	5.25	6.16			13.09	13.92	15.43
	velocity			6.82	8.29	7.97	7.81	7.64	7.61	7.38	7.11	6.65	6.67	6.49	7.25		8.02	7.54	6.80
	H1 lead leg	L	strides	23	15	15		15	16				17	21	122				
Kloster, Line (NOR) (1990)	time			6.32	10.40	14.68	19.06	23.55	28.20	32.95	38.08	43.51	49.00		55.29	5 / 6			
	reaction time	0.168	interval		4.08	4.28	4.38	4.49	4.65	4.75	5.13	5.43	5.49	6.29			12.74	13.89	16.05
	velocity			7.12	8.58	8.18	7.99	7.80	7.53	7.37	6.82	6.45	6.38	6.36	7.23		8.24	7.56	6.54
	H1 lead leg	R	strides	22	15	15			15	15	16		17	20	135				
Nielsen, Lina (GBR) (1996)	time			6.55	10.76	15.14	19.57	24.18	29.02	34.00	39.08	44.22	49.52		55.65	8 / 7			
	reaction time	0.209	interval		4.21	4.38	4.43	4.61	4.84	4.98	5.08	5.14	5.30	6.13			13.02	14.43	15.52
	velocity			6.87	8.31	7.99	7.90	7.59	7.23	7.03	6.89	6.81	6.60	6.53	7.19		8.06	7.28	6.77
	H1 lead leg	L	strides	22	15	15	15	16	16	16			17	19	151				
Diallo, Fatoumata Binta (POR) (2000)	time			6.42	10.63	14.96	19.38	23.88	28.57	33.58	38.62	43.96	49.44		55.65	3 / 8			
	reaction time	0.166	interval		4.21	4.33	4.42	4.50	4.69	5.01	5.04	5.34	5.48	6.21			12.96	14.20	15.86
	velocity			7.01	8.31	8.08	7.92	7.78	7.46	6.99	6.94	6.55	6.39	6.44	7.19		8.10	7.39	6.62
	H1 lead leg	R	strides	24	16	16			17				18	21.5	112.5				



Source: European Athletics (2024). 2024 European athletics championships - results book. p. 327
<https://european-athletics.directus.app/assets/fe31f746-d9d1-4555-8899-d095f5843ff0/Results%20Book%20-%20European%20Athletics%20Championships%202024.pdf>
Video: <https://www.youtube.com/watch?v=M5GTBi4chFQ>

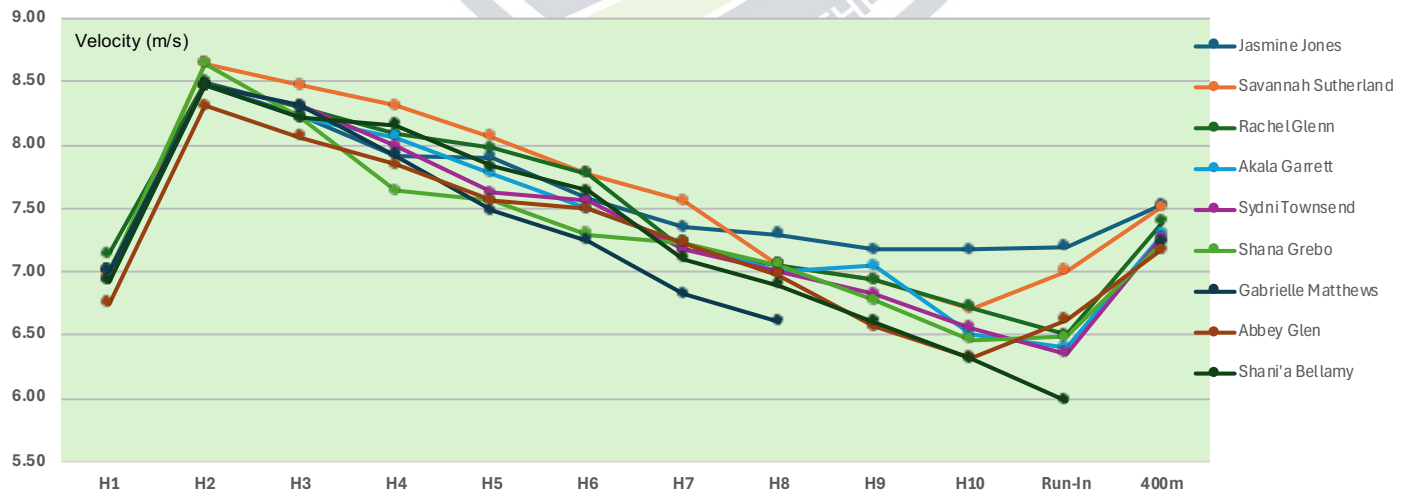
2024 NCAA Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2024.06.08

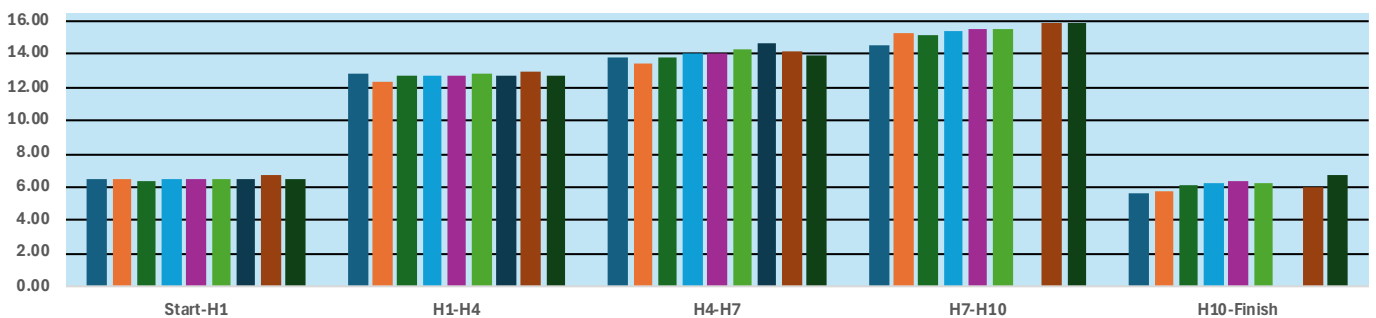
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Jones, Jasmine (USA) (2001)	time		6.42	10.55	14.80	19.22	23.65	28.27	33.03	37.83	42.71	47.59		53.15	5 / 1			
	reaction time																	
	interval			4.13	4.25	4.42	4.43	4.62	4.76	4.80	4.88	4.88	5.56	PB		12.80	13.81	14.56
	velocity		7.01	8.47	8.24	7.92	7.93	7.58	7.35	7.29	7.17	7.17	7.19	7.53		8.20	7.60	7.21
Sutherland, Savannah (CAN) (2003)	H1 lead leg	R	22	14	14	14	14	15	15	15	15	15	18.2	171.2				
	time		6.46	10.51	14.64	18.85	23.19	27.69	32.32	37.28	42.33	47.55		53.26	7 / 2			
	reaction time																	
	interval			4.05	4.13	4.21	4.34	4.50	4.63	4.96	5.05	5.22	5.71	NR PB		12.39	13.47	15.23
Glenn, Rachel (USA) (2002)	velocity		6.97	8.64	8.47	8.31	8.06	7.78	7.56	7.06	6.93	6.70	7.01	7.51		8.47	7.80	6.89
	H1 lead leg	R	23	15	15	15	15	15	15	16	16	16	20	181				
	time		6.30	10.42	14.64	18.97	23.36	27.86	32.74	37.70	42.75	47.96		54.11	6 / 3			
	reaction time																	
Garrett, Akala (USA) (2005)	interval			4.12	4.22	4.33	4.39	4.50	4.88	4.96	5.05	5.21	6.15			12.67	13.77	15.22
	velocity		7.14	8.50	8.29	8.08	7.97	7.78	7.17	7.06	6.93	6.72	6.50	7.39		8.29	7.63	6.90
	H1 lead leg	R	21	14	14	14	14	14	15	15	15	15	18.7	169.7				
	time		6.50	10.63	14.89	19.23	23.73	28.40	33.24	38.24	43.21	48.59		54.84	8 / 4			
Townsend, Sydni (USA) (2000)	reaction time																	
	interval			4.13	4.21	4.38	4.59	4.63	4.88	5.00	5.13	5.34	6.30			12.72	14.10	15.47
	velocity		7.01	8.47	8.31	7.99	7.63	7.56	7.17	7.00	6.82	6.55	6.35	7.27		8.25	7.45	6.79
	H1 lead leg	L	23	16	16	16	16	16	17	17	18	18	22	195				
Grebo, Shana (FRA) (2000)	time		6.42	10.47	14.73	19.31	23.94	28.74	33.58	38.54	43.71	49.13		55.30	4 / 6			
	reaction time																	
	interval			4.05	4.26	4.58	4.63	4.80	4.84	4.96	5.17	5.42	6.17	PB		12.89	14.27	15.55
	velocity		7.01	8.64	8.22	7.64	7.56	7.29	7.23	7.06	6.77	6.46	6.48	7.23		8.15	7.36	6.75
Matthews, Gabrielle (JAM) (2002)	H1 lead leg	L	23	15	15	17	17	17	17	17	17	18		173				
	time		6.42	10.55	14.76	19.18	23.86	28.69	33.82	39.12				55.33	9 / 7			
	reaction time																	
	interval			4.13	4.21	4.42	4.68	4.83	5.13	5.30						12.76	14.64	
Glynn, Abbey (USA) (2001)	velocity		7.01	8.47	8.31	7.92	7.48	7.25	6.82	6.60				7.23		8.23	7.17	
	H1 lead leg	L	15	15	15	16	16	17	17					111				
	time		6.67	10.88	15.22	19.68	24.31	28.98	33.82	38.84	44.17	49.71		55.75	2 / 8			
	reaction time																	
Bellamy, Shani'a (USA) (2002)	interval			4.21	4.34	4.46	4.63	4.67	4.84	5.02	5.33	5.54	6.04			13.01	14.14	15.89
	velocity		6.75	8.31	8.06	7.85	7.56	7.49	7.23	6.97	6.57	6.32	6.62	7.17		8.07	7.43	6.61
	H1 lead leg	L	23	15	15	15	15	15	15	15	16	16		160				
	time		6.50	10.63	14.89	19.18	23.65	28.23	33.16	38.24	43.54	49.09		55.78	1 / 9			
Bellamy, Shani'a (USA) (2002)	reaction time																	
	interval			4.13	4.26	4.29	4.47	4.58	4.93	5.08	5.30	5.55	6.69			12.68	13.98	15.93
	velocity		6.92	8.47	8.22	8.16	7.83	7.64	7.10	6.89	6.60	6.31	5.98			8.28	7.51	6.59
	H1 lead leg	L	23	15	15	15	15	15	16	16	17	17		164				



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo

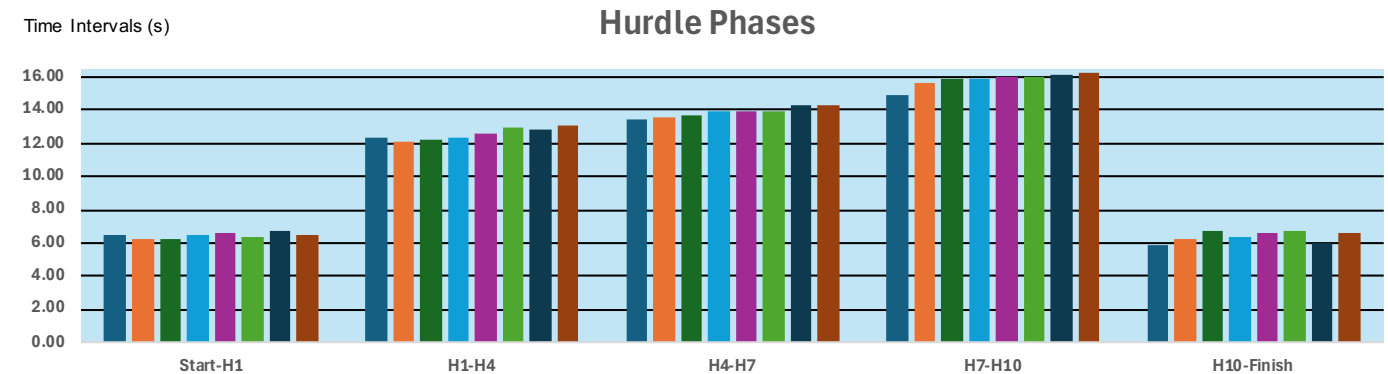
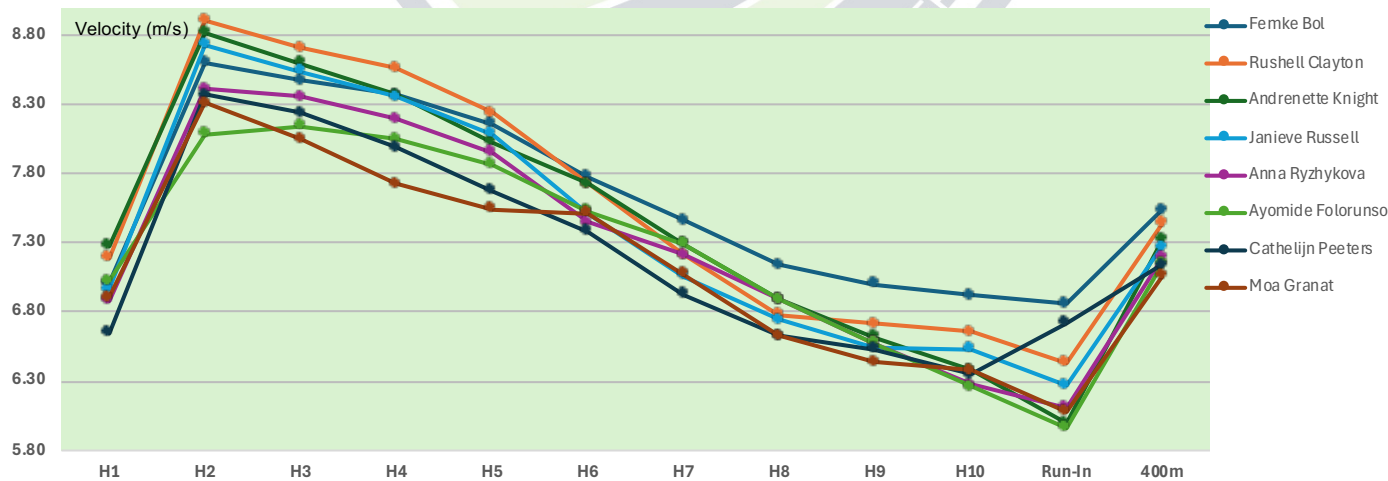
Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: Gun Flash

Source: <https://www.youtube.com/watch?v=cDnZJWvQVfk>

2024 Bauhaus Galan (Stockholm, SWE)

Women's 400m Hurdles															FINAL			
Date 2024.06.02																		
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Bol, Femke (NED) (2000)	time		6.42	10.49	14.62	18.80	23.09	27.59	32.28	37.18	42.18	47.24		53.07	5 / 1			
	reaction time	0.191																
	interval		7.01	4.07	4.13	4.18	4.29	4.50	4.69	4.90	5.00	5.06	5.83			12.38	13.48	14.96
	velocity		8.60	8.47	8.37	8.37	8.16	7.78	7.46	7.14	7.00	6.92	6.86	7.54		8.48	7.79	7.02
Clayton, Rushell (JAM) (1992)	time		6.26	10.19	14.21	18.30	22.55	27.08	31.93	37.09	42.30	47.56		53.78	6 / 2			
	reaction time	0.142																
	interval		3.93	4.02	4.09	4.25	4.53	4.85	5.16	5.21	5.26	6.22				12.04	13.63	15.63
	velocity		7.19	8.91	8.71	8.56	8.24	7.73	7.22	6.78	6.72	6.65	6.43	7.44		8.72	7.70	6.72
Knight, Andrenette (JAM) (1996)	time		6.18	10.15	14.22	18.40	22.76	27.29	32.09	37.17	42.46	47.95		54.62	4 / 3			
	reaction time	0.168																
	interval		3.97	4.07	4.18	4.36	4.53	4.80	5.08	5.29	5.49	6.67				12.22	13.69	15.86
	velocity		7.28	8.82	8.60	8.37	8.03	7.73	7.29	6.89	6.62	6.38	6.00	7.32		8.59	7.67	6.62
Russell, Janieve (JAM) (1993)	time		6.46	10.47	14.57	18.76	23.09	27.75	32.71	37.90	43.25	48.61		54.99	7 / 4			
	reaction time	0.159																
	interval		4.01	4.10	4.19	4.33	4.66	4.96	5.19	5.35	5.36	6.38				12.30	13.95	15.90
	velocity		6.97	8.73	8.54	8.35	8.08	7.51	7.06	6.74	6.54	6.53	6.27	7.27		8.54	7.53	6.60
Ryzhykova, Anna (UKR) (1989)	time		6.54	10.70	14.89	19.16	23.56	28.26	33.11	38.19	43.51	49.09		55.64	1 / 5			
	reaction time	0.194																
	interval		4.16	4.19	4.27	4.40	4.70	4.85	5.08	5.32	5.58	6.55				12.62	13.95	15.98
	velocity		6.88	8.41	8.35	8.20	7.95	7.45	7.22	6.89	6.58	6.27	6.11	7.19		8.32	7.53	6.57
Folorunso, Ayomide (ITA) (1996)	time		6.41	10.74	15.04	19.39	23.84	28.49	33.29	38.37	43.69	49.28		55.99	2 / 6			
	reaction time	0.174																
	interval		4.33	4.30	4.35	4.45	4.65	4.80	5.08	5.32	5.59	6.71				12.98	13.90	15.99
	velocity		7.02	8.08	8.14	8.05	7.87	7.53	7.29	6.89	6.58	6.26	5.96	7.14		8.09	7.55	6.57
Peeters, Cathelijn (NED) (1996)	time		6.77	10.95	15.20	19.58	24.14	28.88	33.93	39.21	44.57	50.08		56.03	3 / 7			
	reaction time	0.279																
	interval		4.18	4.25	4.38	4.56	4.74	5.05	5.28	5.36	5.51	5.95				12.81	14.35	16.15
	velocity		6.65	8.37	8.24	7.99	7.68	7.38	6.93	6.63	6.53	6.35	6.72	7.14		8.20	7.32	6.50
Granat, Moa (SWE) (2004)	time		6.52	10.73	15.08	19.61	24.25	28.91	33.86	39.14	44.58	50.07		56.65	8 / 8			
	reaction time	0.154																
	interval		4.21	4.35	4.53	4.64	4.66	4.95	5.28	5.44	5.49	6.58				13.09	14.25	16.21
	velocity		6.90	8.31	8.05	7.73	7.54	7.51	7.07	6.63	6.43	6.38	6.08	7.06		8.02	7.37	6.48



Source: Omega Timing (Sun 02 Jun 2024 19:40) - diamond league race analysis
<https://www.omegatiming.com/File/0002040A0102090101FFFFFFFF6D.pdf>
Video: <https://www.youtube.com/watch?v=dhxm3yNivU>

2024 Bislett Games (Oslo, NOR) (TV Analysis)

Women's 400m Hurdles

Date 2024.05.30

FINAL

Hurdle Phases

Time Intervals (s)

Phase	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8
Start-H1	6.2	6.1	6.3	6.3	6.4	6.3	6.2	6.3
H1-H4	12.0	12.1	12.3	12.7	12.7	12.6	12.4	12.7
H4-H7	13.5	13.8	13.8	14.1	14.1	13.9	13.8	14.1
H7-H10	15.5	15.7	15.7	15.7	15.5	16.2	15.8	15.8
H10-Finish	6.1	6.3	6.1	5.9	5.9	6.2	6.5	6.3

Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 24fps
 Timing From: First Movement
 Source: https://www.youtube.com/watch?v=4XvY_RMxQag

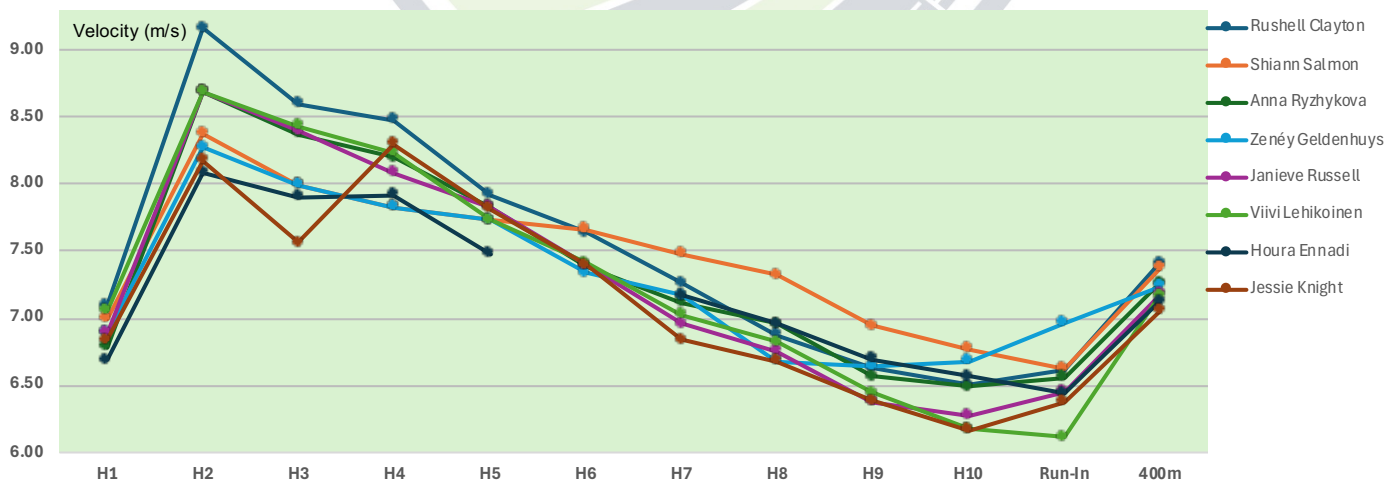
2024 Meeting International Mohammed VI d'Athlétisme (Marrakech, MAR)

Women's 400m Hurdles

Date 2024.05.19

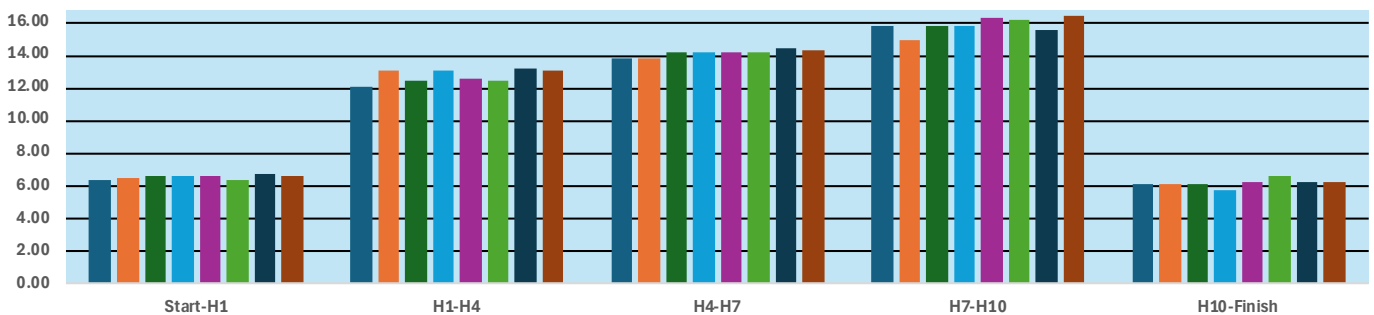
FINAL

				H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Clayton, Rushell (JAM) (1992)	time			6.34	10.16	14.23	18.36	22.78	27.36	32.18	37.27	42.55	47.93		53.98	6 / 1			
	reaction time	0.158	interval		3.82	4.07	4.13	4.42	4.58	4.82	5.09	5.28	5.38	6.05			12.02	13.82	15.75
	velocity			7.10	9.16	8.60	8.47	7.92	7.64	7.26	6.88	6.63	6.51	6.61	7.41		8.74	7.60	6.67
	H1 lead leg	L	strides	22	14	14	14	15	15	15	16	16	16	19.2	176.2				
Salmon, Shiann (JAM) (1999)	time			6.43	10.61	14.99	19.46	23.99	28.56	33.24	38.02	43.06	48.23		54.27	7 / 2			
	reaction time	0.163	interval		4.18	4.38	4.47	4.53	4.57	4.68	4.78	5.04	5.17	6.04			13.03	13.78	14.99
	velocity			7.00	8.37	7.99	7.83	7.73	7.66	7.48	7.32	6.94	6.77	6.62	7.37		8.06	7.62	7.00
	H1 lead leg	R	strides	22	15	15	15	15	15	15	15	16	16	19.7	163.7				
Ryzhykova, Anna (UKR) (1989)	time			6.63	10.66	14.84	19.11	23.58	28.32	33.24	38.27	43.60	48.99		55.09	4 / 3			
	reaction time	0.202	interval		4.03	4.18	4.27	4.47	4.74	4.92	5.03	5.33	5.39	6.10			12.48	14.13	15.75
	velocity			6.79	8.68	8.37	8.20	7.83	7.38	7.11	6.96	6.57	6.49	6.56	7.26		8.41	7.43	6.67
	H1 lead leg	R	strides	21	14	14	14	14	15			16	16	19	158				
Geldenhuis, Zenéy (RSA) (2000)	time			6.53	10.76	15.14	19.61	24.14	28.91	33.79	39.03	44.30	49.54		55.28	1 / 4			
	reaction time	0.163	interval		4.23	4.38	4.47	4.53	4.77	4.88	5.24	5.27	5.24	5.74			13.08	14.18	15.75
	velocity			6.89	8.27	7.99	7.83	7.73	7.34	7.17	6.68	6.64	6.68	6.97	7.24		8.03	7.40	6.67
	H1 lead leg	R	strides	23	15	15	15	15	15		16	16	16	19	165				
Russell, Janieve (JAM) (1993)	time			6.53	10.56	14.73	19.06	23.53	28.26	33.29	38.47	43.96	49.54		55.74	5 / 5			
	reaction time	0.141	interval		4.03	4.17	4.33	4.47	4.73	5.03	5.18	5.49	5.58	6.20			12.53	14.23	16.25
	velocity			6.89	8.68	8.39	8.08	7.83	7.40	6.96	6.76	6.38	6.27	6.45	7.18		8.38	7.38	6.46
	H1 lead leg	R	strides	23	15	15	15	15	16		17	17	17	20	170				
Lehikoinen, Viivi (FIN) (1999)	time			6.38	10.41	14.56	18.81	23.34	28.06	33.04	38.17	43.60	49.27		55.81	8 / 6			
	reaction time	0.192	interval		4.03	4.15	4.25	4.53	4.72	4.98	5.13	5.43	5.67	6.54			12.43	14.23	16.23
	velocity			7.05	8.68	8.43	8.24	7.73	7.42	7.03	6.82	6.45	6.17	6.12	7.17		8.45	7.38	6.47
	H1 lead leg	R	strides	23	15	15	15	16	16	16	17	18	18	21	190				
Ennadi, Noura (MAR) (1999)	time			6.73	11.06	15.49	19.91	24.59		34.35	39.38	44.61	49.94		56.15	3 / 7			
	reaction time	0.177	interval		4.33	4.43	4.42	4.68		9.76	5.03	5.23	5.33	6.21			13.18	14.44	15.59
	velocity			6.69	8.08	7.90	7.92	7.48		7.17	6.96	6.69	6.57	6.44	7.12		7.97	7.27	6.74
	H1 lead leg	R	strides	23	15	15	15	15	15		17	17	17	20.2	169.2				
Knight, Jessie (GBR) (1994)	time			6.58	10.86	15.49	19.71	24.19	28.92	34.04	39.28	44.76	50.44		56.71	2 / 8			
	reaction time	0.163	interval		4.28	4.63	4.22	4.48	4.73	5.12	5.24	5.48	5.68	6.27			13.13	14.33	16.40
	velocity			6.84	8.18	7.56	8.29	7.81	7.40	6.84	6.68	6.39	6.16	6.38	7.05		8.00	7.33	6.40
	H1 lead leg	R	strides	22	14	16	15	15	15		16	16	16	19.5	164.5				



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: First Movement

Source: <https://www.youtube.com/watch?v=Ci5ozhfc5WQ>