

2022 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

2022 Season Hurdles Report

Men's 110m Hurdles

Top 10 Times	5
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2022 Season Hurdles Report

Men's 400m Hurdles

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Meeting International Mohammed VI d'Athlétisme (Rabat, MAR) (TV Analysis) — Final	76
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Women's 400m Hurdles

Top 10 Times	80
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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
- 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

2022 Top 10 Times - Men's 110m Hurdles

Athlete (Year)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Allen, Devon (USA) (1994)																	
FINAL - 2022 New York Grand Prix (New York, NY) (TV Analysis)													Henson (2022) - Athlete First: 2022 year end hurdle report				
date	12-Jun	time	2.42	3.44	4.43	5.42	6.38	7.38	8.36	9.38	10.38	11.42	12.84	5 / 1			
reaction time	0.128	interval	7 steps	1.02	0.99	0.99	0.96	1.00	0.98	1.02	1.00	1.04	1.42	PB	3.00	2.94	3.06
wind	1.6 m/s	velocity	5.67	8.96	9.23	9.23	9.52	9.14	9.33	8.96	9.14	8.79	9.87	8.57	9.14	9.33	8.96
Holloway, Grant (USA) (1997)																	
FINAL - Herculis Meeting International d'Athlétisme (Monaco, MON) (TV Analysis)													Henson (2022) - Athlete First: 2022 year end hurdle report				
date	10-Aug	time	2.40	3.40	4.36	5.33	6.30	7.30	8.30	9.30	10.36	11.43	12.99	6 / 1			
reaction time	0.148	interval	7 steps	1.00	0.96	0.97	0.97	1.00	1.00	1.00	1.06	1.07	1.56		2.93	2.97	3.13
wind	0.6 m/s	velocity	5.72	9.14	9.52	9.42	9.42	9.14	9.14	9.14	8.62	8.54	8.99	8.47	9.36	9.23	8.76
Broadbell, Rasheed (JAM) (2000)																	
FINAL - 2022 Athletissima (Lausanne, SUI) (TV Analysis)													Henson (2022) - Athlete First: 2022 year end hurdle report				
date	26-Aug	time	2.47	3.50	4.50	5.50	6.50	7.52	8.51	9.52	10.54	11.58	12.99	5 / 1			
reaction time	0.142	interval	7 steps	1.03	1.00	1.00	1.00	1.02	0.99	1.01	1.02	1.04	1.41	PB	3.03	3.01	3.07
wind	0.0 m/s	velocity	5.55	8.87	9.14	9.14	9.14	8.96	9.23	9.05	8.96	8.79	9.94	8.47	9.05	9.11	8.93
Cunningham, Trey (USA) (1998)																	
FINAL - 2022 NCAA Championships (Eugene, OR) (TV Analysis)													Henson (2022) - Athlete First: 2022 year end hurdle report				
date	10-Jun	time	2.44	3.45	4.44	5.42	6.40	7.44	8.44	9.46	10.51	11.56	13.00	5 / 1			
reaction time		interval	7 steps	1.01	0.99	0.98	0.98	1.04	1.00	1.02	1.05	1.05	1.44	PB	2.98	3.02	3.12
wind	0.0 m/s	velocity	5.62	9.05	9.23	9.33	9.33	8.79	9.14	8.96	8.70	8.70	9.74	8.46	9.20	9.08	8.79
Crittenden, Freddie (USA) (1994)																	
FINAL - 2022 NACAC Championships (Freeport, BAH) (TV Analysis)													Henson (2022) - Athlete First: 2022 year end hurdle report				
date	20-Aug	time	2.43	3.45	4.44	5.43	6.40	7.40	8.40	9.43	10.47	11.52	13.00	4 / 1			
reaction time		interval		1.02	0.99	0.99	0.97	1.00	1.00	1.03	1.04	1.05	1.48	PB	3.00	2.97	3.12
wind	0.3 m/s	velocity	5.65	8.96	9.23	9.23	9.42	9.14	9.14	8.87	8.79	8.70	9.47	8.46	9.14	9.23	8.79
Holloway, Grant (USA) (1997)																	
Semi-Final 1 - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)													Henson (2022) - Athlete First: 2022 year end hurdle report				
date	17-Jul	time	2.43	3.40	4.40	5.37	6.37	7.37	8.37	9.40	10.43	11.48	13.01	6 / 1			
reaction time	0.128	interval	7 steps	0.97	1.00	0.97	1.00	1.00	1.00	1.03	1.03	1.05	1.53		2.94	3.00	3.11
wind	-0.6 m/s	velocity	5.65	9.42	9.14	9.42	9.14	9.14	9.14	8.87	8.87	8.70	9.16	8.46	9.33	9.14	8.82
Holloway, Grant (USA) (1997)																	
FINAL - 2022 Weltklasse (Zürich, SUI) (TV Analysis)													Henson (2022) - Athlete First: 2022 year end hurdle report				
date	8-Aug	time	2.44	3.44	4.41	5.37	6.34	7.34	8.34	9.38	10.44	11.51	13.02	6 / 1			
reaction time	0.140	interval	7 steps	1.00	0.97	0.96	0.97	1.00	1.00	1.04	1.06	1.07	1.51		2.93	2.97	3.17
wind	-1.0 m/s	velocity	5.62	9.14	9.42	9.52	9.42	9.14	9.14	8.79	8.62	8.54	9.28	8.45	9.36	9.23	8.65
Parchment, Hansle (JAM) (1990)																	
Semi-Final 3 - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)													Henson (2022) - Athlete First: 2022 year end hurdle report				
date	17-Jul	time	2.56	3.60	4.60	5.66	6.52	7.53	8.50	9.50	10.53	11.56	13.02	3 / 1			
reaction time	0.128	interval	7 steps	1.04	1.00	0.96	0.96	1.01	0.97	1.00	1.03	1.03	1.46		3.00	2.94	3.06
wind	2.5 m/s	velocity	5.36	8.79	9.14	9.52	9.52	9.05	9.42	9.14	8.87	8.87	9.60	8.45	9.14	9.33	8.96
Holloway, Grant (USA) (1997)																	
Semi-Final 1 - 2022 USATF National Championships (Eugene, OR)													USATF (2022) - Results powered by Karmarush.com				
date	26-Jun	time	2.41	3.41	4.38	5.35	6.34	7.36	8.36	9.40	10.45	11.53	13.03	13.03	4 / 1		
reaction time		interval	7 steps	1.00	0.97	0.97	0.99	1.02	1.00	1.04	1.05	1.08	1.50		2.94	3.01	3.17
wind	0.4 m/s	velocity	5.69	9.14	9.42	9.42	9.23	8.96	9.14	8.79	8.70	8.46	9.35	8.44	9.33	9.11	8.65
Roberts, Daniel (USA) (1998)																	
FINAL - 2022 USATF National Championships (Eugene, OR) (TV Analysis)													Henson (2022) - Athlete First: 2022 year end hurdle report				
date	26-Jun	time	2.43	3.47	4.47	5.47	6.47	7.47	8.50	9.52	10.54	11.61	13.03	7 / 1			
reaction time		interval		1.04	1.00	1.00	1.00	1.00	1.03	1.02	1.02	1.07	1.42		3.04	3.03	3.11
wind	1.2 m/s	velocity	5.65	8.79	9.14	9.14	9.14	9.14	8.87	8.96	8.96	8.54	9.87	8.44	9.02	9.05	8.82
Holloway, Grant (USA) (1997)																	
FINAL - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)													Henson (2022) - Athlete First: 2022 year end hurdle report				
date	17-Jul	time	2.40	3.38	4.36	5.34	6.34	7.32	8.34	9.36	10.40	11.46	13.03	4 / 1			
reaction time	0.124	interval	7 steps	0.98	0.98	0.98	1.00	0.98	1.02	1.02	1.04	1.06	1.57		2.94	3.00	3.12
wind	1.2 m/s	velocity	5.72	9.33	9.33	9.33	9.14	9.33	8.96	8.96	8.79	8.62	8.93	8.44	9.33	9.14	8.79
Cunningham, Trey (USA) (1998)																	
FINAL - Herculis Meeting International d'Athlétisme (Monaco, MON) (TV Analysis)													Henson (2022) - Athlete First: 2022 year end hurdle report				
date	10-Aug	time	2.43	3.43	4.40	5.40	6.40	7.43	8.46	9.46	10.53	11.60	13.03	4 / 2			
reaction time	0.141	interval	7 steps	1.00	0.97	1.00	1.00	1.03	1.03	1.00	1.07	1.07	1.43		2.97	3.06	3.14
wind	0.6 m/s	velocity	5.65	9.14	9.42	9.14	9.14	8.87	8.87	9.14	8.54	8.54	9.80	8.44	9.23	8.96	8.73
Holloway, Grant (USA) (1997)																	
FINAL - 2022 ISTAF (Berlin, GER) (TV Analysis)													Henson (2022) - Athlete First: 2022 year end hurdle report				
date	4-Sep	time	2.42	3.44	4.40	5.36	6.34	7.34	8.36	9.40	10.44	11.56	13.05	4 / 1			
reaction time	0.140	interval	7 steps	1.02	0.96	0.96	0.98	1.00	1.02	1.04	1.04	1.12	1.49		2.94	3.00	3.20
wind	0.6 m/s	velocity	5.67	8.96	9.52	9.52	9.33	9.14	8.96	8.79	8.79	8.16	9.41	8.43	9.33	9.14	8.57
Holloway, Grant (USA) (1997)																	
FINAL - 2022 New York Grand Prix (New York, NY) (TV Analysis)													Henson (2022) - Athlete First: 2022 year end hurdle report				
date	12-Jun	time	2.35	3.35	4.33	5.33	6.30	7.28	8.30	9.35	10.38	11.52	13.06	6 / 2			
reaction time	0.116	interval	7 steps	1.00	0.98	1.00	0.97	0.98	1.02	1.05	1.03	1.14	1.54		2.98	2.97	3.22
wind	1.6 m/s	velocity	5.84	9.14	9.33	9.14	9.42	9.33	8.96	8.70	8.87	8.02	9.10	8.42	9.20	9.23	8.52
Broadbell, Rasheed (JAM) (2000)																	
FINAL - 2022 Weltklasse (Zürich, SUI) (TV Analysis)													Henson (2022) - Athlete First: 2022 year end hurdle report				
date	8-Aug	time	2.44	3.47	4.48	5.47	6.45	7.48	8.50	9.52	10.61	11.64	13.06	7 / 2			
reaction time	0.149	interval	7 steps	1.03	1.01	0.99	0.98	1.03	1.02	1.02	1.09	1.03	1.42		3.03	3.03	3.14
wind	-1.0 m/s	velocity	5.62	8.87	9.05	9.23	9.33	8.87	8.96	8.96	8.39	8.87	9.87	8.42	9.05	9.05	8.73

2022 Weltklasse (Zürich, SUI) (TV Analysis)

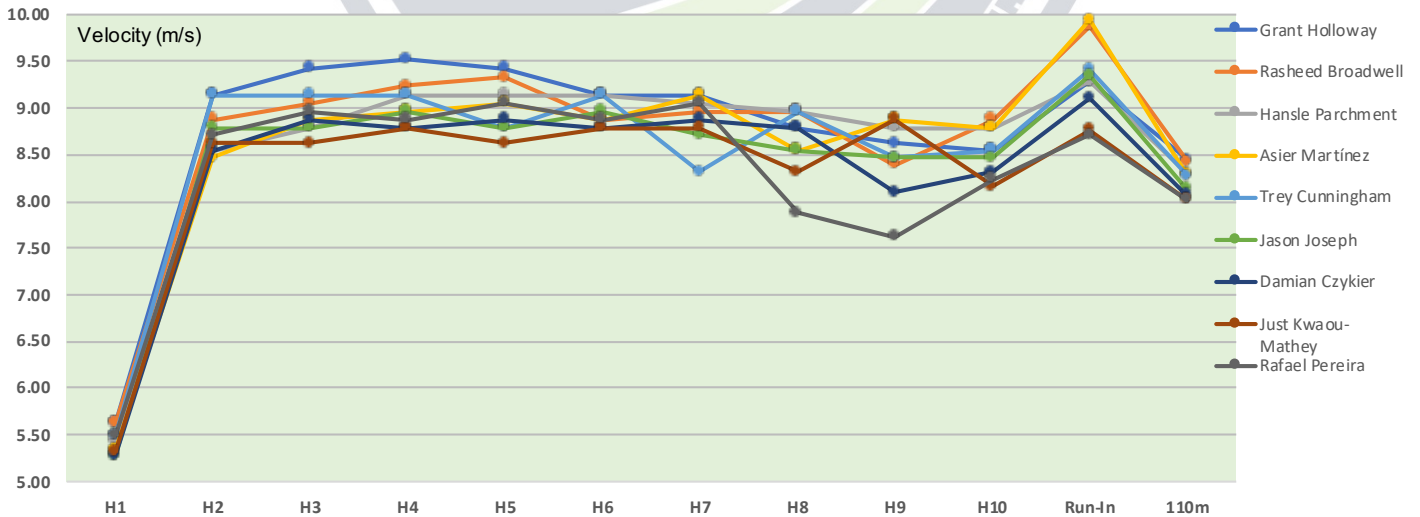
110m Hurdles

Date: 2022.09.08

Wind: -1.0 m/s

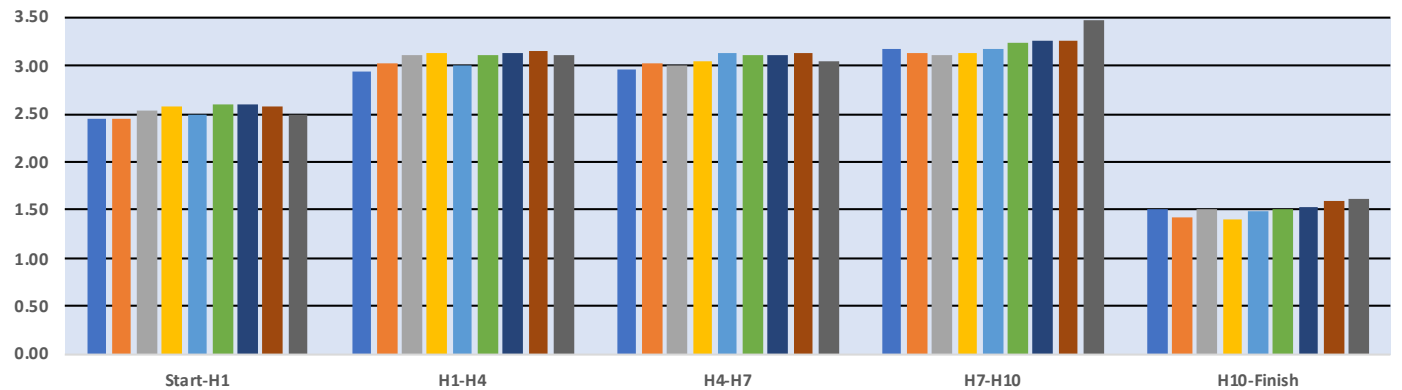
FINAL

		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	3.44	4.41	5.37	6.34	7.34	8.34	9.38	10.44	11.51		13.02	6 / 1			
	reaction time	0.140													2.93	2.97	3.17
	interval	7 steps	1.00	0.97	0.96	0.97	1.00	1.00	1.04	1.06	1.07	1.51			9.36	9.23	8.65
	velocity	5.62	9.14	9.42	9.52	9.42	9.14	9.14	8.79	8.62	8.54	9.28	8.45				
Broadbell, Rasheed (JAM) (2000)	time	2.44	3.47	4.48	5.47	6.45	7.48	8.50	9.52	10.61	11.64		13.06	7 / 2			
	reaction time	0.149													3.03	3.03	3.14
	interval	7 steps	1.03	1.01	0.99	0.98	1.03	1.02	1.02	1.09	1.03	1.42			9.05	9.05	8.73
	velocity	5.62	8.87	9.05	9.23	9.33	8.87	8.96	8.96	8.39	8.87	9.87	8.42				
Parchment, Hansle (JAM) (1990)	time	2.53	3.60	4.64	5.64	6.64	7.64	8.65	9.67	10.71	11.75		13.26	5 / 3			
	reaction time	0.153													3.11	3.01	3.10
	interval	7 steps	1.07	1.04	1.00	1.00	1.00	1.01	1.02	1.04	1.04	1.51			8.82	9.11	8.85
	velocity	5.42	8.54	8.79	9.14	9.14	9.14	9.05	8.96	8.79	8.79	9.28	8.30				
Martinez, Asier (ESP) (2000)	time	2.57	3.65	4.68	5.70	6.71	7.74	8.74	9.81	10.84	11.88		13.29	3 / 4			
	reaction time	0.144													3.13	3.04	3.14
	interval	7 steps	1.08	1.03	1.02	1.01	1.03	1.00	1.07	1.03	1.04	1.41			8.76	9.02	8.73
	velocity	5.34	8.46	8.87	8.96	9.05	8.87	8.79	9.14	8.54	8.87	9.94	8.28				
Cunningham, Trey (USA) (1998)	time	2.50	3.50	4.50	5.50	6.54	7.54	8.64	9.66	10.74	11.81		13.30	4 / 5			
	reaction time	0.153													3.00	3.14	3.17
	interval	7 steps	1.00	1.00	1.00	1.04	1.00	1.10	1.02	1.08	1.07	1.49			9.14	8.73	8.65
	velocity	5.49	9.14	9.14	9.14	8.79	9.14	8.31	8.96	8.46	8.54	9.41	8.27				
Joseph, Jason (SUI) (1998)	time	2.60	3.64	4.68	5.70	6.74	7.76	8.81	9.88	10.96	12.04		13.54	9 / 6			
	reaction time	0.178													3.10	3.11	3.23
	interval	7 steps	1.04	1.04	1.02	1.04	1.02	1.05	1.07	1.08	1.08	1.50			8.85	8.82	8.49
	velocity	5.28	8.79	8.79	8.96	8.79	8.96	8.70	8.54	8.46	8.46	9.35	8.12				
Czykier, Damian (POL) (1992)	time	2.60	3.67	4.70	5.74	6.77	7.81	8.84	9.88	11.01	12.11		13.65	1 / 7			
	reaction time	0.142													3.14	3.10	3.27
	interval	7 steps	1.07	1.03	1.04	1.03	1.04	1.03	1.04	1.13	1.10	1.54			8.73	8.85	8.39
	velocity	5.28	8.54	8.87	8.79	8.87	8.79	8.87	8.79	8.09	8.31	9.10	8.06				
Kwaou-Mathey, Just (FRA) (1999)	time	2.58	3.64	4.70	5.74	6.80	7.84	8.88	9.98	11.01	12.13		13.73	2 / 8			
	reaction time	0.150													3.16	3.14	3.25
	interval	7 steps	1.06	1.06	1.04	1.06	1.04	1.04	1.10	1.03	1.12	1.60			8.68	8.73	8.44
	velocity	5.32	8.62	8.62	8.79	8.62	8.79	8.79	8.31	8.87	8.16	8.76	8.01				
Pereira, Rafael (BRA) (1997)	time	2.50	3.55	4.57	5.60	6.61	7.64	8.65	9.81	11.01	12.12		13.73	8 / 9			
	reaction time	0.130													3.10	3.05	3.47
	interval	7 steps	1.05	1.02	1.03	1.01	1.03	1.01	1.16	1.20	1.11	1.61			8.85	8.99	7.90
	velocity	5.49	8.70	8.96	8.87	9.05	8.87	9.05	7.88	7.62	8.23	8.71	8.01				



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=ik8Dpmk5EBM&t=29s>

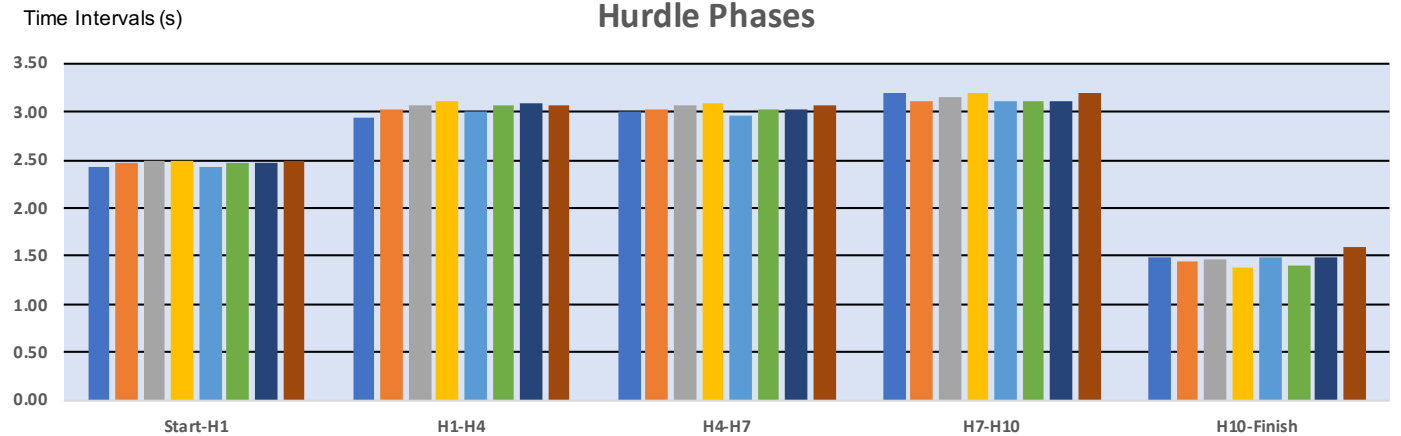
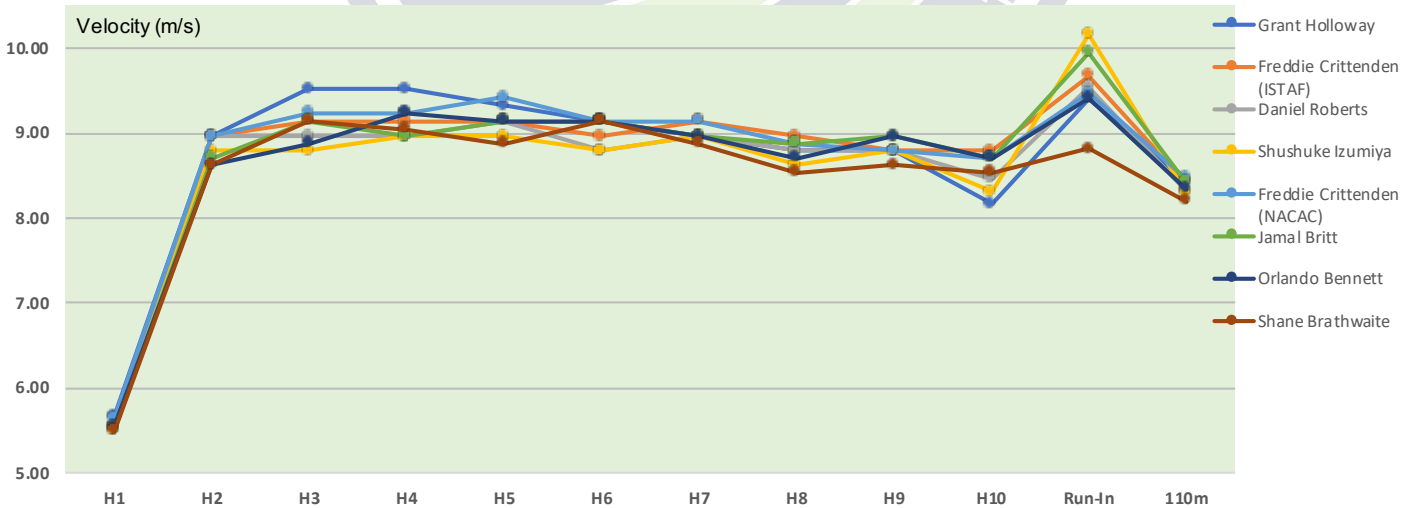
Biomechanical Analysis

2022 ISTAF (Berlin, GER) (TV Analysis)

110m Hurdles		Date: 2022.09.04	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
Holloway, Grant (USA) (1997)	time	2.42	3.44	4.40	5.36	6.34	7.34	8.36	9.40	10.44	11.56		13.05	4 / 1			
	reaction time	0.140													2.94	3.00	3.20
	interval	7 steps	1.02	0.96	0.96	0.98	1.00	1.02	1.04	1.04	1.12	1.49			9.33	9.14	8.57
	velocity	5.67	8.96	9.52	9.52	9.33	9.14	8.96	8.79	8.79	8.16	9.41	8.43				
Crittenden, Freddie (USA) (1994)	time	2.48	3.50	4.50	5.50	6.50	7.52	8.52	9.54	10.58	11.62		13.07	5 / 2			
	reaction time	0.142													3.02	3.02	3.10
	interval		1.02	1.00	1.00	1.00	1.02	1.00	1.02	1.04	1.04	1.45			9.08	9.08	8.85
	velocity	5.53	8.96	9.14	9.14	9.14	8.96	9.14	8.96	8.79	8.79	9.67	8.42				
Roberts, Daniel (USA) (1998)	time	2.50	3.52	4.54	5.56	6.56	7.60	8.62	9.66	10.70	11.78		13.25	6 / 3			
	reaction time	0.145													3.06	3.06	3.16
	interval		1.02	1.02	1.02	1.00	1.04	1.02	1.04	1.04	1.08	1.47			8.96	8.96	8.68
	velocity	5.49	8.96	8.96	8.96	9.14	8.79	8.96	8.79	8.79	8.46	9.54	8.30				
Izumiya, Shunsuke (JPN) (2000)	time	2.50	3.54	4.58	5.60	6.62	7.66	8.68	9.74	10.78	11.88		13.26	8 / 4			
	reaction time	0.129													3.10	3.08	3.20
	interval	7 steps	1.04	1.04	1.02	1.02	1.04	1.02	1.06	1.04	1.10	1.38			8.85	8.90	8.57
	velocity	5.49	8.79	8.79	8.96	8.96	8.79	8.96	8.62	8.79	8.31	10.16	8.30				

2022 NACAC Championships (Freeport, BAH) (TV Analysis)

110m Hurdles		Date: 2022.08.20	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
Crittenden, Freddie (USA) (1994)	time	2.43	3.45	4.44	5.43	6.40	7.40	8.40	9.43	10.47	11.52		13.00	4 / 1			
	reaction time														3.00	2.97	3.12
	interval		1.02	0.99	0.99	0.97	1.00	1.00	1.03	1.04	1.05	1.48	PB		9.14	9.23	8.79
	velocity	5.65	8.96	9.23	9.23	9.42	9.14	9.14	8.87	8.79	8.70	9.47	8.46				
Britt, Jamal (USA) (1998)	time	2.48	3.53	4.53	5.55	6.55	7.55	8.57	9.60	10.62	11.67		13.08	7 / 2			
	reaction time														3.07	3.02	3.10
	interval		1.05	1.00	1.02	1.00	1.00	1.02	1.03	1.02	1.05	1.41	PB		8.93	9.08	8.85
	velocity	5.53	8.70	9.14	8.96	9.14	9.14	8.96	8.87	8.96	8.70	9.94	8.41				
Bennett, Orlando (JAM) (1999)	time	2.47	3.53	4.56	5.55	6.55	7.55	8.57	9.62	10.64	11.69		13.18	6 / 3			
	reaction time														3.08	3.02	3.12
	interval		1.06	1.03	0.99	1.00	1.00	1.02	1.05	1.02	1.05	1.49	PB		8.90	9.08	8.79
	velocity	5.55	8.62	8.87	9.23	9.14	9.14	8.96	8.70	8.96	8.70	9.41	8.35				
Brathwaite, Shane (BAR) (1990)	time	2.50	3.56	4.56	5.57	6.60	7.60	8.63	9.70	10.76	11.83		13.42	5 / 4			
	reaction time														3.07	3.06	3.20
	interval		1.06	1.00	1.01	1.03	1.00	1.03	1.07	1.06	1.07	1.59			8.93	8.96	8.57
	velocity	5.49	8.62	9.14	9.05	8.87	9.14	8.87	8.54	8.62	8.54	8.82	8.20				



ISTAF
 Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=TKknO2ZvdM>

NACAC
 Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=8841eyFexT8>

2022 Athletissima (Lausanne, SUI) (TV Analysis)

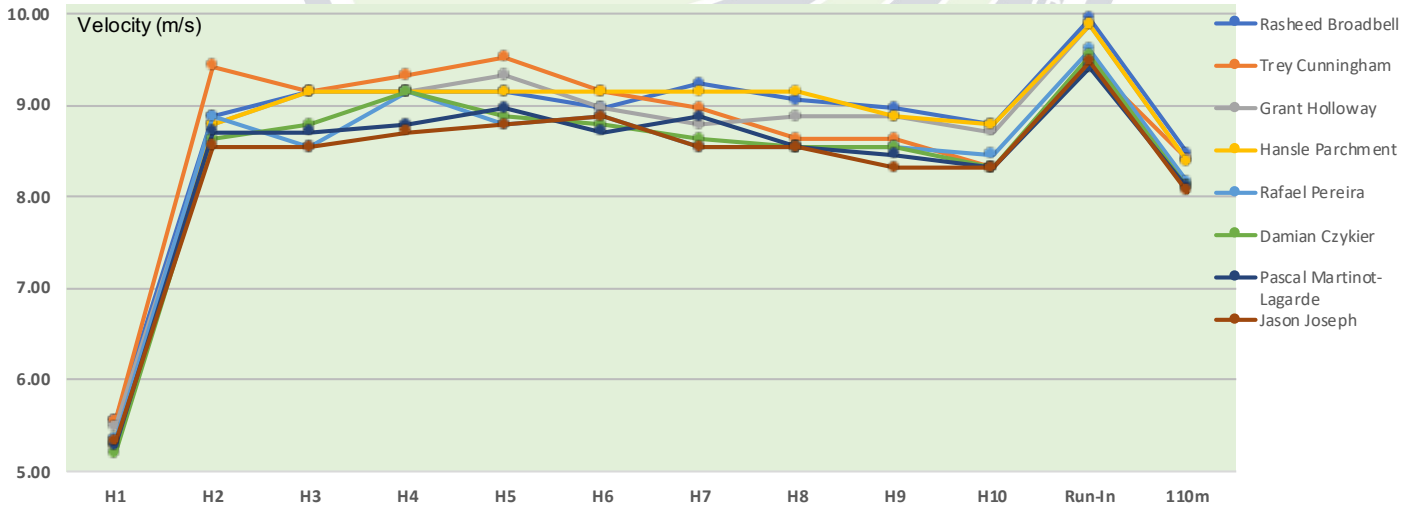
110m Hurdles

Date: 2022.08.26

Wind: 0.0 m/s

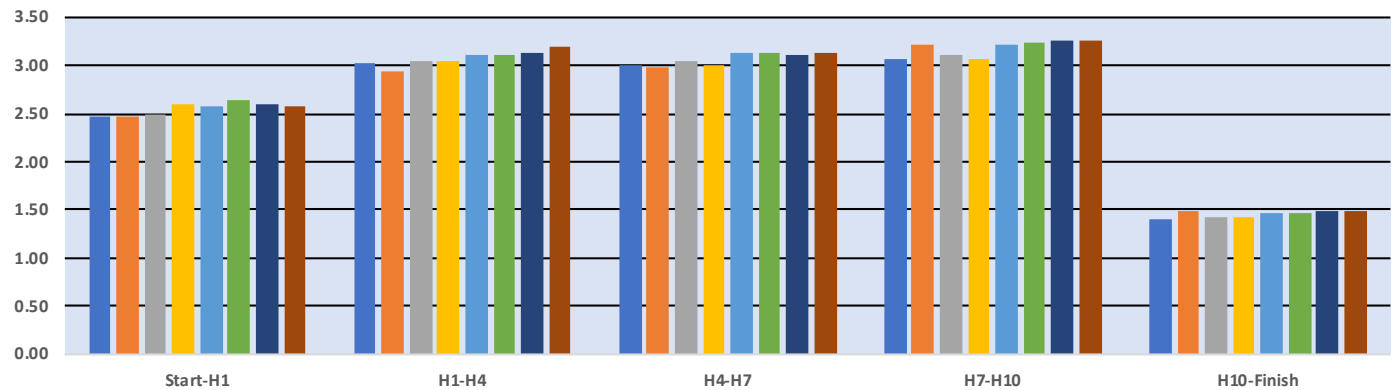
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Broadbell, Rasheed (JAM) (2000)	time	2.47	3.50	4.50	5.50	6.50	7.52	8.51	9.52	10.54	11.58	12.99		5 / 1			
	reaction time	0.142											PB		3.03	3.01	3.07
	interval	7 steps	1.03	1.00	1.00	1.00	1.02	0.99	1.01	1.02	1.04	1.41	8.47		9.05	9.11	8.93
	velocity	5.55	8.87	9.14	9.14	9.14	8.96	9.23	9.05	8.96	8.79	9.94	8.47				
Cunningham, Trey (USA) (1998)	time	2.47	3.44	4.44	5.42	6.38	7.38	8.40	9.46	10.52	11.62		13.10	3 / 2			
	reaction time	0.140										1.48			2.95	2.98	3.22
	interval	7 steps	0.97	1.00	0.98	0.96	1.00	1.02	1.06	1.06	1.10	1.48	8.40		9.29	9.20	8.52
	velocity	5.55	9.42	9.14	9.33	9.52	9.14	8.96	8.62	8.62	8.31	9.47	8.40				
Holloway, Grant (USA) (1997)	time	2.50	3.54	4.54	5.54	6.52	7.54	8.58	9.61	10.64	11.69		13.11	6 / 3			
	reaction time	0.122										1.42			3.04	3.04	3.11
	interval	7 steps	1.04	1.00	1.00	0.98	1.02	1.04	1.03	1.03	1.05	1.42	8.39		9.02	9.02	8.82
	velocity	5.49	8.79	9.14	9.14	9.33	8.96	8.79	8.87	8.87	8.70	9.87	8.39				
Parchment, Hansle (JAM) (1990)	time	2.60	3.64	4.64	5.64	6.64	7.64	8.64	9.64	10.67	11.71		13.13	4 / 4			
	reaction time	0.151										1.42			3.04	3.00	3.07
	interval	7 steps	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.04	1.42	8.38		9.02	9.14	8.93
	velocity	5.28	8.79	9.14	9.14	9.14	9.14	9.14	9.14	8.87	8.79	9.87	8.38				
Pereira, Rafael (BRA) (1997)	time	2.57	3.60	4.67	5.67	6.71	7.74	8.81	9.88	10.95	12.03		13.49	1 / 5			
	reaction time	0.140										1.46			3.10	3.14	3.22
	interval	7 steps	1.03	1.07	1.00	1.04	1.03	1.07	1.07	1.07	1.08	1.46	8.15		8.85	8.73	8.52
	velocity	5.34	8.87	8.54	9.14	8.79	8.87	8.54	8.54	8.54	8.46	9.60	8.15				
Czykier, Damian (POL) (1992)	time	2.64	3.70	4.74	5.74	6.77	7.81	8.87	9.94	11.01	12.11		13.58	8 / 6			
	reaction time	0.166										1.47			3.10	3.13	3.24
	interval	7 steps	1.06	1.04	1.00	1.03	1.04	1.06	1.07	1.10	1.10	1.47	8.10		8.85	8.76	8.46
	velocity	5.20	8.62	8.79	9.14	8.87	8.79	8.62	8.54	8.54	8.31	9.54	8.10				
Martinet-Lagarde, Pascal (FRA) (1991)	time	2.60	3.65	4.70	5.74	6.76	7.81	8.84	9.91	10.99	12.09		13.58	7 / 7			
	reaction time	0.155										1.49			3.14	3.10	3.25
	interval	7 steps	1.05	1.05	1.04	1.02	1.05	1.03	1.07	1.08	1.10	1.49	8.10		8.73	8.85	8.44
	velocity	5.28	8.70	8.70	8.79	8.96	8.70	8.87	8.54	8.46	8.31	9.41	8.10				
Joseph, Jason (SUI) (1998)	time	2.58	3.65	4.72	5.77	6.81	7.84	8.91	9.98	11.08	12.18		13.66	2 / 8			
	reaction time	0.158										1.48			3.19	3.14	3.27
	interval	7 steps	1.07	1.07	1.05	1.04	1.03	1.07	1.07	1.10	1.10	1.48	8.05		8.60	8.73	8.39
	velocity	5.32	8.54	8.54	8.70	8.79	8.87	8.54	8.54	8.31	8.31	9.47	8.05				



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: Gun Flash
 Source: https://www.youtube.com/watch?v=DqURii_g8aGk

2022 European Athletics Championships (Munich, GER) (TV Analysis)

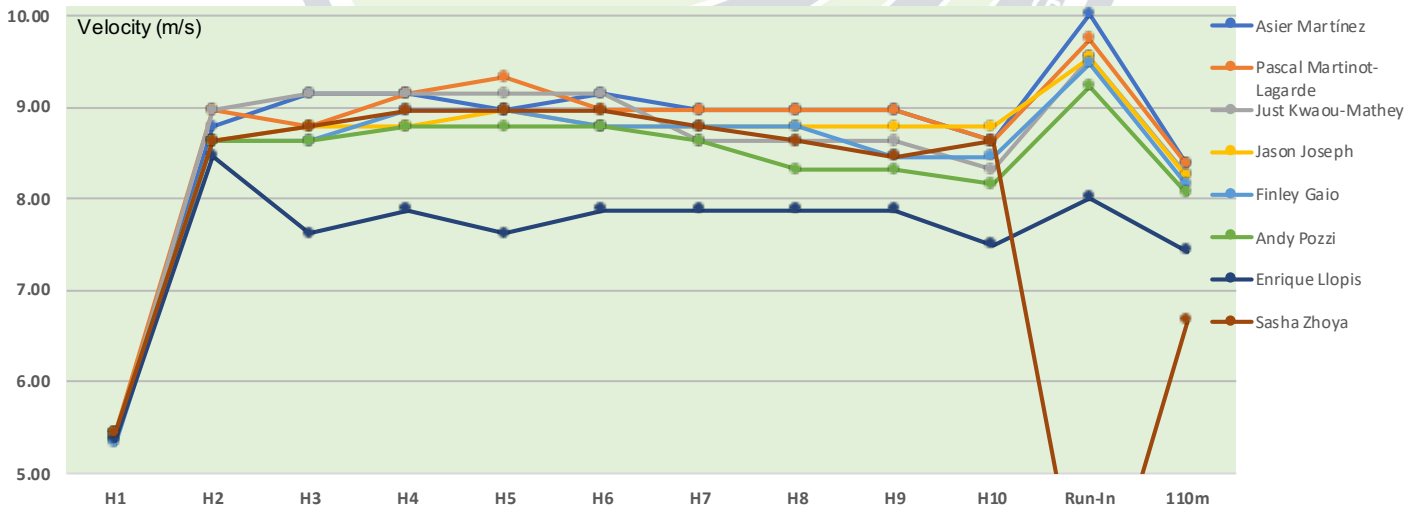
110m Hurdles

Date: 2022.08.17

Wind: -0.2 m/s

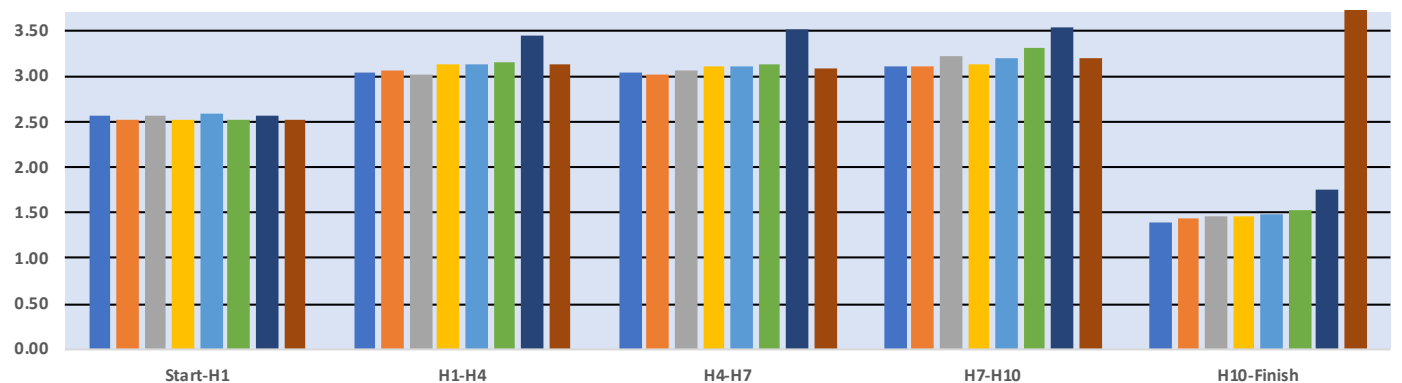
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Martinez, Asier (ESP) (2000)	time	2.56	3.60	4.60	5.60	6.62	7.62	8.64	9.66	10.68	11.74	13.14	13.14	4 / 1			
	reaction time	0.149													3.04	3.04	3.10
	interval	7 steps	1.04	1.00	1.00	1.02	1.00	1.02	1.02	1.02	1.02	1.06	1.40	PB	9.02	9.02	8.85
	velocity	5.36	8.79	9.14	9.14	8.96	9.14	8.96	8.96	8.96	8.62	10.01	8.37				
Martinot-Lagarde, Pascal (FRA) (1991)	time	2.52	3.54	4.58	5.58	6.56	7.58	8.60	9.62	10.64	11.70	13.14	13.14	5 / 2			
	reaction time	0.167													3.06	3.02	3.10
	interval	7 steps	1.02	1.04	1.00	0.98	1.02	1.02	1.02	1.02	1.06	1.44	1.44		8.96	9.08	8.85
	velocity	5.44	8.96	8.79	9.14	9.33	8.96	8.96	8.96	8.96	8.62	9.74	8.37				
Kwaou-Mathey, Just (FRA) (1999)	time	2.56	3.58	4.58	5.58	6.58	7.58	8.64	9.70	10.76	11.86	13.33	13.33	3 / 3			
	reaction time	0.178													3.02	3.06	3.22
	interval	7 steps	1.02	1.00	1.00	1.00	1.00	1.06	1.06	1.06	1.10	1.47	1.47		9.08	8.96	8.52
	velocity	5.36	8.96	9.14	9.14	9.14	9.14	8.62	8.62	8.62	8.31	9.54	8.25				
Joseph, Jason (SUI) (1998)	time	2.52	3.58	4.62	5.66	6.68	7.72	8.76	9.80	10.84	11.88	13.35	13.35	8 / 4			
	reaction time	0.169													3.14	3.10	3.12
	interval	7 steps	1.06	1.04	1.04	1.02	1.04	1.04	1.04	1.04	1.10	1.47	1.47		8.73	8.85	8.79
	velocity	5.44	8.62	8.79	8.79	8.96	8.79	8.79	8.79	8.79	8.79	9.54	8.24				
Gaio, Finley (SUI) (1999)	time	2.58	3.64	4.70	5.72	6.74	7.78	8.82	9.86	10.94	12.02	13.50	13.50	2 / 5			
	reaction time	0.172													3.14	3.10	3.20
	interval	7 steps	1.06	1.06	1.02	1.02	1.04	1.04	1.04	1.08	1.08	1.48	1.48		8.73	8.85	8.57
	velocity	5.32	8.62	8.62	8.96	8.96	8.79	8.79	8.79	8.46	8.46	9.47	8.15				
Pozzi, Andy (GBR) (1992)	time	2.52	3.58	4.64	5.68	6.72	7.76	8.82	9.92	11.02	12.14	13.66	13.66	1 / 6			
	reaction time	0.166													3.16	3.14	3.32
	interval	7 steps	1.06	1.06	1.04	1.04	1.04	1.06	1.10	1.10	1.12	1.52	1.52		8.68	8.73	8.26
	velocity	5.44	8.62	8.62	8.79	8.79	8.79	8.62	8.31	8.31	8.16	9.22	8.05				
Llopis, Enrique (ESP) (2000)	time	2.56	3.64	4.84	6.00	7.20	8.36	9.52	10.68	11.84	13.06	14.81	14.81	6 / 7			
	reaction time	0.145													3.44	3.52	3.54
	interval	7 steps	1.08	1.20	1.16	1.20	1.16	1.16	1.16	1.16	1.22	1.75	1.75		7.97	7.79	7.75
	velocity	5.36	8.46	7.62	7.88	7.62	7.88	7.88	7.88	7.88	7.49	8.01	7.43				
Zhoya, Sasha (FRA) (2002)	time	2.52	3.58	4.62	5.64	6.66	7.68	8.72	9.78	10.86	11.92	16.51	16.51	7 / 8			
	reaction time	0.153													3.12	3.08	3.20
	interval	7 steps	1.06	1.04	1.02	1.02	1.02	1.04	1.06	1.08	1.06	4.59	4.59		8.79	8.90	8.57
	velocity	5.44	8.62	8.79	8.96	8.96	8.96	8.79	8.62	8.46	8.62	3.05	6.66				



Time Intervals (s)

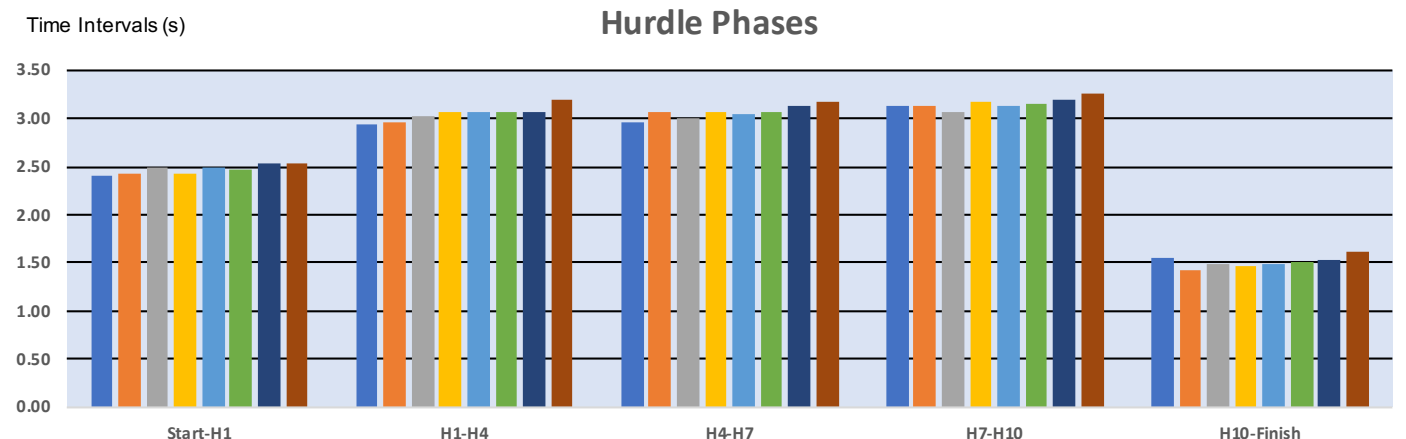
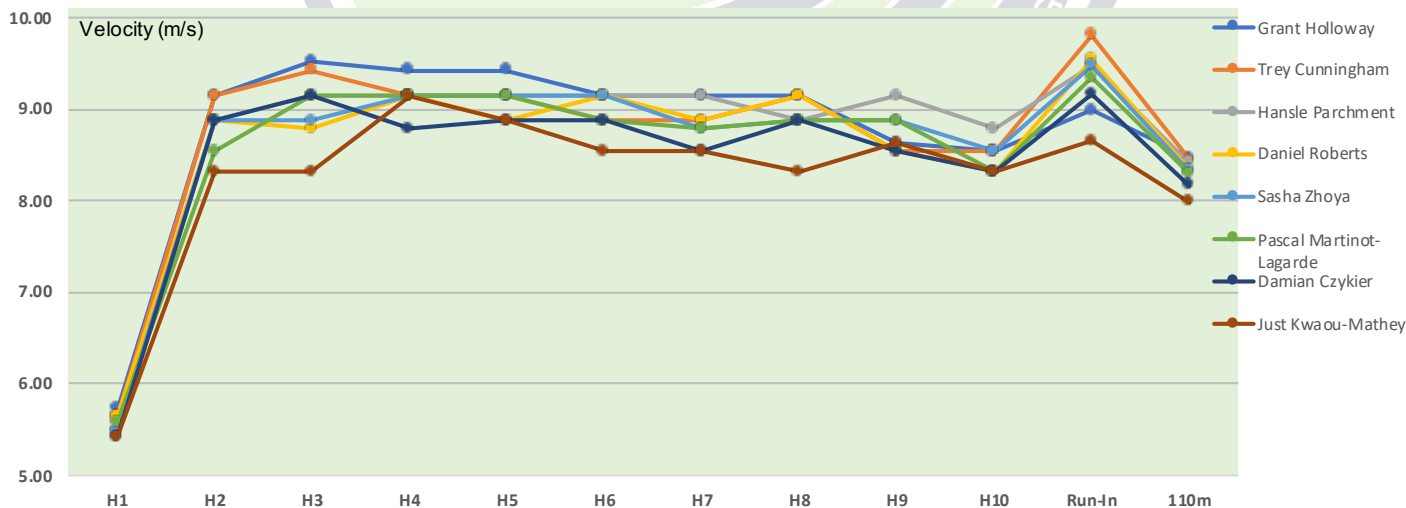
Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=wXCF8uTtT68>

2022 Herculis Meeting International d'Athlétisme (Monaco, MON) (TV Analysis)

110m Hurdles		Date:	2022.08.10		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		
Holloway, Grant (USA) (1997)	time		2.40	3.40	4.36	5.33	6.30	7.30	8.30	9.30	10.36	11.43		12.99	6 / 1					
	reaction time	0.148														2.93	2.97	3.13		
	interval		7 steps	1.00	0.96	0.97	0.97	1.00	1.00	1.00	1.06	1.07	1.56			9.36	9.23	8.76		
	velocity		5.72	9.14	9.52	9.42	9.42	9.14	9.14	9.14	8.62	8.54	8.99	8.47						
Cunningham, Trey (USA) (1998)	time		2.43	3.43	4.40	5.40	6.40	7.43	8.46	9.46	10.53	11.60		13.03	4 / 2					
	reaction time	0.141														2.97	3.06	3.14		
	interval		7 steps	1.00	0.97	1.00	1.00	1.03	1.03	1.00	1.07	1.07	1.43			9.23	8.96	8.73		
	velocity		5.65	9.14	9.42	9.14	9.14	8.87	8.87	9.14	8.54	8.54	9.80	8.44						
Parchment, Hansle (JAM) (1990)	time		2.50	3.53	4.53	5.53	6.53	7.53	8.53	9.56	10.56	11.60		13.08	5 / 3					
	reaction time	0.128														3.03	3.00	3.07		
	interval		7 steps	1.03	1.00	1.00	1.00	1.00	1.00	1.03	1.00	1.04	1.48			9.05	9.14	8.93		
	velocity		5.49	8.87	9.14	9.14	9.14	9.14	9.14	8.87	9.14	8.79	9.47	8.41						
Roberts, Daniel (USA) (1998)	time		2.43	3.46	4.50	5.50	6.53	7.53	8.56	9.56	10.63	11.73		13.20	3 / 4					
	reaction time	0.157														3.07	3.06	3.17		
	interval		7 steps	1.03	1.04	1.00	1.03	1.00	1.03	1.00	1.07	1.10	1.47			8.93	8.96	8.65		
	velocity		5.65	8.87	8.79	9.14	8.87	9.14	8.87	9.14	8.54	8.31	9.54	8.33						
Zhoya, Sasha (FRA) (2002)	time		2.50	3.53	4.56	5.56	6.56	7.56	8.60	9.63	10.66	11.73		13.21	2 / 5					
	reaction time	0.138														3.06	3.04	3.13		
	interval		7 steps	1.03	1.03	1.00	1.00	1.00	1.04	1.03	1.03	1.07	1.48			8.96	9.02	8.76		
	velocity		5.49	8.87	8.87	9.14	9.14	9.14	8.79	8.87	8.87	8.54	9.47	8.33						
Martinet-Lagarde, Pascal (FRA) (1991)	time		2.46	3.53	4.53	5.53	6.53	7.56	8.60	9.63	10.66	11.76		13.26	8 / 6					
	reaction time	0.137														3.07	3.07	3.16		
	interval		7 steps	1.07	1.00	1.00	1.00	1.03	1.04	1.03	1.03	1.10	1.50			8.93	8.93	8.68		
	velocity		5.58	8.54	9.14	9.14	9.14	8.87	8.79	8.87	8.87	8.31	9.35	8.30						
Czykier, Damian (POL) (1992)	time		2.53	3.56	4.56	5.60	6.63	7.66	8.73	9.76	10.83	11.93		13.46	7 / 7					
	reaction time	0.156														3.07	3.13	3.20		
	interval		7 steps	1.03	1.00	1.04	1.03	1.03	1.07	1.03	1.07	1.10	1.53			8.93	8.76	8.57		
	velocity		5.42	8.87	9.14	8.79	8.87	8.87	8.54	8.87	8.54	8.31	9.16	8.17						
Kwaou-Mathey, Just (FRA) (1999)	time		2.53	3.63	4.73	5.73	6.76	7.83	8.90	10.00	11.06	12.16		13.78	1 / 8					
	reaction time	0.144														3.20	3.17	3.26		
	interval		7 steps	1.10	1.10	1.00	1.03	1.07	1.07	1.10	1.06	1.10	1.62			8.57	8.65	8.41		
	velocity		5.42	8.31	8.31	9.14	8.87	8.54	8.54	8.31	8.62	8.31	8.65	7.98						



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=gPZE18RRJgI>

2022 World Athletics Championships (Eugene, OR) (TV Analysis)

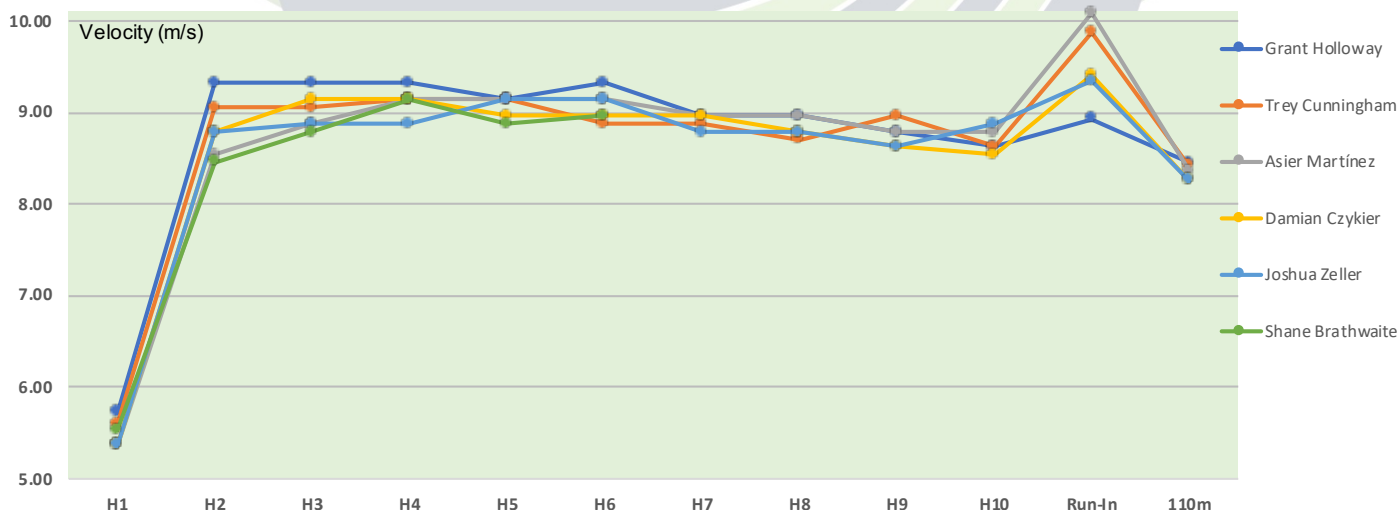
110m Hurdles

Date: 2022.07.17

Wind: 1.2 m/s

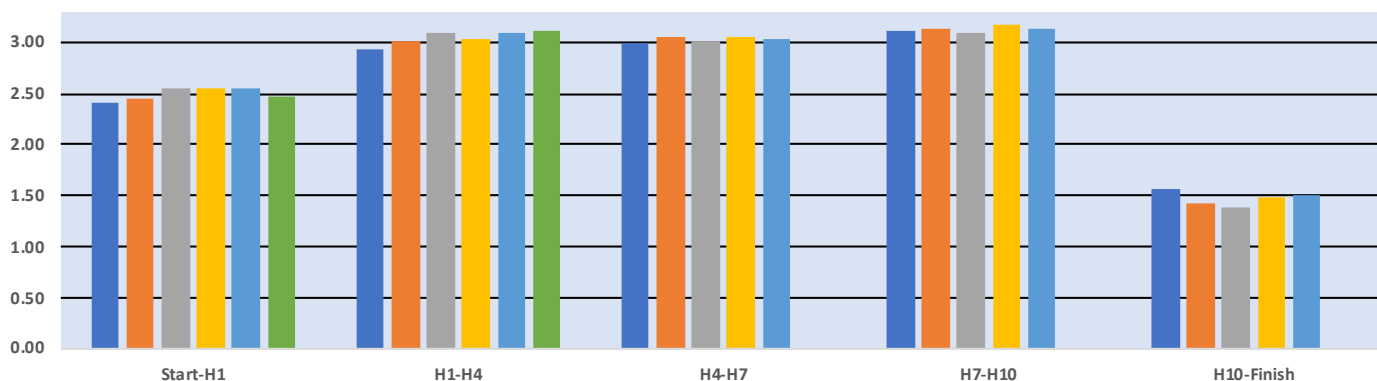
FINAL

		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	2.40	3.38	4.36	5.34	6.34	7.32	8.34	9.36	10.40	11.46		13.03	4 / 1			
	reaction time	0.124													2.94	3.00	3.12
	interval	7 steps	0.98	0.98	0.98	1.00	0.98	1.02	1.02	1.04	1.06	1.57			9.33	9.14	8.79
	velocity	5.72	9.33	9.33	9.33	9.14	9.33	8.96	8.96	8.79	8.62	8.93	8.44				
Cunningham, Trey (USA) (1998)	time	2.45	3.46	4.47	5.47	6.47	7.50	8.53	9.58	10.60	11.66		13.08	6 / 2			
	reaction time	0.109													3.02	3.06	3.13
	interval	7 steps	1.01	1.01	1.00	1.00	1.03	1.03	1.05	1.02	1.06	1.42			9.08	8.96	8.76
	velocity	5.60	9.05	9.05	9.14	9.14	8.87	8.87	8.70	8.96	8.62	9.87	8.41				
Martinez, Asier (ESP) (2000)	time	2.56	3.63	4.66	5.66	6.66	7.66	8.68	9.70	10.74	11.78		13.17	8 / 3			
	reaction time	0.126													3.10	3.02	3.10
	interval	7 steps	1.07	1.03	1.00	1.00	1.00	1.02	1.02	1.04	1.04	1.39	PB		8.85	9.08	8.85
	velocity	5.36	8.54	8.87	9.14	9.14	9.14	8.96	8.96	8.79	8.79	10.09	8.35				
Czykier, Damian (POL) (1992)	time	2.56	3.60	4.60	5.60	6.62	7.64	8.66	9.70	10.76	11.83		13.32	2 / 4			
	reaction time	0.140													3.04	3.06	3.17
	interval	7 steps	1.04	1.00	1.00	1.02	1.02	1.02	1.04	1.06	1.07	1.49			9.02	8.96	8.65
	velocity	5.36	8.79	9.14	9.14	8.96	8.96	8.96	8.79	8.62	8.54	9.41	8.26				
Zeller, Joshua (GBR) (2000)	time	2.56	3.60	4.63	5.66	6.66	7.66	8.70	9.74	10.80	11.83		13.33	7 / 5			
	reaction time	0.145													3.10	3.04	3.13
	interval	7 steps	1.04	1.03	1.03	1.00	1.00	1.04	1.04	1.06	1.03	1.50			8.85	9.02	8.76
	velocity	5.36	8.79	8.87	8.87	9.14	9.14	8.79	8.79	8.62	8.87	9.35	8.25				
Brathwaite, Shane (BAR) (1990)	time	2.48	3.56	4.60	5.60	6.63	7.65						dnf	1 / --			
reaction time	0.108												DQ				
	interval	7 steps	1.08	1.04	1.00	1.03	1.02								3.12		
	velocity	5.53	8.46	8.79	9.14	8.87	8.96								8.79		
Allen, Devon (USA) (1994)	reaction time		0.099											DQ			
Parchment, Hansle (JAM) (1990)														dns			



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=lu7cOzY50n8>

2022 World Athletics Championships (Eugene, OR) (TV Analysis)

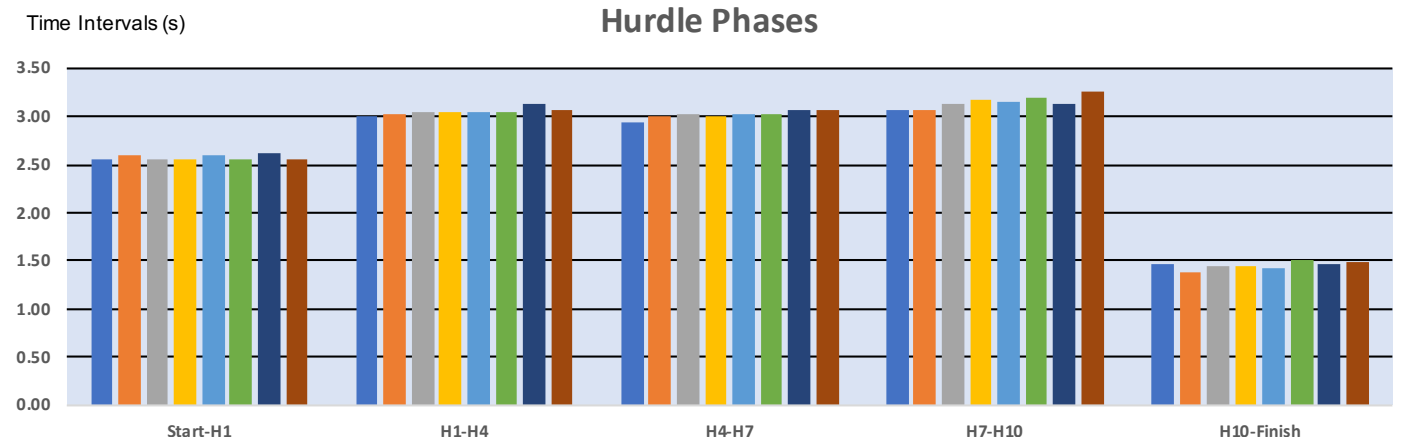
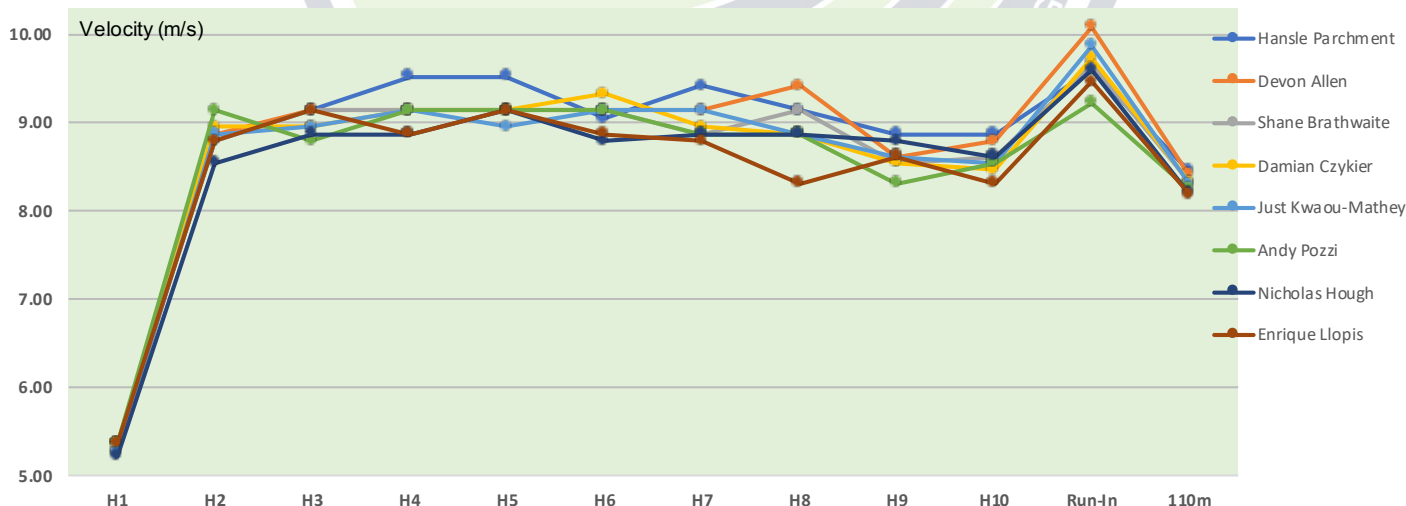
110m Hurdles

Date: 2022.07.17

Wind: 2.5 m/s

Semi-Final 3

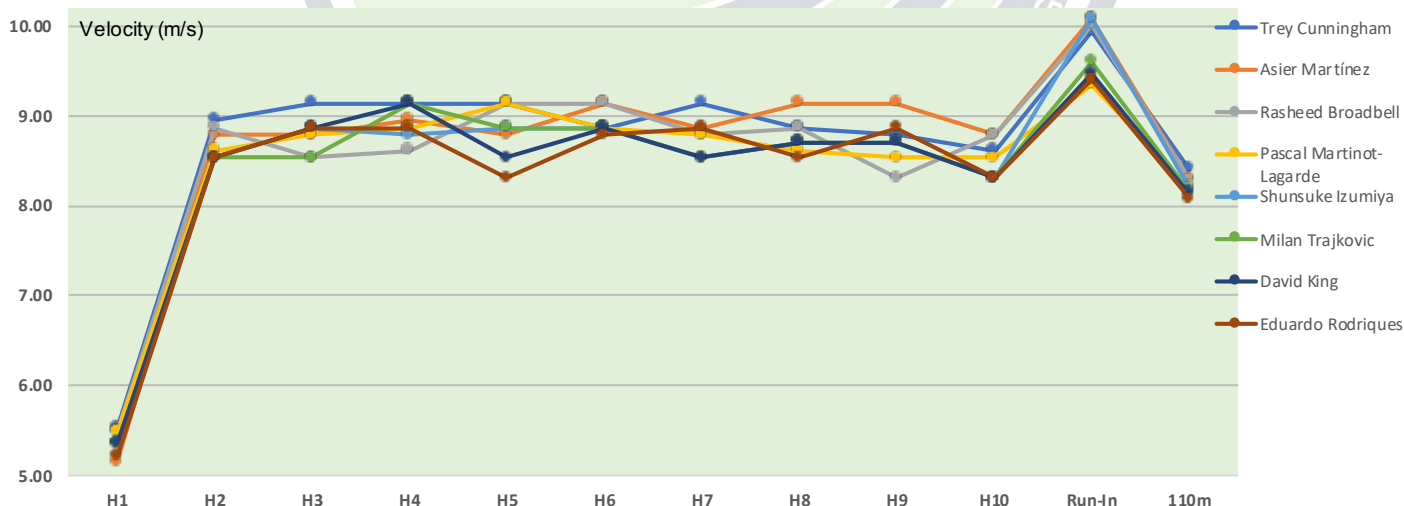
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Parchment, Hansle (JAM) (1990)	time	2.56	3.60	4.60	5.56	6.52	7.53	8.50	9.50	10.53	11.56	13.02	13.02	3 / 1			
	reaction time	0.128													3.00	2.94	3.06
	interval	7 steps	1.04	1.00	0.96	0.96	1.01	0.97	1.00	1.03	1.03	1.46			9.14	9.33	8.96
Allen, Devon (USA) (1994)	time	2.60	3.63	4.63	5.63	6.63	7.63	8.63	9.60	10.66	11.70	13.09	13.09	5 / 2			
	reaction time	0.101													3.03	3.00	3.07
	interval	7 steps	1.03	1.00	1.00	1.00	1.00	1.00	0.97	1.06	1.04	1.39			9.05	9.14	8.93
Brathwaite, Shane (BAR) (1990)	time	2.56	3.60	4.60	5.60	6.60	7.60	8.63	9.63	10.70	11.76	13.21	13.21	8 / 3			
	reaction time	0.115													3.04	3.03	3.13
	interval	7 steps	1.04	1.00	1.00	1.00	1.00	1.03	1.00	1.07	1.06	1.45			9.02	9.05	8.76
Czykier, Damian (POL) (1992)	time	2.56	3.58	4.60	5.60	6.60	7.58	8.60	9.63	10.70	11.78	13.22	13.22	6 / 4			
	reaction time	0.135													3.04	3.00	3.18
	interval	7 steps	1.02	1.02	1.00	1.00	0.98	1.02	1.03	1.07	1.08	1.44			9.02	9.14	8.62
Kwaou-Mathey, Just (FRA) (1999)	time	2.60	3.63	4.65	5.65	6.67	7.67	8.67	9.70	10.76	11.83	13.25	13.25	4 / 5			
	reaction time	0.148													3.05	3.02	3.16
	interval	7 steps	1.03	1.02	1.00	1.02	1.00	1.00	1.03	1.06	1.07	1.42			8.99	9.08	8.68
Pozzi, Andy (GBR) (1992)	time	2.56	3.56	4.60	5.60	6.60	7.60	8.63	9.66	10.76	11.83	13.35	13.35	7 / 6			
	reaction time	0.141													3.04	3.03	3.20
	interval	7 steps	1.00	1.04	1.00	1.00	1.00	1.03	1.03	1.10	1.07	1.52			9.02	9.05	8.57
Hough, Nicholas (AUS) (1993)	time	2.63	3.70	4.73	5.76	6.76	7.80	8.83	9.86	10.90	11.96	13.42	13.42	1 / 7			
	reaction time	0.131													3.13	3.07	3.13
	interval	7 steps	1.07	1.03	1.03	1.00	1.04	1.03	1.03	1.04	1.06	1.46			8.76	8.93	8.76
Llopis, Enrique (ESP) (2000)	time	2.56	3.60	4.60	5.63	6.63	7.66	8.70	9.80	10.86	11.96	13.44	13.44	2 / 8			
	reaction time	0.113													3.07	3.07	3.26
	interval	7 steps	1.04	1.00	1.03	1.00	1.03	1.04	1.10	1.06	1.10	1.48			8.93	8.93	8.41
velocity	5.36	8.79	9.14	8.87	9.14	8.87	8.79	8.31	8.62	8.31	9.47	8.18					



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=lt7cOzY50p8>

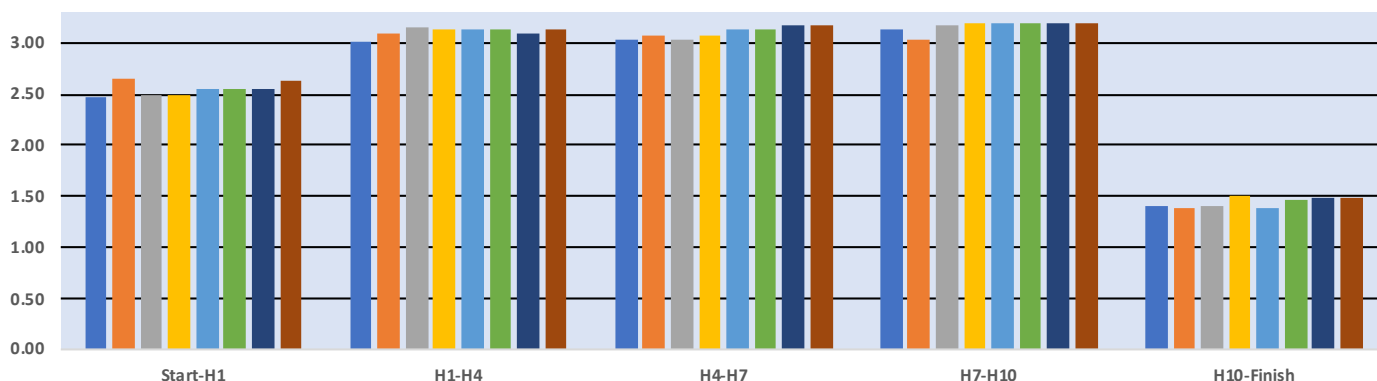
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

110m Hurdles		Date:	2022.07.17		Wind:	0.3 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
Cunningham, Trey (USA) (1998)	time	2.48	3.50	4.50	5.50	6.50	7.53	8.53	9.56	10.60	11.66	13.07		13.07	3 / 1			
	reaction time	0.120																
	interval	7 steps	1.02	1.00	1.00	1.00	1.00	1.03	1.00	1.03	1.04	1.06	1.41			3.02	3.03	3.13
	velocity	5.53	8.96	9.14	9.14	9.14	8.87	9.14	8.87	8.79	8.62	9.94	8.42			9.08	9.05	8.76
Martinez, Asier (ESP) (2000)	time	2.66	3.70	4.74	5.76	6.80	7.80	8.83	9.83	10.83	11.87	13.26		13.26	6 / 2			
	reaction time	0.141																
	interval	7 steps	1.04	1.04	1.02	1.04	1.00	1.03	1.00	1.00	1.04	1.39				3.10	3.07	3.04
	velocity	5.16	8.79	8.79	8.96	8.79	9.14	8.87	9.14	9.14	8.79	10.09	8.30			8.85	8.93	9.02
Broadbell, Rasheed (JAM) (2000)	time	2.50	3.53	4.60	5.66	6.66	7.66	8.70	9.73	10.83	11.87	13.27		13.27	4 / 3			
	reaction time	0.129																
	interval	7 steps	1.03	1.07	1.06	1.00	1.00	1.04	1.03	1.10	1.04	1.40				3.16	3.04	3.17
	velocity	5.49	8.87	8.54	8.62	9.14	9.14	8.79	8.87	8.31	8.79	10.01	8.29			8.68	9.02	8.65
Martinot-Lagarde, Pascal (FRA) (1991)	time	2.50	3.56	4.60	5.63	6.63	7.66	8.70	9.76	10.83	11.90	13.40		13.40	1 / 4			
	reaction time	0.129																
	interval	7 steps	1.06	1.04	1.03	1.00	1.03	1.04	1.06	1.07	1.07	1.50				3.13	3.07	3.20
	velocity	5.49	8.62	8.79	8.87	9.14	8.87	8.79	8.62	8.54	8.54	9.35	8.21			8.76	8.93	8.57
Izumiya, Shunsuke (JPN) (2000)	time	2.56	3.63	4.66	5.70	6.73	7.76	8.83	9.88	10.93	12.03	13.42		13.42	8 / 5			
	reaction time	0.112																
	interval	7 steps	1.07	1.03	1.04	1.03	1.03	1.07	1.05	1.05	1.10	1.39				3.14	3.13	3.20
	velocity	5.36	8.54	8.87	8.79	8.87	8.87	8.54	8.70	8.70	8.31	10.09	8.20			8.73	8.76	8.57
Trajkovic, Milan (CYP) (1992)	time	2.56	3.63	4.70	5.70	6.73	7.76	8.83	9.88	10.93	12.03	13.49		13.49	5 / 6			
	reaction time	0.142																
	interval	7 steps	1.07	1.07	1.00	1.03	1.03	1.07	1.05	1.10	1.10	1.46				3.14	3.13	3.20
	velocity	5.36	8.54	8.54	9.14	8.87	8.87	8.54	8.70	8.70	8.31	9.60	8.15			8.73	8.76	8.57
King, David (GBR) (1994)	time	2.56	3.63	4.66	5.66	6.73	7.76	8.83	9.88	10.93	12.03	13.51		13.51	2 / 7			
	reaction time	0.120																
	interval	7 steps	1.07	1.03	1.00	1.07	1.03	1.07	1.05	1.05	1.10	1.48				3.10	3.17	3.20
	velocity	5.36	8.54	8.87	9.14	8.54	8.87	8.54	8.70	8.70	8.31	9.47	8.14			8.85	8.65	8.57
Rodrigues, Eduardo (BRA) (1995)	time	2.63	3.70	4.73	5.76	6.86	7.90	8.93	10.00	11.03	12.13	13.62		13.62	7 / 8			
	reaction time	0.130																
	interval	7 steps	1.07	1.03	1.03	1.10	1.04	1.03	1.07	1.03	1.10	1.49				3.13	3.17	3.20
	velocity	5.22	8.54	8.87	8.87	8.31	8.79	8.87	8.54	8.87	8.31	9.41	8.08			8.76	8.65	8.57



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=lt7cOzY50p8>

2022 World Athletics Championships (Eugene, OR) (TV Analysis)

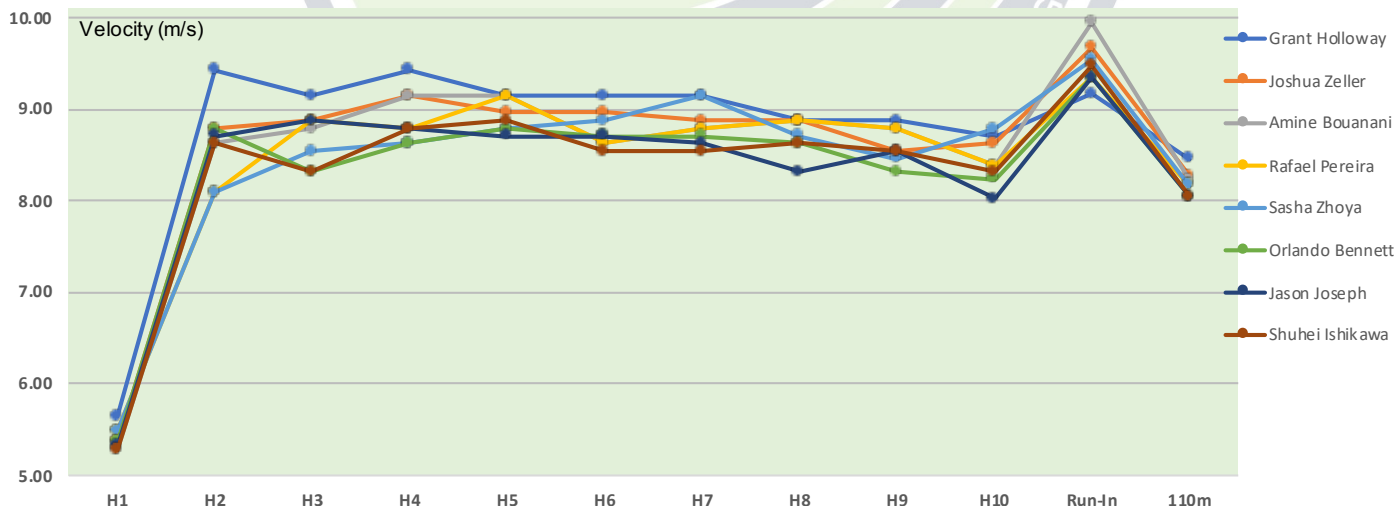
110m Hurdles

Date: 2022.07.17

Wind: -0.6 m/s

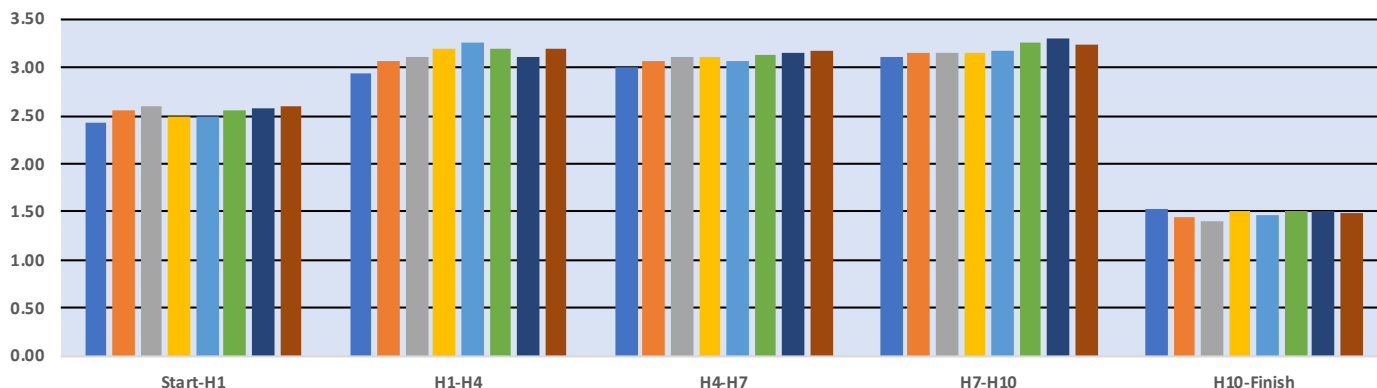
Semi-Final 1

		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	2.43	3.40	4.40	5.37	6.37	7.37	8.37	9.40	10.43	11.48	13.01	13.01	6 / 1			
	reaction time	0.128													2.94	3.00	3.11
	interval	7 steps	0.97	1.00	0.97	1.00	1.00	1.00	1.03	1.03	1.05	1.53			9.33	9.14	8.82
	velocity	5.65	9.42	9.14	9.42	9.14	9.14	9.14	8.87	8.87	8.70	9.16	8.46				
Zeller, Joshua (GBR) (2000)	time	2.56	3.60	4.63	5.63	6.65	7.67	8.70	9.73	10.80	11.86	13.31	13.31	5 / 2			
	reaction time	0.124													3.07	3.07	3.16
	interval		1.04	1.03	1.00	1.02	1.02	1.03	1.03	1.07	1.06	1.45			8.93	8.93	8.68
	velocity	5.36	8.79	8.87	9.14	8.96	8.96	8.87	8.87	8.54	8.62	9.67	8.26				
Bouanani, Amine (ALG) (1997)	time	2.60	3.66	4.70	5.70	6.70	7.76	8.80	9.83	10.87	11.96	13.37	13.37	3 / 3			
	reaction time	0.130													3.10	3.10	3.16
	interval	7 steps	1.06	1.04	1.00	1.00	1.06	1.04	1.03	1.04	1.09	1.41	NR PB		8.85	8.85	8.68
	velocity	5.28	8.62	8.79	9.14	9.14	8.62	8.79	8.87	8.79	8.39	9.94	8.23				
Pereira, Rafael (BRA) (1997)	time	2.50	3.63	4.66	5.70	6.70	7.76	8.80	9.83	10.87	11.96	13.46	13.46	4 / 4			
	reaction time	0.125													3.20	3.10	3.16
	interval		1.13	1.03	1.04	1.00	1.06	1.04	1.03	1.04	1.09	1.50			8.57	8.85	8.68
	velocity	5.49	8.09	8.87	8.79	9.14	8.62	8.79	8.87	8.79	8.39	9.35	8.17				
Zhoya, Sasha (FRA) (2002)	time	2.50	3.63	4.70	5.76	6.80	7.83	8.83	9.88	10.96	12.00	13.47	13.47	8 / 5			
	reaction time	0.154													3.26	3.07	3.17
	interval	7 steps	1.13	1.07	1.06	1.04	1.03	1.00	1.05	1.08	1.04	1.47			8.41	8.93	8.65
	velocity	5.49	8.09	8.54	8.62	8.79	8.87	9.14	8.70	8.46	8.79	9.54	8.17				
Bennett, Orlando (JAM) (1999)	time	2.56	3.60	4.70	5.76	6.80	7.85	8.90	9.96	11.06	12.17	13.67	13.67	2 / 6			
	reaction time	0.139													3.20	3.14	3.27
	interval		1.04	1.10	1.06	1.04	1.05	1.05	1.06	1.10	1.11	1.50			8.57	8.73	8.39
	velocity	5.36	8.79	8.31	8.62	8.79	8.70	8.70	8.62	8.31	8.23	9.35	8.05				
Joseph, Jason (SUI) (1998)	time	2.58	3.63	4.66	5.70	6.75	7.80	8.86	9.96	11.03	12.17	13.67	13.67	7 / 7			
	reaction time	0.149													3.12	3.16	3.31
	interval	7 steps	1.05	1.03	1.04	1.05	1.05	1.06	1.10	1.07	1.14	1.50			8.79	8.68	8.28
	velocity	5.32	8.70	8.87	8.79	8.70	8.70	8.62	8.31	8.54	8.02	9.35	8.05				
Ishikawa, Shuhei (JPN) (1995)	time	2.60	3.66	4.76	5.80	6.83	7.90	8.97	10.03	11.10	12.20	13.68	13.68	1 / 8			
	reaction time	0.144													3.20	3.17	3.23
	interval	7 steps	1.06	1.10	1.04	1.03	1.07	1.07	1.06	1.07	1.10	1.48			8.57	8.65	8.49
	velocity	5.28	8.62	8.31	8.79	8.87	8.54	8.54	8.62	8.54	8.31	9.47	8.04				



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=lt7cOzY50p8>

2022 World Athletics Championships (Eugene, OR) (TV Analysis)

110m Hurdles

Date: 2022.07.16 Wind: 0.4 m/s

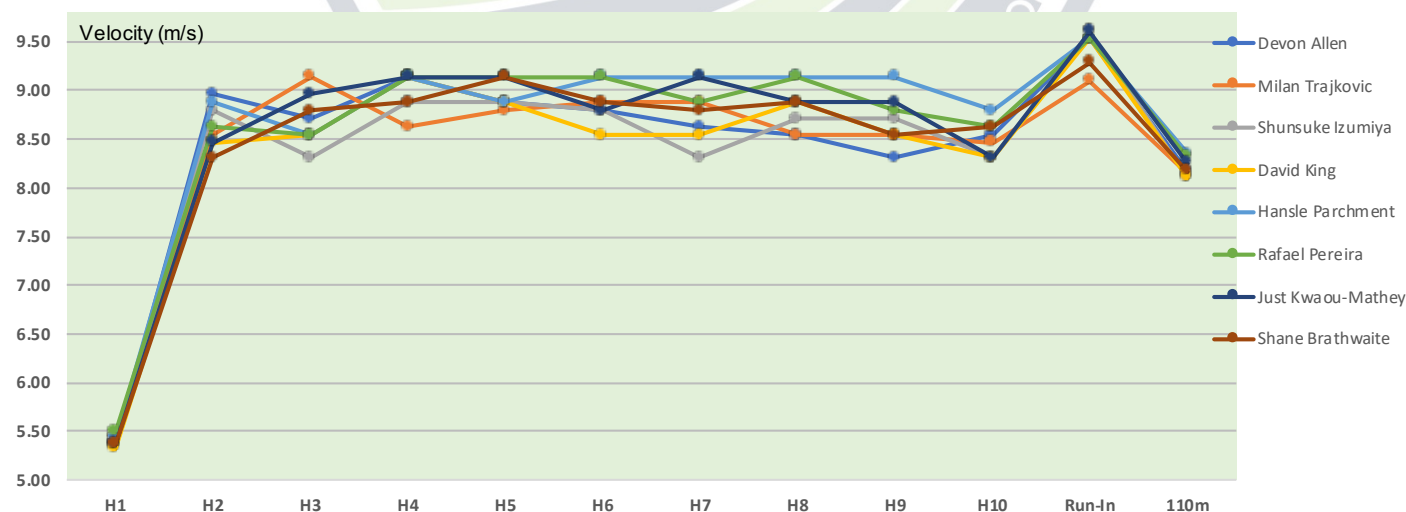
Heat 5

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Allen, Devon (USA) (1994)	time	2.56	3.58	4.63	5.63	6.66	7.70	8.76	9.83	10.93	12.00		13.47	3 / 1			
	reaction time	0.123															
	interval	7 steps	1.02	1.05	1.00	1.03	1.04	1.06	1.07	1.10	1.07	1.47			3.07	3.13	3.24
	velocity	5.36	8.96	8.70	9.14	8.87	8.79	8.62	8.54	8.31	8.54	9.54	8.17		8.93	8.76	8.46
Trajkovic, Milan (CYP) (1992)	time	2.53	3.60	4.60	5.66	6.70	7.73	8.76	9.83	10.90	11.98		13.52	4 / 2			
	reaction time	0.133															
	interval	7 steps	1.07	1.00	1.06	1.04	1.03	1.03	1.07	1.07	1.08	1.54			3.13	3.10	3.22
	velocity	5.42	8.54	9.14	8.62	8.79	8.87	8.87	8.54	8.54	8.46	9.10	8.14		8.76	8.85	8.52
Izumiya, Shunsuke (JPN) (2000)	time	2.56	3.60	4.70	5.73	6.76	7.80	8.90	9.95	11.00	12.10		13.56	1 / 3			
	reaction time	0.128															
	interval	7 steps	1.04	1.10	1.03	1.03	1.04	1.10	1.05	1.05	1.10	1.46			3.17	3.17	3.20
	velocity	5.36	8.79	8.31	8.87	8.87	8.79	8.31	8.70	8.70	8.31	9.60	8.11		8.65	8.65	8.57
King, David (GBR) (1994)	time	2.58	3.66	4.73	5.73	6.76	7.83	8.90	9.93	11.00	12.10		13.57	5 / 4			
	reaction time	0.117															
	interval	7 steps	1.08	1.07	1.00	1.03	1.07	1.07	1.03	1.07	1.10	1.47			3.15	3.17	3.20
	velocity	5.32	8.46	8.54	9.14	8.87	8.54	8.54	8.87	8.54	8.31	9.54	8.11		8.70	8.65	8.57

Date: 2022.07.16 Wind: 0.2 m/s

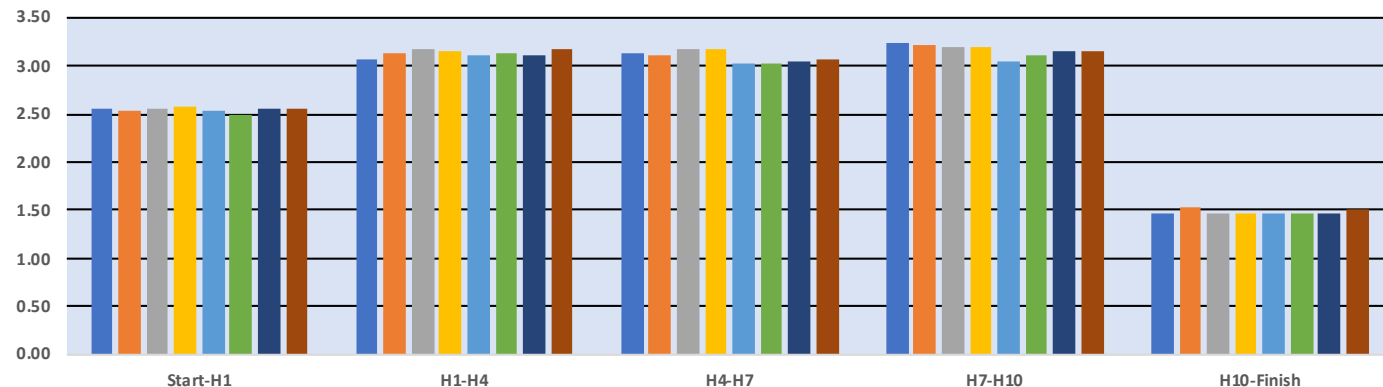
Heat 4

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Parchment, Hansle (JAM) (1990)	time	2.53	3.56	4.63	5.63	6.66	7.66	8.66	9.66	10.66	11.70		13.17	4 / 1			
	reaction time	0.153															
	interval	7 steps	1.03	1.07	1.00	1.03	1.00	1.00	1.00	1.00	1.04	1.47			3.10	3.03	3.04
	velocity	5.42	8.87	8.54	9.14	8.87	9.14	9.14	9.14	9.14	8.79	9.54	8.35		8.85	9.05	9.02
Pereira, Rafael (BRA) (1997)	time	2.50	3.56	4.63	5.63	6.63	7.63	8.66	9.66	10.70	11.76		13.23	6 / 2			
	reaction time	0.140															
	interval	7 steps	1.06	1.07	1.00	1.00	1.00	1.03	1.00	1.04	1.06	1.47			3.13	3.03	3.10
	velocity	5.49	8.62	8.54	9.14	9.14	9.14	8.87	9.14	8.79	8.62	9.54	8.31		8.76	9.05	8.85
Kwaou-Mathey, Just (FRA) (1999)	time	2.56	3.64	4.66	5.66	6.66	7.70	8.70	9.73	10.76	11.86		13.32	2 / 3			
	reaction time	0.150															
	interval	7 steps	1.08	1.02	1.00	1.00	1.04	1.00	1.03	1.03	1.10	1.46			3.10	3.04	3.16
	velocity	5.36	8.46	8.96	9.14	9.14	8.79	9.14	8.87	8.87	8.31	9.60	8.26		8.85	9.02	8.68
Brathwaite, Shane (BAR) (1990)	time	2.56	3.66	4.70	5.73	6.73	7.76	8.80	9.83	10.90	11.96		13.47	3 / 4			
	reaction time	0.134															
	interval	7 steps	1.10	1.04	1.03	1.00	1.03	1.04	1.03	1.03	1.07	1.06	1.51		3.17	3.07	3.16
	velocity	5.36	8.31	8.79	8.87	9.14	8.87	8.79	8.87	8.54	8.62	9.28	8.17		8.65	8.93	8.68



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: First Movement
 Source: https://www.youtube.com/watch?v=v2XCv1nM_xY&t=9s

2022 World Athletics Championships (Eugene, OR) (TV Analysis)

110m Hurdles

Date: 2022.07.16

Wind: -0.3 m/s

Heat 3

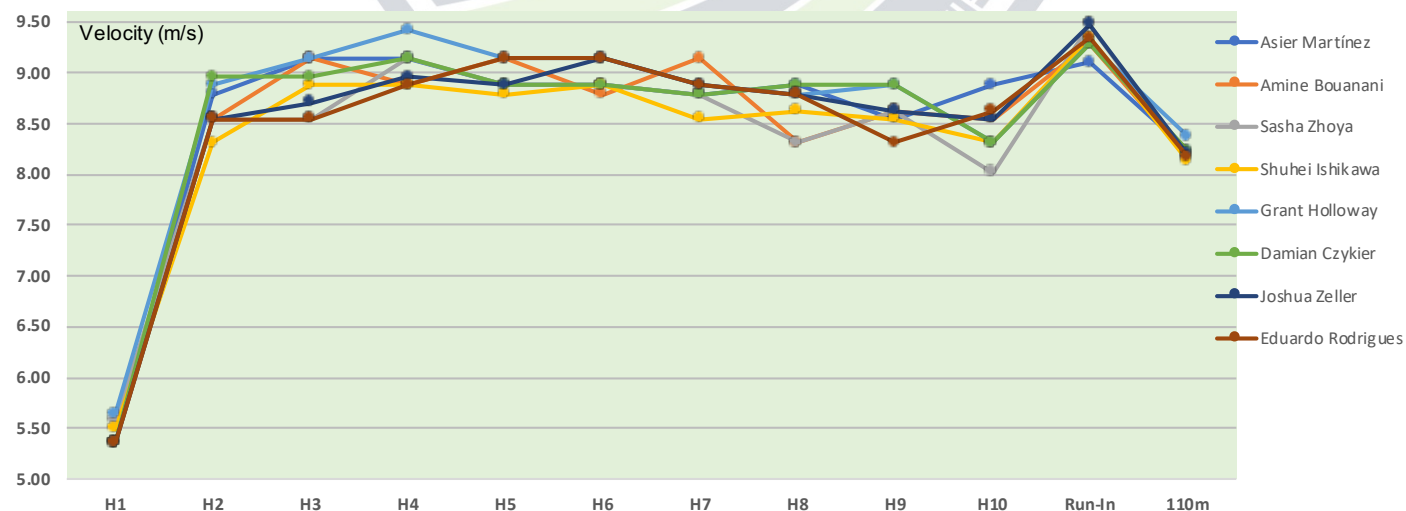
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10	
Martínez, Asier (ESP) (2000)	time	2.56	3.60	4.60	5.60	6.63	7.66	8.70	9.73	10.80	11.83		13.37	2 / 1				
	reaction time	0.137													3.04	3.10	3.13	
	interval	7 steps	1.04	1.00	1.00	1.03	1.03	1.04	1.03	1.07	1.03	1.54			9.02	8.85	8.76	
	velocity	5.36	8.79	9.14	9.14	8.87	8.87	8.79	8.87	8.54	8.87	9.10	8.23					
Bouanani, Amine (ALG) (1997)	time	2.56	3.63	4.63	5.66	6.66	7.70	8.70	9.80	10.86	11.93		13.44	1 / 2				
	reaction time	0.134													3.10	3.04	3.23	
	interval	7 steps	1.07	1.00	1.03	1.00	1.04	1.00	1.10	1.06	1.07	1.51			8.85	9.02	8.49	
	velocity	5.36	8.54	9.14	8.87	9.14	8.79	9.14	8.31	8.62	8.54	9.28	8.18					
Zhoya, Sasha (FRA) (2002)	time	2.46	3.53	4.60	5.60	6.63	7.66	8.70	9.80	10.86	12.00		13.48	6 / 3				
	reaction time	0.132													3.14	3.10	3.30	
	interval	7 steps	1.07	1.07	1.00	1.03	1.03	1.04	1.10	1.06	1.14	1.48			8.73	8.85	8.31	
	velocity	5.58	8.54	8.54	9.14	8.87	8.87	8.79	8.31	8.62	8.02	9.47	8.16					
Ishikawa, Shuhei (JPN) (1995)	time	2.50	3.60	4.63	5.66	6.70	7.73	8.80	9.86	10.93	12.03		13.53	3 / 4				
	reaction time	0.144													3.16	3.14	3.23	
	interval	7 steps	1.10	1.03	1.03	1.04	1.03	1.07	1.06	1.07	1.10	1.50			8.68	8.73	8.49	
	velocity	5.49	8.31	8.87	8.87	8.79	8.87	8.54	8.62	8.54	8.31	9.35	8.13					
Roberts, Daniel (USA) (1998)	time	2.50	3.50	4.50	5.50	6.53	7.56	8.60						dnf	4 / --			
	reaction time	0.179													3.00	3.10		
	interval		1.00	1.00	1.00	1.03	1.03	1.04							9.14	8.85		
	velocity	5.49	9.14	9.14	9.14	8.87	8.87	8.79										

Date: 2022.07.16

Wind: 0.4 m/s

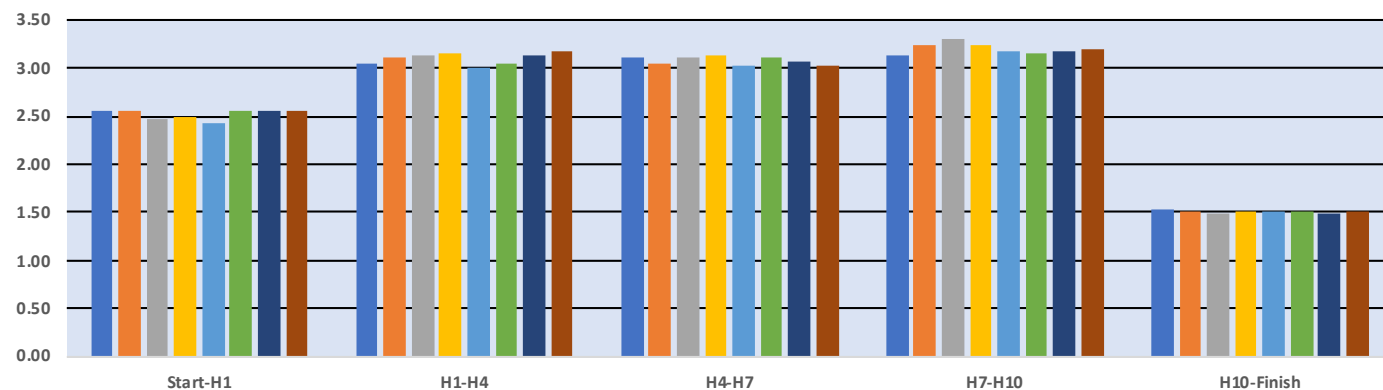
Heat 2

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Holloway, Grant (USA) (1997)	time	2.43	3.46	4.46	5.43	6.43	7.43	8.46	9.50	10.53	11.63		13.14	1 / 1			
	reaction time	0.147													3.00	3.03	3.17
	interval	7 steps	1.03	1.00	0.97	1.00	1.00	1.03	1.04	1.03	1.10	1.51			9.14	9.05	8.65
	velocity	5.65	8.87	9.14	9.42	9.14	9.14	8.87	8.79	8.87	8.31	9.28	8.37				
Czykier, Damian (POL) (1992)	time	2.56	3.58	4.60	5.60	6.63	7.66	8.70	9.73	10.76	11.86		13.37	3 / 2			
	reaction time	0.146													3.04	3.10	3.16
	interval	7 steps	1.02	1.02	1.00	1.03	1.03	1.04	1.03	1.03	1.10	1.51			9.02	8.85	8.68
	velocity	5.36	8.96	8.96	9.14	8.87	8.87	8.79	8.87	8.87	8.31	9.28	8.23				
Zeller, Joshua (GBR) (2000)	time	2.56	3.63	4.68	5.70	6.73	7.73	8.76	9.80	10.86	11.93		13.41	5 / 3			
	reaction time	0.126													3.14	3.06	3.17
	interval		1.07	1.05	1.02	1.03	1.00	1.03	1.04	1.06	1.07	1.48			8.73	8.96	8.65
	velocity	5.36	8.54	8.70	8.96	8.87	9.14	8.87	8.79	8.62	8.54	9.47	8.20				
Rodrigues, Eduardo (BRA) (1995)	time	2.56	3.63	4.70	5.73	6.73	7.73	8.76	9.80	10.90	11.96		13.46	8 / 4			
	reaction time	0.134													3.17	3.03	3.20
	interval	7 steps	1.07	1.07	1.03	1.00	1.00	1.03	1.04	1.10	1.06	1.50			8.65	9.05	8.57
	velocity	5.36	8.54	8.54	8.87	9.14	9.14	8.87	8.79	8.31	8.62	9.35	8.17				



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: First Movement
 Source: https://www.youtube.com/watch?v=v2XCv1nM_xY&t=9s

2022 World Athletics Championships (Eugene, OR) (TV Analysis)

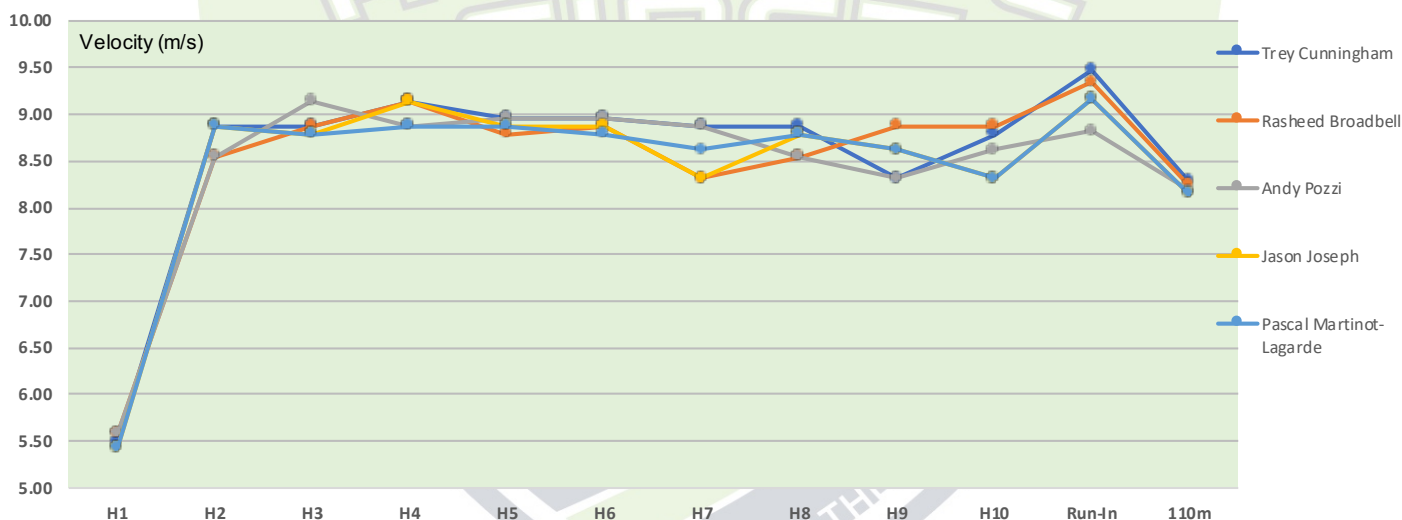
110m Hurdles

Date: 2022.07.16

Wind: -0.5 m/s

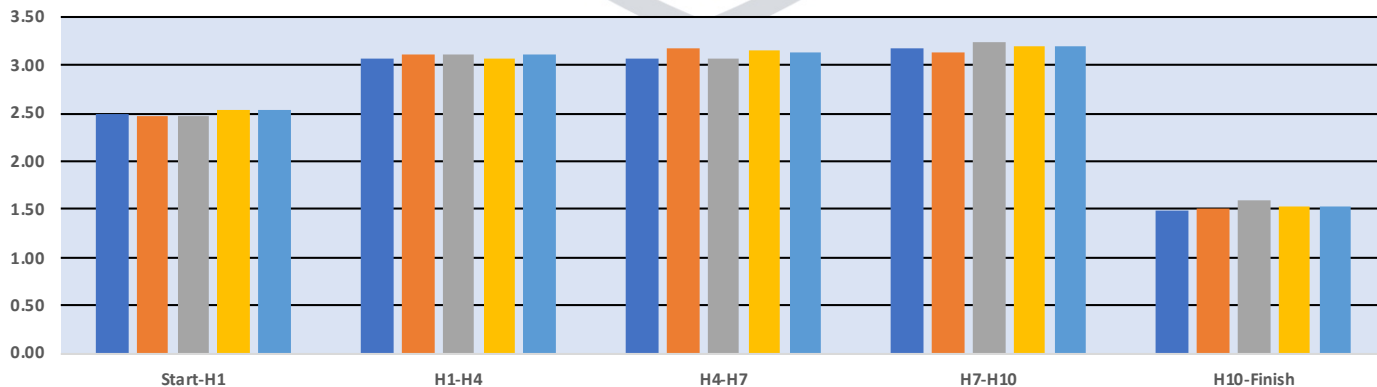
Heat 1

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Cunningham, Trey (USA) (1998)	time	2.50	3.53	4.56	5.56	6.58	7.60	8.63	9.66	10.76	11.80		13.28	4 / 1			
	reaction time	0.115													3.06	3.07	3.17
	interval	7 steps	1.03	1.03	1.00	1.02	1.02	1.03	1.03	1.10	1.04	1.48			8.96	8.93	8.65
	velocity	5.49	8.87	8.87	9.14	8.96	8.96	8.87	8.87	8.31	8.79	9.47	8.28				
Broadbell, Rasheed (JAM) (2000)	time	2.46	3.53	4.56	5.56	6.60	7.63	8.73	9.80	10.83	11.86		13.36	8 / 2			
	reaction time	0.139													3.10	3.17	3.13
	interval	7 steps	1.07	1.03	1.00	1.04	1.03	1.10	1.07	1.03	1.03	1.50			8.85	8.65	8.76
	velocity	5.58	8.54	8.87	9.14	8.79	8.87	8.31	8.54	8.87	8.87	9.35	8.23				
Pozzi, Andy (GBR) (1992)	time	2.46	3.53	4.53	5.56	6.58	7.60	8.63	9.70	10.80	11.86		13.45	2 / 3			
	reaction time	0.120													3.10	3.07	3.23
	interval	7 steps	1.07	1.00	1.03	1.02	1.02	1.03	1.07	1.10	1.06	1.59			8.85	8.93	8.49
	velocity	5.58	8.54	9.14	8.87	8.96	8.96	8.87	8.54	8.31	8.62	8.82	8.18				
Joseph, Jason (SUI) (1998)	time	2.53	3.56	4.60	5.60	6.63	7.66	8.76	9.80	10.86	11.96		13.49	7 / 4			
	reaction time	0.140													3.07	3.16	3.20
	interval	7 steps	1.03	1.04	1.00	1.03	1.03	1.10	1.04	1.06	1.10	1.53			8.93	8.68	8.57
	velocity	5.42	8.87	8.79	9.14	8.87	8.87	8.31	8.79	8.62	8.31	9.16	8.15				
Martinot-Lagarde, Pascal (FRA) (1991)	time	2.53	3.56	4.60	5.63	6.66	7.70	8.76	9.80	10.86	11.96		13.49	1 / 5			
	reaction time	0.134													3.10	3.13	3.20
	interval	7 steps	1.03	1.04	1.03	1.03	1.04	1.06	1.04	1.06	1.10	1.53			8.85	8.76	8.57
	velocity	5.42	8.87	8.79	8.87	8.87	8.79	8.62	8.79	8.62	8.31	9.16	8.15				



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: First Movement
 Source: https://www.youtube.com/watch?v=v2XCv1nM_xY&t=9s

2022 USATF National Championships (Eugene, OR) (TV Analysis)

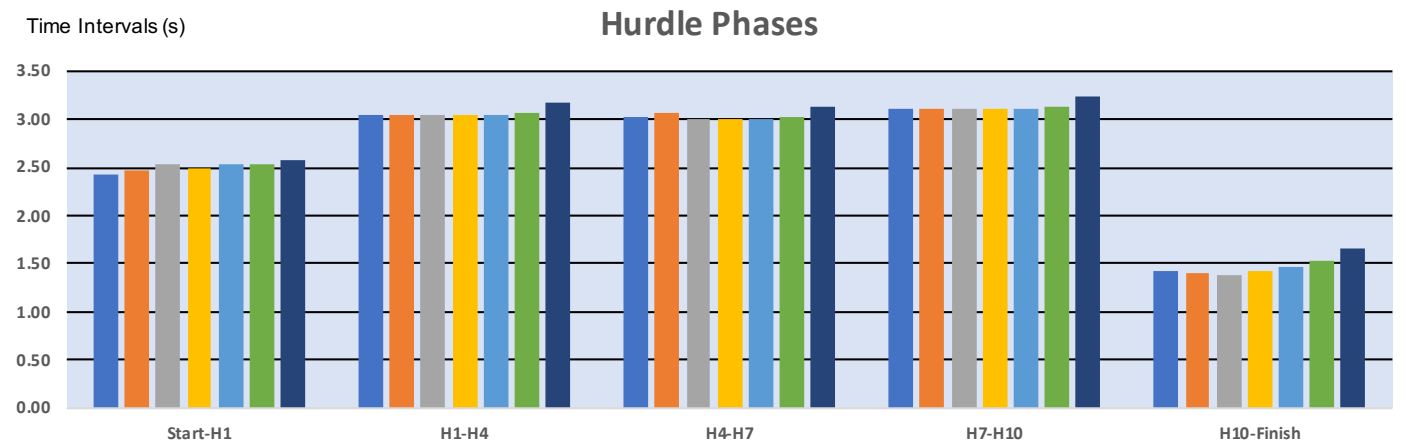
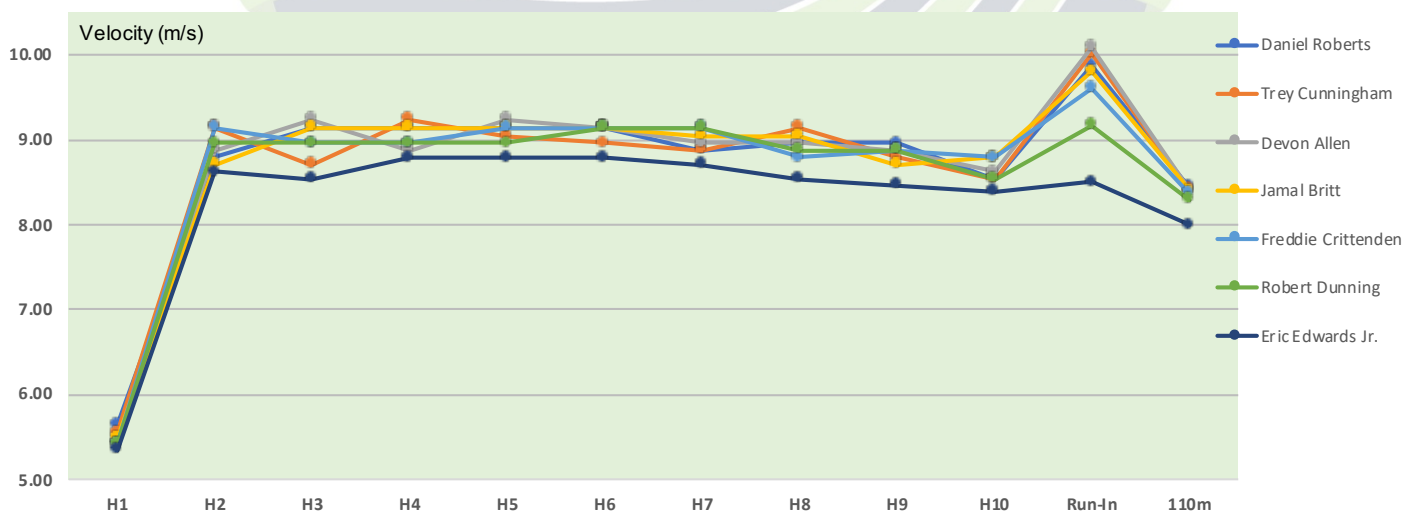
110m Hurdles

Date: 2022.06.26

Wind: 1.2 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	2.43	3.47	4.47	5.47	6.47	7.47	8.50	9.52	10.54	11.61		13.03	7 / 1			
	reaction time														3.04	3.03	3.11
	interval		1.04	1.00	1.00	1.00	1.00	1.00	1.03	1.02	1.02	1.07	1.42		9.02	9.05	8.82
	velocity	5.65	8.79	9.14	9.14	9.14	9.14	8.87	8.96	8.96	8.54	9.87	8.44				
Cunningham, Trey (USA) (1998)	time	2.47	3.47	4.52	5.51	6.52	7.54	8.57	9.57	10.61	11.68		13.08	5 / 2			
	reaction time														3.04	3.06	3.11
	interval	7 steps	1.00	1.05	0.99	1.01	1.02	1.03	1.00	1.04	1.07	1.40			9.02	8.96	8.82
	velocity	5.55	9.14	8.70	9.23	9.05	8.96	8.87	9.14	8.79	8.54	10.01	8.41				
Allen, Devon (USA) (1994)	time	2.53	3.56	4.55	5.58	6.57	7.57	8.59	9.61	10.64	11.70		13.09	4 / 3			
	reaction time														3.05	3.01	3.11
	interval	7 steps	1.03	0.99	1.03	0.99	1.00	1.02	1.02	1.03	1.06	1.39			8.99	9.11	8.82
	velocity	5.42	8.87	9.23	8.87	9.23	9.14	8.96	8.96	8.87	8.62	10.09	8.40				
Britt, Jamal (USA) (1998)	time	2.50	3.55	4.55	5.55	6.55	7.55	8.56	9.57	10.62	11.66		13.09	3 / 4			
	reaction time														3.05	3.01	3.10
	interval	7 steps	1.05	1.00	1.00	1.00	1.00	1.01	1.01	1.05	1.04	1.43	PB		8.99	9.11	8.85
	velocity	5.49	8.70	9.14	9.14	9.14	9.14	9.05	9.05	8.70	8.79	9.80	8.40				
Crittenden, Freddie (USA) (1994)	time	2.53	3.53	4.55	5.57	6.57	7.57	8.57	9.61	10.64	11.68		13.14	2 / 5			
	reaction time														3.04	3.00	3.11
	interval		1.00	1.02	1.02	1.00	1.00	1.00	1.04	1.03	1.04	1.46	PB		9.02	9.14	8.82
	velocity	5.42	9.14	8.96	8.96	9.14	9.14	9.14	8.79	8.87	8.79	9.60	8.37				
Dunning, Robert (USA) (1997)	time	2.53	3.55	4.57	5.59	6.61	7.61	8.61	9.64	10.67	11.74		13.27	9 / 6			
	reaction time														3.06	3.02	3.13
	interval	7 steps	1.02	1.02	1.02	1.02	1.00	1.00	1.03	1.03	1.07	1.53			8.96	9.08	8.76
	velocity	5.42	8.96	8.96	8.96	8.96	9.14	9.14	8.87	8.87	8.54	9.16	8.29				
Edwards Jr., Eric (USA) (2000)	time	2.57	3.63	4.70	5.74	6.78	7.82	8.87	9.94	11.02	12.11		13.76	8 / 7			
	reaction time														3.17	3.13	3.24
	interval		1.06	1.07	1.04	1.04	1.04	1.05	1.07	1.08	1.09	1.65			8.65	8.76	8.46
	velocity	5.34	8.62	8.54	8.79	8.79	8.79	8.70	8.54	8.46	8.39	8.50	7.99				



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1280 x 720 @ 50fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=0Onww33Cz>

2022 USATF National Championships (Eugene, OR)

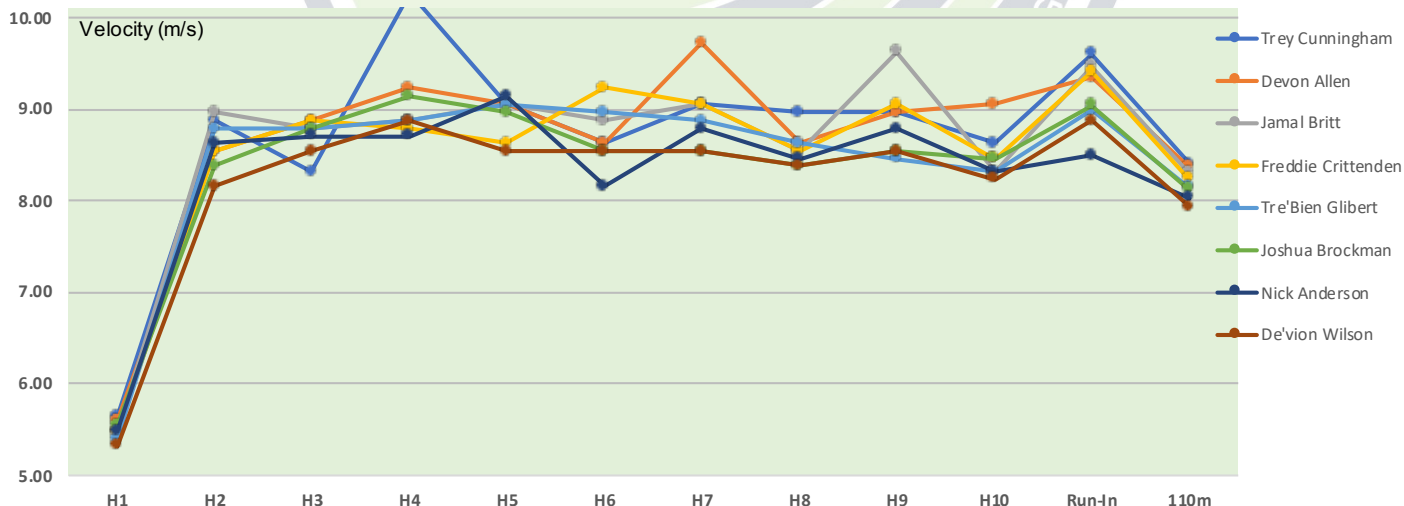
110m Hurdles

Date: 2022.06.26

Wind: 0.1 m/s

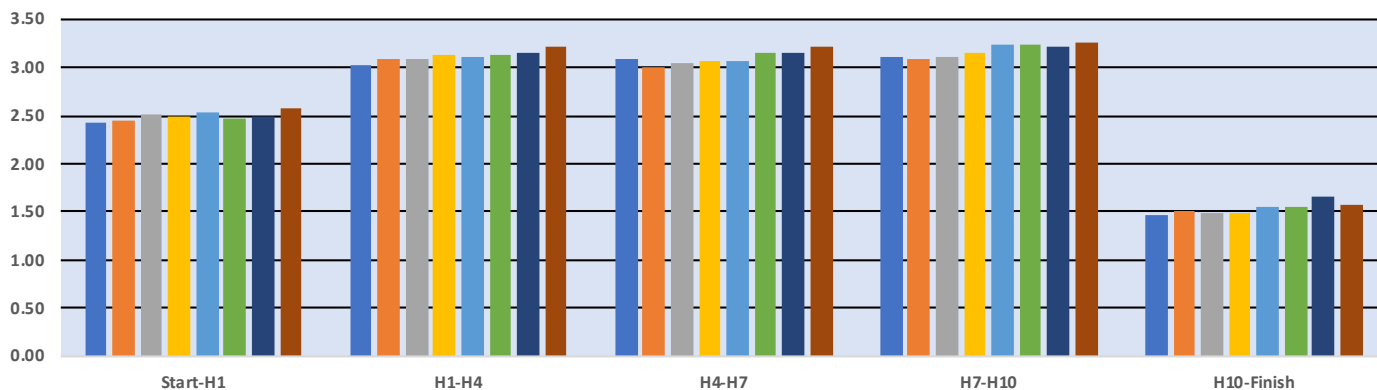
Semi-Final 2

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Cunningham, Trey (USA) (1998)	time	2.43	3.46	4.56	5.45	6.46	7.52	8.53	9.55	10.57	11.63	13.09	13.09	6 / 1			
	reaction time														3.02	3.08	3.10
	interval	7 steps	1.03	1.10	0.89	1.01	1.06	1.01	1.02	1.02	1.06	1.46			9.08	8.90	8.85
	velocity	5.65	8.87	8.31	10.27	9.05	8.62	9.05	8.96	8.96	8.62	9.60	8.40				
Allen, Devon (USA) (1994)	time	2.45	3.52	4.55	5.54	6.55	7.61	8.55	9.61	10.63	11.64	13.14	13.14	5 / 2			
	reaction time														3.09	3.01	3.09
	interval	7 steps	1.07	1.03	0.99	1.01	1.06	0.94	1.06	1.02	1.01	1.50			8.87	9.11	8.87
	velocity	5.60	8.54	8.87	9.23	9.05	8.62	9.72	8.62	8.96	9.05	9.35	8.37				
Britt, Jamal (USA) (1998)	time	2.51	3.53	4.57	5.60	6.61	7.64	8.65	9.72	10.67	11.77	13.25	13.25	7 / 3			
	reaction time														3.09	3.05	3.12
	interval	7 steps	1.02	1.04	1.03	1.01	1.03	1.01	1.07	0.95	1.10	1.48			8.87	8.99	8.79
	velocity	5.47	8.96	8.79	8.87	9.05	8.87	9.05	8.54	9.62	8.31	9.47	8.30				
Crittenden, Freddie (USA) (1994)	time	2.50	3.57	4.60	5.64	6.70	7.69	8.70	9.77	10.78	11.86	13.35	13.35	4 / 4			
	reaction time														3.14	3.06	3.16
	interval		1.07	1.03	1.04	1.06	0.99	1.01	1.07	1.01	1.08	1.49			8.73	8.96	8.68
	velocity	5.49	8.54	8.87	8.79	8.62	9.23	9.05	8.54	9.05	8.46	9.41	8.24				
Gilbert, Tre'Bien (USA) (1999)	time	2.54	3.58	4.62	5.65	6.66	7.68	8.71	9.77	10.85	11.95	13.51	13.51	8 / 5			
	reaction time														3.11	3.06	3.24
	interval		1.04	1.04	1.03	1.01	1.02	1.03	1.06	1.08	1.10	1.56			8.82	8.96	8.46
	velocity	5.40	8.79	8.79	8.87	9.05	8.96	8.87	8.62	8.46	8.31	8.99	8.14				
Brockman, Joshua (USA) (2001)	time	2.47	3.56	4.60	5.60	6.62	7.69	8.76	9.85	10.92	12.00	13.55	13.55	2 / 6			
	reaction time														3.13	3.16	3.24
	interval		1.09	1.04	1.00	1.02	1.07	1.07	1.09	1.07	1.08	1.55	PB		8.76	8.68	8.46
	velocity	5.55	8.39	8.79	9.14	8.96	8.54	8.54	8.39	8.54	8.46	9.05	8.12				
Anderson, Nick (USA) (1995)	time	2.50	3.56	4.61	5.66	6.66	7.78	8.82	9.90	10.94	12.04	13.69	13.69	3 / 7			
	reaction time														3.16	3.16	3.22
	interval		1.06	1.05	1.05	1.00	1.12	1.04	1.08	1.04	1.10	1.65			8.68	8.68	8.52
	velocity	5.49	8.62	8.70	8.70	9.14	8.16	8.79	8.46	8.79	8.31	8.50	8.04				
Wilson, De'vion (USA) (2000)	time	2.58	3.70	4.77	5.80	6.87	7.94	9.01	10.10	11.17	12.28	13.86	13.86	9 / 8			
	reaction time														3.22	3.21	3.27
	interval		1.12	1.07	1.03	1.07	1.07	1.07	1.09	1.07	1.11	1.58			8.52	8.54	8.39
	velocity	5.32	8.16	8.54	8.87	8.54	8.54	8.54	8.39	8.54	8.23	8.87	7.94				



Time Intervals (s)

Hurdle Phases



Source: USATF (2022) - Results powered by Karmarush.com. Retrieved from <https://results.usatf.org/2022Outdoors/>
 Times taken at the exact hurdle distances, the athlete is on top of the hurdle

Video: No Video Found

2022 USATF National Championships (Eugene, OR)

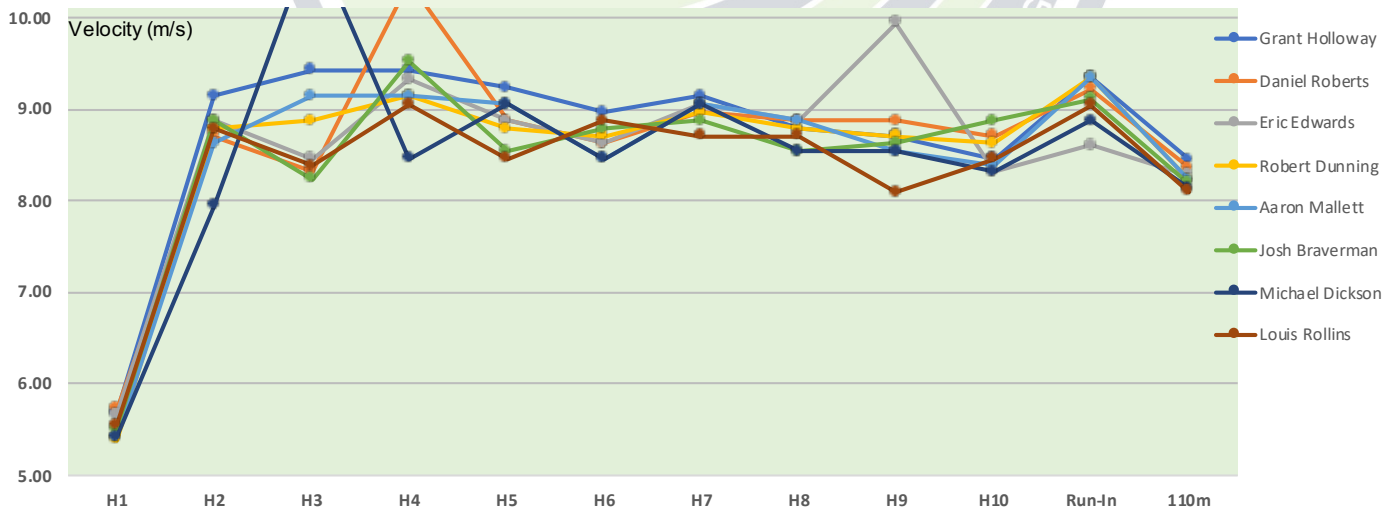
110m Hurdles

Date: 2022.06.26

Wind: 0.4 m/s

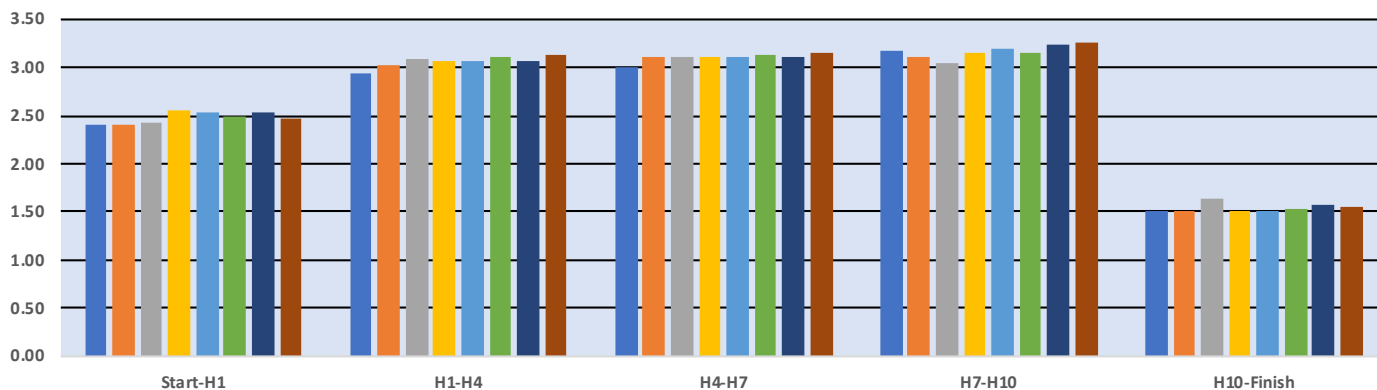
Semi-Final 1

		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	2.41	3.41	4.38	5.35	6.34	7.36	8.36	9.40	10.45	11.53	13.03	13.03	4 / 1			
	reaction time														2.94	3.01	3.17
	interval	7 steps	1.00	0.97	0.97	0.99	1.02	1.00	1.04	1.05	1.08	1.50			9.33	9.11	8.65
Roberts, Daniel (USA) (1998)	time	2.40	3.45	4.55	5.43	6.46	7.52	8.54	9.57	10.60	11.65	13.17	13.17	6 / 2			
	reaction time														3.03	3.11	3.11
	interval		1.05	1.10	0.88	1.03	1.06	1.02	1.03	1.03	1.05	1.52			9.05	8.82	8.82
Edwards Jr., Eric (USA) (2000)	time	2.42	3.45	4.53	5.51	6.54	7.60	8.61	9.64	10.56	11.66	13.29	13.29	5 / 3			
	reaction time														3.09	3.10	3.05
	interval		1.03	1.08	0.98	1.03	1.06	1.01	1.03	0.92	1.10	1.63			8.87	8.85	8.99
Dunning, Robert (USA) (1997)	time	2.55	3.59	4.62	5.62	6.66	7.71	8.73	9.77	10.82	11.88	13.38	13.38	2 / 4			
	reaction time														3.07	3.11	3.15
	interval		1.04	1.03	1.00	1.04	1.05	1.02	1.04	1.05	1.06	1.50			8.93	8.82	8.70
Mallett, Aaron (USA) (1994)	time	2.53	3.59	4.59	5.59	6.60	7.68	8.69	9.72	10.79	11.88	13.38	13.38	7 / 5			
	reaction time														3.06	3.10	3.19
	interval		1.06	1.00	1.00	1.01	1.08	1.01	1.03	1.07	1.09	1.50			8.96	8.85	8.60
Braverman, Josh (USA) (1998)	time	2.49	3.52	4.63	5.59	6.66	7.70	8.73	9.80	10.86	11.89	13.43	13.43	8 / 6			
	reaction time														3.10	3.14	3.16
	interval		1.03	1.11	0.96	1.07	1.04	1.03	1.07	1.06	1.03	1.54			8.85	8.73	8.68
Dickson, Michael (USA) (1997)	time	2.53	3.68	4.52	5.60	6.61	7.69	8.70	9.77	10.84	11.94	13.52	13.52	3 / 7			
	reaction time														3.07	3.10	3.24
	interval		1.15	0.84	1.08	1.01	1.08	1.01	1.07	1.07	1.10	1.58			8.93	8.85	8.46
Rollins, Louis (USA) (1996)	time	2.47	3.51	4.60	5.61	6.69	7.72	8.77	9.82	10.95	12.03	13.58	13.58	9 / 8			
	reaction time														3.14	3.16	3.26
	interval		1.04	1.09	1.01	1.08	1.03	1.05	1.05	1.13	1.08	1.55			8.73	8.68	8.41
	velocity	5.69	9.14	9.42	9.42	9.23	8.96	9.14	8.79	8.70	8.46	9.35	8.44				



Time Intervals (s)

Hurdle Phases

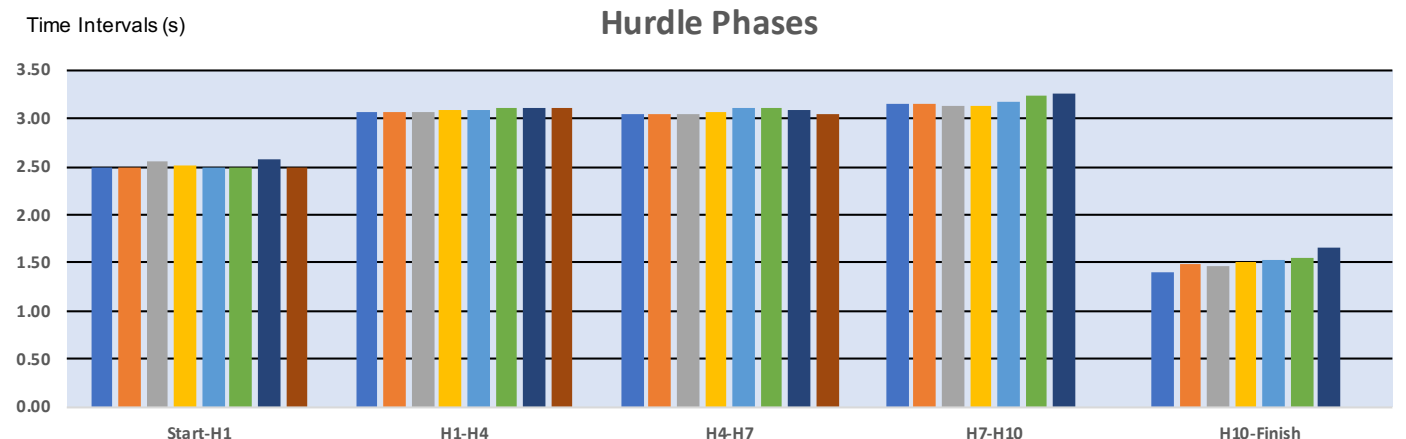
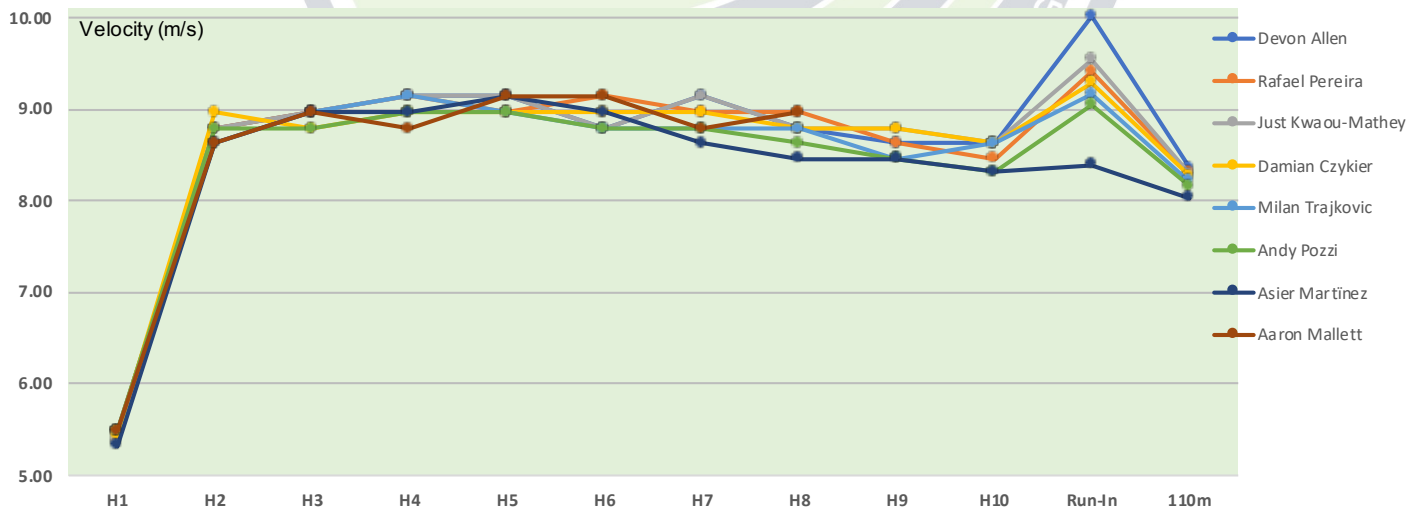


Source: USATF (2022) - Results powered by Karmarush.com. Retrieved from <https://results.usatf.org/2022Outdoors/>
 Times taken at the exact hurdle distances, the athlete is on top of the hurdle

Video: No Video Found

2022 Meeting de Paris (Paris, FRA) (TV Analysis)

110m Hurdles		Date: 2022.06.18	Wind: -0.2 m/s										FINAL				
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Allen, Devon (USA) (1994)	time	2.50	3.54	4.56	5.56	6.56	7.60	8.60	9.64	10.70	11.76	13.16		5 / 1			
	reaction time	0.138															
	interval	7 steps	1.04	1.02	1.00	1.00	1.04	1.00	1.04	1.06	1.06	1.40			3.06	3.04	3.16
	velocity	5.49	8.79	8.96	9.14	9.14	8.79	9.14	8.79	8.62	8.62	10.01	8.36		8.96	9.02	8.68
Pereira, Rafael (BRA) (1997)	time	2.50	3.54	4.56	5.56	6.58	7.58	8.60	9.62	10.68	11.76	13.25		4 / 2			
	reaction time	0.141															
	interval	7 steps	1.04	1.02	1.00	1.02	1.00	1.02	1.02	1.06	1.08	1.49	=PB		3.06	3.04	3.16
	velocity	5.49	8.79	8.96	9.14	8.96	9.14	8.96	8.96	8.62	8.46	9.41	8.30		8.96	9.02	8.68
Kwaou-Mathey, Just (FRA) (1999)	time	2.56	3.60	4.62	5.62	6.62	7.66	8.66	9.70	10.74	11.80	13.27		2 / 3			
	reaction time	0.169															
	interval	7 steps	1.04	1.02	1.00	1.00	1.04	1.00	1.04	1.04	1.06	1.47	PB		3.06	3.04	3.14
	velocity	5.36	8.79	8.96	9.14	9.14	8.79	9.14	8.79	8.79	8.62	9.54	8.29		8.96	9.02	8.73
Czykier, Damian (POL) (1992)	time	2.52	3.54	4.58	5.60	6.62	7.64	8.66	9.70	10.74	11.80	13.31		7 / 4			
	reaction time	0.144															
	interval	7 steps	1.02	1.04	1.02	1.02	1.02	1.02	1.04	1.04	1.06	1.51			3.08	3.06	3.14
	velocity	5.44	8.96	8.79	8.96	8.96	8.96	8.96	8.79	8.79	8.62	9.28	8.26		8.90	8.96	8.73
Trajkovic, Milan (CYP) (1992)	time	2.50	3.56	4.58	5.58	6.60	7.64	8.68	9.72	10.80	11.86	13.39		8 / 5			
	reaction time	0.154															
	interval	7 steps	1.06	1.02	1.00	1.02	1.04	1.04	1.04	1.08	1.06	1.53			3.08	3.10	3.18
	velocity	5.49	8.62	8.96	9.14	8.96	8.79	8.79	8.79	8.46	8.62	9.16	8.22		8.90	8.85	8.62
Pozzi, Andy (GBR) (1992)	time	2.50	3.54	4.58	5.60	6.62	7.66	8.70	9.76	10.84	11.94	13.49		1 / 6			
	reaction time	0.126															
	interval	7 steps	1.04	1.04	1.02	1.02	1.04	1.04	1.06	1.08	1.10	1.55			3.10	3.10	3.24
	velocity	5.49	8.79	8.79	8.96	8.96	8.79	8.62	8.46	8.31	9.05	8.15			8.85	8.85	8.46
Martínez, Asier (ESP) (2000)	time	2.58	3.64	4.66	5.68	6.68	7.70	8.76	9.84	10.92	12.02	13.69		6 / 7			
	reaction time	0.161															
	interval	7 steps	1.06	1.02	1.02	1.00	1.02	1.06	1.08	1.08	1.10	1.67			3.10	3.08	3.26
	velocity	5.32	8.62	8.96	8.96	9.14	8.96	8.62	8.46	8.46	8.31	8.40	8.04		8.85	8.90	8.41
Mallett, Aaron (USA) (1994)	time	2.50	3.56	4.58	5.62	6.62	7.62	8.66	9.68					3 / --			
	reaction time	0.150															
	interval	7 steps	1.06	1.02	1.04	1.00	1.00	1.04	1.02								
	velocity	5.49	8.62	8.96	8.79	9.14	9.14	8.79	8.96						3.12	3.04	
															8.79	9.02	



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1280 x 720 @ 50fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=0Onvw33Czs>

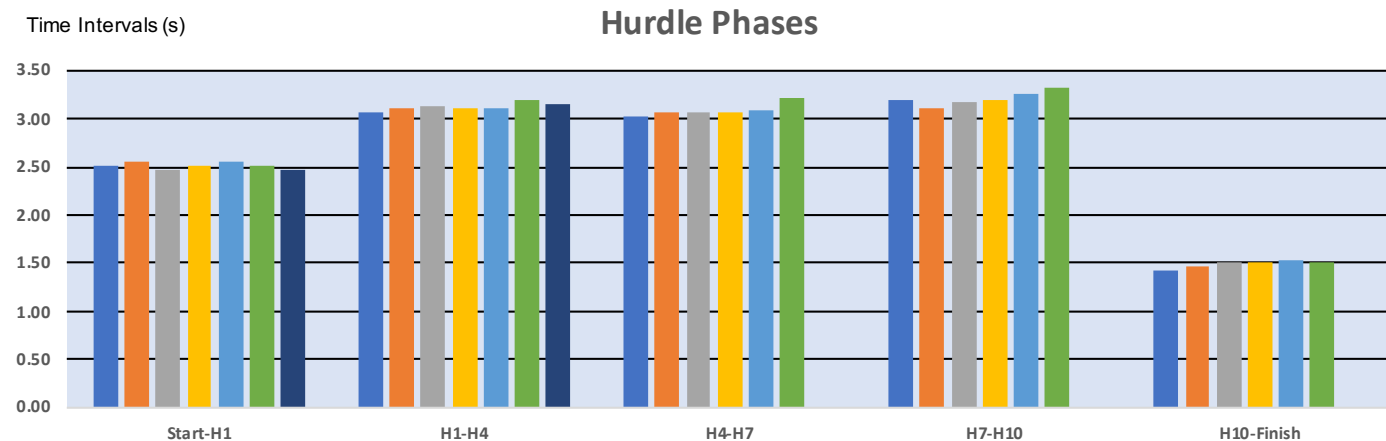
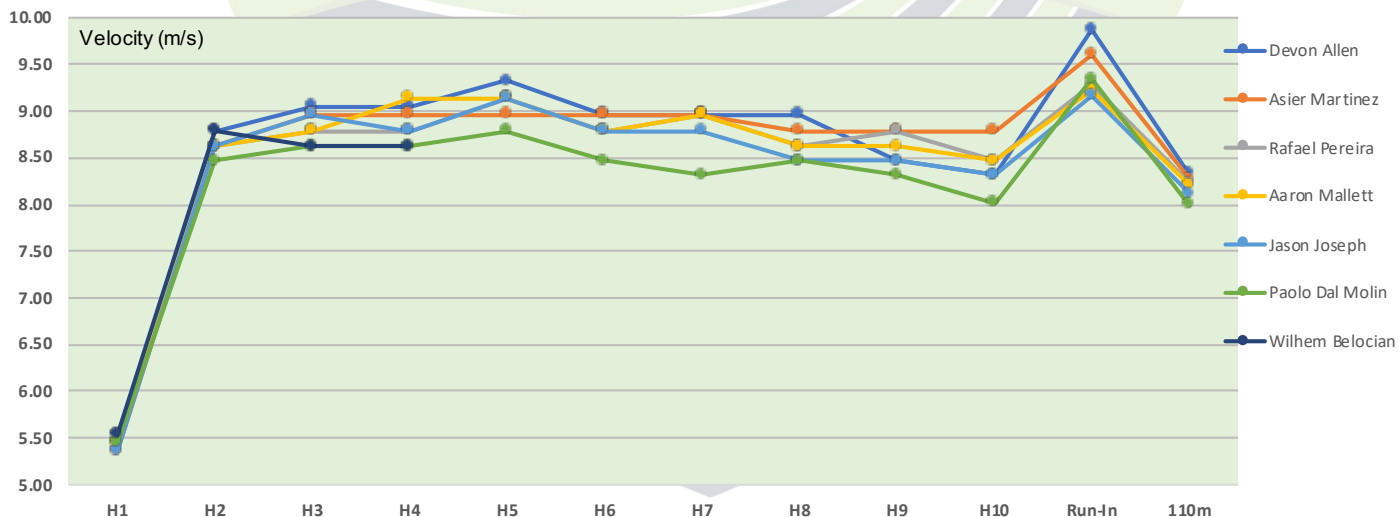
2022 Bislett Games (Oslo, NOR) (TV Analysis)

110m Hurdles

Date: 2022.06.16 Wind: -1.2 m/s

FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Allen, Devon (USA) (1994)	time	2.52	3.56	4.57	5.58	6.56	7.58	8.60	9.62	10.70	11.80		13.22	5 / 1			
	reaction time	0.140															
	interval	7 steps	1.04	1.01	1.01	0.98	1.02	1.02	1.02	1.08	1.10	1.42			3.06	3.02	3.20
	velocity	5.44	8.79	9.05	9.05	9.33	8.96	8.96	8.96	8.46	8.31	9.87	8.32		8.96	9.08	8.57
Martinez, Asier (ESP) (2000)	time	2.56	3.62	4.64	5.66	6.68	7.70	8.72	9.76	10.80	11.84		13.30	6 / 2			
	reaction time	0.137															
	interval	7 steps	1.06	1.02	1.02	1.02	1.02	1.02	1.04	1.04	1.04	1.46			3.10	3.06	3.12
	velocity	5.36	8.62	8.96	8.96	8.96	8.96	8.96	8.79	8.79	8.79	9.60	8.27		8.85	8.96	8.79
Pereira, Rafael (BRA) (1997)	time	2.48	3.54	4.58	5.62	6.62	7.66	8.68	9.74	10.78	11.86		13.37	3 / 3			
	reaction time	0.137															
	interval		1.06	1.04	1.04	1.00	1.04	1.02	1.06	1.04	1.08	1.51			3.14	3.06	3.18
	velocity	5.53	8.62	8.79	8.79	9.14	8.79	8.96	8.62	8.79	8.46	9.28	8.23		8.73	8.96	8.62
Mallett, Aaron (USA) (1994)	time	2.52	3.58	4.62	5.62	6.62	7.66	8.68	9.74	10.80	11.88		13.40	1 / 4			
	reaction time	0.173															
	interval	7 steps	1.06	1.04	1.00	1.00	1.04	1.02	1.06	1.06	1.08	1.52			3.10	3.06	3.20
	velocity	5.44	8.62	8.79	9.14	9.14	8.79	8.96	8.62	8.62	8.46	9.22	8.21		8.85	8.96	8.57
Joseph, Jason (SUI) (1998)	time	2.56	3.62	4.64	5.68	6.68	7.72	8.76	9.84	10.92	12.02		13.55	7 / 5			
	reaction time	0.159															
	interval	7 steps	1.06	1.02	1.04	1.00	1.04	1.04	1.08	1.08	1.10	1.53			3.12	3.08	3.26
	velocity	5.36	8.62	8.96	8.79	9.14	8.79	8.79	8.46	8.46	8.31	9.16	8.12		8.79	8.90	8.41
Dal Molin, Paolo (ITA) (1987)	time	2.52	3.60	4.66	5.72	6.76	7.84	8.94	10.02	11.12	12.26		13.76	8 / 6			
	reaction time	0.122															
	interval	7 steps	1.08	1.06	1.06	1.04	1.08	1.10	1.08	1.10	1.14	1.50			3.20	3.22	3.32
	velocity	5.44	8.46	8.62	8.62	8.79	8.46	8.31	8.46	8.31	8.02	9.35	7.99		8.57	8.52	8.26
Belocian, Wilhem (FRA) (1995)	time	2.48	3.52	4.58	5.64								dnf	1 / --			
	reaction time	0.111															
	interval	7 steps	1.04	1.06	1.06										3.16		
	velocity	5.53	8.79	8.62	8.62										8.68		



Evaluated with: ObjectVideo
 Quality & Frame Rate: 1920 x 1080 @ 50ps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=2GibBmvX0uQ>

2022 New York Grand Prix (New York, NY) (TV Analysis)

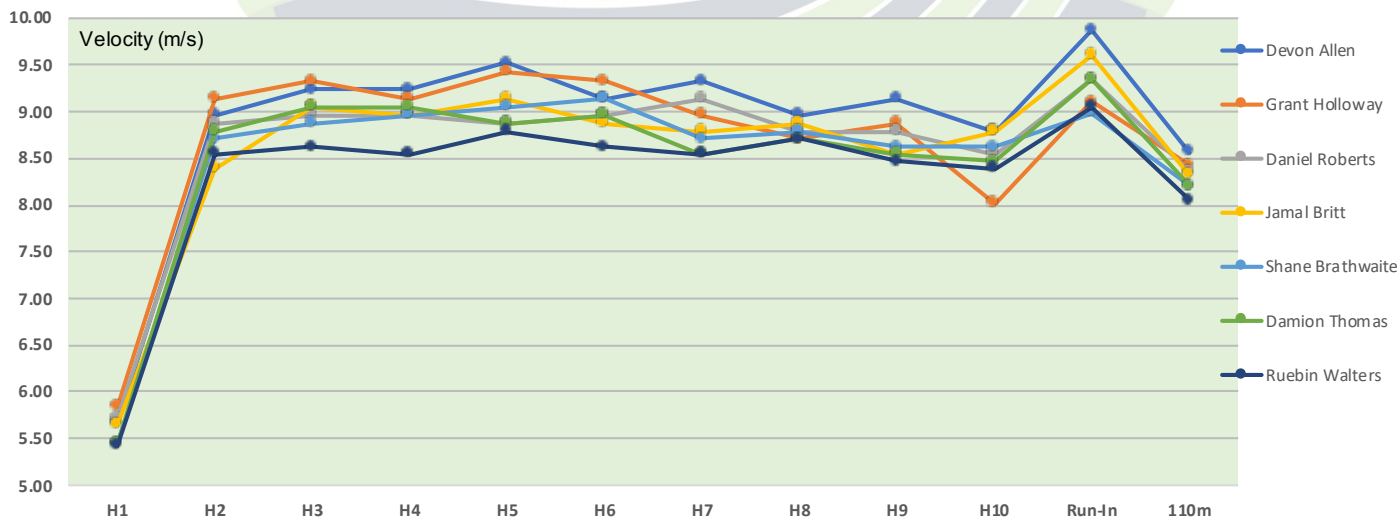
110m Hurdles

Date: 2022.06.12

Wind: 1.6 m/s

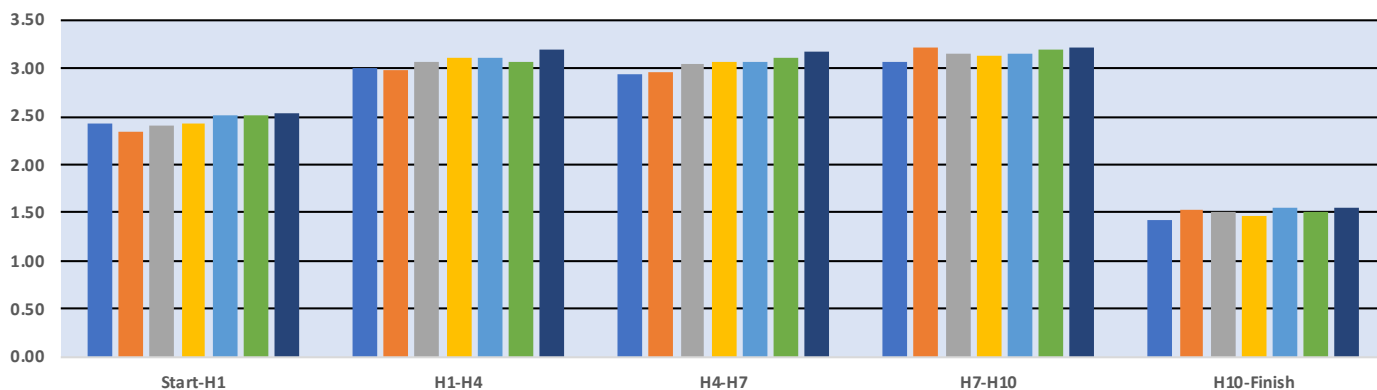
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Allen, Devon (USA) (1994)	time	2.42	3.44	4.43	5.42	6.38	7.38	8.36	9.38	10.38	11.42	12.84	13.17	5 / 1	3.00	2.94	3.06
	reaction time	0.128													9.14	9.33	8.96
	interval	7 steps	1.02	0.99	0.99	0.96	1.00	0.98	1.02	1.00	1.04	1.42	PB				
	velocity	5.67	8.96	9.23	9.23	9.52	9.14	9.33	8.96	9.14	8.79	9.87	8.57				
Holloway, Grant (USA) (1997)	time	2.35	3.35	4.33	5.33	6.30	7.28	8.30	9.35	10.38	11.52		13.06	6 / 2	2.98	2.97	3.22
	reaction time	0.116													9.20	9.23	8.52
	interval	7 steps	1.00	0.98	1.00	0.97	0.98	1.02	1.05	1.03	1.14	1.54					
	velocity	5.84	9.14	9.33	9.14	9.42	9.33	8.96	8.70	8.87	8.02	9.10	8.42				
Roberts, Daniel (USA) (1997)	time	2.40	3.43	4.45	5.47	6.50	7.52	8.52	9.56	10.60	11.67		13.17	4 / 3	3.07	3.05	3.15
	reaction time	0.156													8.93	8.99	8.70
	interval		1.03	1.02	1.02	1.03	1.02	1.00	1.04	1.04	1.07	1.50	PB				
	velocity	5.72	8.87	8.96	8.96	8.87	8.96	9.14	8.79	8.79	8.54	9.35	8.35				
Britt, Jamal (USA) (1998)	time	2.43	3.52	4.53	5.55	6.55	7.58	8.62	9.65	10.72	11.76		13.22	3 / 4	3.12	3.07	3.14
	reaction time	0.139													8.79	8.93	8.73
	interval	7 steps	1.09	1.01	1.02	1.00	1.03	1.04	1.03	1.07	1.04	1.46	PB				
	velocity	5.65	8.39	9.05	8.96	9.14	8.87	8.79	8.87	8.54	8.79	9.60	8.32				
Brathwaite, Shane (BAR) (1990)	time	2.52	3.57	4.60	5.62	6.63	7.63	8.68	9.72	10.78	11.84		13.40	8 / 5	3.10	3.06	3.16
	reaction time	0.133													8.85	8.96	8.68
	interval		1.05	1.03	1.02	1.01	1.00	1.05	1.04	1.06	1.06	1.56					
	velocity	5.44	8.70	8.87	8.96	9.05	9.14	8.70	8.79	8.62	8.62	8.99	8.21				
Thomas, Damion (JAM) (1999)	time	2.52	3.56	4.57	5.58	6.61	7.63	8.70	9.75	10.82	11.90		13.40	7 / 6	3.06	3.12	3.20
	reaction time	0.149													8.96	8.79	8.57
	interval	7 steps	1.04	1.01	1.01	1.03	1.02	1.07	1.05	1.07	1.08	1.50					
	velocity	5.44	8.79	9.05	8.87	8.96	8.54	8.70	8.54	8.46	8.46	9.35	8.21				
Walters, Ruebin (TTO) (1995)	time	2.53	3.60	4.66	5.73	6.77	7.83	8.90	9.95	11.03	12.12		13.67	2 / 7	3.20	3.17	3.22
	reaction time	0.139													8.57	8.65	8.52
	interval		1.07	1.06	1.07	1.04	1.06	1.07	1.05	1.08	1.09	1.55					
	velocity	5.42	8.54	8.62	8.54	8.79	8.62	8.54	8.70	8.46	8.39	9.05	8.05				



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=9PMsox9_mYA&t=20s

2022 NCAA Championships (Eugene, OR) (TV Analysis)

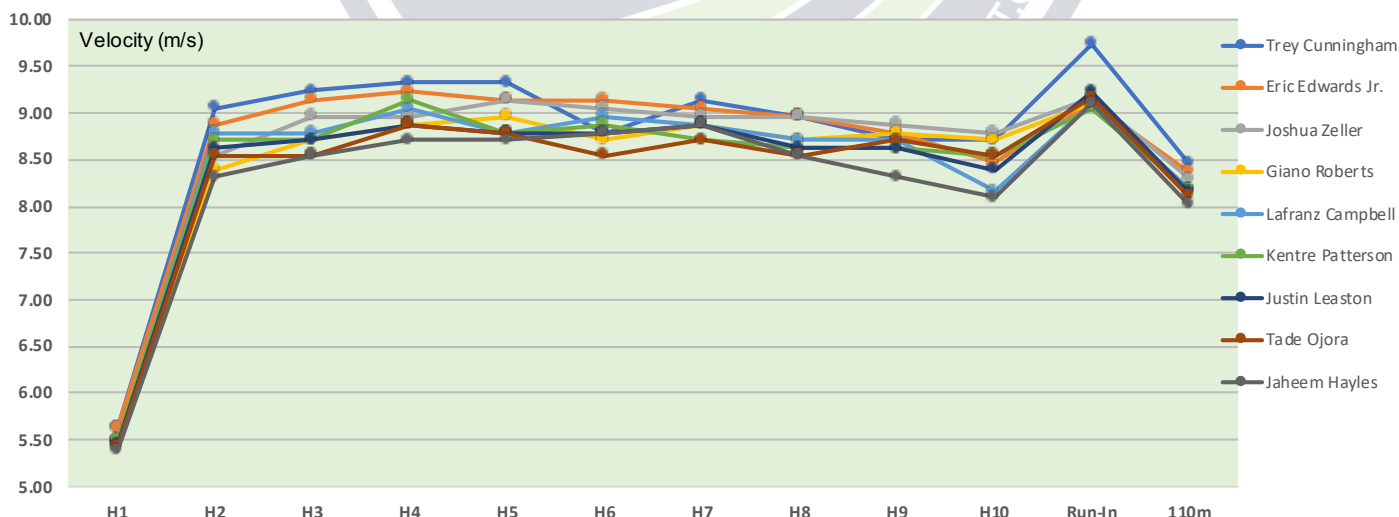
110m Hurdles

Date: 2022.06.10

Wind: 0.0 m/s

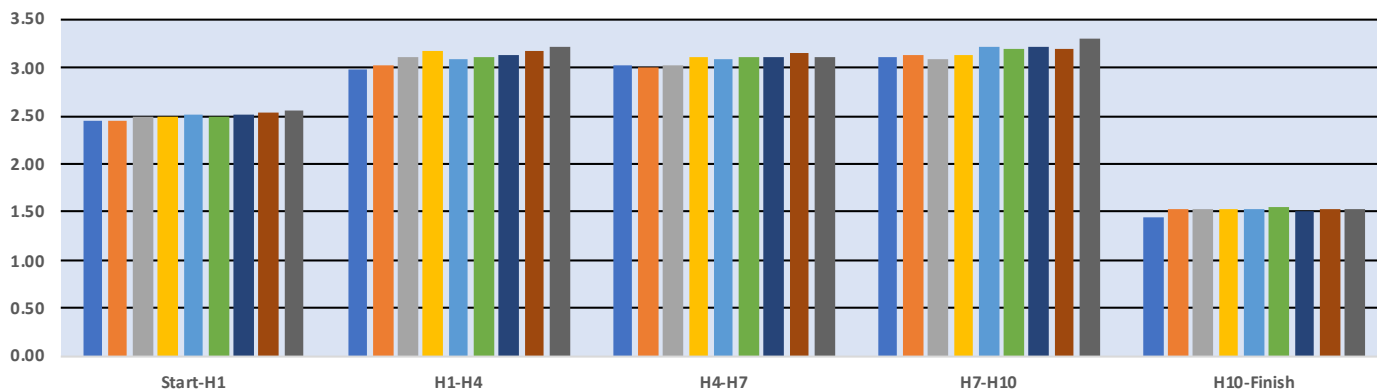
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Cunningham, Trey (USA) (1998)	time	2.44	3.45	4.44	5.42	6.40	7.44	8.44	9.46	10.51	11.56		13.00	5 / 1			
	reaction time														2.98	3.02	3.12
	interval	7 steps	1.01	0.99	0.98	0.98	1.04	1.00	1.02	1.05	1.05	1.44	PB		9.20	9.08	8.79
Edwards Jr., Eric (USA) (2000)	time	2.44	3.47	4.47	5.46	6.46	7.46	8.47	9.49	10.53	11.61		13.15	6 / 2			
	reaction time														3.02	3.01	3.14
	interval		1.03	1.00	0.99	1.00	1.00	1.01	1.02	1.04	1.08	1.54	PB		9.08	9.11	8.73
Zeller, Joshua (GBR) (2000)	time	2.50	3.57	4.59	5.61	6.61	7.62	8.64	9.66	10.69	11.73		13.26	7 / 3			
	reaction time														3.11	3.03	3.09
	interval		1.07	1.02	1.02	1.00	1.01	1.02	1.02	1.03	1.04	1.53			8.82	9.05	8.87
Roberts, Giano (USA) (2000)	time	2.50	3.59	4.64	5.67	6.69	7.74	8.77	9.82	10.86	11.91		13.45	1 / 4			
	reaction time														3.17	3.10	3.14
	interval		1.09	1.05	1.03	1.02	1.05	1.03	1.05	1.04	1.05	1.54			8.65	8.85	8.73
Campbell, Lafranz (JAM) (1997)	time	2.51	3.55	4.59	5.60	6.64	7.66	8.69	9.74	10.79	11.91		13.45	8 / 5			
	reaction time														3.09	3.09	3.22
	interval	7 steps	1.04	1.04	1.01	1.04	1.02	1.03	1.05	1.05	1.12	1.54			8.87	8.87	8.52
Patterson, Kentre (USA) (1999)	time	2.50	3.55	4.60	5.60	6.64	7.67	8.72	9.78	10.84	11.91		13.46	9 / 6			
	reaction time														3.10	3.12	3.19
	interval		1.05	1.05	1.00	1.04	1.03	1.05	1.06	1.06	1.07	1.55			8.85	8.79	8.60
Leaston, Justin (USA) (2001)	time	2.52	3.58	4.63	5.66	6.70	7.74	8.77	9.83	10.89	11.98		13.50	3 / 7			
	reaction time														3.14	3.11	3.21
	interval		1.06	1.05	1.03	1.04	1.04	1.03	1.06	1.06	1.09	1.52			8.73	8.82	8.54
Ojora, Tade (GBR) (1999)	time	2.53	3.60	4.67	5.70	6.74	7.81	8.86	9.93	10.98	12.05		13.58	2 / 8			
	reaction time														3.17	3.16	3.19
	interval	7 steps	1.07	1.07	1.03	1.04	1.07	1.05	1.07	1.05	1.07	1.53			8.65	8.68	8.60
Hayles, Jaheem (JAM) (2001)	time	2.55	3.65	4.72	5.77	6.82	7.86	8.89	9.96	11.06	12.19		13.73	4 / 9			
	reaction time														3.22	3.12	3.30
	interval		1.10	1.07	1.05	1.05	1.04	1.03	1.07	1.10	1.13	1.54			8.52	8.79	8.31
	velocity	5.62	9.05	9.23	9.33	9.33	8.79	9.14	8.96	8.70	8.70	9.74	8.46				
	velocity	5.62	8.87	9.14	9.23	9.14	9.14	9.05	8.96	8.79	8.46	9.10	8.37				
	velocity	5.49	8.54	8.96	8.96	9.14	9.05	8.96	8.96	8.87	8.79	9.16	8.30				
	velocity	5.49	8.39	8.70	8.87	8.96	8.70	8.87	8.70	8.79	8.70	9.10	8.18				
	velocity	5.47	8.79	8.79	9.05	8.79	8.96	8.87	8.70	8.70	8.16	9.10	8.18				
	velocity	5.49	8.70	8.70	9.14	8.79	8.87	8.70	8.62	8.62	8.54	9.05	8.17				
	velocity	5.44	8.62	8.70	8.87	8.79	8.79	8.87	8.62	8.62	8.39	9.22	8.15				
	velocity	5.42	8.54	8.54	8.87	8.79	8.54	8.70	8.54	8.70	8.54	9.16	8.10				
	velocity	5.38	8.31	8.54	8.70	8.70	8.79	8.87	8.54	8.31	8.09	9.10	8.01				



Time Intervals (s)

Hurdle Phases

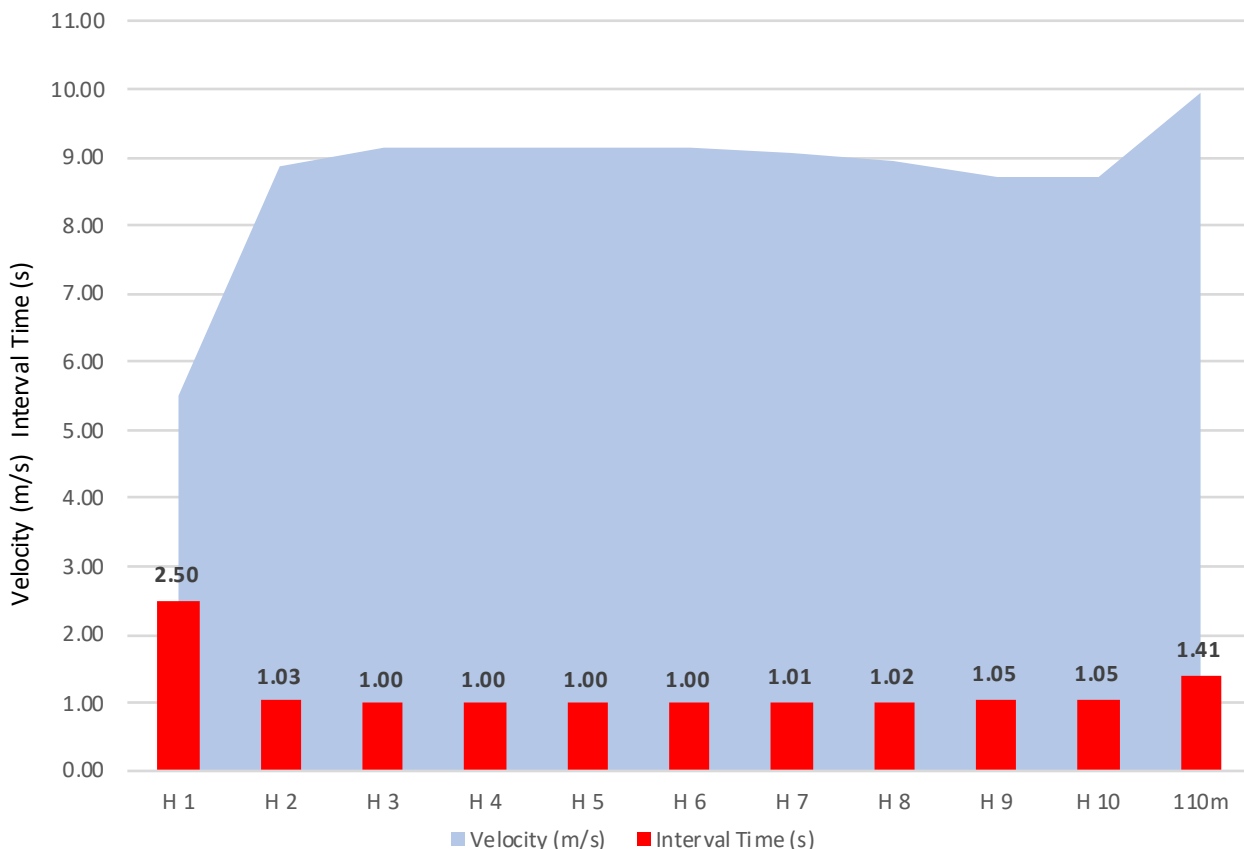


Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1280 x 720 @ 60fps
 Timing From: First Movement
 Source: https://www.youtube.com/watch?v=ebAHN_lTeRI&t=1s

Men's 110m Hurdles

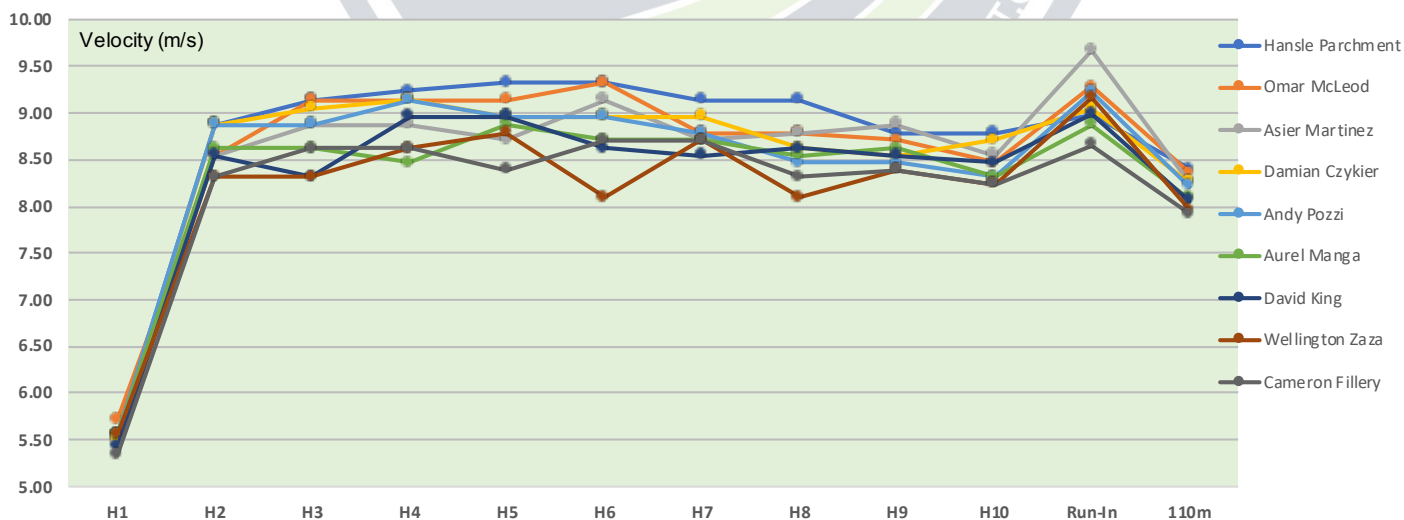
Name (YOB): Trey Cunningham (1998) **Official Time (FAT):** 13.07
Club: USA / Florida State University **Wind:** -1.5 m/s
Competition: NCAA East Region Preliminary **Lane / Place:** 5 / 1
City: Bloomington, IN **Reaction Time:**
Date: 2022.05.27 **Steps to Hurdle 1:** 7
Round: Quarterfinal 2 **Min Split (s):** 1.00
Distances: 13.72m / 9.14m / 107cm **Max Split (s):** 1.05
Evaluated with: ObjectusVideo **Evaluated by:** AthleteFirst.org
Timing From: First Movement **Quality & Frame Rate:** 1920 x 1080 @ 30fps
Source: <https://www.youtube.com/watch?v=wVvoE30pTkM>

Hurdle	Touchdown Time (s)	Interval Time (s)	Velocity (m/s)	
H 1	2.50	2.50	5.49	Start → Hurdle 1 2.50
H 2	3.53	1.03	8.87	
H 3	4.53	1.00	9.14	Hurdle 1 → Hurdle 4 3.03
H 4	5.53	1.00	9.14	
H 5	6.53	1.00	9.14	
H 6	7.53	1.00	9.14	Hurdle 4 → Hurdle 7 3.01
H 7	8.54	1.01	9.05	
H 8	9.56	1.02	8.96	Hurdle 7 → Hurdle 10 3.12
H 9	10.61	1.05	8.70	
H 10	11.66	1.05	8.70	
Manual Time (MT)	13.07	1.41	9.94	Hurdle 10 → Finish 1.41
Official Time	13.07	<i>Ave Interval = 1.02</i>	<i>Ave Velocity = 8.98</i>	



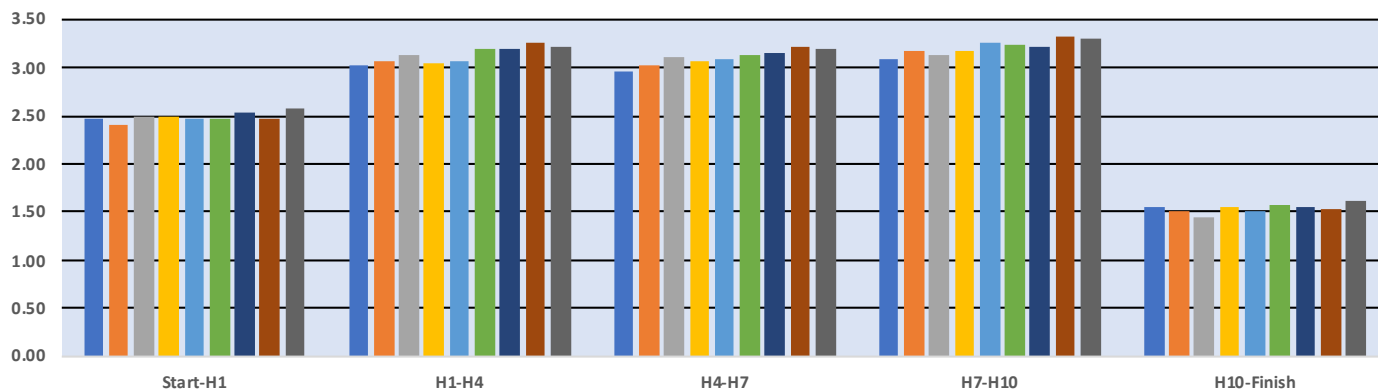
2022 Müller Birmingham Diamond League (Birmingham, GBR) (TV Analysis)

110m Hurdles		Date: 2022.05.21	Wind: 0.2 m/s										FINAL				
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Parchment, Hansle (JAM) (1990)	time	2.47	3.50	4.50	5.49	6.47	7.45	8.45	9.45	10.49	11.53		13.09	4 / 1			
	reaction time	0.143													3.02	2.96	3.08
	interval	7 steps	1.03	1.00	0.99	0.98	0.98	1.00	1.00	1.04	1.04	1.56			9.08	9.26	8.90
	velocity	5.55	8.87	9.14	9.23	9.33	9.33	9.14	9.14	8.79	8.79	8.99	8.40				
McLeod, Omar (JAM) (1994)	time	2.40	3.47	4.47	5.47	6.47	7.45	8.49	9.53	10.58	11.66		13.17	5 / 2			
	reaction time	0.132													3.07	3.02	3.17
	interval	7 steps	1.07	1.00	1.00	1.00	1.00	1.04	1.04	1.05	1.05	1.51			8.93	9.08	8.65
	velocity	5.72	8.54	9.14	9.14	9.14	9.33	8.79	8.79	8.70	8.46	9.28	8.35				
Martinez, Asier (ESP) (2000)	time	2.50	3.57	4.60	5.63	6.68	7.68	8.73	9.77	10.80	11.87		13.32	6 / 3			
	reaction time	0.150													3.13	3.10	3.14
	interval	7 steps	1.07	1.03	1.03	1.05	1.00	1.05	1.04	1.03	1.07	1.45			8.76	8.85	8.73
	velocity	5.49	8.54	8.87	8.87	8.70	9.14	8.70	8.79	8.87	8.54	9.67	8.26				
Czykier, Damian (POL) (1992)	time	2.49	3.52	4.53	5.53	6.55	7.57	8.59	9.65	10.72	11.77		13.32	1 / 4			
	reaction time	0.158													3.04	3.06	3.18
	interval	7 steps	1.03	1.01	1.00	1.02	1.02	1.02	1.06	1.07	1.05	1.55			9.02	8.96	8.62
	velocity	5.51	8.87	9.05	9.14	8.96	8.96	8.96	8.62	8.54	8.70	9.05	8.26				
Pozzi, Andy (GBR) (1992)	time	2.47	3.50	4.53	5.53	6.55	7.57	8.61	9.69	10.77	11.87		13.39	3 / 5			
	reaction time	0.102													3.06	3.08	3.26
	interval	7 steps	1.03	1.03	1.00	1.02	1.02	1.04	1.08	1.08	1.10	1.52			8.96	8.90	8.41
	velocity	5.55	8.87	8.87	9.14	8.96	8.96	8.79	8.46	8.46	8.31	9.22	8.22				
Manga, Aurel (FRA) (1992)	time	2.47	3.53	4.59	5.67	6.70	7.75	8.80	9.87	10.93	12.03		13.61	7 / 6			
	reaction time	0.153													3.20	3.13	3.23
	interval	7 steps	1.06	1.06	1.08	1.03	1.05	1.05	1.07	1.06	1.10	1.58			8.57	8.76	8.49
	velocity	5.55	8.62	8.62	8.46	8.87	8.70	8.70	8.54	8.62	8.31	8.87	8.08				
King, David (GBR) (1994)	time	2.53	3.60	4.70	5.72	6.74	7.80	8.87	9.93	11.00	12.08		13.64	2 / 7			
	reaction time	0.137													3.19	3.15	3.21
	interval	7 steps	1.07	1.10	1.02	1.02	1.06	1.07	1.06	1.07	1.08	1.56			8.60	8.70	8.54
	velocity	5.42	8.54	8.31	8.96	8.96	8.62	8.54	8.62	8.54	8.46	8.99	8.06				
Zaza, Wellington (LBR) (1995)	time	2.47	3.57	4.67	5.73	6.77	7.90	8.95	10.08	11.17	12.28		13.81	8 / 8			
	reaction time	0.141													3.26	3.22	3.33
	interval	7 steps	1.10	1.10	1.06	1.04	1.13	1.05	1.13	1.09	1.11	1.53			8.41	8.52	8.23
	velocity	5.55	8.31	8.31	8.62	8.79	8.09	8.70	8.09	8.39	8.23	9.16	7.97				
Fillery, Cameron (GBR) (1998)	time	2.57	3.67	4.73	5.79	6.88	7.93	8.98	10.08	11.17	12.28		13.90	9 / 9			
	reaction time	0.126													3.22	3.19	3.30
	interval	7 steps	1.10	1.06	1.06	1.09	1.05	1.05	1.10	1.09	1.11	1.62			8.52	8.60	8.31
	velocity	5.34	8.31	8.62	8.62	8.39	8.70	8.70	8.31	8.39	8.23	8.65	7.91				



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=MW6WgY1qkBs>

Biomechanical Analysis

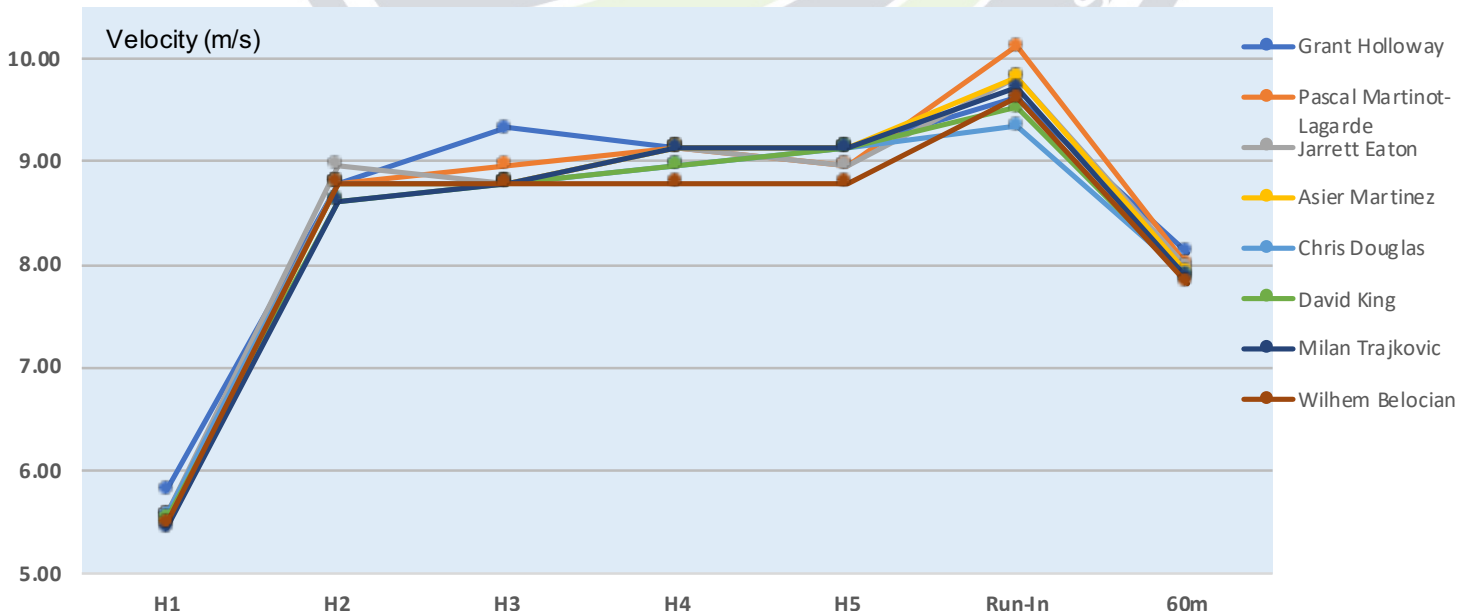
World Athletics Indoor Championships (Belgrade, SRB) (TV Analysis)

Men's 60m Hurdles

Date: 2022.03.20

FINAL

		H1	H2	H3	H4	H5	Run-In	60m	Lane / Place
Holloway, Grant (USA) (1997)	time	2.36	3.40	4.38	5.38	6.38		7.39	4 / 1
	reaction time	0.151	interval	7 steps	1.04	0.98	1.00	1.01	
	velocity	5.81	8.79	9.33	9.14	9.14	9.62	8.12	
Martinot-Lagarde, Pascal (FRA) (1991)	time	2.46	3.50	4.52	5.52	6.54		7.50	5 / 2
	reaction time	0.154	interval	7 steps	1.04	1.02	1.00	1.02	0.96
	velocity	5.58	8.79	8.96	9.14	8.96	10.13	8.00	
Eaton, Jarrett (USA) (1989)	time	2.46	3.48	4.52	5.52	6.54		7.53	6 / 3
	reaction time	0.166	interval	7 steps	1.02	1.04	1.00	1.02	0.99
	velocity	5.58	8.96	8.79	9.14	8.96	9.82	7.97	
Martinez, Asier (ESP) (2000)	time	2.50	3.54	4.58	5.58	6.58		7.57	2 / 4
	reaction time	0.150	interval	7 steps	1.04	1.04	1.00	0.99	
	velocity	5.49	8.79	8.79	9.14	9.14	9.82	7.93	
Douglas, Chris (AUS) (1997)	time	2.46	3.50	4.54	5.56	6.56		7.60	8 / 5
	reaction time	0.159	interval	7 steps	1.04	1.04	1.02	1.00	1.04
	velocity	5.58	8.79	8.79	8.96	9.14	9.35	7.89	
King, David (GBR) (1994)	time	2.48	3.54	4.58	5.60	6.60		7.62	1 / 6
	reaction time	0.142	interval	7 steps	1.06	1.04	1.02	1.00	1.02
	velocity	5.53	8.62	8.79	8.96	9.14	9.53	7.87	
Trajkovic, Milan (CYP) (1992)	time	2.52	3.58	4.62	5.62	6.62		7.62	7 / 7
	reaction time	0.207	interval	7 steps	1.06	1.04	1.00	1.00	1.00
	velocity	5.44	8.62	8.79	9.14	9.14	9.72	7.87	
Belocian, Wilhem (FRA) (1995)	time	2.50	3.54	4.58	5.62	6.66		7.67	3 / 8
	reaction time	0.177	interval		1.04	1.04	1.04	1.04	1.01
	velocity	5.49	8.79	8.79	8.79	8.79	9.62	7.82	



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 25fps

Timing From: First Movement

Source: https://www.youtube.com/watch?v=X_kiMlqqpeg

Biomechanical Analysis

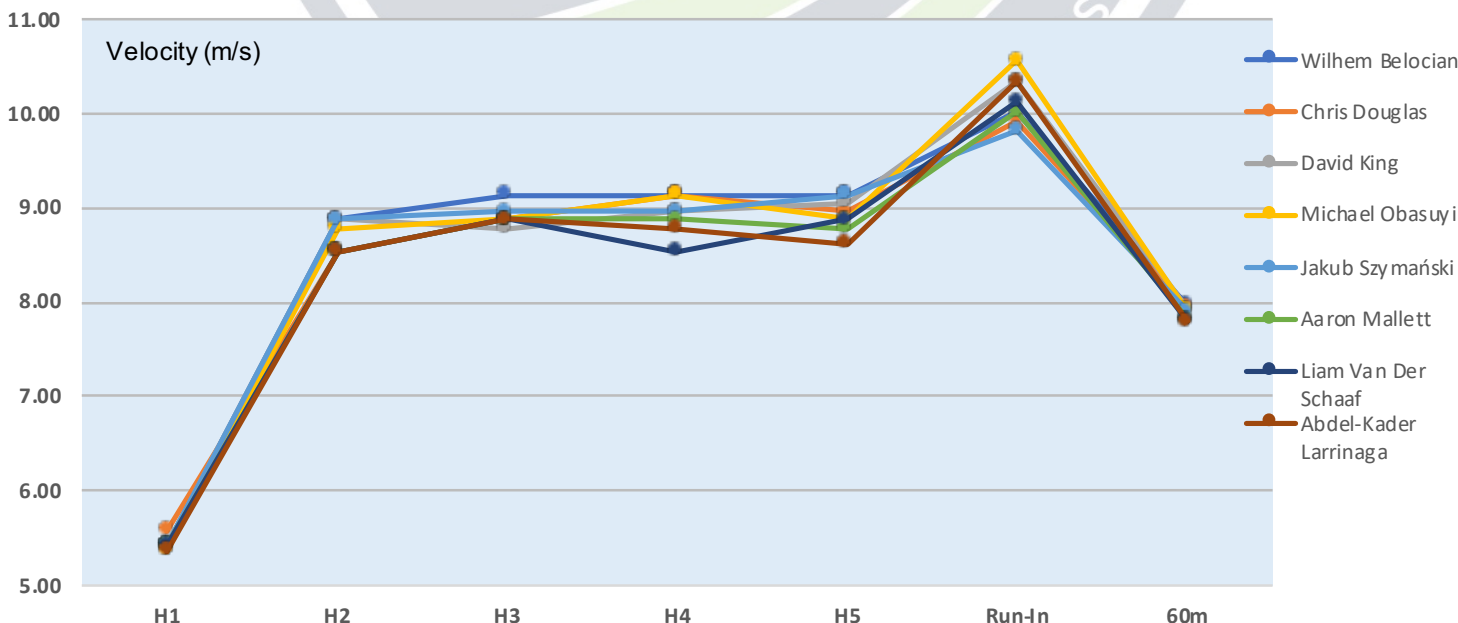
World Athletics Indoor Championships (Belgrade, SRB) (TV Analysis)

Men's 60m Hurdles

Date: 2022.03.20

Semi-Final 3

		H1	H2	H3	H4	H5	Run-In	60m	Lane / Place
Belocian, Wilhem (FRA) (1995)	time	2.53	3.56	4.56	5.56	6.56		7.53	4 / 1
	reaction time	0.129	interval	1.03	1.00	1.00	1.00	0.97	
	velocity	5.42	8.87	9.14	9.14	9.14	10.02	7.97	
Douglas, Chris (AUS) (1997)	time	2.46	3.53	4.56	5.56	6.58		7.56	8 / 2
	reaction time	0.145	interval	7 steps 1.07	1.03	1.00	1.02	0.98	NR PB
	velocity	5.58	8.54	8.87	9.14	8.96	9.92	7.94	
King, David (GBR) (1994)	time	2.53	3.56	4.60	5.62	6.63		7.57	3 / 3
	reaction time	0.121	interval	7 steps 1.03	1.04	1.02	1.01	0.94	=PB
	velocity	5.42	8.87	8.79	8.96	9.05	10.34	7.93	
Obasuyi, Michael (BEL) (1999)	time	2.56	3.60	4.63	5.63	6.66		7.58	5 / 4
	reaction time	0.130	interval	7 steps 1.04	1.03	1.00	1.03	0.92	PB
	velocity	5.36	8.79	8.87	9.14	8.87	10.57	7.92	
Szymański, Jakub (POL) (2002)	time	2.53	3.56	4.58	5.60	6.60		7.59	7 / 5
	reaction time	0.146	interval	7 steps 1.03	1.02	1.02	1.00	0.99	PB
	velocity	5.42	8.87	8.96	8.96	9.14	9.82	7.91	
Mallett, Aaron (USA) (1994)	time	2.53	3.60	4.63	5.66	6.70		7.67	6 / 6
	reaction time	0.152	interval	7 steps 1.07	1.03	1.03	1.04	0.97	
	velocity	5.42	8.54	8.87	8.87	8.79	10.02	7.82	
Van Der Schaaf, Liam (NED) (1998)	time	2.53	3.60	4.63	5.70	6.73		7.69	1 / 7
	reaction time	0.129	interval	7 steps 1.07	1.03	1.07	1.03	0.96	PB
	velocity	5.42	8.54	8.87	8.54	8.87	10.13	7.80	
Larrinaga, Abdel-Kader (POL) (1994)	time	2.56	3.63	4.66	5.70	6.76		7.70	2 / 8
	reaction time	0.137	interval	7 steps 1.07	1.03	1.04	1.06	0.94	
	velocity	5.36	8.54	8.87	8.79	8.62	10.34	7.79	



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 25fps

Timing From: First Movement

Source: https://www.youtube.com/watch?v=X_kiMlqqpeg

Biomechanical Analysis

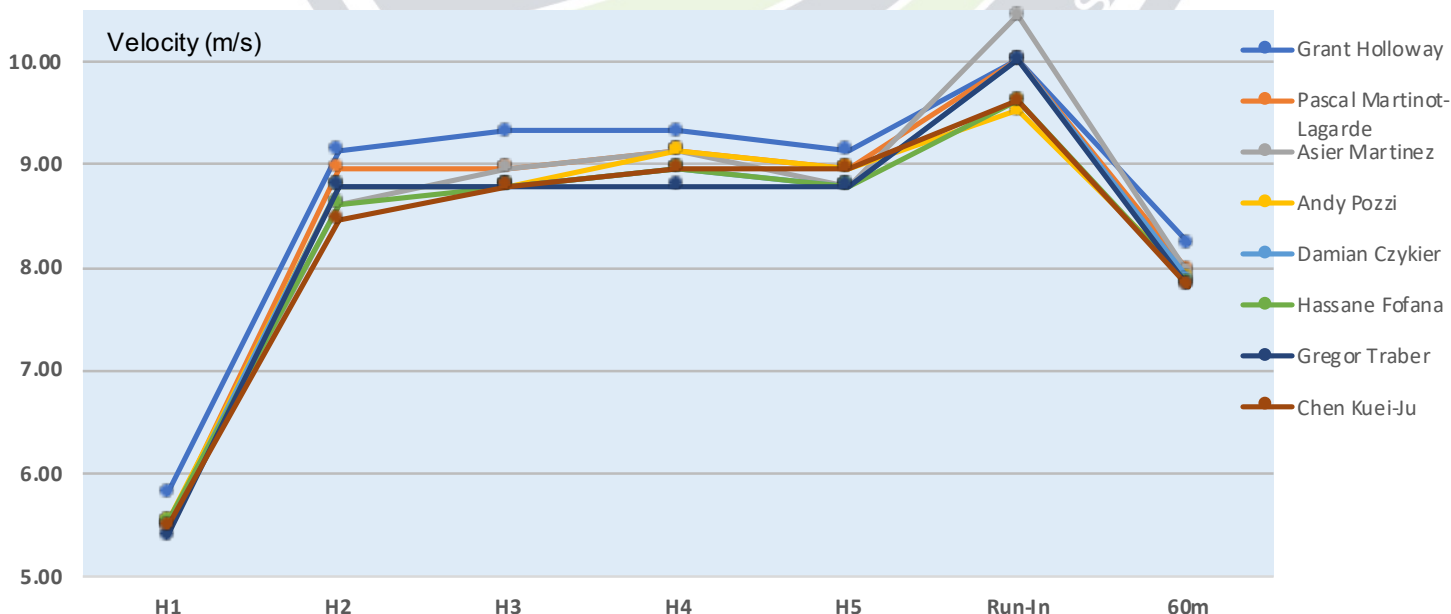
World Athletics Indoor Championships (Belgrade, SRB) (TV Analysis)

Men's 60m Hurdles

Date: 2022.03.20

Semi-Final 2

		H1	H2	H3	H4	H5	Run-In	60m	Lane / Place	
Holloway, Grant (USA) (1997)	time	2.36	3.36	4.34	5.32	6.32		7.29	6 / 1	
	reaction time	0.130	interval	7 steps	1.00	0.98	0.98	1.00	0.97	=WR
	velocity	5.81	9.14	9.33	9.33	9.14	10.02	8.23		
Martinot-Lagarde, Pascal (FRA) (1992)	time	2.50	3.52	4.54	5.54	6.56		7.53	4 / 2	
	reaction time	0.136	interval	7 steps	1.02	1.02	1.00	1.02	0.97	
	velocity	5.49	8.96	8.96	9.14	8.96	10.02	7.97		
Martinez, Asier (ESP) (2000)	time	2.50	3.56	4.58	5.58	6.62		7.55	2 / 3	
	reaction time	0.138	interval	7 steps	1.06	1.02	1.00	1.04	0.93	=PB
	velocity	5.49	8.62	8.96	9.14	8.79	10.45	7.95		
Pozzi, Andy (GBR) (1992)	time	2.48	3.52	4.56	5.56	6.58		7.60	3 / 4	
	reaction time	0.122	interval	7 steps	1.04	1.04	1.00	1.02	1.02	
	velocity	5.53	8.79	8.79	9.14	8.96	9.53	7.89		
Czykier, Damian (POL) (1992)	time	2.50	3.54	4.58	5.60	6.64		7.61	5 / 5	
	reaction time	0.157	interval	7 steps	1.04	1.04	1.02	1.04	0.97	
	velocity	5.49	8.79	8.79	8.96	8.79	10.02	7.88		
Fofana, Hassane (ITA) (1992)	time	2.48	3.54	4.58	5.60	6.64		7.65	1 / 6	
	reaction time	0.122	interval		1.06	1.04	1.02	1.04	1.01	PB
	velocity	5.53	8.62	8.79	8.96	8.79	9.62	7.84		
Traber, Gregor (GER) (1992)	time	2.54	3.58	4.62	5.66	6.70		7.67	8 / 7	
	reaction time	0.140	interval	7 steps	1.04	1.04	1.04	1.04	0.97	
	velocity	5.40	8.79	8.79	8.79	8.79	10.02	7.82		
Chen Kuei-Ju (TPE) (1993)	time	2.50	3.58	4.62	5.64	6.66		7.67	7 / 8	
	reaction time	0.168	interval	7 steps	1.08	1.04	1.02	1.02	1.01	NR PB
	velocity	5.49	8.46	8.79	8.96	8.96	9.62	7.82		



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 25fps

Timing From: First Movement

Source: https://www.youtube.com/watch?v=X_kiMlqqpeg

Biomechanical Analysis

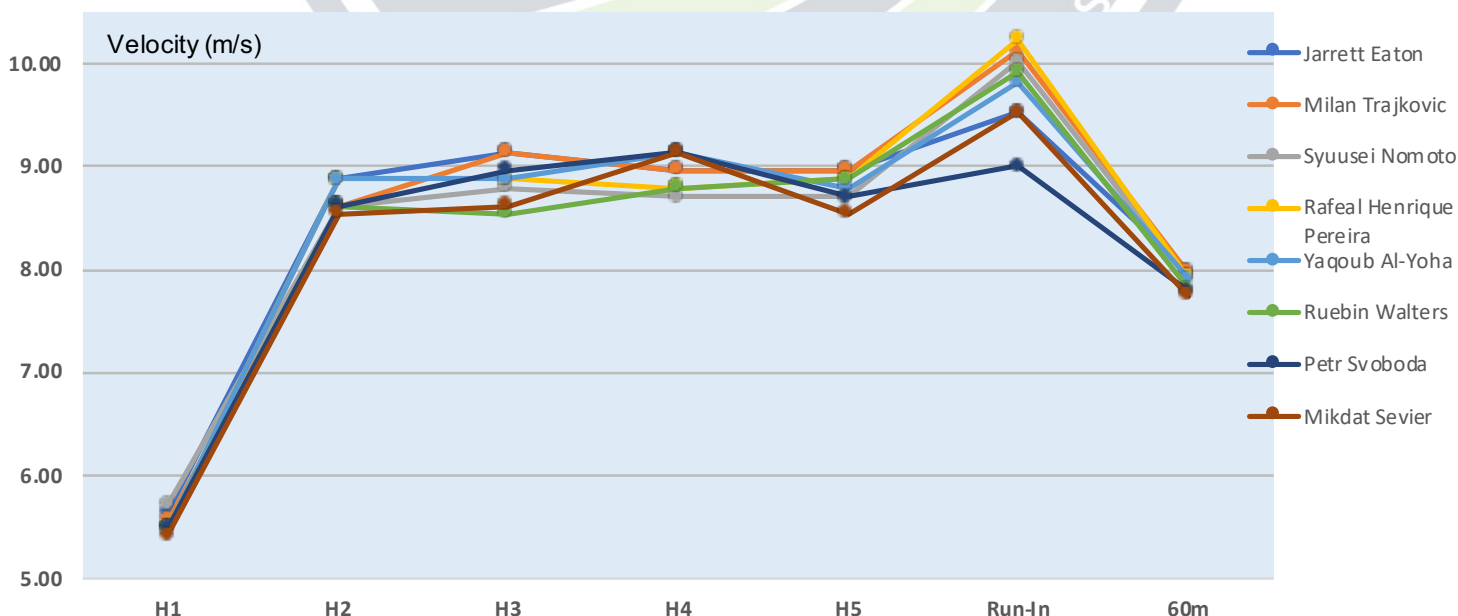
World Athletics Indoor Championships (Belgrade, SRB) (TV Analysis)

Men's 60m Hurdles

Date: 2022.03.20

Semi-Final 1

		H1	H2	H3	H4	H5	Run-In	60m	Lane / Place
Eaton, Jarrett (USA) (1989)	time	2.43	3.46	4.46	5.48	6.50		7.52	4 / 1
	reaction time	0.134	interval	7 steps	1.03	1.00	1.02	1.02	
	velocity	5.65	8.87	9.14	8.96	8.96	9.53	7.98	
Trajkovic, Milan (CYP) (1992)	time	2.47	3.53	4.53	5.55	6.57		7.53	1 / 2
	reaction time	0.145	interval	7 steps	1.06	1.00	1.02	0.96	
	velocity	5.55	8.62	9.14	8.96	8.96	10.13	7.97	
Nomoto, Syuusei (JPN) (1995)	time	2.40	3.46	4.50	5.55	6.60		7.57	8 / 3
	reaction time	0.127	interval	7 steps	1.06	1.04	1.05	0.97	PB
	velocity	5.72	8.62	8.79	8.70	8.70	10.02	7.93	
Pereira, Rafeal Henrique (BRA) (1993)	time	2.50	3.53	4.56	5.60	6.63		7.58	3 / 4
	reaction time	0.141	interval	1.03	1.03	1.04	1.03	0.95	=NR =PB
	velocity	5.49	8.87	8.87	8.79	8.87	10.23	7.92	
Al-Yoha, Yaqoub (KUW) (1993)	time	2.50	3.53	4.56	5.56	6.60		7.59	6 / 5
	reaction time	0.156	interval	1.03	1.03	1.00	1.04	0.99	
	velocity	5.49	8.87	8.87	9.14	8.79	9.82	7.91	
Walters, Ruebin (TTO) (1995)	time	2.50	3.56	4.63	5.67	6.70		7.68	7 / 6
	reaction time	0.135	interval	1.06	1.07	1.04	1.03	0.98	
	velocity	5.49	8.62	8.54	8.79	8.87	9.92	7.81	
Svoboda, Petr (CZE) (1984)	time	2.50	3.56	4.58	5.58	6.63		7.71	5 / 7
	reaction time	0.136	interval	1.06	1.02	1.00	1.05	1.08	
	velocity	5.49	8.62	8.96	9.14	8.70	9.00	7.78	
Sevier, Mikdat (TUR) (1998)	time	2.53	3.60	4.66	5.66	6.73		7.75	2 / 8
	reaction time	0.129	interval	1.07	1.06	1.00	1.07	1.02	
	velocity	5.42	8.54	8.62	9.14	8.54	9.53	7.74	



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 25fps

Timing From: First Movement

Source: https://www.youtube.com/watch?v=X_kiMlqqpeg

Women's 100m Hurdles

2021 Top 10 Times - Women's 100m Hurdles

	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)																
FINAL - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																
date 24-Jul time	2.45	3.43	4.40	5.30	6.23	7.16	8.07	9.02	9.98	10.97		12.06	4 / 1			
reaction time 0.130 interval		0.98	0.97	0.90	0.93	0.93	0.91	0.95	0.96	0.99	1.09			2.85	2.77	2.90
wind 2.5 m/s velocity	5.31	8.67	8.76	9.44	9.14	9.14	9.34	8.95	8.85	8.59	9.22	8.29		8.95	9.21	8.79
Amusan, Tobi (NGR) (1997)																
Semi-Final 1 - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																
date 24-Jul time	2.46	3.45	4.43	5.33	6.24	7.15	8.10	9.06	10.03	10.96		12.12	4 / 1			
reaction time 0.144 interval		0.99	0.98	0.90	0.91	0.91	0.95	0.96	0.97	0.93	1.16	WR		2.87	2.77	2.86
wind 0.9 m/s velocity	5.28	8.59	8.67	9.44	9.34	9.34	8.95	8.85	8.76	9.14	8.66	8.25		8.89	9.21	8.92
Anderson, Britany (JAM) (2001)																
FINAL - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																
date 24-Jul time	2.43	3.42	4.40	5.30	6.25	7.20	8.15	9.10	10.08	11.08		12.23	5 / 2			
reaction time 0.129 interval		0.99	0.98	0.90	0.95	0.95	0.95	0.95	0.98	1.00	1.15			2.87	2.85	2.93
wind 2.5 m/s velocity	5.35	8.59	8.67	9.44	8.95	8.95	8.95	8.95	8.67	8.50	8.74	8.18		8.89	8.95	8.70
Camacho-Quinn, Jasmine (PUR) (1996)																
FINAL - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																
date 24-Jul time	2.45	3.46	4.44	5.38	6.30	7.24	8.18	9.10	10.06	11.03		12.23	7 / 3			
reaction time 0.127 interval		1.01	0.98	0.94	0.92	0.94	0.94	0.92	0.96	0.97	1.20			2.93	2.80	2.85
wind 2.5 m/s velocity	5.31	8.42	8.67	9.04	9.24	9.04	9.04	9.24	8.85	8.76	8.37	8.18		8.70	9.11	8.95
Harrison, Kendra (USA) (1992)																
Semi-Final 1 - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																
date 24-Jul time	2.46	3.48	4.43	5.36	6.30	7.23	8.15	9.13	10.10	11.08		12.27	6 / 2			
reaction time 0.155 interval		1.02	0.95	0.93	0.94	0.93	0.92	0.98	0.97	0.98	1.19			2.90	2.79	2.93
wind 0.9 m/s velocity	5.28	8.33	8.95	9.14	9.04	9.14	9.24	8.67	8.76	8.67	8.45	8.15		8.79	9.14	8.70
Camacho-Quinn, Jasmine (PUR) (1996)																
FINAL - 2022 Gyulai István Memorial (Székesfehérvár, HUN) (TV Analysis)																
date 8-Aug time	2.47	3.50	4.47	5.43	6.35	7.30	8.25	9.20	10.13	11.13		12.27	5 / 1			
reaction time 0.114 interval		1.03	0.97	0.96	0.92	0.95	0.95	0.95	0.93	1.00	1.14			2.96	2.82	2.88
wind 2.4 m/s velocity	5.26	8.25	8.76	8.85	9.24	8.95	8.95	8.95	9.14	8.50	8.82	8.15		8.61	9.04	8.85
Camacho-Quinn, Jasmine (PUR) (1996)																
FINAL - 2022 Memorial van Damme (Brussels, BEL) (TV Analysis)																
date 2-Sep time	2.44	3.44	4.40	5.35	6.28	7.22	8.19	9.13	10.09	11.07		12.27	4 / 1			
reaction time 0.166 interval		1.00	0.96	0.95	0.93	0.94	0.97	0.94	0.96	0.98	1.20			2.91	2.84	2.88
wind 0.1 m/s velocity	5.33	8.50	8.85	8.95	9.14	9.04	8.76	9.04	8.85	8.67	8.38	8.15		8.76	8.98	8.85
Amusan, Tobi (NGR) (1997)																
FINAL - 2022 Weltklasse (Zürich, SUI) (TV Analysis)																
date 8-Sep time	2.47	3.47	4.43	5.37	6.31	7.24	8.19	9.14	10.12	11.10		12.29	4 / 1			
reaction time 0.163 interval		1.00	0.96	0.94	0.94	0.93	0.95	0.95	0.98	0.98	1.19			2.90	2.82	2.91
wind -0.3 m/s velocity	5.26	8.50	8.85	9.04	9.04	9.14	8.95	8.95	8.67	8.67	8.45	8.14		8.79	9.04	8.76
Amusan, Tobi (NGR) (1997)																
FINAL - 2022 Commonwealth Games (Birmingham, GBR) (TV Analysis)																
date 7-Aug time	2.48	3.48	4.44	5.38	6.34	7.28	8.22	9.18	10.16	11.16		12.30	5 / 1			
reaction time 0.126 interval		1.00	0.96	0.94	0.96	0.94	0.94	0.96	0.98	1.00	1.14			2.90	2.84	2.94
wind -0.2 m/s velocity	5.24	8.50	8.85	9.04	8.85	9.04	9.04	8.85	8.67	8.50	8.82	8.13		8.79	8.98	8.67
Anderson, Britany (JAM) (2001)																
Semi-Final 3 - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																
date 24-Jul time	2.50	3.50	4.46	5.42	6.34	7.30	8.26	9.23	10.20	11.20		12.31	3 / 1			
reaction time 0.143 interval		1.00	0.96	0.96	0.92	0.96	0.96	0.97	0.97	1.00	1.11	NR		2.92	2.84	2.94
wind 0.3 m/s velocity	5.20	8.50	8.85	8.85	9.24	8.85	8.85	8.76	8.76	8.50	9.05	8.12		8.73	8.98	8.67
Armstrong, Alia (USA) (2000)																
FINAL - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																
date 24-Jul time	2.38	3.40	4.36	5.30	6.25	7.20	8.16	9.10	10.13	11.18		12.31	6 / 4			
reaction time 0.125 interval		1.02	0.96	0.94	0.95	0.95	0.96	0.94	1.03	1.05	1.13			2.92	2.86	3.02
wind 2.5 m/s velocity	5.46	8.33	8.85	9.04	8.95	8.95	8.85	9.04	8.25	8.10	8.89	8.12		8.73	8.92	8.44
Harrison, Kendra (USA) (1992)																
Invitational FINAL - 2022 Texas Relays (Austin, TX) (TV Analysis)																
date 26-Mar time	2.54	3.52	4.45	5.40	6.34	7.27	8.24	9.21	10.18	11.18		12.32	5 / 1			
reaction time interval		0.98	0.93	0.95	0.94	0.93	0.97	0.97	0.97	1.00	1.14			2.86	2.84	2.94
wind 3.9 m/s velocity	5.12	8.67	9.14	8.95	9.04	9.14	8.76	8.76	8.76	8.50	8.82	8.12		8.92	8.98	8.67
Camacho-Quinn, Jasmine (PUR) (1996)																
Semi-Final 3 - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																
date 24-Jul time	2.53	3.53	4.53	5.46	6.43	7.38	8.32	9.26	10.23	11.21		12.32	5 / 2			
reaction time 0.126 interval		1.00	1.00	0.93	0.97	0.95	0.94	0.94	0.97	0.98	1.11			2.93	2.86	2.89
wind 0.3 m/s velocity	5.14	8.50	8.50	9.14	8.76	8.95	9.04	9.04	8.76	8.67	9.05	8.12		8.70	8.92	8.82
Armstrong, Alia (USA) (2000)																
University FINAL - 2022 Texas Relays (Austin, TX) (TV Analysis)																
date 26-Mar time	2.47	3.45	4.43	5.37	6.33	7.30	8.26	9.23	10.20	11.18		12.33	4 / 1			
reaction time interval		0.98	0.98	0.94	0.96	0.97	0.96	0.97	0.97	0.98	1.15			2.90	2.89	2.92
wind 2.5 m/s velocity	5.26	8.67	8.67	9.04	8.85	8.76	8.85	8.76	8.76	8.67	8.74	8.11		8.79	8.82	8.73

2022 Weltklasse (Zürich, SUI) (TV Analysis)

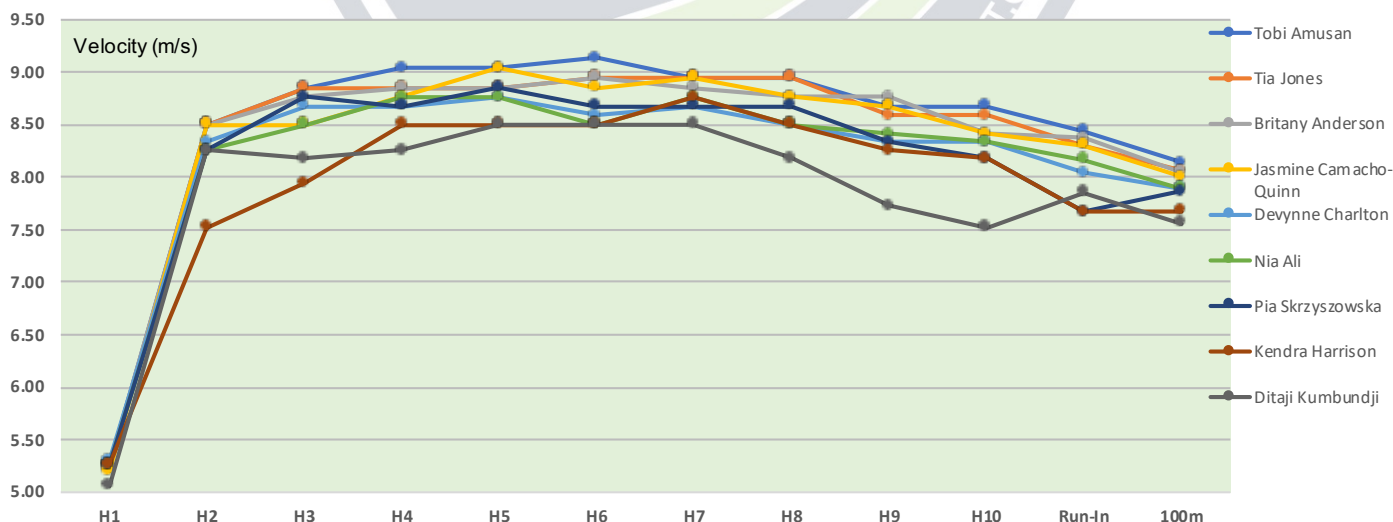
100m Hurdles

Date: 2022.09.08

Wind: -0.3 m/s

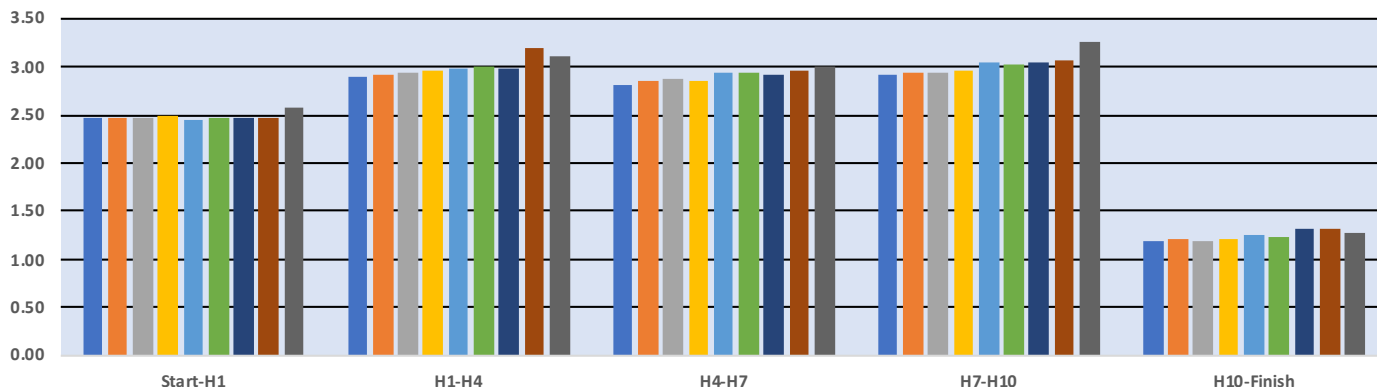
FINAL

		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	2.47	3.47	4.43	5.37	6.31	7.24	8.19	9.14	10.12	11.10		12.29	4 / 1			
	reaction time	0.163													2.90	2.82	2.91
	interval		1.00	0.96	0.94	0.94	0.93	0.95	0.95	0.98	0.98	1.19			8.79	9.04	8.76
	velocity	5.26	8.50	8.85	9.04	9.04	9.14	8.95	8.95	8.67	8.67	8.45	8.14				
Jones, Tia (USA) (2000)	time	2.48	3.48	4.44	5.40	6.36	7.31	8.26	9.21	10.20	11.19		12.40	8 / 2			
	reaction time	0.173													2.92	2.86	2.93
	interval		1.00	0.96	0.96	0.96	0.95	0.95	0.95	0.99	0.99	1.21			8.73	8.92	8.70
	velocity	5.24	8.50	8.85	8.85	8.85	8.95	8.95	8.95	8.59	8.59	8.31	8.06				
Anderson, Britany (JAM) (2001)	time	2.47	3.47	4.44	5.40	6.36	7.31	8.27	9.24	10.21	11.22		12.42	6 / 3			
	reaction time	0.166													2.93	2.87	2.95
	interval		1.00	0.97	0.96	0.96	0.95	0.96	0.97	0.97	1.01	1.20			8.70	8.89	8.64
	velocity	5.26	8.50	8.76	8.85	8.85	8.95	8.85	8.76	8.76	8.42	8.38	8.05				
Camacho-Quinn, Jasmine (PUR) (199)	time	2.50	3.50	4.50	5.47	6.41	7.37	8.32	9.29	10.27	11.28		12.49	5 / 4			
	reaction time	0.186													2.97	2.85	2.96
	interval		1.00	1.00	0.97	0.94	0.96	0.95	0.97	0.98	1.01	1.21			8.59	8.95	8.61
	velocity	5.20	8.50	8.50	8.76	9.04	8.85	8.95	8.76	8.67	8.42	8.31	8.01				
Charlton, Devynne (BAH) (1995)	time	2.45	3.47	4.45	5.43	6.40	7.39	8.37	9.37	10.39	11.41		12.66	2 / 5			
	reaction time	0.147													2.98	2.94	3.04
	interval		1.02	0.98	0.98	0.97	0.99	0.98	1.00	1.02	1.02	1.25			8.56	8.67	8.39
	velocity	5.31	8.33	8.67	8.67	8.76	8.59	8.67	8.50	8.33	8.33	8.04	7.90				
Ali, Nia (USA) (1988)	time	2.47	3.50	4.50	5.47	6.44	7.44	8.41	9.41	10.42	11.44		12.67	3 / 6			
	reaction time	0.163													3.00	2.94	3.03
	interval		1.03	1.00	0.97	0.97	1.00	0.97	1.00	1.01	1.02	1.23			8.50	8.67	8.42
	velocity	5.26	8.25	8.50	8.76	8.76	8.50	8.76	8.50	8.42	8.33	8.17	7.89				
Skrzyszowska, Pia (POL) (2001)	time	2.47	3.50	4.47	5.45	6.41	7.39	8.37	9.35	10.37	11.41		12.72	9 / 7			
	reaction time	0.162													2.98	2.92	3.04
	interval		1.03	0.97	0.98	0.96	0.98	0.98	0.98	1.02	1.04	1.31			8.56	8.73	8.39
	velocity	5.26	8.25	8.76	8.67	8.85	8.67	8.67	8.67	8.33	8.17	7.67	7.86				
Harrison, Kendra (USA) (1992)	time	2.47	3.60	4.67	5.67	6.67	7.67	8.64	9.64	10.67	11.71		13.02	7 / 8			
	reaction time	0.163													3.20	2.97	3.07
	interval		1.13	1.07	1.00	1.00	1.00	0.97	1.00	1.03	1.04	1.31			7.97	8.59	8.31
	velocity	5.26	7.52	7.94	8.50	8.50	8.50	8.76	8.50	8.25	8.17	7.67	7.68				
Kambundji, Ditaji (SUI) (2002)	time	2.57	3.60	4.64	5.67	6.67	7.67	8.67	9.71	10.81	11.94		13.22	1 / 9			
	reaction time	0.161													3.10	3.00	3.27
	interval		1.03	1.04	1.03	1.00	1.00	1.00	1.04	1.10	1.13	1.28			8.23	8.50	7.80
	velocity	5.06	8.25	8.17	8.25	8.50	8.50	8.50	8.17	7.73	7.52	7.56					



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=EzJKodw5GFU&t=9s>

2022 Memorial van Damme (Brussels, BEL) (TV Analysis)

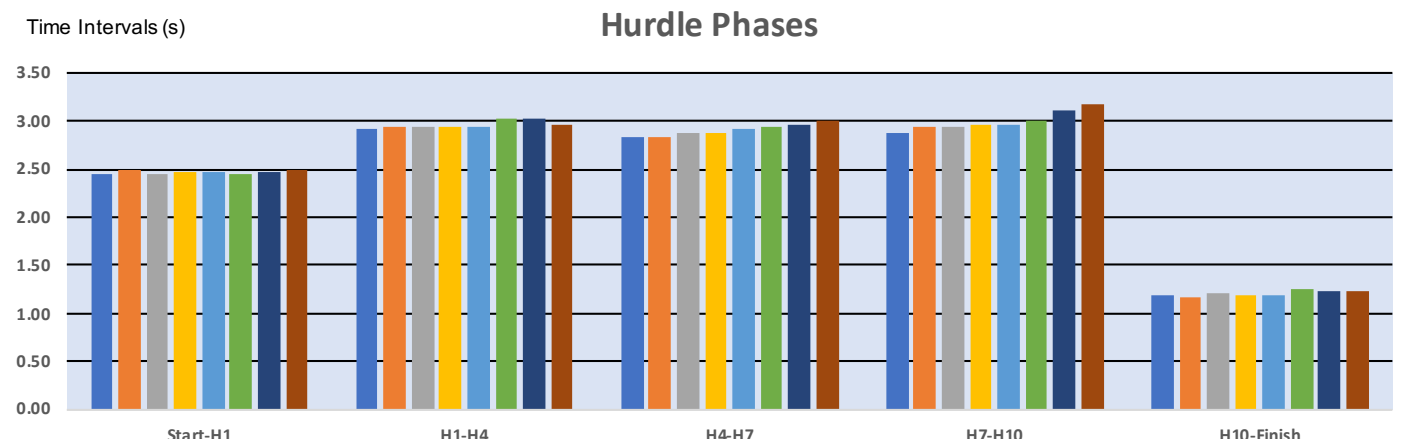
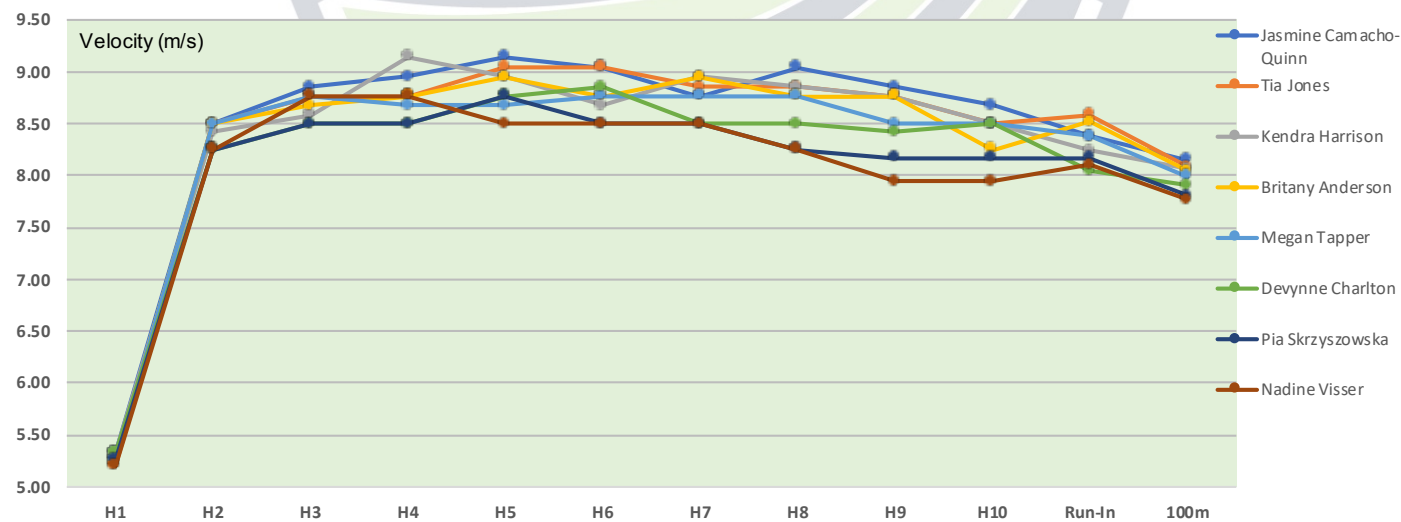
100m Hurdles

Date: 2022.09.02

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
Camacho-Quinn, Jasmine (PUR) (199)	time	2.44	3.44	4.40	5.35	6.28	7.22	8.19	9.13	10.09	11.07		12.27	4 / 1			
	reaction time	0.166													2.91	2.84	2.88
	interval		1.00	0.96	0.95	0.93	0.94	0.97	0.94	0.96	0.98	1.20			8.76	8.98	8.85
	velocity	5.33	8.50	8.85	8.95	9.14	9.04	8.76	9.04	8.85	8.67	8.38	8.15				
Jones, Tia (USA) (2000)	time	2.50	3.50	4.47	5.44	6.38	7.32	8.28	9.24	10.21	11.21		12.38	3 / 2			
	reaction time	0.165													2.94	2.84	2.93
	interval		1.00	0.97	0.97	0.94	0.94	0.96	0.96	0.97	1.00	1.17			8.67	8.98	8.70
	velocity	5.20	8.50	8.76	8.76	9.04	9.04	8.85	8.85	8.76	8.50	8.59	8.08				
Harrison, Kendra (USA) (1992)	time	2.44	3.45	4.44	5.37	6.32	7.30	8.25	9.21	10.18	11.18		12.40	5 / 3			
	reaction time	0.163													2.93	2.88	2.93
	interval		1.01	0.99	0.93	0.95	0.98	0.95	0.96	0.97	1.00	1.22			8.70	8.85	8.70
	velocity	5.33	8.42	8.59	9.14	8.95	8.67	8.95	8.85	8.76	8.50	8.24	8.06				
Anderson, Britany (JAM) (2001)	time	2.47	3.47	4.45	5.42	6.37	7.34	8.29	9.26	10.23	11.26		12.44	6 / 4			
	reaction time	0.145													2.95	2.87	2.97
	interval		1.00	0.98	0.97	0.95	0.97	0.95	0.97	0.97	1.03	1.18			8.64	8.89	8.59
	velocity	5.26	8.50	8.67	8.76	8.95	8.76	8.95	8.76	8.76	8.50	8.52	8.04				
Tapper, Megan (JAM) (1994)	time	2.47	3.47	4.44	5.42	6.40	7.37	8.34	9.31	10.31	11.31		12.51	2 / 5			
	reaction time	0.163													2.95	2.92	2.97
	interval		1.00	0.97	0.98	0.98	0.97	0.97	0.97	1.00	1.00	1.20	PB		8.64	8.73	8.59
	velocity	5.26	8.50	8.76	8.67	8.67	8.76	8.76	8.76	8.50	8.50	8.38	7.99				
Charlton, Devynne (BAH) (1995)	time	2.44	3.47	4.47	5.47	6.44	7.40	8.40	9.40	10.41	11.41		12.66	1 / 6			
	reaction time	0.160													3.03	2.93	3.01
	interval		1.03	1.00	1.00	0.97	0.96	1.00	1.00	1.01	1.00	1.25			8.42	8.70	8.47
	velocity	5.33	8.25	8.50	8.50	8.76	8.85	8.50	8.50	8.42	8.50	8.04	7.90				
Skrzyszowska, Pia (POL) (2001)	time	2.47	3.50	4.50	5.50	6.47	7.47	8.47	9.50	10.54	11.58		12.81	7 / 7			
	reaction time	0.136													3.03	2.97	3.11
	interval		1.03	1.00	1.00	0.97	1.00	1.00	1.03	1.04	1.04	1.23			8.42	8.59	8.20
	velocity	5.26	8.25	8.50	8.50	8.76	8.50	8.50	8.25	8.17	8.17	8.17	7.81				
Visser, Nadine (NED) (1995)	time	2.50	3.53	4.50	5.47	6.47	7.47	8.47	9.50	10.57	11.64		12.88	8 / 8			
	reaction time	0.174													2.97	3.00	3.17
	interval		1.03	0.97	0.97	1.00	1.00	1.00	1.03	1.07	1.07	1.24			8.59	8.50	8.04
	velocity	5.20	8.25	8.76	8.76	8.50	8.50	8.50	8.25	7.94	7.94	8.10	7.76				



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=6uolnNITBdl>

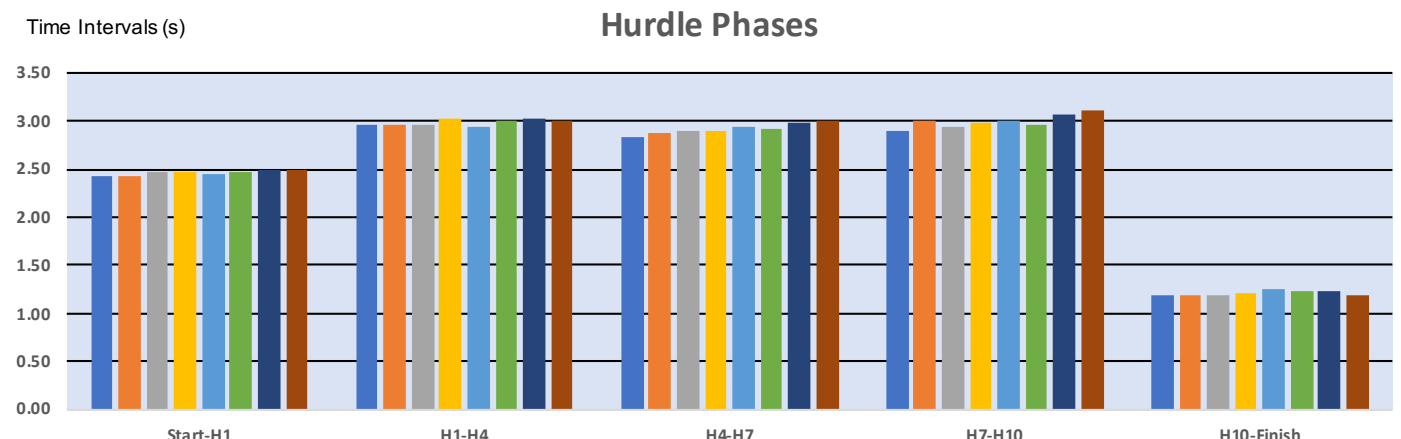
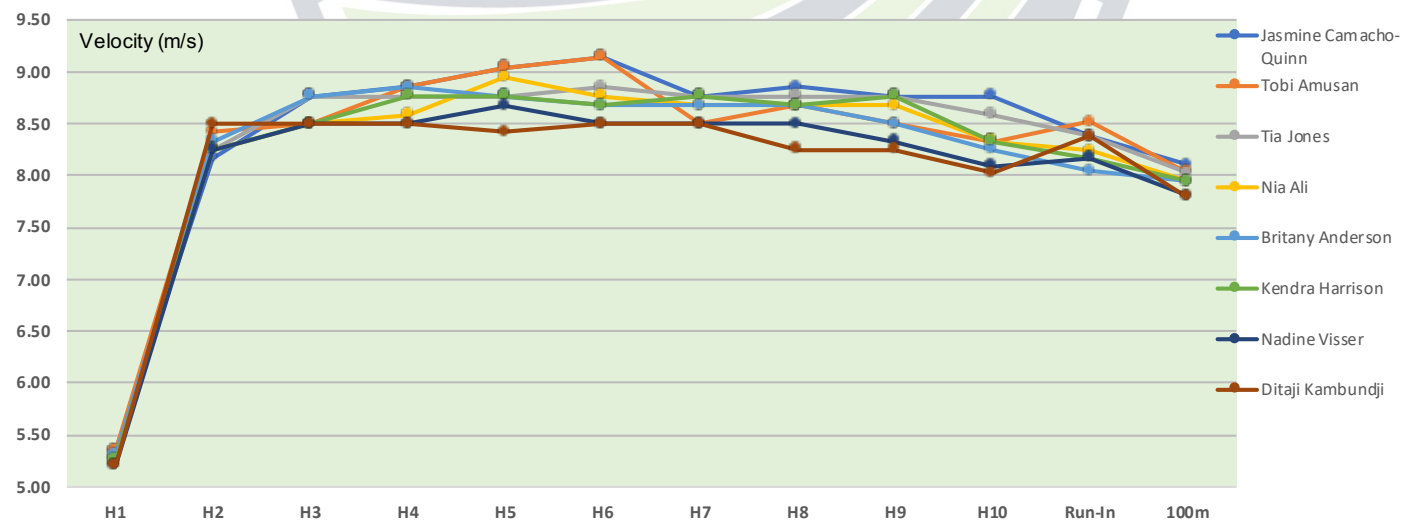
2022 Athletissima (Lausanne, SUI) (TV Analysis)

100m Hurdles

Date: 2022.08.26 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	2.43	3.47	4.44	5.40	6.34	7.27	8.24	9.20	10.17	11.14		12.34	4 / 1			
	reaction time	0.152													2.97	2.84	2.90
	interval		1.04	0.97	0.96	0.94	0.93	0.97	0.96	0.97	0.97	1.20			8.59	8.98	8.79
	velocity	5.35	8.17	8.76	8.85	9.04	9.14	8.76	8.85	8.76	8.76	8.38	8.10				
Amusan, Tobi (NGR) (1997)	time	2.43	3.44	4.44	5.40	6.34	7.27	8.27	9.25	10.25	11.27		12.45	5 / 2			
	reaction time	0.151													2.97	2.87	3.00
	interval		1.01	1.00	0.96	0.94	0.93	1.00	0.98	1.00	1.02	1.18			8.59	8.89	8.50
	velocity	5.35	8.42	8.50	8.85	9.04	9.14	8.50	8.67	8.50	8.33	8.52	8.03				
Jones, Tia (USA) (2000)	time	2.47	3.50	4.47	5.44	6.41	7.37	8.34	9.31	10.28	11.27		12.47	8 / 3			
	reaction time	0.161													2.97	2.90	2.93
	interval		1.03	0.97	0.97	0.97	0.96	0.97	0.97	0.97	0.99	1.20	PB		8.59	8.79	8.70
	velocity	5.26	8.25	8.76	8.76	8.76	8.85	8.76	8.76	8.76	8.59	8.37	8.02				
Ali, Nia (USA) (1988)	time	2.47	3.50	4.50	5.49	6.44	7.41	8.39	9.37	10.35	11.37		12.59	7 / 4			
	reaction time	0.182													3.02	2.90	2.98
	interval		1.03	1.00	0.99	0.95	0.97	0.98	0.98	0.98	1.02	1.22			8.44	8.79	8.56
	velocity	5.26	8.25	8.50	8.59	8.95	8.76	8.67	8.67	8.67	8.33	8.24	7.94				
Anderson, Britany (JAM) (2001)	time	2.45	3.47	4.44	5.40	6.37	7.35	8.33	9.31	10.31	11.34		12.59	3 / 5			
	reaction time	0.155													2.95	2.93	3.01
	interval		1.02	0.97	0.96	0.97	0.98	0.98	0.98	1.00	1.03	1.25			8.64	8.70	8.47
	velocity	5.31	8.33	8.76	8.85	8.76	8.67	8.67	8.67	8.50	8.25	8.04	7.94				
Harrison, Kendra (USA) (1992)	time	2.47	3.50	4.50	5.47	6.44	7.42	8.39	9.37	10.34	11.36		12.59	6 / 6			
	reaction time	0.171													3.00	2.92	2.97
	interval		1.03	1.00	0.97	0.97	0.98	0.97	0.98	0.97	1.02	1.23			8.50	8.73	8.59
	velocity	5.26	8.25	8.50	8.76	8.76	8.67	8.76	8.67	8.76	8.33	8.17	7.94				
Visser, Nadine (NED) (1995)	time	2.50	3.53	4.53	5.53	6.51	7.51	8.51	9.51	10.53	11.58		12.81	1 / 7			
	reaction time	0.171													3.03	2.98	3.07
	interval		1.03	1.00	1.00	0.98	1.00	1.00	1.00	1.02	1.05	1.23			8.42	8.56	8.31
	velocity	5.20	8.25	8.50	8.50	8.67	8.50	8.50	8.50	8.33	8.10	8.17	7.81				
Kambundji, Ditaji (SUI) (2002)	time	2.50	3.50	4.50	5.50	6.51	7.51	8.51	9.54	10.57	11.63		12.83	2 / 8			
	reaction time	0.129													3.00	3.01	3.12
	interval		1.00	1.00	1.00	1.01	1.00	1.00	1.03	1.03	1.06	1.20			8.50	8.47	8.17
	velocity	5.20	8.50	8.50	8.50	8.42	8.50	8.50	8.25	8.25	8.02	8.38	7.79				



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=frnmR4Ecb0c&t=2s>

2022 European Athletics Championships (Munich, GER) (TV Analysis)

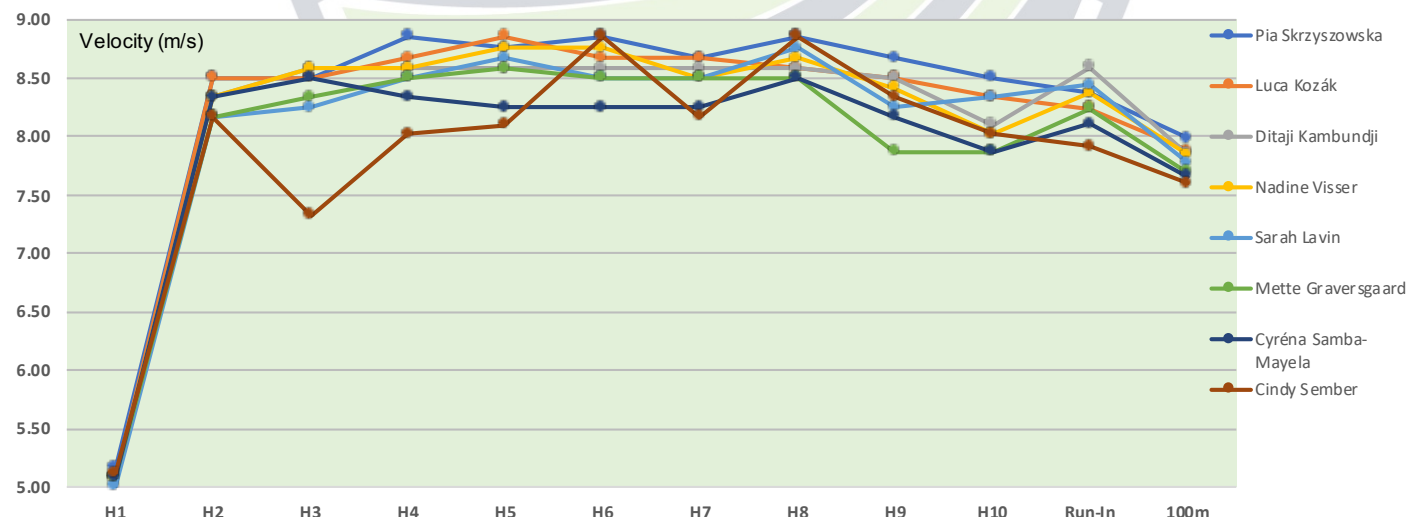
100m Hurdles

Date: 2022.08.21

Wind: -0.1 m/s

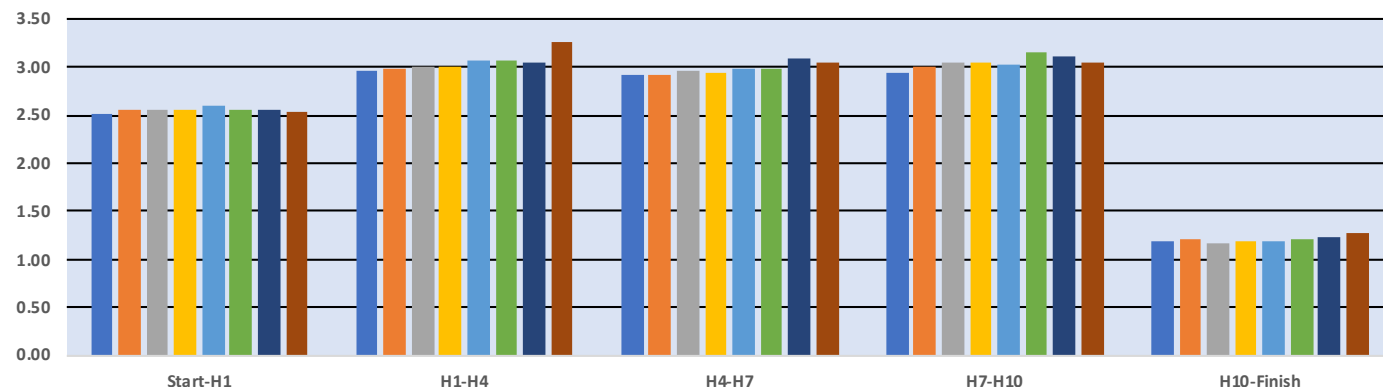
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Skrzysowska, Pia (POL) (2001)	time	2.52	3.52	4.52	5.48	6.45	7.41	8.39	9.35	10.33	11.33		12.53	6 / 1			
	reaction time	0.134													2.96	2.91	2.94
	interval		1.00	1.00	0.96	0.97	0.96	0.98	0.96	0.98	1.00	1.20			8.61	8.76	8.67
	velocity	5.16	8.50	8.50	8.85	8.76	8.85	8.67	8.85	8.67	8.50	8.38	7.98				
Kozák, Luca (HUN) (1996)	time	2.56	3.56	4.56	5.54	6.50	7.48	8.46	9.45	10.45	11.47		12.69	5 / 2			
	reaction time	0.155													2.98	2.92	3.01
	interval		1.00	1.00	0.98	0.96	0.98	0.98	0.99	1.00	1.02	1.22	=NR =PB		8.56	8.73	8.47
	velocity	5.08	8.50	8.50	8.67	8.85	8.67	8.67	8.59	8.50	8.33	8.24	7.88				
Kambundji, Ditaji (SUI) (2002)	time	2.56	3.58	4.57	5.56	6.55	7.54	8.53	9.52	10.52	11.57		12.74	8 / 3			
	reaction time	0.169													3.00	2.97	3.04
	interval		1.02	0.99	0.99	0.99	0.99	0.99	0.99	1.00	1.05	1.17			8.50	8.59	8.39
	velocity	5.08	8.33	8.59	8.59	8.59	8.59	8.59	8.59	8.50	8.10	8.59	7.85				
Visser, Nadine (NED) (1995)	time	2.56	3.58	4.57	5.56	6.53	7.50	8.50	9.48	10.49	11.55		12.75	4 / 4			
	reaction time	0.156													3.00	2.94	3.05
	interval		1.02	0.99	0.99	0.97	0.97	1.00	0.98	1.01	1.06	1.20			8.50	8.67	8.36
	velocity	5.08	8.33	8.59	8.59	8.76	8.76	8.50	8.67	8.42	8.02	8.38	7.84				
Lavin, Sarah (IRL) (1994)	time	2.60	3.64	4.67	5.67	6.65	7.65	8.65	9.62	10.65	11.67		12.86	1 / 5			
	reaction time	0.171													3.07	2.98	3.02
	interval		1.04	1.03	1.00	0.98	1.00	1.00	0.97	1.03	1.02	1.19			8.31	8.56	8.44
	velocity	5.00	8.17	8.25	8.50	8.67	8.50	8.50	8.76	8.25	8.33	8.45	7.78				
Graversgaard, Mette (DEN) (1995)	time	2.56	3.60	4.62	5.62	6.61	7.61	8.61	9.61	10.69	11.77		12.99	2 / 6			
	reaction time	0.154													3.06	2.99	3.16
	interval		1.04	1.02	1.00	0.99	1.00	1.00	1.00	1.08	1.08	1.22			8.33	8.53	8.07
	velocity	5.08	8.17	8.33	8.50	8.59	8.50	8.50	8.50	7.87	7.87	8.24	7.70				
Samba-Mayela, Cyréna (FRA) (2000)	time	2.56	3.58	4.58	5.60	6.63	7.66	8.69	9.69	10.73	11.81		13.05	7 / 7			
	reaction time	0.152													3.04	3.09	3.12
	interval		1.02	1.00	1.02	1.03	1.03	1.03	1.00	1.04	1.08	1.24			8.39	8.25	8.17
	velocity	5.08	8.33	8.50	8.33	8.25	8.25	8.25	8.50	8.17	7.87	8.10	7.66				
Sember, Cindy (GBR) (1994)	time	2.54	3.58	4.74	5.80	6.85	7.81	8.85	9.81	10.83	11.89		13.16	3 / 8			
	reaction time	0.175													3.26	3.05	3.04
	interval		1.04	1.16	1.06	1.05	0.96	1.04	0.96	1.02	1.06	1.27			7.82	8.36	8.39
	velocity	5.12	8.17	7.33	8.02	8.10	8.85	8.17	8.85	8.33	8.02	7.91	7.60				



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=OJoXwCk6JU>

2022 Gyulai István Memorial (Székesfehérvár, HUN) (TV Analysis)

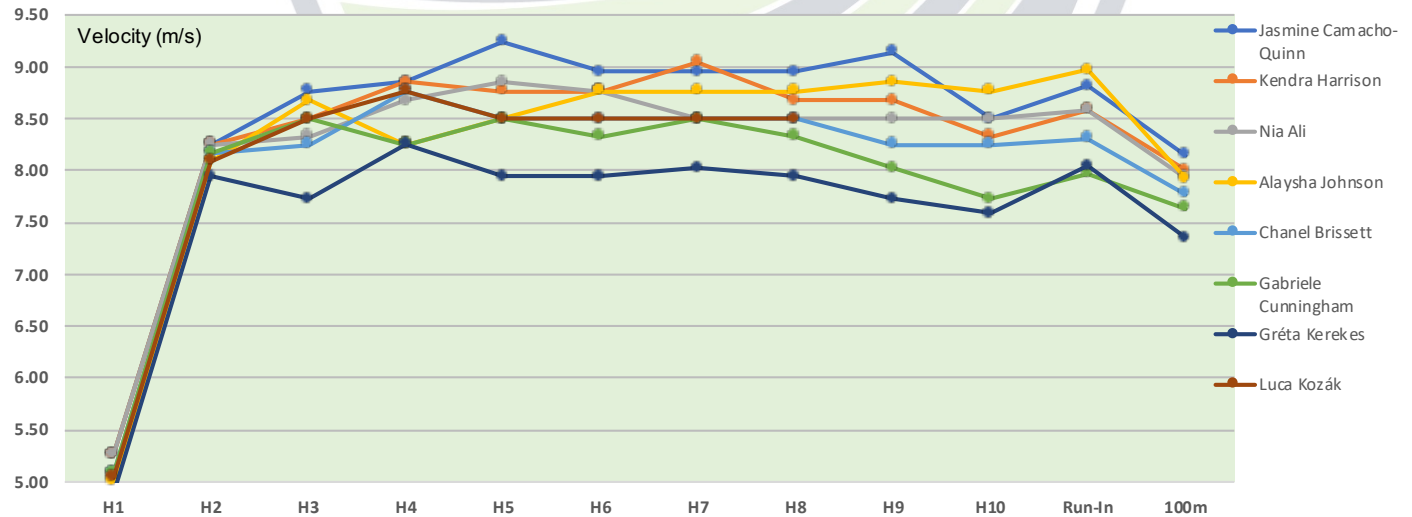
100m Hurdles

Date: 2022.08.08

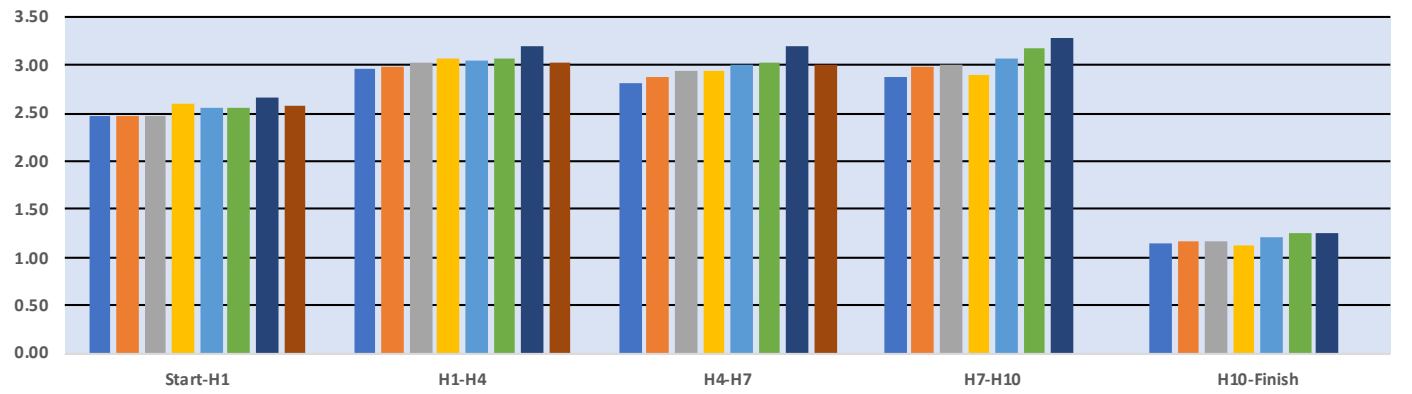
Wind: 2.4 m/s

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	2.47	3.50	4.47	5.43	6.35	7.30	8.25	9.20	10.13	11.13		12.27	5 / 1			
	reaction time	0.114													2.96	2.82	2.88
	interval		1.03	0.97	0.96	0.92	0.95	0.95	0.95	0.93	1.00	1.14			8.61	9.04	8.85
	velocity	5.26	8.25	8.76	8.85	9.24	8.95	8.95	8.95	9.14	8.50	8.82	8.15				
Harrison, Kendra (USA) (1992)	time	2.47	3.50	4.50	5.46	6.43	7.40	8.34	9.32	10.30	11.32		12.49	4 / 2			
	reaction time	0.140													2.99	2.88	2.98
	interval		1.03	1.00	0.96	0.97	0.97	0.94	0.98	0.98	1.02	1.17			8.53	8.85	8.56
	velocity	5.26	8.25	8.50	8.85	8.76	8.76	9.04	8.67	8.67	8.33	8.59	8.01				
Ali, Nia (USA) (1988)	time	2.47	3.50	4.52	5.50	6.46	7.43	8.43	9.43	10.43	11.43		12.60	6 / 3			
	reaction time	0.138													3.03	2.93	3.00
	interval		1.03	1.02	0.98	0.96	0.97	1.00	1.00	1.00	1.00	1.17			8.42	8.70	8.50
	velocity	5.26	8.25	8.33	8.67	8.85	8.76	8.50	8.50	8.50	8.50	8.59	7.94				
Johnson, Alaysha (USA) (1996)	time	2.60	3.65	4.63	5.66	6.66	7.63	8.60	9.57	10.53	11.50		12.62	7 / 4			
	reaction time	0.173													3.06	2.94	2.90
	interval		1.05	0.98	1.03	1.00	0.97	0.97	0.97	0.96	0.97	1.12			8.33	8.67	8.79
	velocity	5.00	8.10	8.67	8.25	8.50	8.76	8.76	8.76	8.85	8.76	8.97	7.92				
Brissett, Chanel (USA) (1999)	time	2.56	3.60	4.63	5.60	6.60	7.60	8.60	9.60	10.63	11.66		12.87	1 / 5			
	reaction time	0.148													3.04	3.00	3.06
	interval		1.04	1.03	0.97	1.00	1.00	1.00	1.00	1.03	1.03	1.21			8.39	8.50	8.33
	velocity	5.08	8.17	8.25	8.76	8.50	8.50	8.50	8.50	8.25	8.25	8.31	7.77				
Cunningham, Gabriele (USA) (1998)	time	2.56	3.60	4.60	5.63	6.63	7.65	8.65	9.67	10.73	11.83		13.09	2 / 6			
	reaction time	0.160													3.07	3.02	3.18
	interval		1.04	1.00	1.03	1.00	1.02	1.00	1.02	1.06	1.10	1.26			8.31	8.44	8.02
	velocity	5.08	8.17	8.50	8.25	8.50	8.33	8.50	8.33	8.02	7.73	7.98	7.64				
Kerekes, Gréta (HUN) (1992)	time	2.66	3.73	4.83	5.86	6.93	8.00	9.06	10.13	11.23	12.35		13.60	8 / 7			
	reaction time	0.140													3.20	3.20	3.29
	interval		1.07	1.10	1.03	1.07	1.07	1.06	1.07	1.10	1.12	1.25			7.97	7.97	7.75
	velocity	4.89	7.94	7.73	8.25	7.94	7.94	8.02	7.94	7.73	7.59	8.04	7.35				
Kozák, Luca (HUN) (1996)	time	2.58	3.63	4.63	5.60	6.60	7.60	8.60	9.60					3 / --			
	reaction time	0.165													3.02	3.00	
	interval		1.05	1.00	0.97	1.00	1.00	1.00	1.00						8.44	8.50	
	velocity	5.04	8.10	8.50	8.76	8.50	8.50	8.50	8.50								



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=7bSum-4L4vM>

2022 Commonwealth Games (Birmingham, GBR) (TV Analysis)

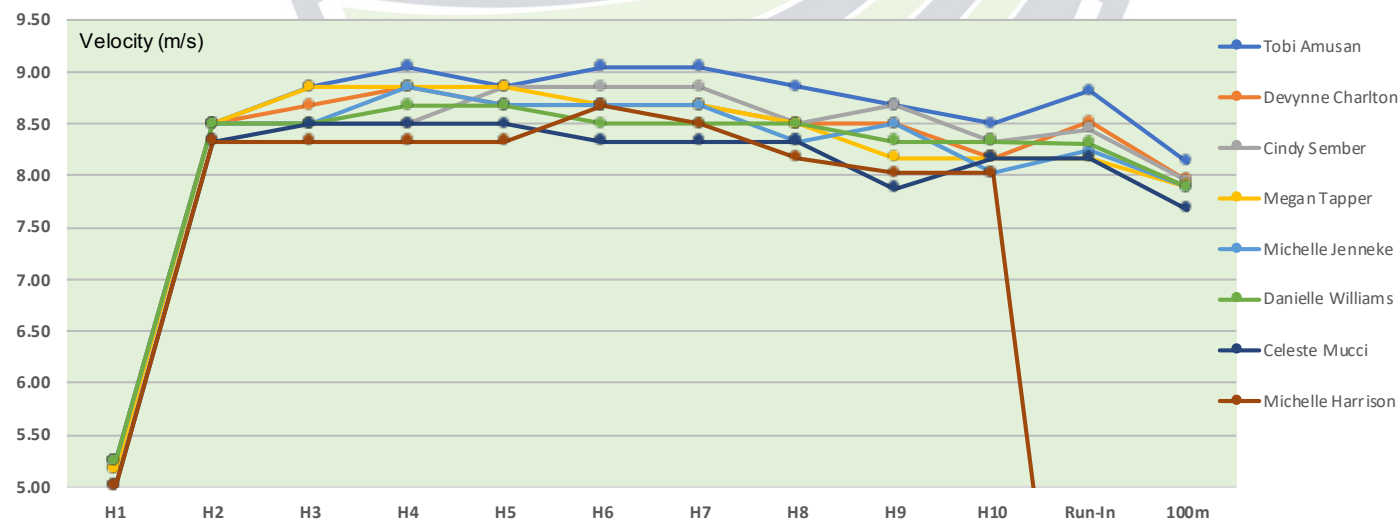
100m Hurdles

Date: 2022.08.07

Wind: -0.2 m/s

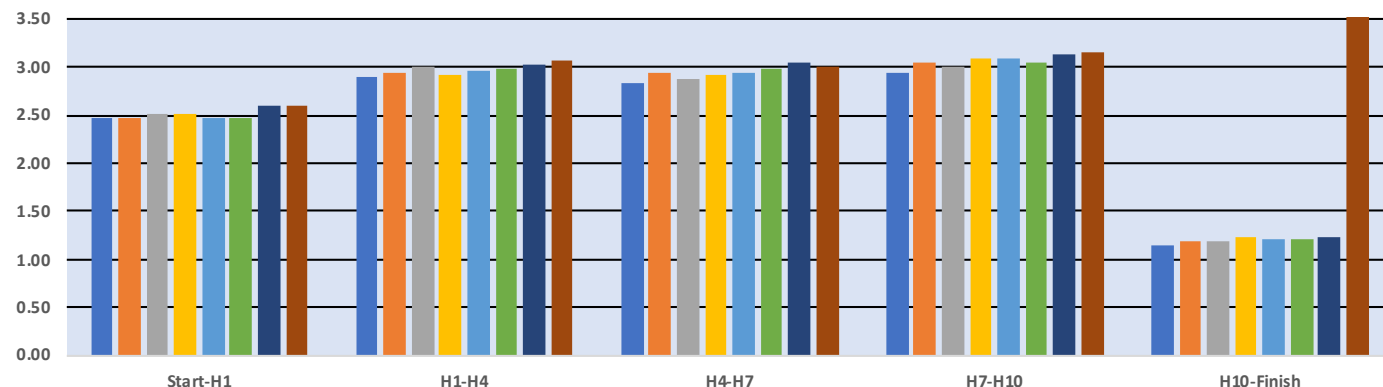
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Amusan, Tobi (NGR) (1997)	time	2.48	3.48	4.44	5.38	6.34	7.28	8.22	9.18	10.16	11.16		12.30	5 / 1			
	reaction time	0.126													2.90	2.84	2.94
	interval		1.00	0.96	0.94	0.96	0.94	0.94	0.96	0.98	1.00	1.14			8.79	8.98	8.67
	velocity	5.24	8.50	8.85	9.04	8.85	9.04	9.04	8.85	8.67	8.50	8.82	8.13				
Charlton, Devynne (BAH) (1995)	time	2.48	3.48	4.46	5.42	6.40	7.38	8.36	9.36	10.36	11.40		12.58	7 / 2			
	reaction time	0.144													2.94	2.94	3.04
	interval		1.00	0.98	0.96	0.98	0.98	0.98	1.00	1.00	1.04	1.18			8.67	8.67	8.39
	velocity	5.24	8.50	8.67	8.85	8.67	8.67	8.67	8.50	8.50	8.17	8.52	7.95				
Sember, Cindy (GBR) (1994)	time	2.52	3.52	4.52	5.52	6.48	7.44	8.40	9.40	10.38	11.40		12.59	3 / 3			
	reaction time	0.145													3.00	2.88	3.00
	interval		1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.98	1.02	1.19			8.50	8.85	8.50
	velocity	5.16	8.50	8.50	8.50	8.85	8.85	8.85	8.50	8.67	8.33	8.45	7.94				
Tapper, Megan (JAM) (1994)	time	2.52	3.52	4.48	5.44	6.40	7.38	8.36	9.36	10.40	11.44		12.67	4 / 4			
	reaction time	0.154													2.92	2.92	3.08
	interval		1.00	0.96	0.96	0.96	0.98	0.98	1.00	1.04	1.04	1.23			8.73	8.73	8.28
	velocity	5.16	8.50	8.85	8.85	8.85	8.67	8.67	8.50	8.17	8.17	8.17	7.89				
Jenneke, Michelle (AUS) (1993)	time	2.48	3.48	4.48	5.44	6.42	7.40	8.38	9.40	10.40	11.46		12.68	6 / 5			
	reaction time	0.154													2.96	2.94	3.08
	interval		1.00	1.00	0.96	0.98	0.98	0.98	1.02	1.00	1.06	1.22			8.61	8.67	8.28
	velocity	5.24	8.50	8.50	8.85	8.67	8.67	8.67	8.33	8.50	8.02	8.24	7.89				
Williams, Danielle (JAM) (1992)	time	2.48	3.48	4.48	5.46	6.44	7.44	8.44	9.44	10.46	11.48		12.69	8 / 6			
	reaction time	0.128													2.98	2.98	3.04
	interval		1.00	1.00	0.98	0.98	1.00	1.00	1.00	1.02	1.02	1.21			8.56	8.56	8.39
	velocity	5.24	8.50	8.50	8.67	8.67	8.50	8.50	8.50	8.33	8.33	8.31	7.88				
Mucci, Celeste (AUS) (1999)	time	2.60	3.62	4.62	5.62	6.62	7.64	8.66	9.68	10.76	11.80		13.03	1 / 7			
	reaction time	0.151													3.02	3.04	3.14
	interval		1.02	1.00	1.00	1.00	1.02	1.02	1.02	1.08	1.04	1.23			8.44	8.39	8.12
	velocity	5.00	8.33	8.50	8.50	8.50	8.33	8.33	8.33	7.87	8.17	8.17	7.67				
Harrison, Michelle (CAN) (1992)	time	2.60	3.62	4.64	5.66	6.68	7.66	8.66	9.70	10.76	11.82		25.13	2 / 8			
	reaction time	0.126													3.06	3.00	3.16
	interval		1.02	1.02	1.02	1.02	0.98	1.00	1.04	1.06	1.06	13.31			8.33	8.50	8.07
	velocity	5.00	8.33	8.33	8.33	8.33	8.67	8.50	8.17	8.02	8.02	0.76	3.98				



Time Intervals (s)

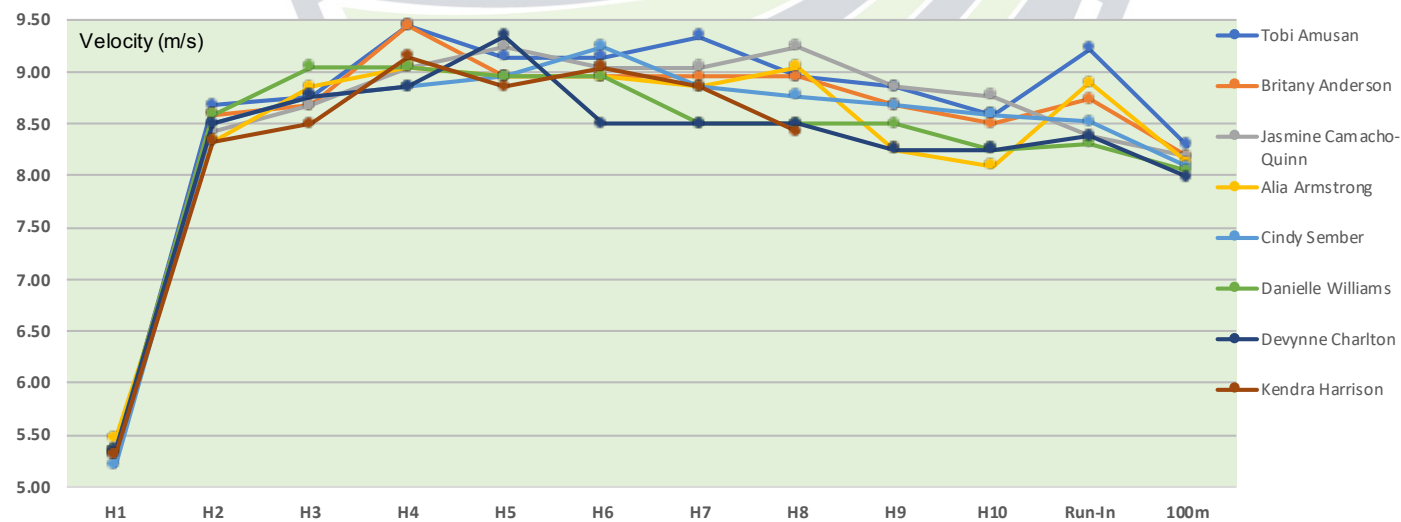
Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1280 x 720 @ 25fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=8d1wCoBKveY&t=7s>

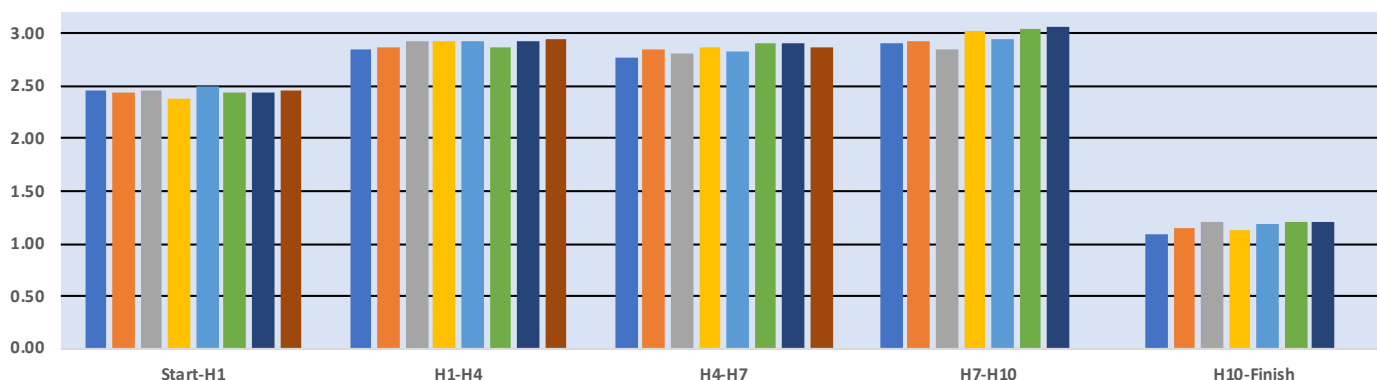
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

100m Hurdles		Date: 2022.07.24	Wind: 2.5 m/s										FINAL					
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Amusan, Tobi (NGR) (1997)	time	2.45	3.43	4.40	5.30	6.23	7.16	8.07	9.02	9.98	10.97			12.06	4 / 1			
	reaction time	0.130														2.85	2.77	2.90
	interval velocity		0.98	0.97	0.90	0.93	0.93	0.91	0.95	0.96	0.99	1.09				8.95	9.21	8.79
Anderson, Britany (JAM) (2001)	time	2.43	3.42	4.40	5.30	6.25	7.20	8.15	9.10	10.08	11.08			12.23	5 / 2			
	reaction time	0.129														2.87	2.85	2.93
	interval velocity		0.99	0.98	0.90	0.95	0.95	0.95	0.95	0.98	1.00	1.15				8.89	8.95	8.70
Camacho-Quinn, Jasmine (PUR) (199)	time	2.45	3.46	4.44	5.38	6.30	7.24	8.18	9.10	10.06	11.03			12.23	7 / 3			
	reaction time	0.127														2.93	2.80	2.85
	interval velocity		1.01	0.98	0.94	0.92	0.94	0.94	0.92	0.96	0.97	1.20				8.70	9.11	8.95
Armstrong, Alia (USA) (2000)	time	2.38	3.40	4.36	5.30	6.25	7.20	8.16	9.10	10.13	11.18			12.31	6 / 4			
	reaction time	0.125														2.92	2.86	3.02
	interval velocity		1.02	0.96	0.94	0.95	0.95	0.96	0.94	1.03	1.05	1.13				8.73	8.92	8.44
Sember, Cindy (GBR) (1994)	time	2.50	3.50	4.47	5.43	6.38	7.30	8.26	9.23	10.21	11.20			12.38	1 / 5			
	reaction time	0.158														2.93	2.83	2.94
	interval velocity		1.00	0.97	0.96	0.95	0.92	0.96	0.97	0.98	0.99	1.18				8.70	9.01	8.67
Williams, Danielle (JAM) (1992)	time	2.43	3.42	4.36	5.30	6.25	7.20	8.20	9.20	10.20	11.23			12.44	2 / 6			
	reaction time	0.105														2.87	2.90	3.03
	interval velocity		0.99	0.94	0.94	0.95	0.95	1.00	1.00	1.00	1.03	1.21				8.89	8.79	8.42
Charlton, Devynne (BAH) (1995)	time	2.43	3.43	4.40	5.36	6.27	7.27	8.27	9.27	10.30	11.33			12.53	8 / 7			
	reaction time	0.129														2.93	2.91	3.06
	interval velocity		1.00	0.97	0.96	0.91	1.00	1.00	1.00	1.00	1.03	1.03	1.20			8.70	8.76	8.33
Harrison, Kendra (USA) (1992)	time	2.45	3.47	4.47	5.40	6.36	7.30	8.26	9.27					dnf	3 / --			
	reaction time	0.145												DQ		2.95	2.86	
	interval velocity		1.02	1.00	0.93	0.96	0.94	0.96	1.01							8.64	8.92	



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=ZNocfS5lFdc&t=22s>

2022 World Athletics Championships (Eugene, OR) (TV Analysis)

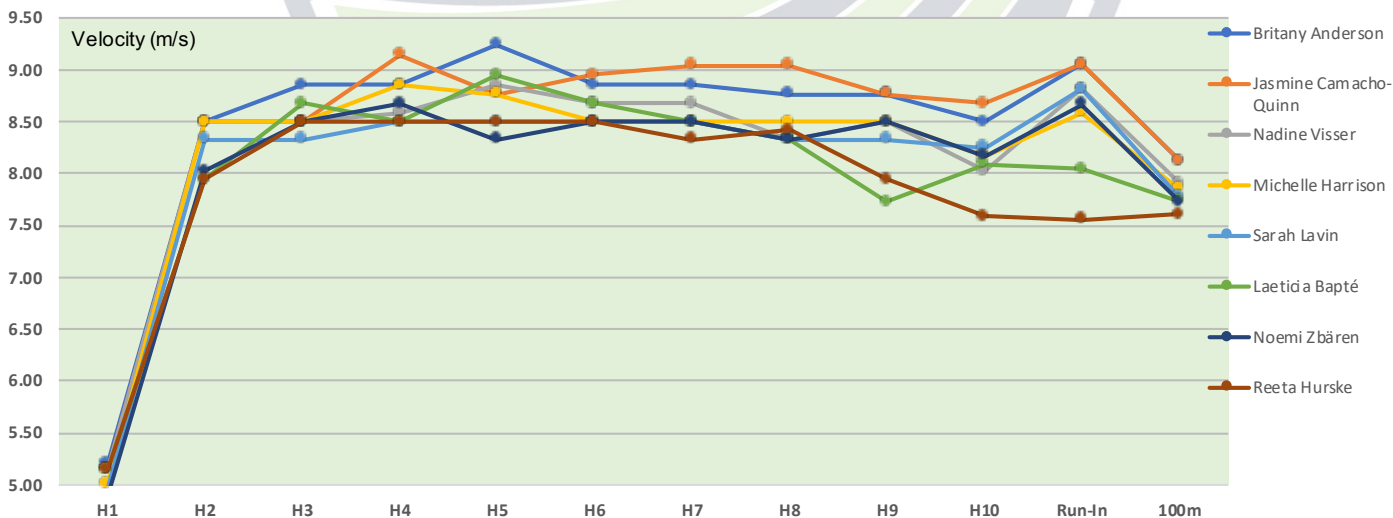
100m Hurdles

Date: 2022.07.24

Wind: 0.3 m/s

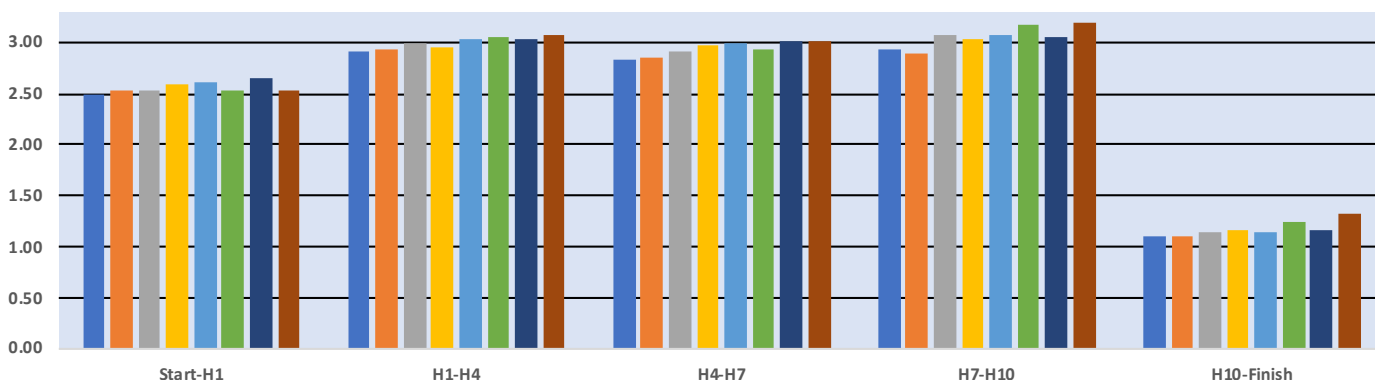
Semi-Final 3

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Anderson, Britany (JAM) (2001)	time	2.50	3.50	4.46	5.42	6.34	7.30	8.26	9.23	10.20	11.20	12.31	12.31	3 / 1			
	reaction time	0.143											NR PB		2.92	2.84	2.94
	interval		1.00	0.96	0.96	0.92	0.96	0.96	0.97	0.97	1.00	1.11	8.12		8.73	8.98	8.67
	velocity	5.20	8.50	8.85	8.85	9.24	8.85	8.85	8.76	8.76	8.50	9.05	8.12				
Camacho-Quinn, Jasmine (PUR) (199)	time	2.53	3.53	4.53	5.46	6.43	7.38	8.32	9.26	10.23	11.21	12.32	12.32	5 / 2			
	reaction time	0.126													2.93	2.86	2.89
	interval		1.00	1.00	0.93	0.97	0.95	0.94	0.94	0.97	0.98	1.11	8.12		8.70	8.92	8.82
	velocity	5.14	8.50	8.50	9.14	8.76	8.95	9.04	9.04	8.76	8.67	9.05	8.12				
Visser, Nadine (NED) (1995)	time	2.53	3.53	4.53	5.52	6.48	7.46	8.44	9.46	10.46	11.52	12.66	12.66	6 / 3			
	reaction time	0.125													2.99	2.92	3.08
	interval		1.00	1.00	0.99	0.96	0.98	0.98	1.02	1.00	1.06	1.14	7.90		8.53	8.73	8.28
	velocity	5.14	8.50	8.50	8.59	8.85	8.67	8.67	8.33	8.50	8.02	8.82	7.90				
Harrison, Michelle (CAN) (1992)	time	2.60	3.60	4.60	5.56	6.53	7.53	8.53	9.53	10.53	11.57	12.74	12.74	4 / 4			
	reaction time	0.106											PB		2.96	2.97	3.04
	interval		1.00	1.00	0.96	0.97	1.00	1.00	1.00	1.00	1.04	1.17	7.85		8.61	8.59	8.39
	velocity	5.00	8.50	8.50	8.85	8.76	8.50	8.50	8.50	8.50	8.17	8.59	7.85				
Lavin, Sarah (IRL) (1994)	time	2.62	3.64	4.66	5.66	6.66	7.66	8.66	9.68	10.70	11.73	12.87	12.87	7 / 5			
	reaction time	0.117													3.04	3.00	3.07
	interval		1.02	1.02	1.00	1.00	1.00	1.00	1.02	1.02	1.03	1.14	7.77		8.39	8.50	8.31
	velocity	4.96	8.33	8.33	8.50	8.50	8.50	8.50	8.33	8.33	8.25	8.82	7.77				
Bapté, Laetitia (FRA) (1999)	time	2.53	3.60	4.58	5.58	6.53	7.51	8.51	9.53	10.63	11.68	12.93	12.93	1 / 6			
	reaction time	0.157													3.05	2.93	3.17
	interval		1.07	0.98	1.00	0.95	0.98	1.00	1.02	1.10	1.05	1.25	7.73		8.36	8.70	8.04
	velocity	5.14	7.94	8.67	8.50	8.95	8.67	8.50	8.33	7.73	8.10	8.04	7.73				
Zbären, Noemi (SUI) (1994)	time	2.66	3.72	4.72	5.70	6.72	7.72	8.72	9.74	10.74	11.78	12.94	12.94	8 / 7			
	reaction time	0.164													3.04	3.02	3.06
	interval		1.06	1.00	0.98	1.02	1.00	1.00	1.02	1.02	1.04	1.16	7.73		8.39	8.44	8.33
	velocity	4.89	8.02	8.50	8.67	8.33	8.50	8.50	8.33	8.50	8.17	8.66	7.73				
Hurske, Reetta (FIN) (1995)	time	2.53	3.60	4.60	5.60	6.60	7.60	8.62	9.63	10.70	11.82	13.15	13.15	2 / 8			
	reaction time	0.113													3.07	3.02	3.20
	interval		1.07	1.00	1.00	1.00	1.00	1.02	1.01	1.07	1.12	1.33	7.60		8.31	8.44	7.97
	velocity	5.14	7.94	8.50	8.50	8.50	8.50	8.33	8.42	7.94	7.59	7.56	7.60				



Time Intervals (s)

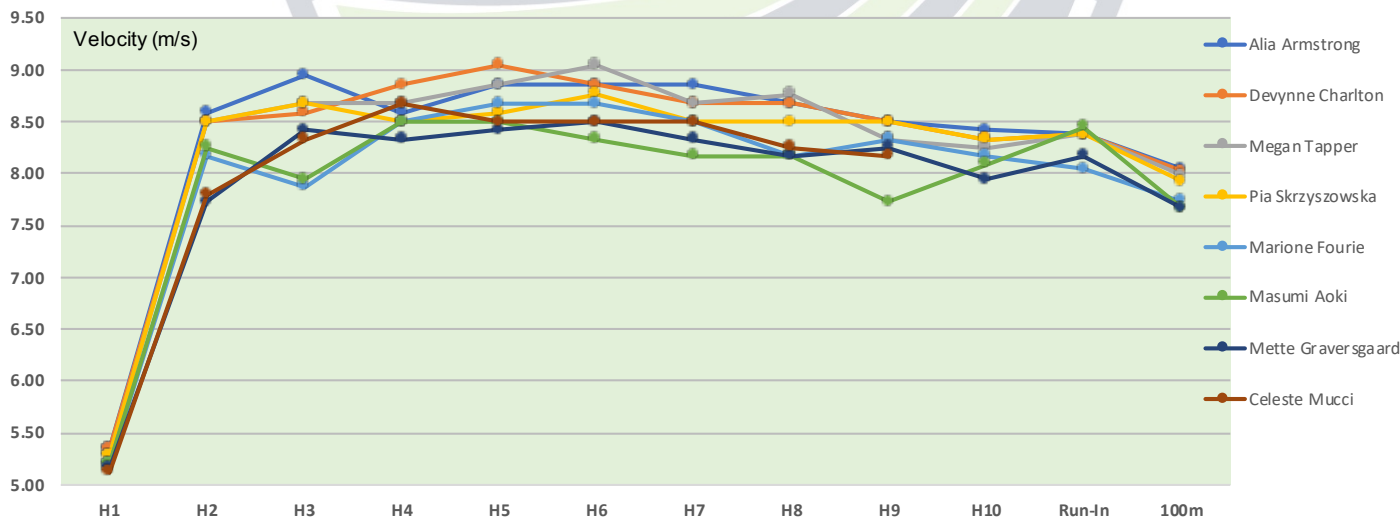
Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30fps
 Timing From: Gun Flash
 Source: <https://www.youtube.com/watch?v=ZNocfS5lFdc&t=22s>

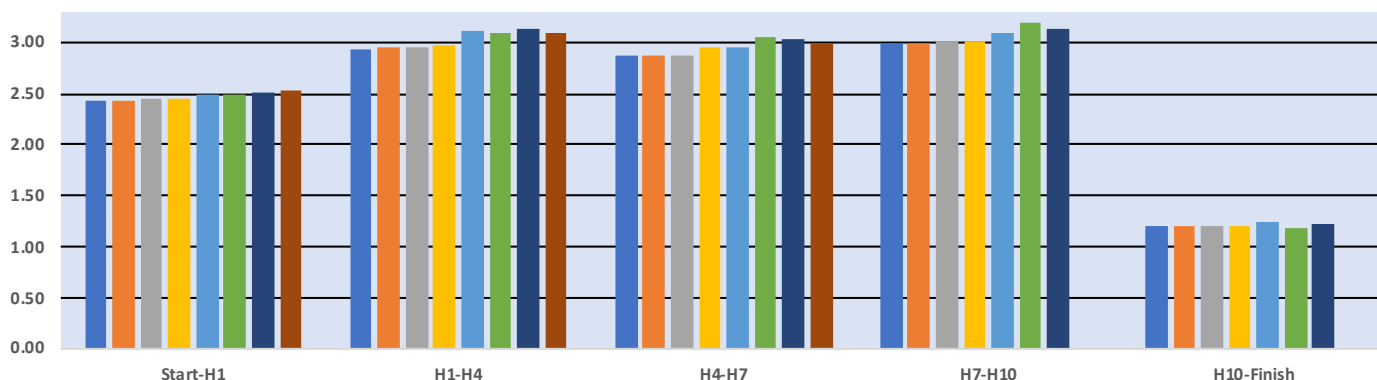
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

100m Hurdles		Date: 2022.07.24	Wind: -0.1 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
Armstrong, Alia (USA) (2000)	time	2.43	3.42	4.37	5.36	6.32	7.28	8.24	9.22	10.22	11.23		12.43	5 / 1			
	reaction time	0.153											PB		2.93	2.88	2.99
	interval		0.99	0.95	0.99	0.96	0.96	0.96	0.98	1.00	1.01	1.20	8.05		8.70	8.85	8.53
	velocity	5.35	8.59	8.95	8.59	8.85	8.85	8.85	8.67	8.50	8.42	8.38	8.05				
Charlton, Devynne (BAH) (1995)	time	2.43	3.43	4.42	5.38	6.32	7.28	8.26	9.24	10.24	11.26		12.46	3 / 2			
	reaction time	0.138											NR PB		2.95	2.88	3.00
	interval		1.00	0.99	0.96	0.94	0.96	0.98	0.98	1.00	1.02	1.20	8.03		8.64	8.85	8.50
	velocity	5.35	8.50	8.59	8.85	9.04	8.85	8.67	8.67	8.50	8.33	8.37	8.03				
Tapper, Megan (JAM) (1994)	time	2.46	3.46	4.44	5.42	6.38	7.32	8.30	9.27	10.29	11.32		12.52	4 / 3			
	reaction time	0.173											PB		2.96	2.88	3.02
	interval		1.00	0.98	0.98	0.96	0.94	0.98	0.97	1.02	1.03	1.20	7.99		8.61	8.85	8.44
	velocity	5.28	8.50	8.67	8.67	8.85	9.04	8.67	8.76	8.33	8.25	8.38	7.99				
Skrzysowska, Pia (POL) (2001)	time	2.46	3.46	4.44	5.44	6.43	7.40	8.40	9.40	10.40	11.42		12.62	6 / 4			
	reaction time	0.119											PB		2.98	2.96	3.02
	interval		1.00	0.98	1.00	0.99	0.97	1.00	1.00	1.00	1.02	1.20	7.92		8.56	8.61	8.44
	velocity	5.28	8.50	8.67	8.50	8.59	8.76	8.50	8.50	8.50	8.33	8.38	7.92				
Fourie, Marione (RSA) (2002)	time	2.50	3.54	4.62	5.62	6.60	7.58	8.58	9.62	10.64	11.68		12.93	7 / 5			
	reaction time	0.128											PB		3.12	2.96	3.10
	interval		1.04	1.08	1.00	0.98	0.98	1.00	1.04	1.02	1.04	1.25	7.73		8.17	8.61	8.23
	velocity	5.20	8.17	7.87	8.50	8.67	8.67	8.50	8.17	8.33	8.17	8.04	7.73				
Aoki, Masumi (JPN) (1994)	time	2.50	3.53	4.60	5.60	6.60	7.62	8.66	9.70	10.80	11.85		13.04	2 / 6			
	reaction time	0.123													3.10	3.06	3.19
	interval		1.03	1.07	1.00	1.00	1.02	1.04	1.04	1.10	1.05	1.19	7.67		8.23	8.33	7.99
	velocity	5.20	8.25	7.94	8.50	8.50	8.33	8.17	8.17	7.73	8.10	8.45	7.67				
Graversgaard, Mette (DEN) (1995)	time	2.52	3.62	4.63	5.65	6.66	7.66	8.68	9.72	10.75	11.82		13.05	8 / 7			
	reaction time	0.134													3.13	3.03	3.14
	interval		1.10	1.01	1.02	1.01	1.00	1.02	1.04	1.03	1.07	1.23	7.66		8.15	8.42	8.12
	velocity	5.16	7.73	8.42	8.33	8.42	8.50	8.33	8.17	8.25	7.94	8.17	7.66				
Mucci, Celeste (AUS) (1999)	time	2.54	3.63	4.65	5.63	6.63	7.63	8.63	9.66	10.70			dnf	1 / --			
	reaction time	0.143											DQ		3.09	3.00	
	interval		1.09	1.02	0.98	1.00	1.00	1.00	1.03	1.04					8.25	8.50	
	velocity	5.12	7.80	8.33	8.67	8.50	8.50	8.50	8.25	8.17							



Time Intervals (s)

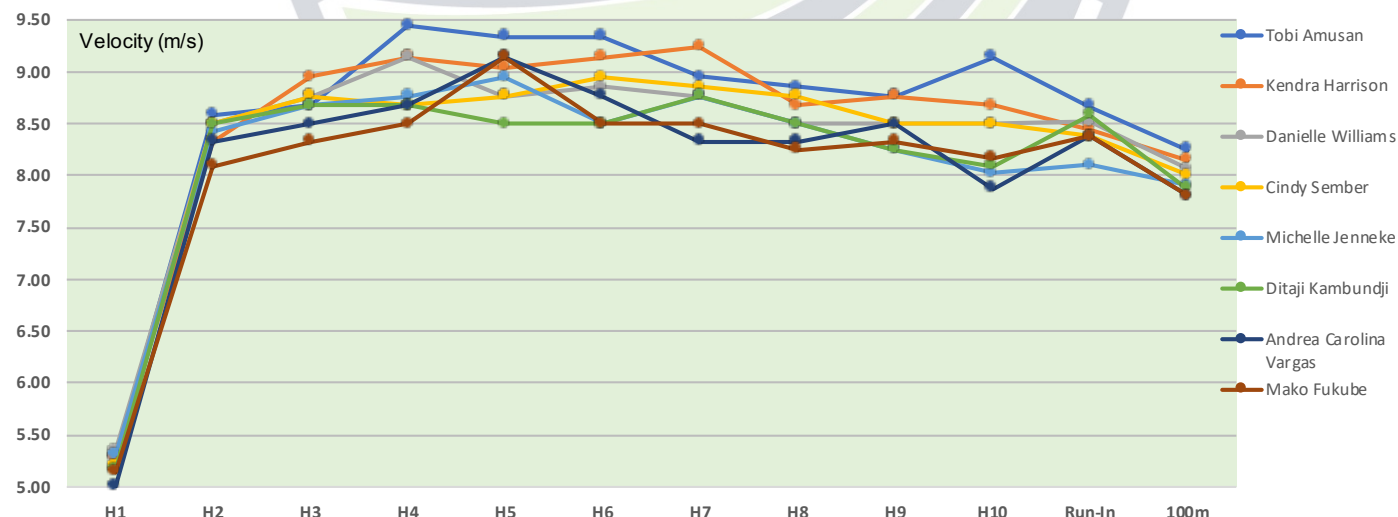
Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30fps
 Timing From: Gun Flash
 Source: <https://www.youtube.com/watch?v=ZNocfS5lFdc&t=22s>

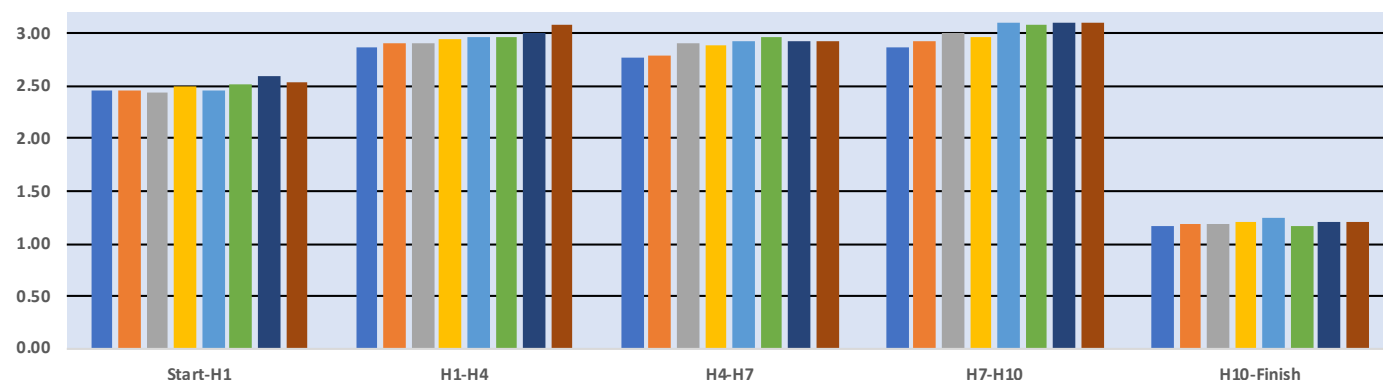
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

100m Hurdles		Date: 2022.07.24	Wind: 0.9 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
Amusan, Tobi (NGR) (1997)	time		2.46	3.45	4.43	5.33	6.24	7.15	8.10	9.06	10.03	10.96	12.12		4 / 1			
	reaction time	0.144												WR		2.87	2.77	2.86
	interval		0.99	0.98	0.90	0.91	0.91	0.95	0.96	0.97	0.93	1.16	8.25			8.89	9.21	8.92
Harrison, Kendra (USA) (1992)	time		2.46	3.48	4.43	5.36	6.30	7.23	8.15	9.13	10.10	11.08	12.27		6 / 2			
	reaction time	0.155														2.90	2.79	2.93
	interval		1.02	0.95	0.93	0.94	0.93	0.92	0.98	0.97	0.98	1.19	8.15			8.79	9.14	8.70
Williams, Danielle (JAM) (1992)	time		2.43	3.43	4.40	5.33	6.30	7.26	8.23	9.23	10.23	11.23	12.41		3 / 3			
	reaction time	0.105														2.90	2.90	3.00
	interval		1.00	0.97	0.93	0.97	0.96	0.97	1.00	1.00	1.00	1.18	8.06			8.79	8.79	8.50
Sember, Cindy (GBR) (1994)	time		2.50	3.50	4.47	5.45	6.42	7.37	8.33	9.30	10.30	11.30	12.50		5 / 4			
	reaction time	0.158												NR PB		2.95	2.88	2.97
	interval		1.00	0.97	0.98	0.97	0.95	0.95	0.96	0.97	1.00	1.00	1.20	8.00		8.64	8.85	8.59
Jenneke, Michelle (AUS) (1993)	time		2.45	3.46	4.44	5.41	6.36	7.36	8.33	9.33	10.36	11.42	12.66		7 / 5			
	reaction time	0.120												PB		2.96	2.92	3.09
	interval		1.01	0.98	0.97	0.95	1.00	0.97	1.00	1.03	1.06	1.24	7.90			8.61	8.73	8.25
Kambundji, Ditaji (SUI) (2002)	time		2.52	3.52	4.50	5.48	6.48	7.48	8.45	9.45	10.48	11.53	12.70		2 / 6			
	reaction time	0.134												PB		2.96	2.97	3.08
	interval		1.00	0.98	0.98	1.00	1.00	0.97	1.00	1.03	1.05	1.17	7.87			8.61	8.59	8.28
Vargas, Andrea Carolina (CRC) (1996)	time		2.60	3.62	4.62	5.60	6.53	7.50	8.52	9.54	10.54	11.62	12.82		8 / 7			
	reaction time	0.154														3.00	2.92	3.10
	interval		1.02	1.00	0.98	0.93	0.97	1.02	1.02	1.02	1.00	1.08	1.20	7.80		8.50	8.73	8.23
Fukube, Mako (JPN) (1995)	time		2.53	3.58	4.60	5.60	6.53	7.53	8.53	9.56	10.58	11.62	12.82		1 / 8			
	reaction time	0.119												NR PB		3.07	2.93	3.09
	interval		1.05	1.02	1.00	0.93	1.00	1.00	1.00	1.03	1.02	1.04	1.20	7.80		8.31	8.70	8.25



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=ZNocifS5lFdc&t=22s>

2022 World Athletics Championships (Eugene, OR) (TV Analysis)

100m Hurdles

Date: 2022.07.23

Wind: -0.4 m/s

Heat 6

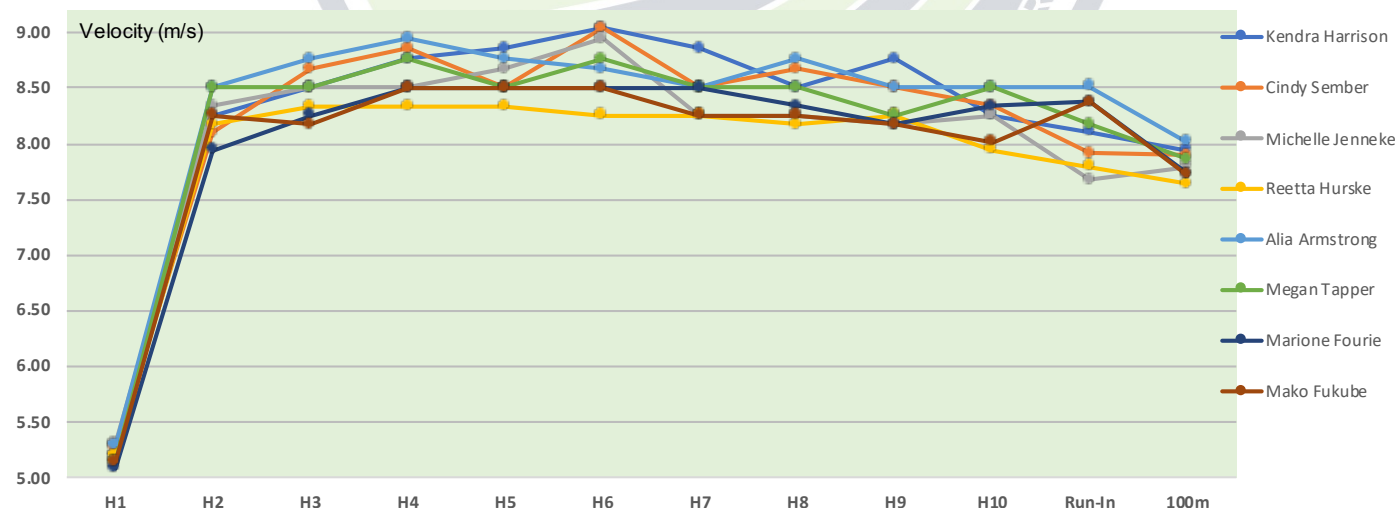
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Harrison, Kendra (USA) (1992)	time	2.50	3.53	4.53	5.50	6.46	7.40	8.36	9.36	10.33	11.36		12.60	4 / 1			
	reaction time	0.182													3.00	2.86	3.00
	interval		1.03	1.00	0.97	0.96	0.94	0.96	1.00	0.97	1.03	1.24			8.50	8.92	8.50
	velocity	5.20	8.25	8.50	8.76	8.85	9.04	8.85	8.50	8.76	8.25	8.10	7.94				
Sember, Cindy (GBR) (1994)	time	2.47	3.52	4.50	5.46	6.46	7.40	8.40	9.38	10.38	11.40		12.67	5 / 2			
	reaction time	0.149													2.99	2.94	3.00
	interval		1.05	0.98	0.96	1.00	0.94	1.00	0.98	1.00	1.02	1.27			8.53	8.67	8.50
	velocity	5.26	8.10	8.67	8.85	8.50	9.04	8.50	8.67	8.50	8.33	7.91	7.89				
Jenneke, Michelle (AUS) (1993)	time	2.45	3.47	4.47	5.47	6.45	7.40	8.43	9.46	10.50	11.53		12.84	3 / 3			
	reaction time	0.131													3.02	2.96	3.10
	interval		1.02	1.00	1.00	0.98	0.95	1.03	1.03	1.04	1.03	1.31			8.44	8.61	8.23
	velocity	5.31	8.33	8.50	8.50	8.67	8.95	8.25	8.25	8.17	8.25	7.67	7.79				
Hurske, Reetta (FIN) (1995)	time	2.50	3.54	4.56	5.58	6.60	7.63	8.66	9.70	10.73	11.80		13.09	7 / 4			
	reaction time	0.129													3.08	3.08	3.14
	interval		1.04	1.02	1.02	1.02	1.03	1.03	1.04	1.03	1.07	1.29			8.28	8.28	8.12
	velocity	5.20	8.17	8.33	8.33	8.33	8.25	8.25	8.17	8.25	7.94	7.79	7.64				

Date: 2022.07.23

Wind: 0.5 m/s

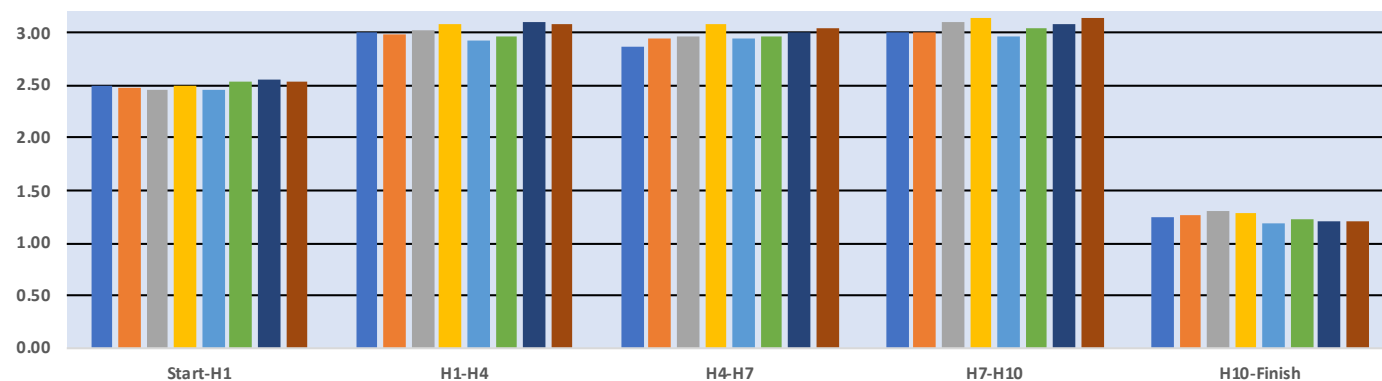
Heat 5

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Armstrong, Alia (USA) (2000)	time	2.46	3.46	4.43	5.38	6.35	7.33	8.33	9.30	10.30	11.30		12.48	3 / 1			
	reaction time	0.149													2.92	2.95	2.97
	interval		1.00	0.97	0.95	0.97	0.98	1.00	0.97	1.00	1.00	1.18			8.73	8.64	8.59
	velocity	5.28	8.50	8.76	8.95	8.76	8.67	8.50	8.76	8.50	8.50	8.52	8.01				
Tapper, Megan (JAM) (1994)	time	2.53	3.53	4.53	5.50	6.50	7.47	8.47	9.47	10.50	11.50		12.73	2 / 2			
	reaction time	0.166													2.97	2.97	3.03
	interval		1.00	1.00	0.97	1.00	0.97	1.00	1.00	1.03	1.00	1.23			8.59	8.59	8.42
	velocity	5.14	8.50	8.50	8.76	8.50	8.76	8.50	8.50	8.25	8.50	8.17	7.86				
Fourie, Marione (RSA) (2002)	time	2.56	3.63	4.66	5.66	6.66	7.66	8.66	9.68	10.72	11.74		12.94	6 / 3			
	reaction time	0.140													3.10	3.00	3.08
	interval		1.07	1.03	1.00	1.00	1.00	1.00	1.02	1.04	1.02	1.20			8.23	8.50	8.28
	velocity	5.08	7.94	8.25	8.50	8.50	8.50	8.50	8.33	8.17	8.33	8.38	7.73				
Fukube, Mako (JPN) (1995)	time	2.53	3.56	4.60	5.60	6.60	7.60	8.63	9.66	10.70	11.76		12.96	7 / 4			
	reaction time	0.108													3.07	3.03	3.13
	interval		1.03	1.04	1.00	1.00	1.00	1.03	1.03	1.04	1.06	1.20			8.31	8.42	8.15
	velocity	5.14	8.25	8.17	8.50	8.50	8.50	8.25	8.25	8.17	8.02	8.37	7.72				



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=ZvR4Zms45Aq&t=19s>

2022 World Athletics Championships (Eugene, OR) (TV Analysis)

100m Hurdles

Date: 2022.07.23

Wind: 0.7 m/s

Heat 4

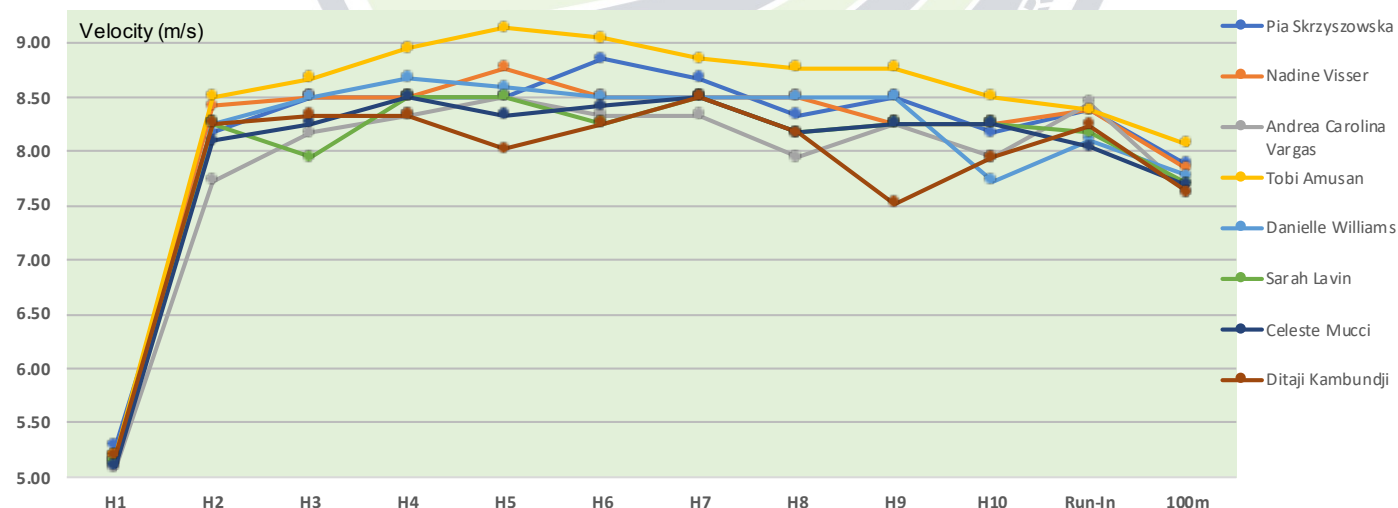
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Skrzysowska, Pia (POL) (2001)	time	2.46	3.50	4.50	5.50	6.50	7.46	8.44	9.46	10.46	11.50		12.70	7 / 1			
	reaction time	0.131													3.04	2.94	3.06
	interval		1.04	1.00	1.00	1.00	0.96	0.98	1.02	1.00	1.04	1.20			8.39	8.67	8.33
	velocity	5.28	8.17	8.50	8.50	8.50	8.85	8.67	8.33	8.50	8.17	8.38	7.87				
Visser, Nadine (NED) (1995)	time	2.52	3.53	4.53	5.53	6.50	7.50	8.50	9.50	10.53	11.56		12.76	8 / 2			
	reaction time	0.136													3.01	2.97	3.06
	interval		1.01	1.00	1.00	0.97	1.00	1.00	1.00	1.03	1.03	1.20			8.47	8.59	8.33
	velocity	5.16	8.42	8.50	8.50	8.76	8.50	8.50	8.50	8.25	8.25	8.38	7.84				
Vargas, Andrea Carolina (CRC) (1996)	time	2.56	3.66	4.70	5.72	6.72	7.74	8.76	9.83	10.86	11.93		13.12	5 / 3			
	reaction time	0.122													3.16	3.04	3.17
	interval		1.10	1.04	1.02	1.00	1.02	1.02	1.07	1.03	1.07	1.19			8.07	8.39	8.04
	velocity	5.08	7.73	8.17	8.33	8.50	8.33	8.33	7.94	8.25	7.94	8.45	7.62				

Date: 2022.07.23

Wind: 1.5 m/s

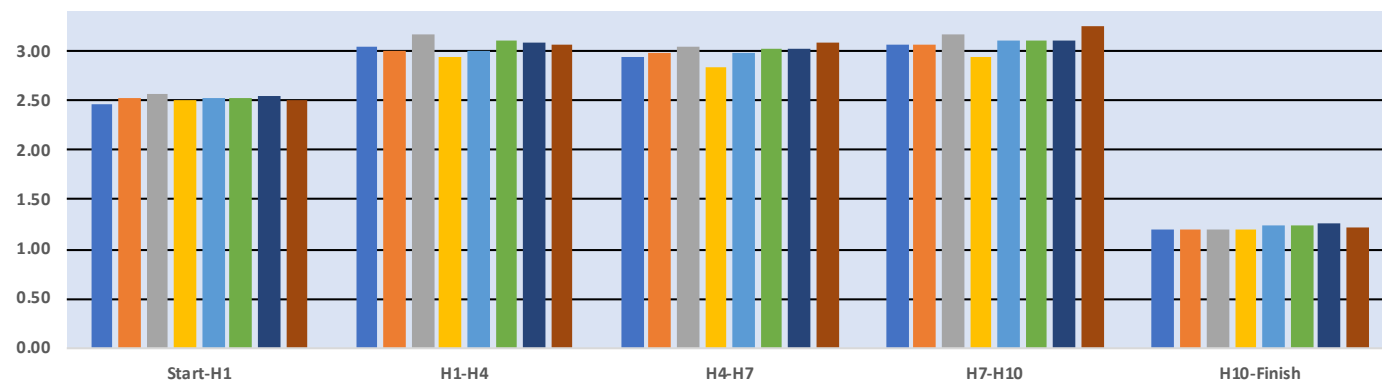
Heat 3

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Amusan, Tobi (NGR) (1997)	time	2.50	3.50	4.48	5.43	6.36	7.30	8.26	9.23	10.20	11.20		12.40	3 / 1			
	reaction time	0.135													2.93	2.83	2.94
	interval		1.00	0.98	0.95	0.93	0.94	0.96	0.97	0.97	0.97	1.00	1.20	AR PB	8.70	9.01	8.67
	velocity	5.20	8.50	8.67	8.95	9.14	9.04	8.85	8.76	8.76	8.50	8.37	8.06				
Williams, Danielle (JAM) (1992)	time	2.53	3.56	4.56	5.54	6.53	7.53	8.53	9.53	10.53	11.63		12.87	8 / 2			
	reaction time	0.194													3.01	2.99	3.10
	interval		1.03	1.00	0.98	0.99	1.00	1.00	1.00	1.00	1.10	1.24			8.47	8.53	8.23
	velocity	5.14	8.25	8.50	8.67	8.59	8.50	8.50	8.50	8.50	7.73	8.10	7.77				
Lavin, Sarah (IRL) (1994)	time	2.53	3.56	4.63	5.63	6.63	7.66	8.66	9.70	10.73	11.76		12.99	4 / 3			
	reaction time	0.117													3.10	3.03	3.10
	interval		1.03	1.07	1.00	1.00	1.03	1.00	1.04	1.03	1.03	1.23			8.23	8.42	8.23
	velocity	5.14	8.25	7.94	8.50	8.50	8.25	8.50	8.17	8.25	8.25	8.17	7.70				
Mucci, Celeste (AUS) (1999)	time	2.55	3.60	4.63	5.63	6.65	7.66	8.66	9.70	10.73	11.76		13.01	5 / 4			
	reaction time	0.163													3.08	3.03	3.10
	interval		1.05	1.03	1.00	1.02	1.01	1.00	1.04	1.03	1.03	1.25			8.28	8.42	8.23
	velocity	5.10	8.10	8.25	8.50	8.33	8.42	8.50	8.17	8.25	8.25	8.04	7.69				
Kambundji, Ditaji (SUI) (2002)	time	2.50	3.53	4.55	5.57	6.63	7.66	8.66	9.70	10.83	11.90		13.12	7 / 5			
	reaction time	0.137													3.07	3.09	3.24
	interval		1.03	1.02	1.02	1.06	1.03	1.00	1.04	1.13	1.07	1.22			8.31	8.25	7.87
	velocity	5.20	8.25	8.33	8.33	8.02	8.25	8.50	8.17	7.52	7.94	8.24	7.62				



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=ZvR4Zms45Aq&t=19s>

2022 World Athletics Championships (Eugene, OR) (TV Analysis)

100m Hurdles

Date: 2022.07.23

Wind: -0.4 m/s

Heat 2

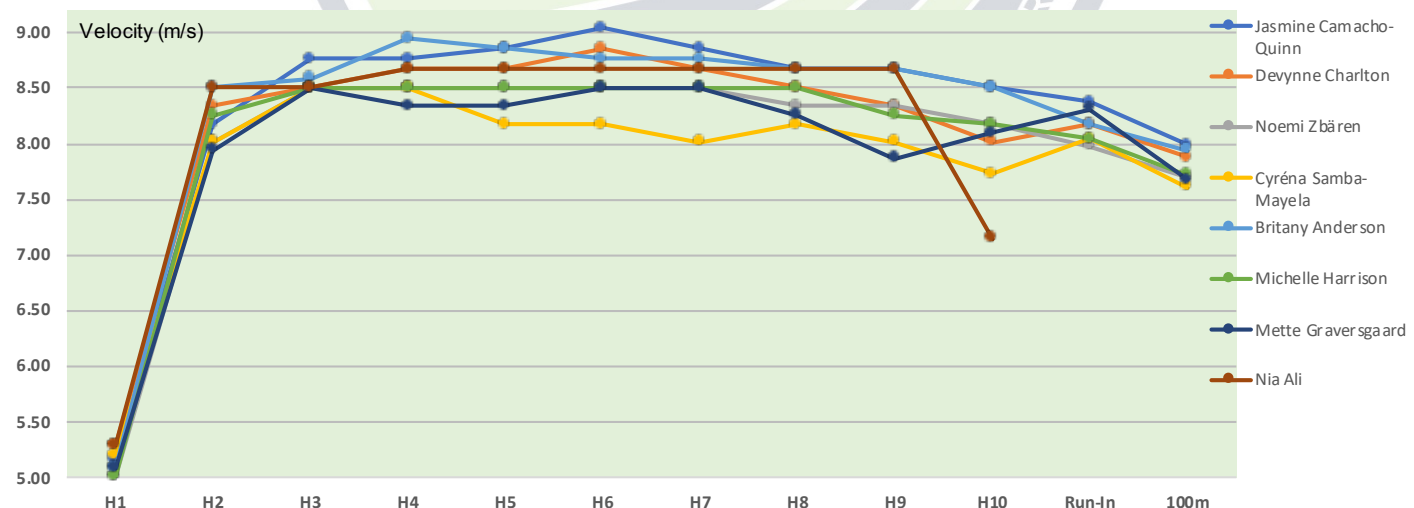
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Camacho-Quinn, Jasmine (PUR) (199)	time	2.52	3.56	4.53	5.50	6.46	7.40	8.36	9.34	10.32	11.32		12.52	7 / 1			
	reaction time	0.185													2.98	2.86	2.96
	interval velocity		1.04	0.97	0.97	0.96	0.94	0.96	0.98	0.98	1.00	1.20			8.56	8.92	8.61
Charlton, Devynne (BAH) (1995)	time	2.46	3.48	4.48	5.46	6.44	7.40	8.38	9.38	10.40	11.46		12.69	8 / 2			
	reaction time	0.124													3.00	2.92	3.08
	interval velocity		1.02	1.00	0.98	0.98	0.96	0.98	1.00	1.02	1.06	1.23			8.50	8.73	8.28
Zbären, Noemi (SUI) (1994)	time	2.60	3.66	4.66	5.66	6.66	7.66	8.66	9.68	10.70	11.74		13.00	6 / 3			
	reaction time	0.162													3.06	3.00	3.08
	interval velocity		1.06	1.00	1.00	1.00	1.00	1.00	1.02	1.02	1.04	1.26			8.33	8.50	8.28
Samba-Mayela, Cyréna (FRA) (2000)	time	2.50	3.56	4.56	5.56	6.60	7.64	8.70	9.74	10.80	11.90		13.15	2 / 4			
	reaction time	0.108													3.06	3.14	3.20
	interval velocity		1.06	1.00	1.00	1.04	1.04	1.06	1.04	1.06	1.10	1.25			8.33	8.12	7.97

Date: 2022.07.23

Wind: -0.3 m/s

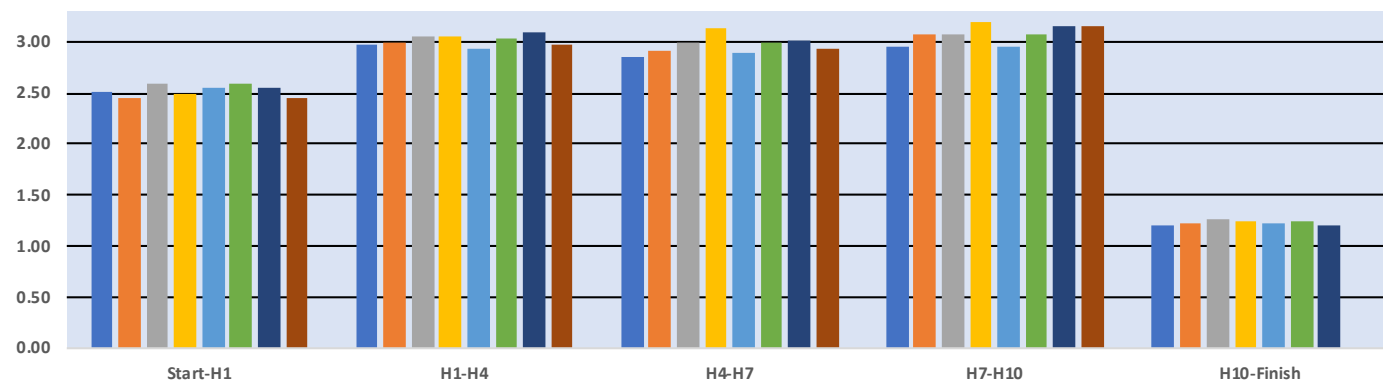
Heat 1

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Anderson, Britany (JAM) (2001)	time	2.56	3.56	4.55	5.50	6.46	7.43	8.40	9.38	10.36	11.36		12.59	4 / 1			
	reaction time	0.153													2.94	2.90	2.96
	interval velocity		1.00	0.99	0.95	0.96	0.97	0.98	0.98	0.98	1.00	1.23			8.67	8.79	8.61
Harrison, Michelle (CAN) (1992)	time	2.60	3.63	4.63	5.63	6.63	7.63	8.63	9.63	10.66	11.70		12.95	2 / 2			
	reaction time	0.137													3.03	3.00	3.07
	interval velocity		1.03	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.04	1.25			8.42	8.50	8.31
Graversgaard, Mette (DEN) (1995)	time	2.56	3.63	4.63	5.65	6.67	7.67	8.67	9.70	10.78	11.83		13.04	3 / 3			
	reaction time	0.130													3.09	3.02	3.16
	interval velocity		1.07	1.00	1.02	1.02	1.00	1.00	1.03	1.08	1.05	1.21			8.25	8.44	8.07
Ali, Nia (USA) (1988)	time	2.46	3.46	4.46	5.44	6.42	7.40	8.38	9.36	10.34	11.53		dnf	5 / --			
	reaction time	0.130													2.98	2.94	3.15
	interval velocity		1.00	1.00	0.98	0.98	0.98	0.98	0.98	0.98	1.19				8.56	8.67	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=ZvR4Zms45Aq&t=19s>

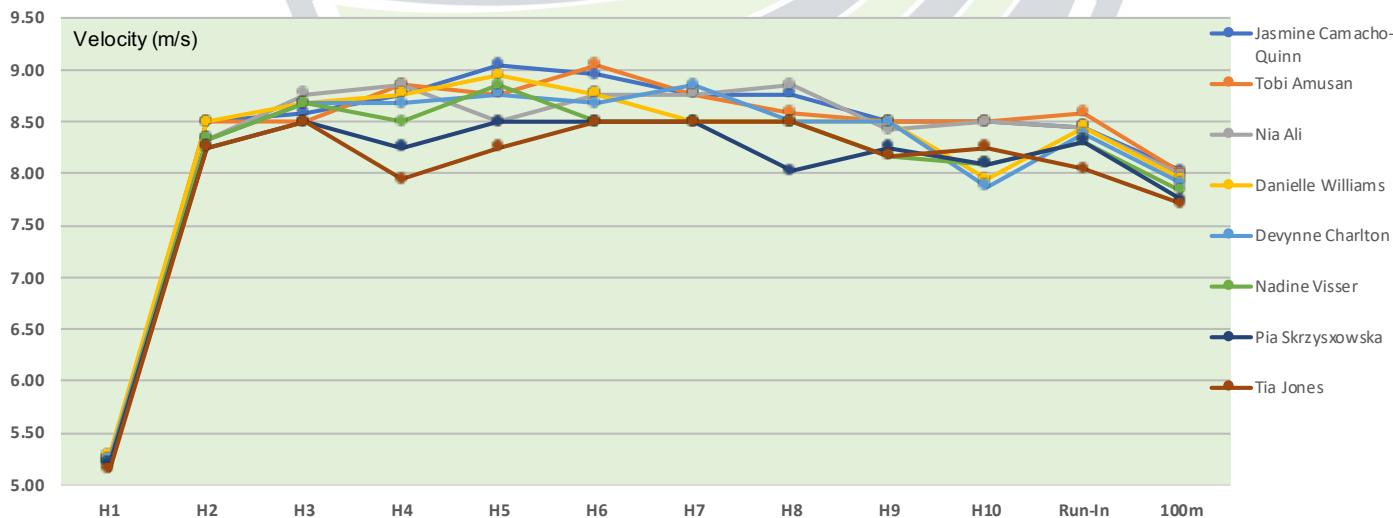
2022 Bauhaus Galan (Stockholm, SWE) (TV Analysis)

100m Hurdles

Date: 2022.06.30 Wind: -0.5 m/s

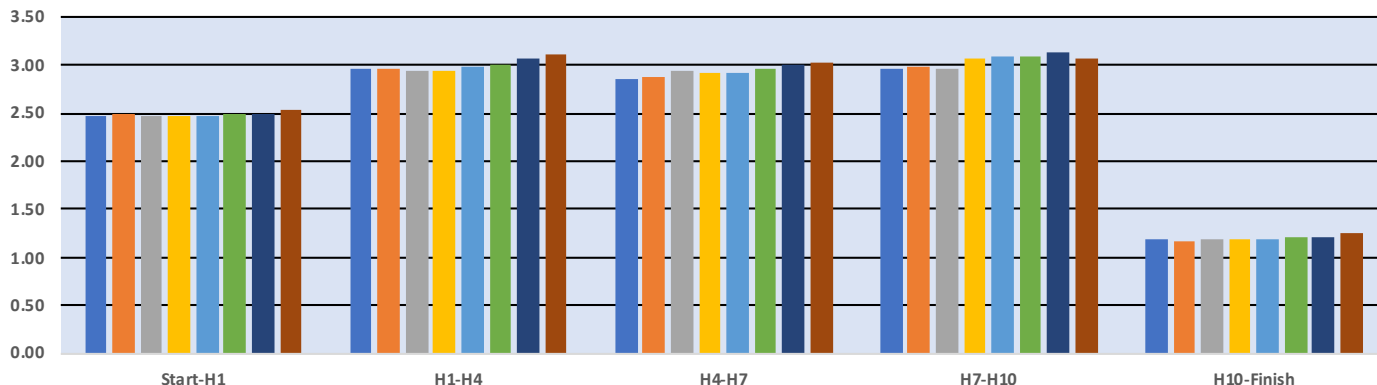
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Camacho-Quinn, Jasmine (PUR) (199)	time	2.48	3.48	4.47	5.44	6.38	7.33	8.30	9.27	10.27	11.27		12.46	5 / 1			
	reaction time	0.143													2.96	2.86	2.97
	interval		1.00	0.99	0.97	0.94	0.95	0.97	0.97	1.00	1.00	1.19			8.61	8.92	8.59
	velocity	5.24	8.50	8.59	8.76	9.04	8.95	8.76	8.76	8.50	8.50	8.45	8.03				
Amusan, Tobi (NGR) (1997)	time	2.50	3.50	4.50	5.46	6.43	7.37	8.34	9.33	10.33	11.33		12.50	4 / 2			
	reaction time	0.147													2.96	2.88	2.99
	interval		1.00	1.00	0.96	0.97	0.94	0.97	0.99	1.00	1.00	1.17			8.61	8.85	8.53
	velocity	5.20	8.50	8.50	8.85	8.76	9.04	8.76	8.59	8.50	8.50	8.59	8.00				
Ali, Nia (USA) (1988)	time	2.48	3.50	4.47	5.43	6.43	7.40	8.37	9.33	10.34	11.34		12.53	6 / 3			
	reaction time	0.160													2.95	2.94	2.97
	interval		1.02	0.97	0.96	1.00	0.97	0.97	0.96	1.01	1.00	1.19			8.64	8.67	8.59
	velocity	5.24	8.33	8.76	8.85	8.50	8.76	8.76	8.85	8.42	8.50	8.45	7.98				
Williams, Danielle (JAM) (1992)	time	2.46	3.46	4.44	5.41	6.36	7.33	8.33	9.33	10.33	11.40		12.59	2 / 4			
	reaction time	0.130													2.95	2.92	3.07
	interval		1.00	0.98	0.97	0.95	0.97	1.00	1.00	1.00	1.07	1.19			8.64	8.73	8.31
	velocity	5.28	8.50	8.67	8.76	8.95	8.76	8.50	8.50	8.50	7.94	8.45	7.94				
Charlton, Devynne (BAH) (1995)	time	2.48	3.50	4.48	5.46	6.43	7.41	8.37	9.37	10.37	11.45		12.65	7 / 5			
	reaction time	0.145													2.98	2.91	3.08
	interval		1.02	0.98	0.98	0.97	0.98	0.96	1.00	1.00	1.08	1.20			8.56	8.76	8.28
	velocity	5.24	8.33	8.67	8.67	8.76	8.67	8.85	8.50	8.50	7.87	8.37	7.91				
Visser, Nadine (NED) (1995)	time	2.50	3.52	4.50	5.50	6.46	7.46	8.46	9.46	10.50	11.55		12.76	1 / 6			
	reaction time	0.136													3.00	2.96	3.09
	interval		1.02	0.98	1.00	0.96	1.00	1.00	1.00	1.04	1.05	1.21			8.50	8.61	8.25
	velocity	5.20	8.33	8.67	8.50	8.85	8.50	8.50	8.50	8.17	8.10	8.31	7.84				
Skrzysowska, Pia (POL) (2001)	time	2.50	3.53	4.53	5.56	6.56	7.56	8.56	9.62	10.65	11.70		12.91	8 / 7			
	reaction time	0.132													3.06	3.00	3.14
	interval		1.03	1.00	1.03	1.00	1.00	1.00	1.06	1.03	1.05	1.21			8.33	8.50	8.12
	velocity	5.20	8.25	8.50	8.25	8.50	8.50	8.50	8.02	8.25	8.10	8.31	7.75				
Jones, Tia (USA) (2000)	time	2.53	3.56	4.56	5.63	6.66	7.66	8.66	9.66	10.70	11.73		12.98	3 / 8			
	reaction time	0.166													3.10	3.03	3.07
	interval		1.03	1.00	1.07	1.03	1.00	1.00	1.00	1.04	1.03	1.25			8.23	8.42	8.31
	velocity	5.14	8.25	8.50	7.94	8.25	8.50	8.50	8.50	8.17	8.25	8.04	7.70				



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=qaQM92wRqBM&t=19s>

2022 USATF National Championships (Eugene, OR) (TV Analysis)

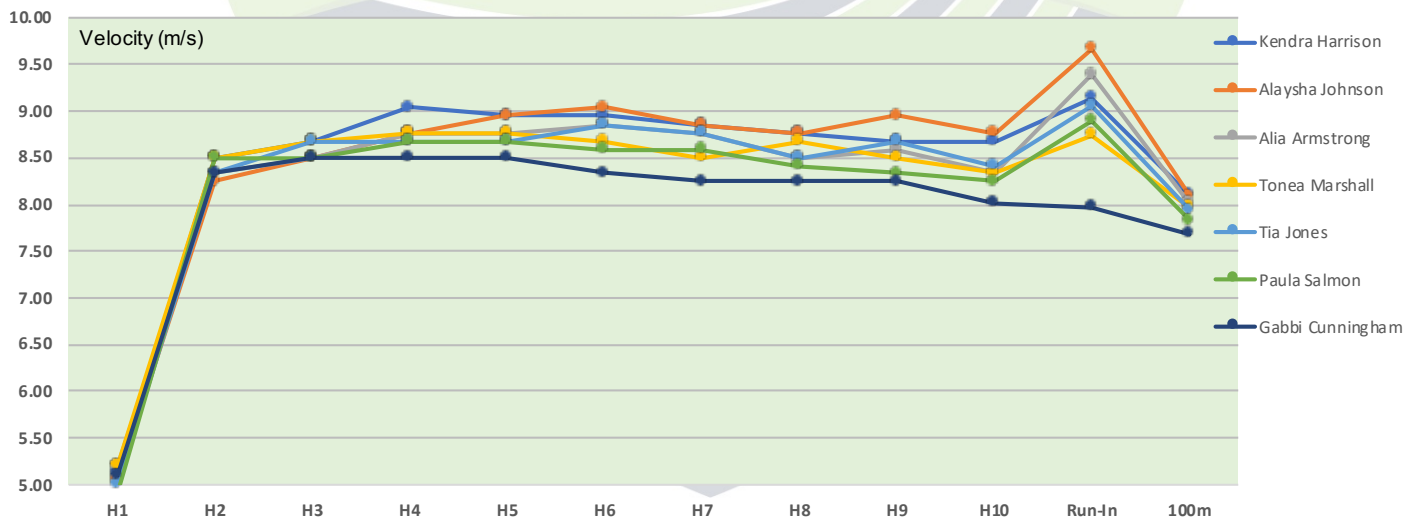
100m Hurdles

Date: 2022.06.25

Wind: -1.4 m/s

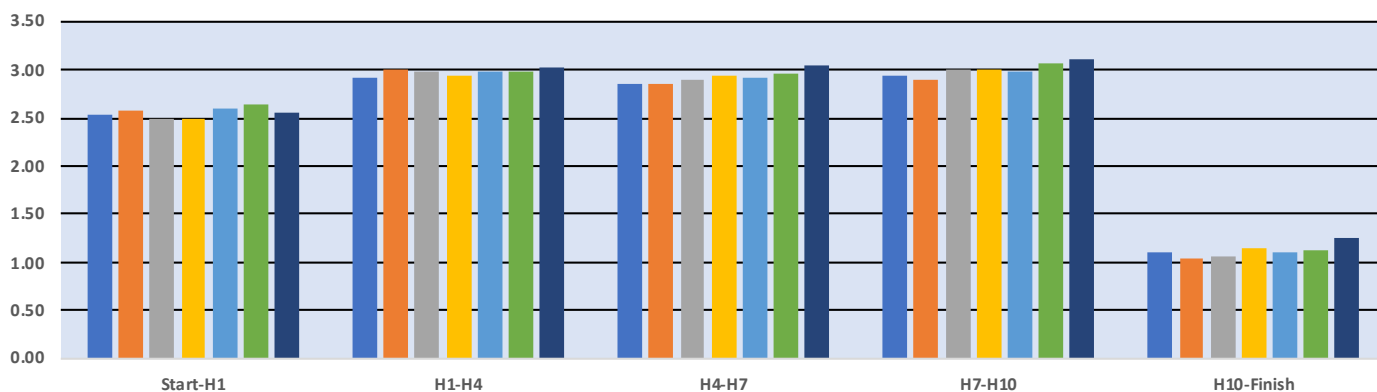
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Harrison, Kendra (USA) (1992)	time	2.53	3.53	4.51	5.45	6.40	7.35	8.31	9.28	10.26	11.24		12.34	5 / 1			
	reaction time														2.92	2.86	2.93
	interval		1.00	0.98	0.94	0.95	0.95	0.96	0.97	0.98	0.98	1.10			8.73	8.92	8.70
Johnson, Alaysha (USA) (1996)	time	2.57	3.60	4.60	5.57	6.52	7.46	8.42	9.39	10.34	11.31		12.35	7 / 2			
	reaction time														3.00	2.85	2.89
	interval		1.03	1.00	0.97	0.95	0.94	0.96	0.97	0.95	0.97	1.04	PB		8.50	8.95	8.82
Armstrong, Alia (USA) (2000)	time	2.50	3.52	4.52	5.49	6.46	7.42	8.39	9.39	10.38	11.40		12.47	8 / 3			
	reaction time														2.99	2.90	3.01
	interval		1.02	1.00	0.97	0.97	0.96	0.97	1.00	0.99	1.02	1.07	PB		8.53	8.79	8.47
Marshall, Tonea (USA) (1998)	time	2.50	3.50	4.48	5.45	6.42	7.40	8.40	9.38	10.38	11.40		12.55	3 / 4			
	reaction time														2.95	2.95	3.00
	interval		1.00	0.98	0.97	0.97	0.98	1.00	0.98	1.00	1.02	1.15			8.64	8.64	8.50
Jones, Tia (USA) (2000)	time	2.60	3.62	4.60	5.58	6.56	7.52	8.49	9.49	10.47	11.48		12.59	4 / 5			
	reaction time														2.98	2.91	2.99
	interval		1.02	0.98	0.98	0.98	0.96	0.97	1.00	0.98	1.01	1.11			8.56	8.76	8.53
Salmon, Paula (USA) (1999)	time	2.65	3.65	4.65	5.63	6.61	7.60	8.59	9.60	10.62	11.65		12.78	2 / 6			
	reaction time														2.98	2.96	3.06
	interval		1.00	1.00	0.98	0.98	0.99	0.99	1.01	1.02	1.03	1.13			8.56	8.61	8.33
Cunningham, Gabriele (USA) (1998)	time	2.55	3.57	4.57	5.57	6.57	7.59	8.62	9.65	10.68	11.74		13.00	9 / 7			
	reaction time														3.02	3.05	3.12
	interval		1.02	1.00	1.00	1.00	1.02	1.03	1.03	1.03	1.06	1.26			8.44	8.36	8.17
	velocity																



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=qa0M92wRqBM&t=19s>

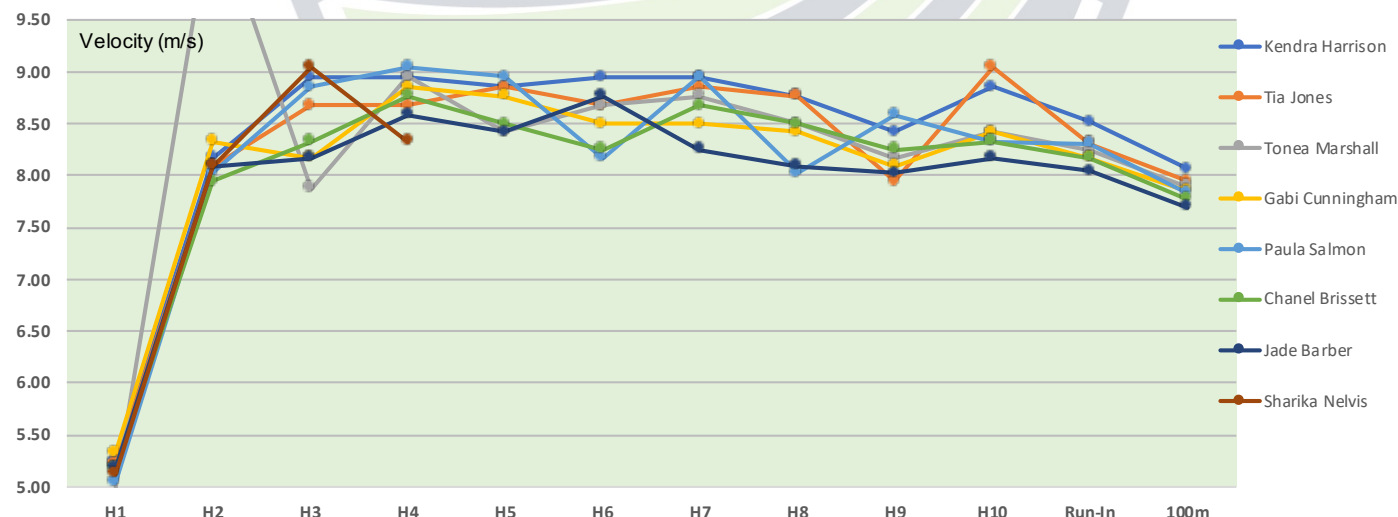
2022 USATF National Championships (Eugene, OR)

100m Hurdles

Date: 2022.06.25 Wind: -0.1 m/s

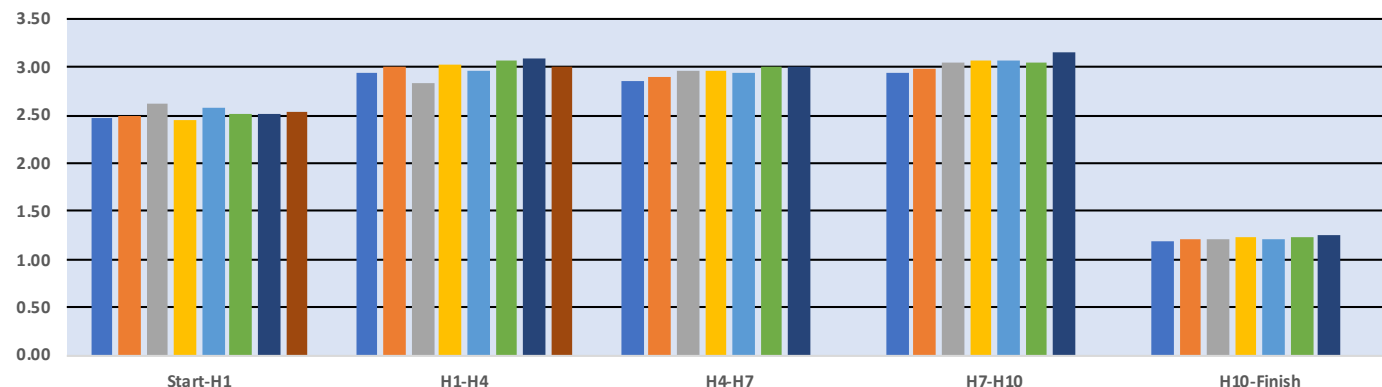
Semi-Final 2

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Harrison, Kendra (USA) (1992)	time	2.48	3.52	4.47	5.42	6.38	7.33	8.28	9.25	10.26	11.22	12.40	12.40	6 / 1			
	reaction time														2.94	2.86	2.94
	interval		1.04	0.95	0.95	0.96	0.95	0.95	0.97	1.01	0.96	1.18			8.67	8.92	8.67
	velocity	5.24	8.17	8.95	8.95	8.85	8.95	8.95	8.76	8.42	8.85	8.52	8.06				
Jones, Tia (USA) (2000)	time	2.49	3.54	4.52	5.50	6.46	7.44	8.40	9.37	10.44	11.38	12.59	12.59	5 / 2			
	reaction time														3.01	2.90	2.98
	interval		1.05	0.98	0.98	0.96	0.98	0.96	0.97	1.07	0.94	1.21			8.47	8.79	8.56
	velocity	5.22	8.10	8.67	8.67	8.85	8.67	8.85	8.76	7.94	9.04	8.31	7.94				
Marshall, Tonea (USA) (1998)	time	2.61	3.41	4.49	5.44	6.45	7.43	8.40	9.40	10.44	11.45	12.67	12.67	4 / 3			
	reaction time														2.83	2.96	3.05
	interval		0.80	1.08	0.95	1.01	0.98	0.97	1.00	1.04	1.01	1.22			9.01	8.61	8.36
	velocity	4.98	10.63	7.87	8.95	8.42	8.67	8.76	8.50	8.17	8.42	8.24	7.89				
Cunningham, Gabriele (USA) (1998)	time	2.44	3.46	4.50	5.46	6.43	7.43	8.43	9.44	10.49	11.50	12.73	12.73	3 / 4			
	reaction time														3.02	2.97	3.07
	interval		1.02	1.04	0.96	0.97	1.00	1.00	1.01	1.05	1.01	1.23			8.44	8.59	8.31
	velocity	5.33	8.33	8.17	8.85	8.76	8.50	8.50	8.42	8.10	8.42	8.17	7.86				
Salmon, Paula (USA) (1999)	time	2.58	3.64	4.60	5.54	6.49	7.53	8.48	9.54	10.53	11.55	12.76	12.76	7 / 5			
	reaction time														2.96	2.94	3.07
	interval		1.06	0.96	0.94	0.95	1.04	0.95	1.06	0.99	1.02	1.21			8.61	8.67	8.31
	velocity	5.04	8.02	8.85	9.04	8.95	8.17	8.95	8.02	8.59	8.33	8.31	7.84				
Brissett, Chanel (USA) (1999)	time	2.51	3.58	4.60	5.57	6.57	7.60	8.58	9.58	10.61	11.63	12.86	12.86	8 / 6			
	reaction time														3.06	3.01	3.05
	interval		1.07	1.02	0.97	1.00	1.03	0.98	1.00	1.03	1.02	1.23			8.33	8.47	8.36
	velocity	5.18	7.94	8.33	8.76	8.50	8.25	8.67	8.50	8.25	8.33	8.17	7.78				
Barber, Jade (USA) (1993)	time	2.51	3.56	4.60	5.59	6.60	7.57	8.60	9.65	10.71	11.75	13.00	13.00	2 / 7			
	reaction time														3.08	3.01	3.15
	interval		1.05	1.04	0.99	1.01	0.97	1.03	1.05	1.06	1.04	1.25			8.28	8.47	8.10
	velocity	5.18	8.10	8.17	8.59	8.42	8.76	8.25	8.10	8.02	8.17	8.04	7.69				
Nelvis, Sharika (USA) (1990)	time	2.54	3.59	4.53	5.55									dnf			
	reaction time														3.01		
	interval		1.05	0.94	1.02										8.47		
	velocity	5.12	8.10	9.04	8.33												



Time Intervals (s)

Hurdle Phases



Source: USATF (2022) - Results powered by Karmarush.com. Retrieved from <https://results.usatf.org/2022Outdoors/>
 Times taken at the exact hurdle distances, the athlete is on top of the hurdle

Video: No Video Found

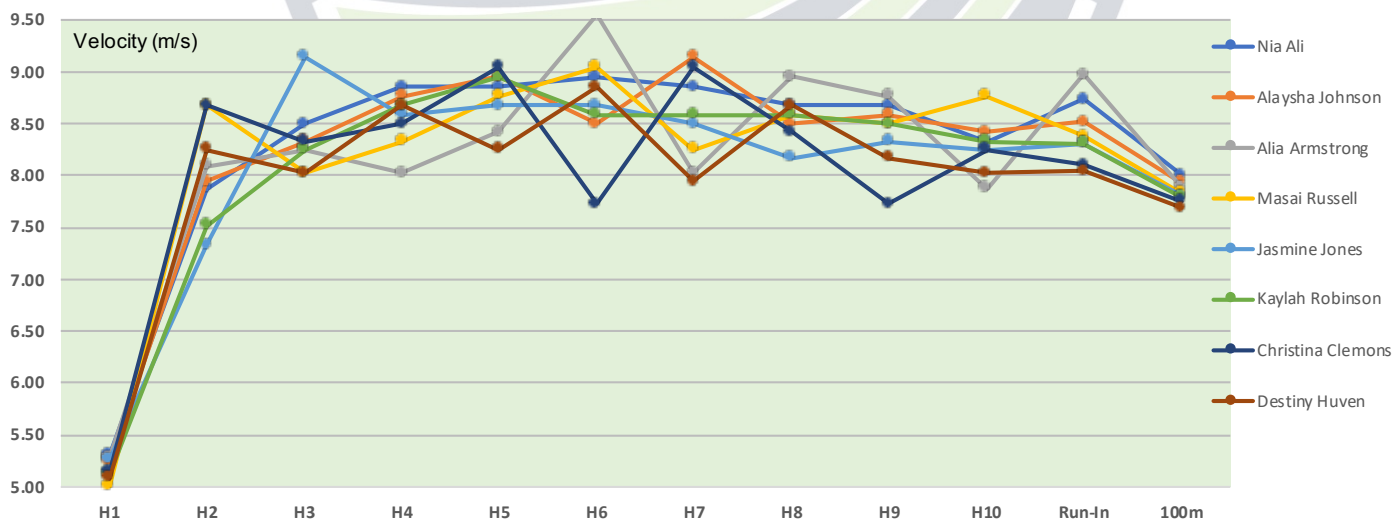
2022 USATF National Championships (Eugene, OR)

100m Hurdles

Date: 2022.06.25 Wind: 0.8 m/s

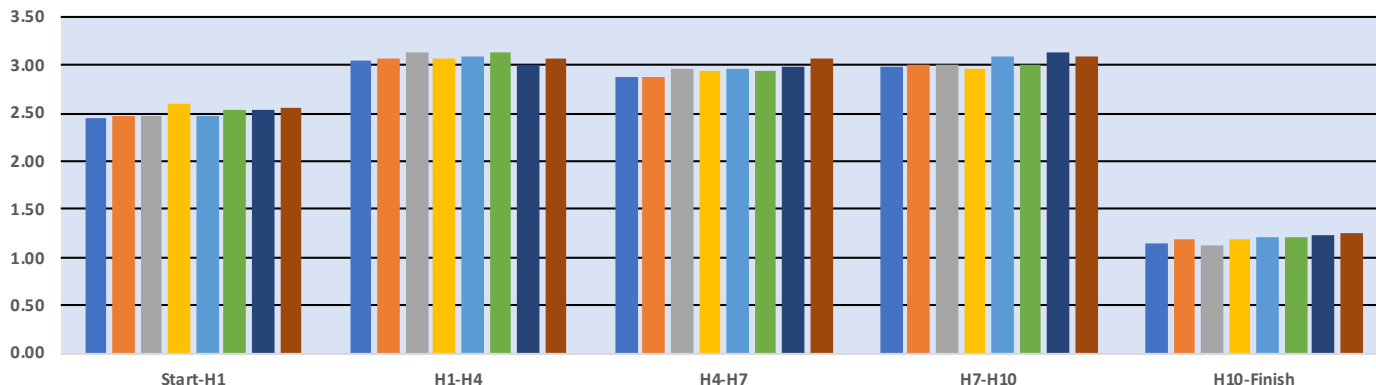
Semi-Final 1

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Ali, Nia (USA) (1988)	time	2.45	3.53	4.53	5.49	6.45	7.40	8.36	9.34	10.32	11.34	12.49	12.49	6 / 1	3.04	2.87	2.98
	reaction time		1.08	1.00	0.96	0.96	0.95	0.96	0.98	0.98	1.02	1.15					
	velocity	5.31	7.87	8.50	8.85	8.85	8.95	8.85	8.67	8.67	8.33	8.74	8.01				
Johnson, Alaysha (USA) (1996)	time	2.48	3.55	4.57	5.54	6.49	7.49	8.42	9.42	10.41	11.42	12.60	12.60	4 / 2	3.06	2.88	3.00
	reaction time		1.07	1.02	0.97	0.95	1.00	0.93	1.00	0.99	1.01	1.18					
	velocity	5.24	7.94	8.33	8.76	8.95	8.50	9.14	8.50	8.59	8.42	8.52	7.94				
Armstrong, Alia (USA) (2000)	time	2.46	3.51	4.54	5.60	6.61	7.50	8.56	9.51	10.48	11.56	12.68	12.68	7 / 3	3.14	2.96	3.00
	reaction time		1.05	1.03	1.06	1.01	0.89	1.06	0.95	0.97	1.08	1.12					
	velocity	5.28	8.10	8.25	8.02	8.42	9.55	8.02	8.95	8.76	7.87	8.97	7.89				
Russell, Masai (USA) (2000)	time	2.60	3.58	4.64	5.66	6.63	7.57	8.60	9.59	10.59	11.56	12.76	12.76	5 / 4	3.06	2.94	2.96
	reaction time		0.98	1.06	1.02	0.97	0.94	1.03	0.99	1.00	0.97	1.20					
	velocity	5.00	8.67	8.02	8.33	8.76	9.04	8.25	8.59	8.50	8.76	8.38	7.84				
Jones, Jasmine (USA) (2001)	time	2.47	3.63	4.56	5.55	6.53	7.51	8.51	9.55	10.57	11.60	12.81	12.81	8 / 5	3.08	2.96	3.09
	reaction time		1.16	0.93	0.99	0.98	0.98	1.00	1.04	1.02	1.03	1.21					
	velocity	5.26	7.33	9.14	8.59	8.67	8.67	8.50	8.17	8.33	8.25	8.31	7.81				
Robinson, Kaylah (USA) (1999)	time	2.54	3.67	4.70	5.68	6.63	7.62	8.61	9.60	10.60	11.62	12.83	12.83	9 / 6	3.14	2.93	3.01
	reaction time		1.13	1.03	0.98	0.95	0.99	0.99	0.99	1.00	1.02	1.21					
	velocity	5.12	7.52	8.25	8.67	8.95	8.59	8.59	8.59	8.50	8.33	8.31	7.79				
Clemons, Christina (USA) (1990)	time	2.53	3.51	4.53	5.53	6.47	7.57	8.51	9.52	10.62	11.65	12.89	12.89	3 / 7	3.00	2.98	3.14
	reaction time		0.98	1.02	1.00	0.94	1.10	0.94	1.01	1.10	1.03	1.24					
	velocity	5.14	8.67	8.33	8.50	9.04	7.73	9.04	8.42	7.73	8.25	8.10	7.76				
Huven, Destiny (USA) (2001)	time	2.56	3.59	4.65	5.63	6.66	7.62	8.69	9.67	10.71	11.77	13.02	13.02	2 / 8	3.07	3.06	3.08
	reaction time		1.03	1.06	0.98	1.03	0.96	1.07	0.98	1.04	1.06	1.25					
	velocity	5.08	8.25	8.02	8.67	8.25	8.85	7.94	8.67	8.17	8.02	8.04	7.68				



Time Intervals (s)

Hurdle Phases



Source: USATF (2022) - Results powered by Karmarush.com. Retrieved from <https://results.usatf.org/2022Outdoors/>
 Times taken at the exact hurdle distances, the athlete is on top of the hurdle

Video: No Video Found

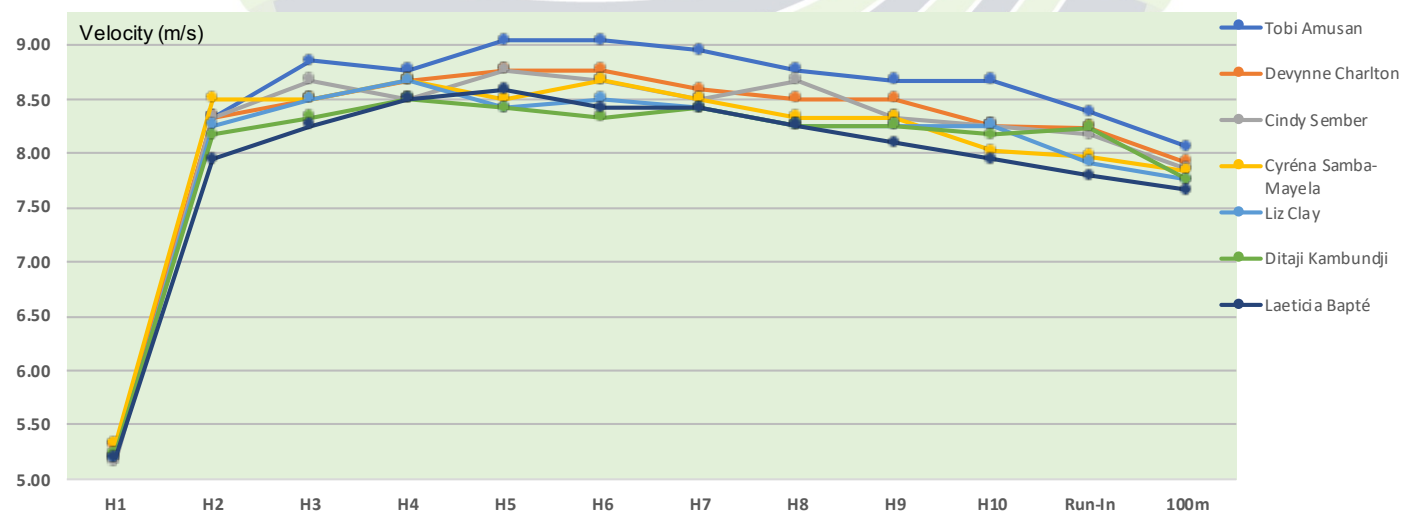
2022 Meeting de Paris (Paris, FRA) (TV Analysis)

100m Hurdles

Date: 2022.06.18 Wind: -0.4 m/s

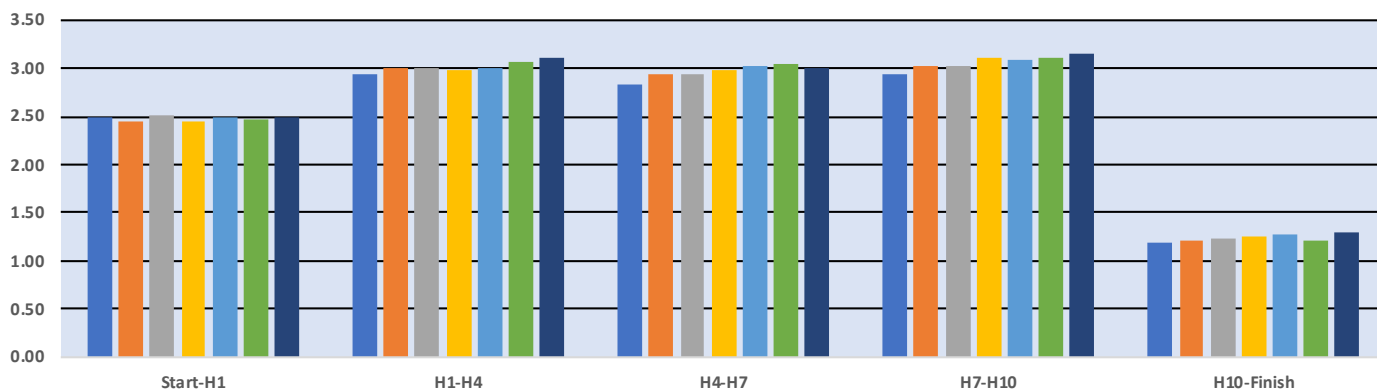
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Amusan, Tobi (NGR) (1997)	time	2.50	3.52	4.48	5.45	6.39	7.33	8.28	9.25	10.23	11.21	12.41	12.41	5 / 1			
	reaction time	0.159											NR PB		2.95	2.83	2.93
	interval		1.02	0.96	0.97	0.94	0.94	0.95	0.97	0.98	0.98	1.20	8.06		8.64	9.01	8.70
	velocity	5.20	8.33	8.85	8.76	9.04	9.04	8.95	8.76	8.67	8.67	8.38	8.06				
Charlton, Devynne (BAH) (1995)	time	2.45	3.47	4.47	5.45	6.42	7.39	8.38	9.38	10.38	11.41		12.63	7 / 2			
	reaction time	0.153										1.22			3.00	2.93	3.03
	interval		1.02	1.00	0.98	0.97	0.97	0.99	1.00	1.00	1.03	1.22	7.92		8.50	8.70	8.42
	velocity	5.31	8.33	8.50	8.67	8.76	8.76	8.59	8.50	8.50	8.25	8.24	7.92				
Sember, Cindy (GBR) (1994)	time	2.52	3.54	4.52	5.52	6.49	7.47	8.47	9.45	10.47	11.50		12.73	3 / 3			
	reaction time	0.161										1.23			3.00	2.95	3.03
	interval		1.02	0.98	1.00	0.97	0.98	1.00	0.98	1.02	1.03	1.23	7.86		8.50	8.64	8.42
	velocity	5.16	8.33	8.67	8.50	8.76	8.67	8.50	8.67	8.33	8.25	8.17	7.86				
Samba-Mayela, Cyréna (FRA) (2000)	time	2.44	3.44	4.44	5.42	6.42	7.40	8.40	9.42	10.44	11.50		12.76	4 / 4			
	reaction time	0.123										1.26			2.98	2.98	3.10
	interval		1.00	1.00	0.98	1.00	0.98	1.00	1.02	1.02	1.06	1.26	7.84		8.56	8.56	8.23
	velocity	5.33	8.50	8.50	8.67	8.50	8.67	8.50	8.33	8.33	8.02	7.98	7.84				
Clay, Liz (AUS) (1995)	time	2.50	3.53	4.53	5.51	6.52	7.52	8.53	9.56	10.59	11.62		12.89	6 / 5			
	reaction time	0.149										1.27			3.01	3.02	3.09
	interval		1.03	1.00	0.98	1.01	1.00	1.01	1.03	1.03	1.03	1.27	7.76		8.47	8.44	8.25
	velocity	5.20	8.25	8.50	8.67	8.42	8.50	8.42	8.25	8.25	8.25	7.91	7.76				
Kambundji, Ditaji (SUI) (2002)	time	2.48	3.52	4.54	5.54	6.55	7.57	8.58	9.61	10.64	11.68		12.90	1 / 6			
	reaction time	0.145										1.22			3.06	3.04	3.10
	interval		1.04	1.02	1.00	1.01	1.02	1.01	1.03	1.03	1.04	1.22	7.75		8.33	8.39	8.23
	velocity	5.24	8.17	8.33	8.50	8.42	8.33	8.42	8.25	8.25	8.17	7.75					
Bapté, Laetitia (FRA) (1999)	time	2.50	3.57	4.60	5.60	6.59	7.60	8.61	9.64	10.69	11.76		13.05	2 / 7			
	reaction time	0.157										1.29			3.10	3.01	3.15
	interval		1.07	1.03	1.00	0.99	1.01	1.01	1.03	1.03	1.05	1.29	7.66		8.23	8.47	8.10
	velocity	5.20	7.94	8.25	8.50	8.59	8.42	8.42	8.25	8.10	7.94	7.79	7.66				



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1280 x 720 @ 50fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=0Onww33Czs>

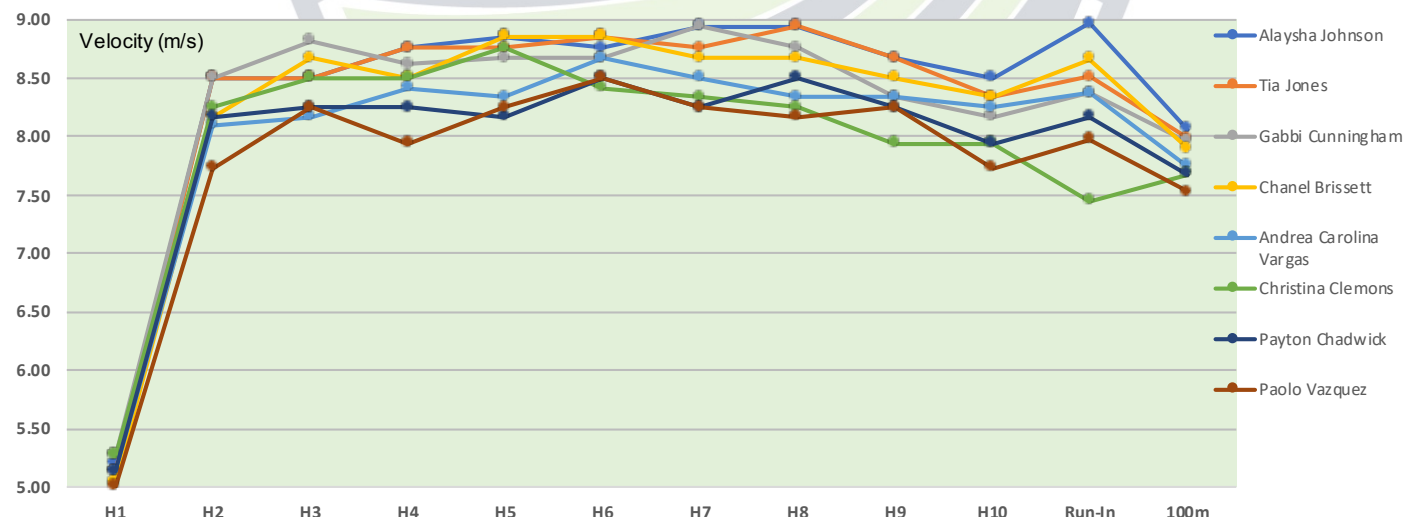
2022 New York Grand Prix (New York, NY) (TV Analysis)

100m Hurdles

Date: 2022.06.12 Wind: 2.0 m/s

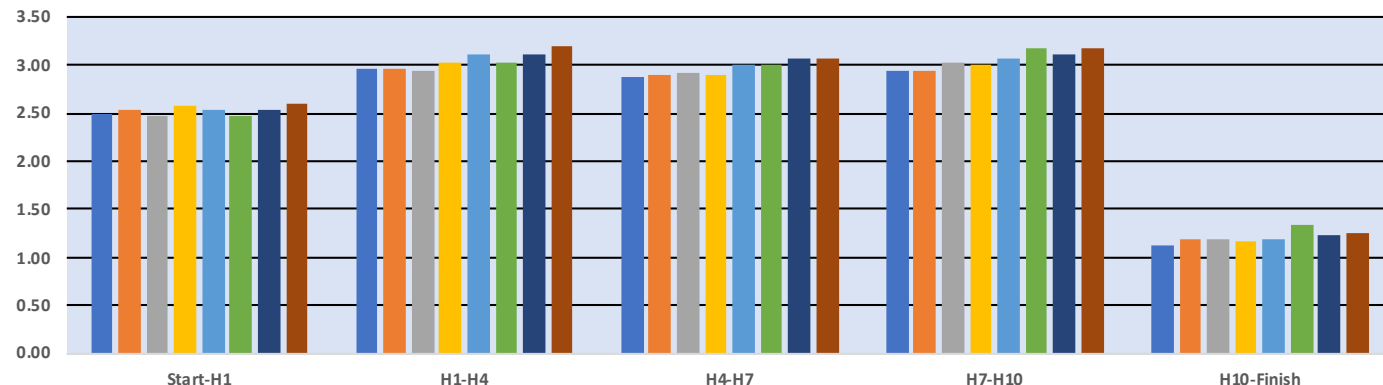
FINAL

		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	2.50	3.50	4.50	5.47	6.43	7.40	8.35	9.30	10.28	11.28	12.40	12.40	4 / 1			
	reaction time	0.153													2.97	2.88	2.93
	interval		1.00	1.00	0.97	0.96	0.97	0.95	0.95	0.98	1.00	1.12	PB		8.59	8.85	8.70
	velocity	5.20	8.50	8.50	8.76	8.85	8.76	8.95	8.95	8.67	8.50	8.97	8.06				
Jones, Tia (USA) (2000)	time	2.53	3.53	4.53	5.50	6.47	7.43	8.40	9.35	10.33	11.35	12.53	12.53	6 / 2			
	reaction time	0.161													2.97	2.90	2.95
	interval		1.00	1.00	0.97	0.97	0.96	0.97	0.95	0.98	1.02	1.18			8.59	8.79	8.64
	velocity	5.14	8.50	8.50	8.76	8.76	8.85	8.76	8.95	8.67	8.33	8.52	7.98				
Cunningham, Gabriele (USA) (1998)	time	2.47	3.47	4.43	5.42	6.40	7.38	8.33	9.30	10.32	11.36	12.56	12.56	5 / 3			
	reaction time	0.160													2.95	2.91	3.03
	interval		1.00	0.96	0.99	0.98	0.98	0.95	0.97	1.02	1.04	1.20			8.64	8.76	8.42
	velocity	5.26	8.50	8.82	8.62	8.67	8.67	8.95	8.76	8.33	8.17	8.37	7.96				
Brissett, Chanel (USA) (1999)	time	2.58	3.62	4.60	5.60	6.56	7.52	8.50	9.48	10.48	11.50	12.66	12.66	8 / 4			
	reaction time	0.160													3.02	2.90	3.00
	interval		1.04	0.98	1.00	0.96	0.96	0.98	0.98	1.00	1.02	1.16			8.44	8.79	8.50
	velocity	5.04	8.17	8.67	8.50	8.85	8.85	8.67	8.67	8.50	8.33	8.66	7.90				
Vargas, Andrea Carolina (CRC) (1996)	time	2.53	3.58	4.62	5.63	6.65	7.63	8.63	9.65	10.67	11.70	12.90	12.90	7 / 5			
	reaction time	0.124													3.10	3.00	3.07
	interval		1.05	1.04	1.01	1.02	0.98	1.00	1.02	1.02	1.03	1.20			8.23	8.50	8.31
	velocity	5.14	8.10	8.17	8.42	8.33	8.67	8.50	8.33	8.33	8.25	8.37	7.75				
Clemons, Christina (USA) (1990)	time	2.47	3.50	4.50	5.50	6.47	7.48	8.50	9.53	10.60	11.67	13.02	13.02	3 / 6			
	reaction time	0.127													3.03	3.00	3.17
	interval		1.03	1.00	1.00	0.97	1.01	1.02	1.03	1.07	1.07	1.35			8.42	8.50	8.04
	velocity	5.26	8.25	8.50	8.50	8.76	8.42	8.33	8.25	7.94	7.94	7.44	7.68				
Chadwick, Payton (USA) (1995)	time	2.53	3.57	4.60	5.63	6.67	7.67	8.70	9.70	10.73	11.80	13.03	13.03	2 / 7			
	reaction time	0.159													3.10	3.07	3.10
	interval		1.04	1.03	1.03	1.04	1.00	1.03	1.00	1.03	1.07	1.23			8.23	8.31	8.23
	velocity	5.14	8.17	8.25	8.25	8.17	8.50	8.25	8.50	8.25	7.94	8.17	7.67				
Vazquez, Paolo (PUR) (1998)	time	2.60	3.70	4.73	5.80	6.83	7.83	8.86	9.90	10.93	12.03	13.29	13.29	1 / 8			
	reaction time	0.179													3.20	3.06	3.17
	interval		1.10	1.03	1.07	1.03	1.00	1.03	1.04	1.03	1.10	1.26			7.97	8.33	8.04
	velocity	5.00	7.73	8.25	7.94	8.25	8.50	8.25	8.17	8.25	7.73	7.98	7.52				



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=9PMsox9_mYA&t=20s

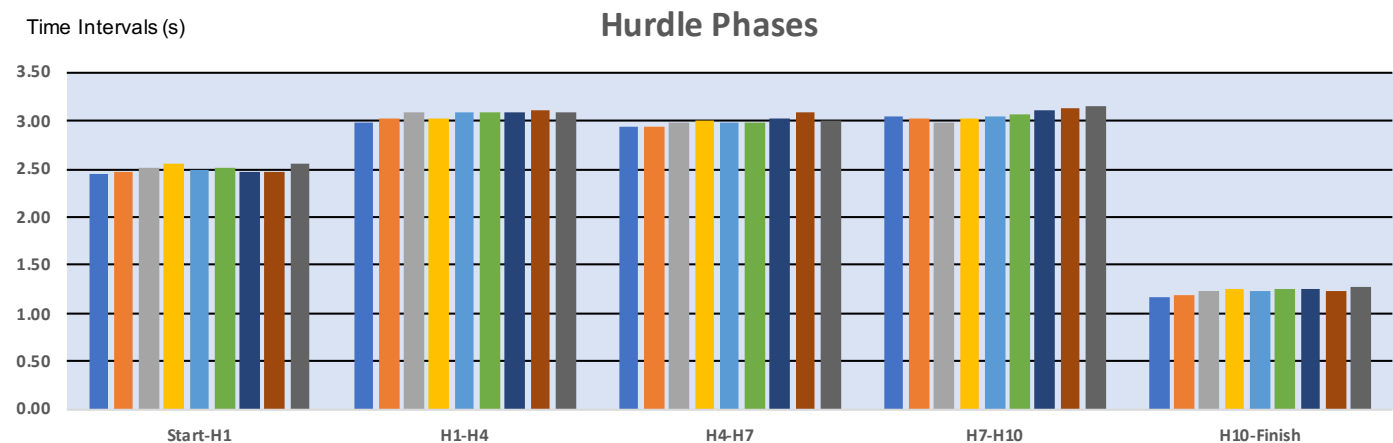
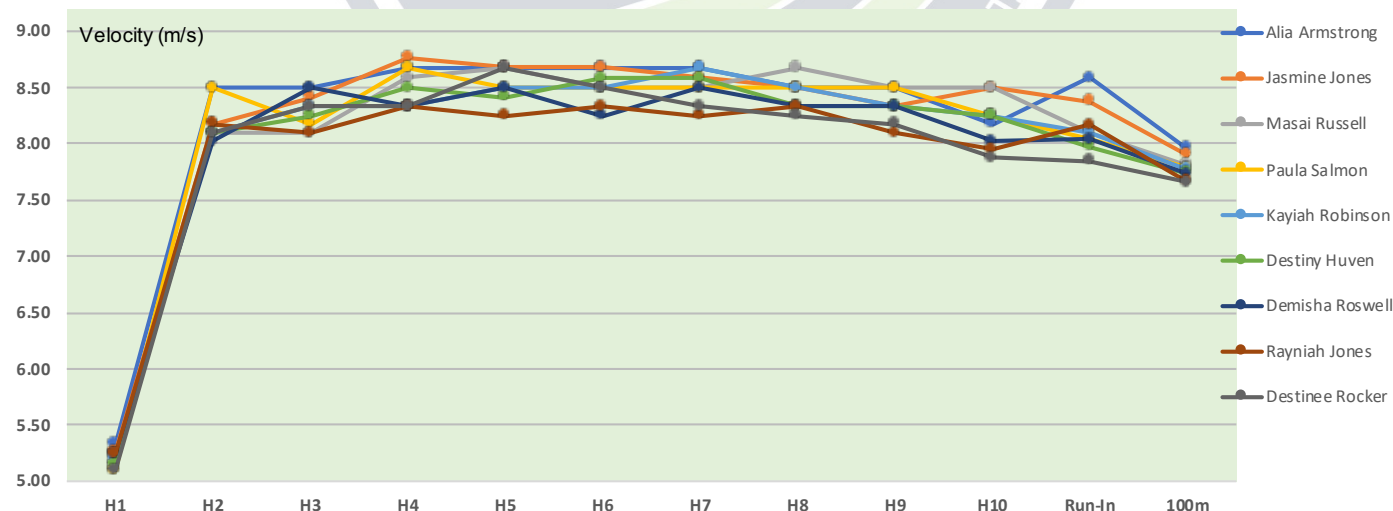
2022 NCAA Championships (Eugene, OR) (TV Analysis)

100m Hurdles

Date: 2022.06.11 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
Armstrong, Alia (USA) (2000)	time	2.44	3.44	4.44	5.42	6.40	7.38	8.36	9.36	10.36	11.40		12.57	5 / 1			
	reaction time														2.98	2.94	3.04
	interval		1.00	1.00	0.98	0.98	0.98	0.98	1.00	1.00	1.04	1.17			8.56	8.67	8.39
Jones, Jasmine (USA) (2001)	time	2.47	3.51	4.52	5.49	6.47	7.45	8.44	9.44	10.46	11.46		12.66	7 / 2			
	reaction time														3.02	2.95	3.02
	interval		1.04	1.01	0.97	0.98	0.98	0.99	1.00	1.02	1.00	1.20			8.44	8.64	8.44
Russell, Masai (USA) (2000)	time	2.52	3.57	4.62	5.61	6.59	7.59	8.59	9.57	10.57	11.57		12.81	4 / 3			
	reaction time														3.09	2.98	2.98
	interval		1.05	1.05	0.99	0.98	1.00	1.00	0.98	1.00	1.00	1.24			8.25	8.56	8.56
Salmon, Paula (USA) (1999)	time	2.55	3.55	4.59	5.57	6.57	7.57	8.57	9.57	10.57	11.60		12.85	6 / 4			
	reaction time														3.02	3.00	3.03
	interval		1.00	1.04	0.98	1.00	1.00	1.00	1.00	1.00	1.03	1.25			8.44	8.50	8.42
Robinson, Kaylah (USA) (1999)	time	2.50	3.55	4.57	5.59	6.59	7.59	8.57	9.57	10.59	11.62		12.86	3 / 5			
	reaction time														3.09	2.98	3.05
	interval		1.05	1.02	1.02	1.00	1.00	0.98	1.00	1.02	1.03	1.24			8.25	8.56	8.36
Huven, Destiny (USA) (2001)	time	2.52	3.57	4.60	5.60	6.61	7.60	8.59	9.61	10.63	11.66		12.92	2 / 6			
	reaction time														3.08	2.99	3.07
	interval		1.05	1.03	1.00	1.01	0.99	0.99	1.02	1.02	1.03	1.26			8.28	8.53	8.31
Roswell, Demisha (JAM) (1998)	time	2.48	3.54	4.54	5.56	6.56	7.59	8.59	9.61	10.63	11.69		12.94	8 / 7			
	reaction time														3.08	3.03	3.10
	interval		1.06	1.00	1.02	1.00	1.03	1.00	1.02	1.02	1.06	1.25			8.28	8.42	8.23
Jones, Rayniah (USA) (2001)	time	2.48	3.52	4.57	5.59	6.62	7.64	8.67	9.69	10.74	11.81		13.04	9 / 8			
	reaction time														3.11	3.08	3.14
	interval		1.04	1.05	1.02	1.03	1.02	1.03	1.02	1.05	1.07	1.23			8.20	8.28	8.12
Rocker, Destinee (USA) (1999)	time	2.55	3.60	4.62	5.64	6.62	7.62	8.64	9.67	10.71	11.79		13.07	1 / 8			
	reaction time														3.09	3.00	3.15
	interval		1.05	1.02	1.02	0.98	1.00	1.02	1.03	1.04	1.08	1.28			8.25	8.50	8.10



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1280 x 720 @ 60fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=WxulnYqrN4&t=2s>

2022 Golden Gala Pietro Mennea (Rome, ITA) (TV Analysis)

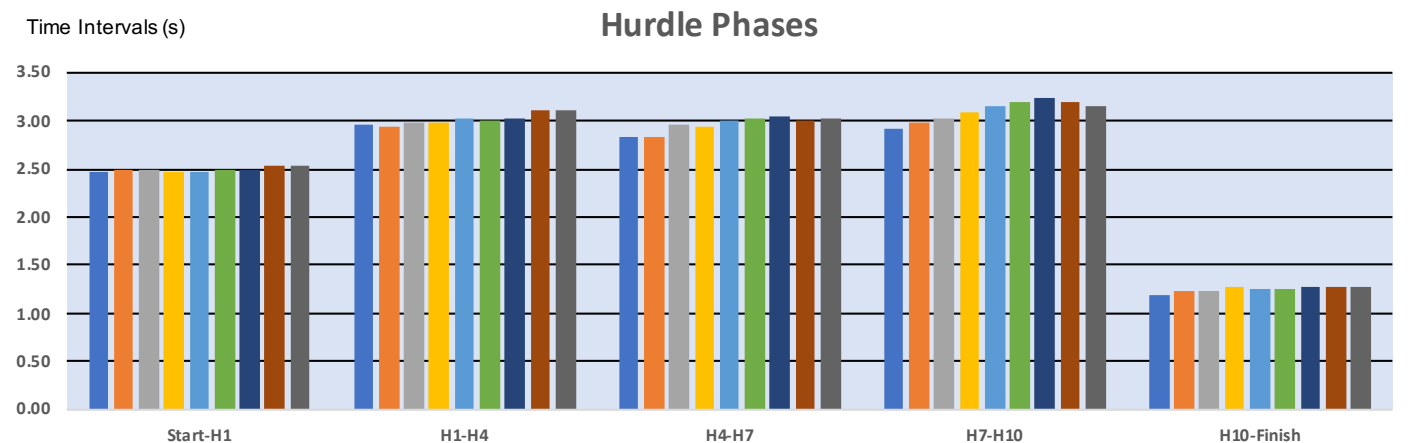
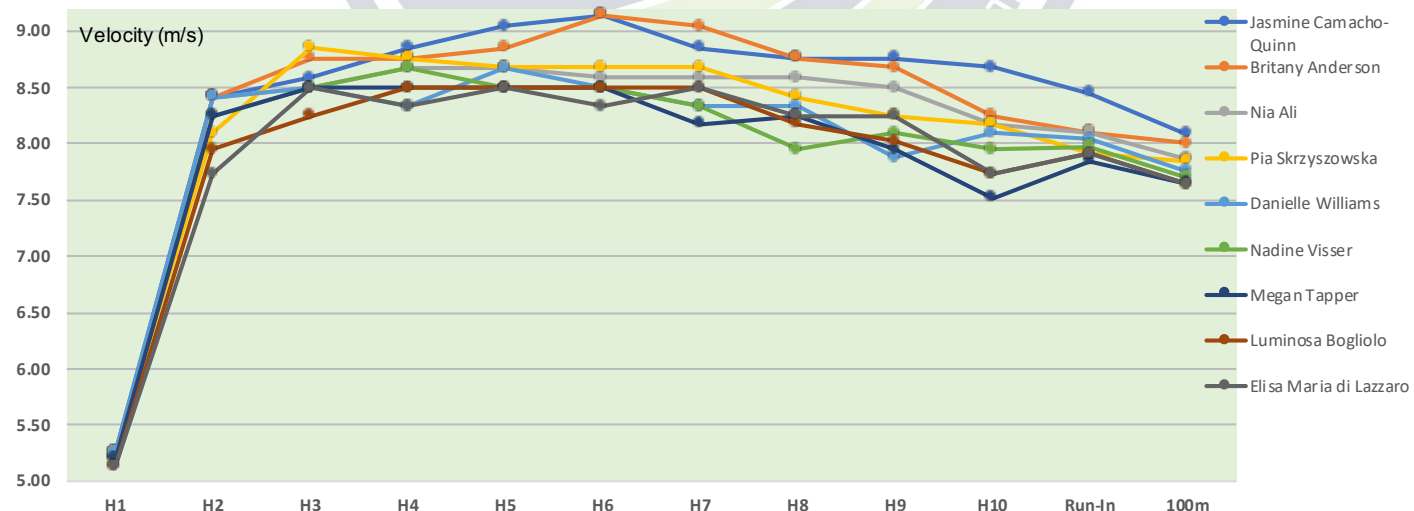
100m Hurdles

Date: 2022.06.09

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
Camacho-Quinn, Jasmine (PUR) (199)	time	2.47	3.48	4.47	5.43	6.37	7.30	8.26	9.23	10.20	11.18		12.37	5 / 1			
	reaction time	0.149													2.96	2.83	2.92
	interval velocity	5.26	8.42	8.59	8.85	9.04	9.14	8.85	8.76	8.76	8.67	8.45	8.08		8.61	9.01	8.73
Anderson, Britany (JAM) (2001)	time	2.50	3.51	4.48	5.45	6.41	7.34	8.28	9.25	10.23	11.26		12.50	4 / 2			
	reaction time	0.182													2.95	2.83	2.98
	interval velocity	5.20	8.42	8.76	8.76	8.85	9.14	9.04	8.76	8.67	8.25	8.10	8.00		8.64	9.01	8.56
Ali, Nia (USA) (1988)	time	2.49	3.50	4.50	5.48	6.46	7.45	8.44	9.43	10.43	11.47		12.71	6 / 3			
	reaction time	0.153													2.99	2.96	3.03
	interval velocity	5.22	8.42	8.50	8.67	8.67	8.59	8.59	8.59	8.50	8.17	8.10	7.87		8.53	8.61	8.42
Skrzysowska, Pia (POL) (2001)	time	2.47	3.52	4.48	5.45	6.43	7.41	8.39	9.40	10.43	11.47		12.74	1 / 4			
	reaction time	0.132													2.98	2.94	3.08
	interval velocity	5.26	8.10	0.96	0.97	0.98	0.98	0.98	0.98	1.01	1.03	1.04	1.27		8.56	8.67	8.28
Williams, Danielle (JAM) (1992)	time	2.47	3.48	4.48	5.50	6.48	7.48	8.50	9.52	10.60	11.65		12.90	7 / 5			
	reaction time	0.131													3.03	3.00	3.15
	interval velocity	5.26	8.42	8.50	8.33	8.67	8.50	8.33	8.33	7.87	8.10	8.04	7.75		8.42	8.50	8.10
Visser, Nadine (NED) (1995)	time	2.50	3.53	4.53	5.51	6.51	7.51	8.53	9.60	10.65	11.72		12.98	8 / 6			
	reaction time	0.146													3.01	3.02	3.19
	interval velocity	5.20	8.25	8.50	8.67	8.50	8.50	8.33	7.94	8.10	7.94	7.98	7.70		8.47	8.44	7.99
Tapper, Megan (JAM) (1994)	time	2.50	3.53	4.53	5.53	6.53	7.53	8.57	9.60	10.67	11.80		13.08	3 / 7			
	reaction time	0.155													3.03	3.04	3.23
	interval velocity	5.20	8.25	8.50	8.50	8.50	8.50	8.17	8.25	7.94	7.52	7.85	7.65		8.42	8.39	7.89
Bogliolo, Luminosa (ITA) (1995)	time	2.53	3.60	4.63	5.63	6.63	7.63	8.63	9.67	10.73	11.83		13.10	2 / 8			
	reaction time	0.163													3.10	3.00	3.20
	interval velocity	5.14	7.94	8.25	8.50	8.50	8.50	8.50	8.17	8.02	7.73	7.91	7.63		8.23	8.50	7.97
di Lazzaro, Elisa Maria (ITA) (1998)	time	2.53	3.63	4.63	5.65	6.65	7.67	8.67	9.70	10.73	11.83		13.10	9 / 9			
	reaction time	0.143													3.12	3.02	3.16
	interval velocity	5.14	7.73	8.50	8.33	8.50	8.33	8.50	8.25	8.25	7.73	7.91	7.63		8.17	8.44	8.07



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=iYFVace8BPc>

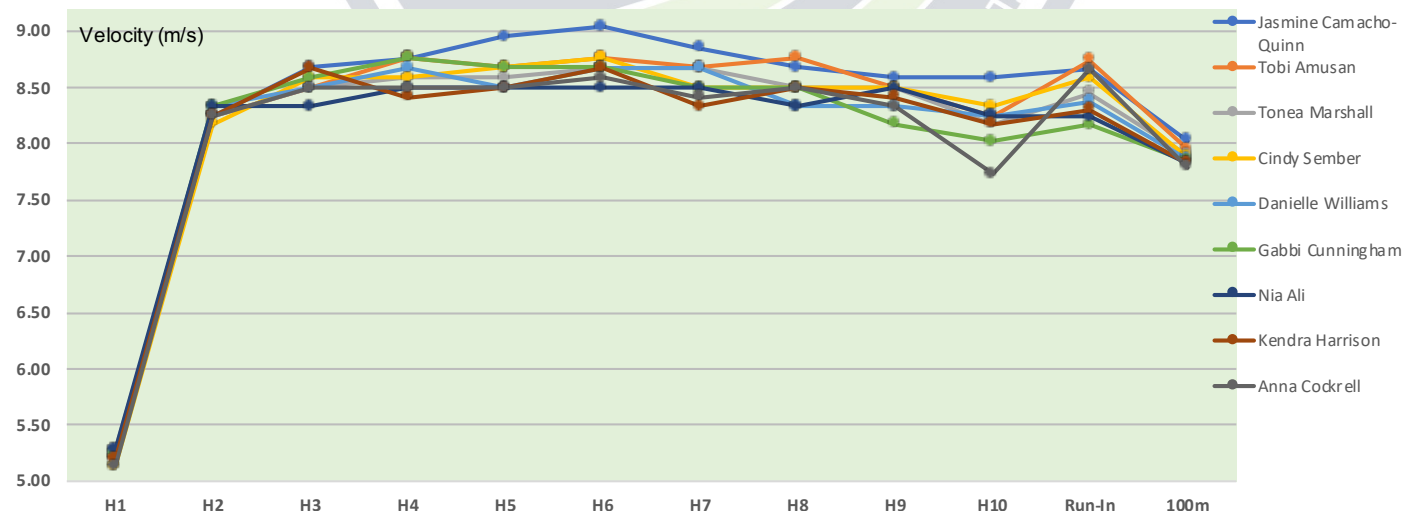
2022 Prefontaine Classic (Eugene, OR) (TV Analysis)

100m Hurdles

Date: 2022.05.28 Wind: -0.7 m/s

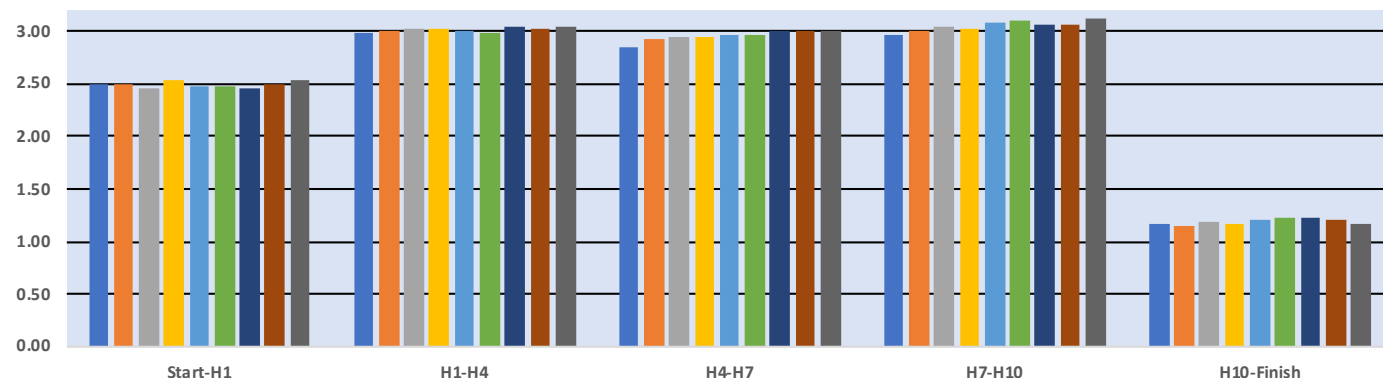
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Camacho-Quinn, Jasmine (PUR) (199)	time	2.50	3.53	4.51	5.48	6.43	7.37	8.33	9.31	10.30	11.29		12.45	5 / 1			
	reaction time	0.132													2.98	2.85	2.96
	interval		1.03	0.98	0.97	0.95	0.94	0.96	0.98	0.99	0.99	1.16			8.56	8.95	8.61
	velocity	5.20	8.25	8.67	8.76	8.95	9.04	8.85	8.67	8.59	8.59	8.66	8.03				
Amusan, Tobi (NGR) (1997)	time	2.50	3.53	4.53	5.50	6.48	7.45	8.43	9.40	10.40	11.43		12.58	8 / 2			
	reaction time	0.150													3.00	2.93	3.00
	interval		1.03	1.00	0.97	0.98	0.97	0.98	0.97	1.00	1.03	1.15			8.50	8.70	8.50
	velocity	5.20	8.25	8.50	8.76	8.67	8.76	8.67	8.76	8.50	8.25	8.74	7.95				
Marshall, Tonea (USA) (1998)	time	2.46	3.49	4.49	5.48	6.47	7.45	8.43	9.43	10.43	11.47		12.66	4 / 3			
	reaction time	0.127													3.02	2.95	3.04
	interval		1.03	1.00	0.99	0.99	0.98	0.98	1.00	1.00	1.04	1.19			8.44	8.64	8.39
	velocity	5.28	8.25	8.50	8.59	8.59	8.67	8.67	8.50	8.50	8.17	8.45	7.90				
Sember, Cindy (GBR) (1994)	time	2.53	3.57	4.56	5.55	6.53	7.50	8.50	9.50	10.50	11.52		12.69	2 / 4			
	reaction time	0.149													3.02	2.95	3.02
	interval		1.04	0.99	0.99	0.98	0.97	1.00	1.00	1.00	1.02	1.17			8.44	8.64	8.44
	velocity	5.14	8.17	8.59	8.59	8.67	8.76	8.50	8.50	8.50	8.33	8.59	7.88				
Williams, Danielle (JAM) (1992)	time	2.48	3.50	4.50	5.48	6.48	7.46	8.44	9.46	10.48	11.51		12.71	3 / 5			
	reaction time	0.139													3.00	2.96	3.07
	interval		1.02	1.00	0.98	1.00	0.98	0.98	1.02	1.02	1.03	1.20			8.50	8.61	8.31
	velocity	5.24	8.33	8.50	8.67	8.50	8.67	8.67	8.33	8.33	8.25	8.37	7.87				
Cunningham, Gabbi (USA) (1998)	time	2.48	3.50	4.49	5.46	6.44	7.42	8.42	9.42	10.46	11.52		12.75	1 / 6			
	reaction time	0.170													2.98	2.96	3.10
	interval		1.02	0.99	0.97	0.98	0.98	1.00	1.00	1.04	1.06	1.23			8.56	8.61	8.23
	velocity	5.24	8.33	8.59	8.76	8.67	8.67	8.50	8.50	8.17	8.02	8.17	7.84				
Ali, Nia (USA) (1988)	time	2.46	3.48	4.50	5.50	6.50	7.50	8.50	9.52	10.52	11.55		12.77	7 / 7			
	reaction time	0.144													3.04	3.00	3.05
	interval		1.02	1.02	1.00	1.00	1.00	1.00	1.02	1.00	1.03	1.22			8.39	8.50	8.36
	velocity	5.28	8.33	8.33	8.50	8.50	8.50	8.50	8.33	8.50	8.25	8.24	7.83				
Harrison, Kendra (USA) (1992)	time	2.50	3.53	4.51	5.52	6.52	7.50	8.52	9.52	10.53	11.57		12.78	6 / 8			
	reaction time	0.144													3.02	3.00	3.05
	interval		1.03	0.98	1.01	1.00	0.98	1.02	1.00	1.01	1.04	1.21			8.44	8.50	8.36
	velocity	5.20	8.25	8.67	8.42	8.50	8.67	8.33	8.50	8.42	8.17	8.31	7.82				
Cockrell, Anna (USA) (1997)	time	2.53	3.56	4.56	5.56	6.56	7.55	8.56	9.56	10.58	11.68		12.84	9 / 9			
	reaction time	0.115													3.03	3.00	3.12
	interval		1.03	1.00	1.00	1.00	0.99	1.01	1.00	1.02	1.10	1.16			8.42	8.50	8.17
	velocity	5.14	8.25	8.50	8.50	8.50	8.59	8.42	8.50	8.33	7.73	8.66	7.79				



Time Intervals (s)

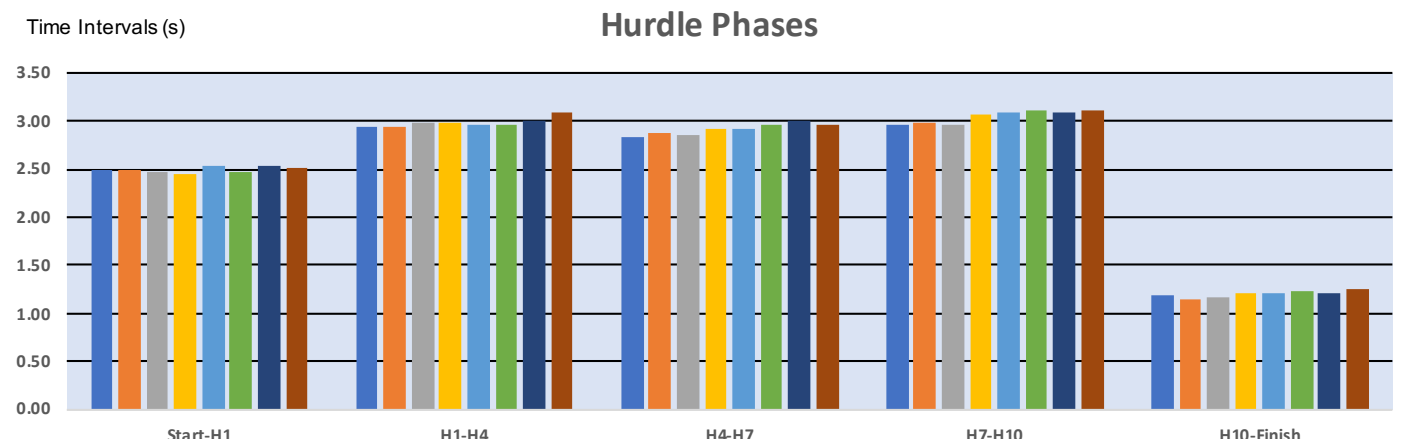
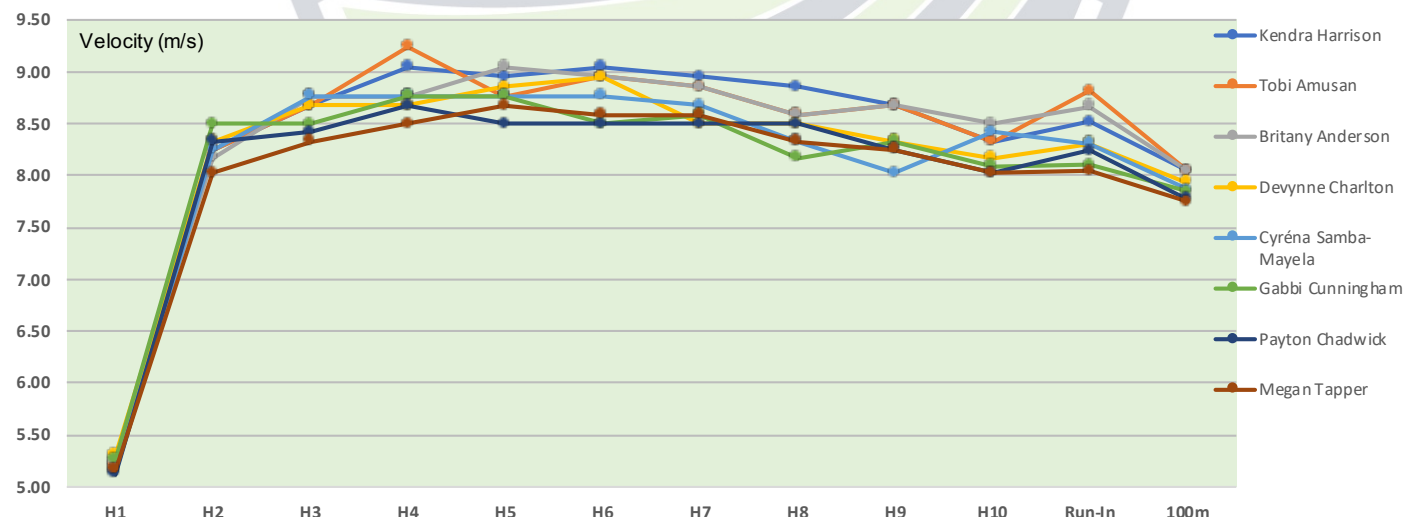
Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=KZZSTexdh0&t=29s>

2022 Doha Diamond League (Doha, QAT) (TV Analysis)

		Date: 2022.05.13		Wind: 3.8 m/s												FINAL		
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10	
Harrison, Kendra (USA) (1992)	time	2.50	3.53	4.51	5.45	6.40	7.34	8.29	9.25	10.23	11.25		12.43	4 / 1				
	reaction time	0.159													2.95	2.84	2.96	
	interval		1.03	0.98	0.94	0.95	0.94	0.95	0.96	0.98	1.02	1.18			8.64	8.98	8.61	
	velocity	5.20	8.25	8.67	9.04	8.95	9.04	8.95	8.85	8.67	8.33	8.52	8.05					
Amusan, Tobi (NGR) (1997)	time	2.50	3.53	4.51	5.43	6.40	7.35	8.31	9.30	10.28	11.30		12.44	6 / 2				
	reaction time	0.171													2.93	2.88	2.99	
	interval		1.03	0.98	0.92	0.97	0.95	0.96	0.99	0.98	1.02	1.14			8.70	8.85	8.53	
	velocity	5.20	8.25	8.67	9.24	8.76	8.95	8.85	8.59	8.67	8.33	8.82	8.04					
Anderson, Britany (JAM) (2001)	time	2.48	3.52	4.49	5.46	6.40	7.35	8.31	9.30	10.28	11.28		12.44	2 / 3				
	reaction time	0.154													2.98	2.85	2.97	
	interval		1.04	0.97	0.97	0.94	0.95	0.96	0.99	0.98	1.00	1.16			8.56	8.95	8.59	
	velocity	5.24	8.17	8.76	8.76	9.04	8.95	8.85	8.59	8.67	8.50	8.66	8.04					
Charlton, Devynne (BAH) (1995)	time	2.45	3.47	4.45	5.43	6.39	7.34	8.34	9.34	10.36	11.40		12.61	7 / 4				
	reaction time	0.154													2.98	2.91	3.06	
	interval		1.02	0.98	0.98	0.96	0.95	1.00	1.00	1.02	1.04	1.21			8.56	8.76	8.33	
	velocity	5.31	8.33	8.67	8.67	8.85	8.95	8.50	8.50	8.33	8.17	8.31	7.93					
Samba-Mayela, Cyréna (FRA) (2000)	time	2.53	3.56	4.53	5.50	6.47	7.44	8.42	9.44	10.50	11.51		12.72	5 / 5				
	reaction time	0.169													2.97	2.92	3.09	
	interval		1.03	0.97	0.97	0.97	0.97	0.98	1.02	1.06	1.01	1.21			8.59	8.73	8.25	
	velocity	5.14	8.25	8.76	8.76	8.76	8.76	8.67	8.33	8.02	8.42	8.31	7.86					
Cunningham, Gabriele (USA) (1998)	time	2.47	3.47	4.47	5.44	6.41	7.41	8.40	9.44	10.46	11.51		12.75	8 / 6				
	reaction time	0.157													2.97	2.96	3.11	
	interval		1.00	1.00	0.97	0.97	1.00	0.99	1.04	1.02	1.05	1.24			8.59	8.61	8.20	
	velocity	5.26	8.50	8.50	8.76	8.76	8.50	8.59	8.17	8.33	8.10	8.10	7.84					
Chadwick, Payton (USA) (1995)	time	2.54	3.56	4.57	5.55	6.55	7.55	8.55	9.55	10.58	11.64		12.86	1 / 7				
	reaction time	0.156													3.01	3.00	3.09	
	interval		1.02	1.01	0.98	1.00	1.00	1.00	1.00	1.03	1.06	1.22			8.47	8.50	8.25	
	velocity	5.12	8.33	8.42	8.67	8.50	8.50	8.50	8.50	8.25	8.02	8.24	7.78					
Tapper, Megan (JAM) (1994)	time	2.52	3.58	4.60	5.60	6.58	7.57	8.56	9.58	10.61	11.67		12.92	3 / 8				
	reaction time	0.153													3.08	2.96	3.11	
	interval		1.06	1.02	1.00	0.98	0.99	0.99	1.02	1.03	1.06	1.25			8.28	8.61	8.20	
	velocity	5.16	8.02	8.33	8.50	8.67	8.59	8.59	8.33	8.25	8.02	8.04	7.74					



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1078 @ 30fps
 Timing From: First Movement
 Source: https://www.youtube.com/watch?v=hghnuRk_eY0

2022 Puerto Rico International Athletics Classic (Ponce, PUR) (TV Analysis)

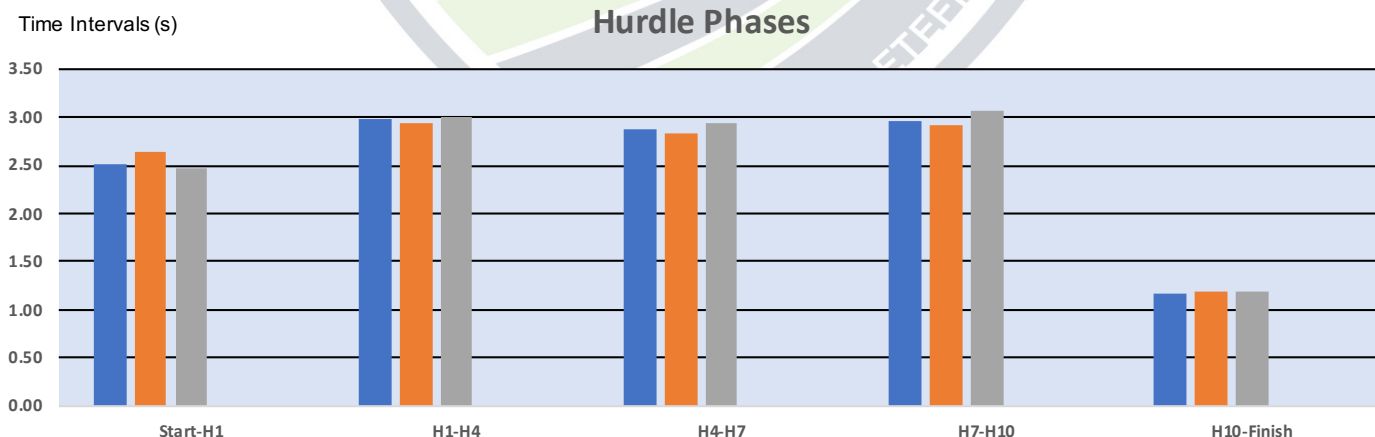
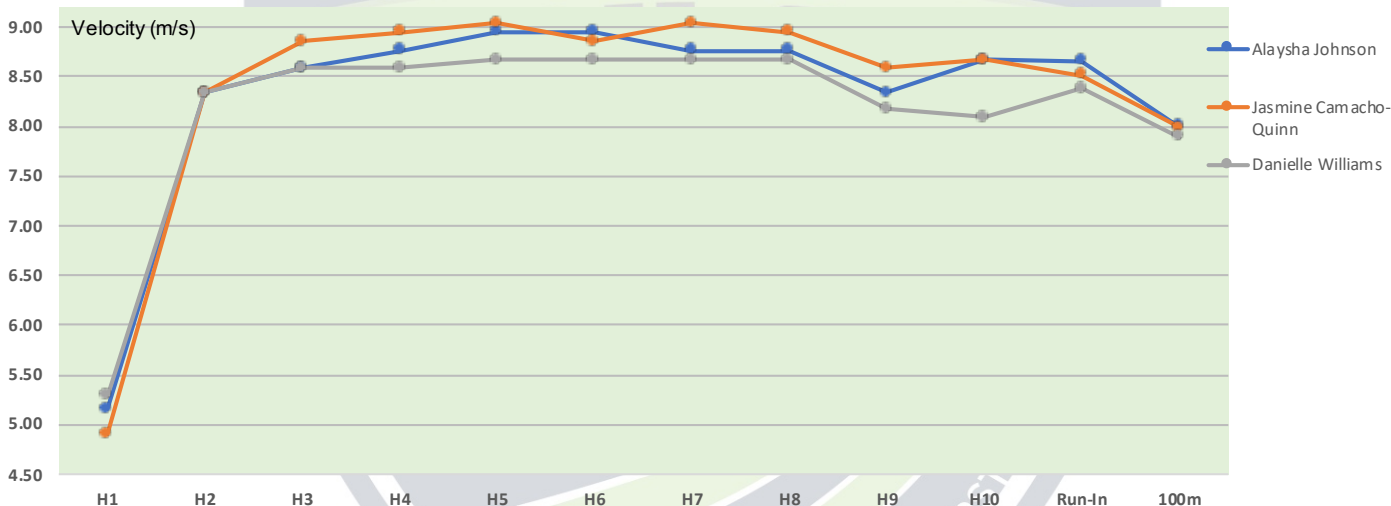
100m Hurdles

Date: 2022.05.12

Wind: 0.3 m/s

FINAL

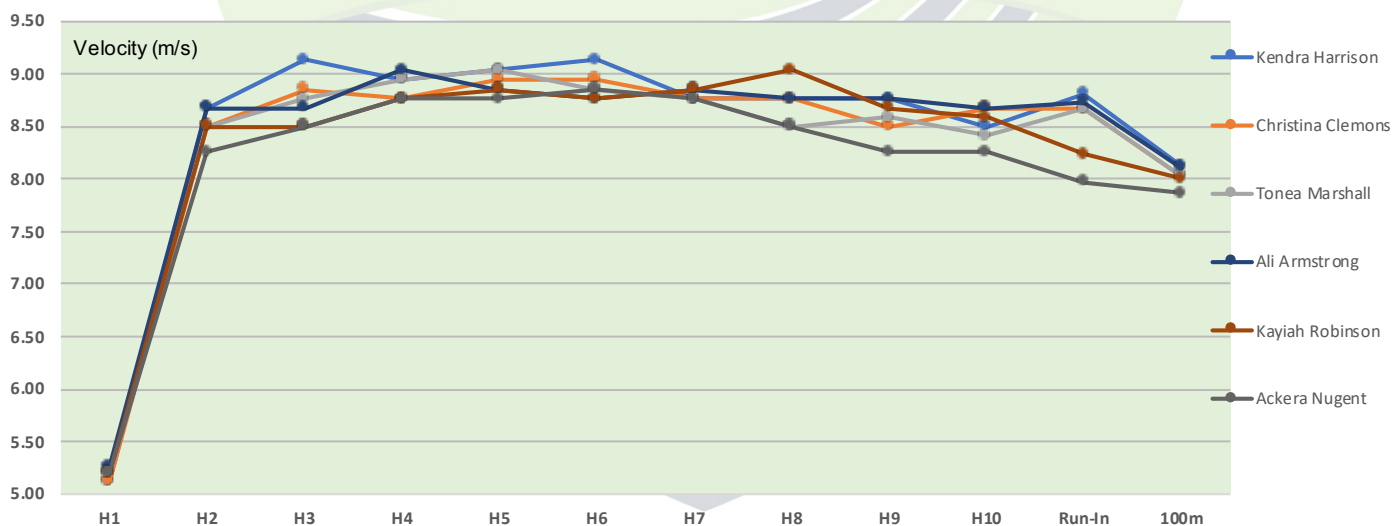
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Johnson, Alaysha (USA) (1996)	time	2.52	3.54	4.53	5.50	6.45	7.40	8.37	9.34	10.36	11.34	12.50	12.50	2 / 1			
	reaction time	0.155													2.98	2.87	2.97
	interval		1.02	0.99	0.97	0.95	0.95	0.97	0.97	1.02	0.98	1.16	PB		8.56	8.89	8.59
	velocity	5.16	8.33	8.59	8.76	8.95	8.95	8.76	8.76	8.33	8.67	8.66	8.00				
Camacho-Quinn, Jasmine (PUR) (199)	time	2.65	3.67	4.63	5.58	6.52	7.48	8.42	9.37	10.36	11.34	12.52	12.52	5 / 2			
	reaction time	0.367													2.93	2.84	2.92
	interval		1.02	0.96	0.95	0.94	0.96	0.94	0.95	0.99	0.98	1.18			8.70	8.98	8.73
	velocity	4.91	8.33	8.85	8.95	9.04	8.85	9.04	8.95	8.59	8.67	8.52	7.99				
Williams, Danielle (JAM) (1992)	time	2.46	3.48	4.47	5.46	6.44	7.42	8.40	9.38	10.42	11.47	12.67	12.67	4 / 3			
	reaction time	0.172													3.00	2.94	3.07
	interval		1.02	0.99	0.99	0.98	0.98	0.98	0.98	1.04	1.05	1.20			8.50	8.67	8.31
	velocity	5.28	8.33	8.59	8.59	8.67	8.67	8.67	8.67	8.17	8.10	8.38	7.89				



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=5jEjWg8Xt0>

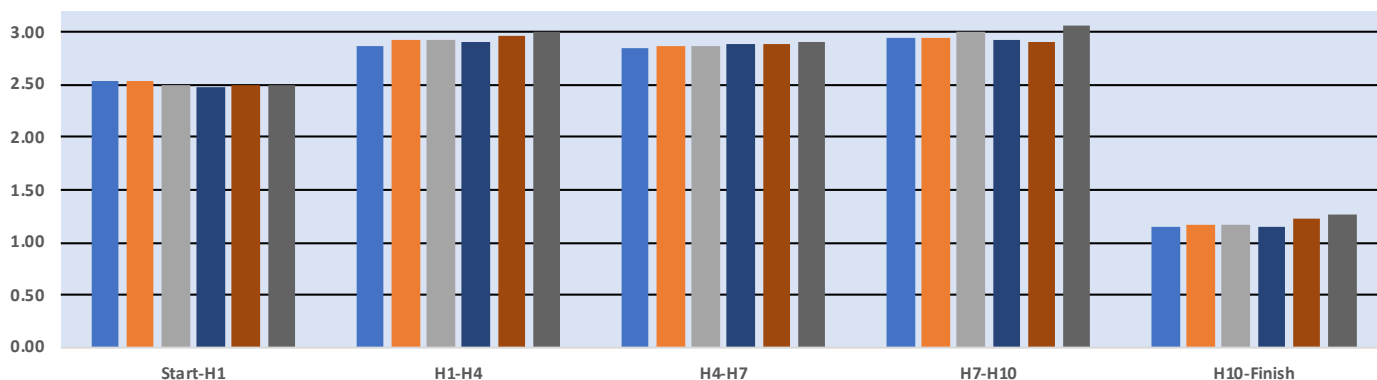
2022 Texas Relays (Austin, TX) (TV Analysis)

100m Hurdles													Invitational FINAL				
Date: 2022.03.26 Wind: 3.9 m/s																	
		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	2.54	3.52	4.45	5.40	6.34	7.27	8.24	9.21	10.18	11.18		12.32	5 / 1			
	reaction time														2.86	2.84	2.94
	interval		0.98	0.93	0.95	0.94	0.93	0.97	0.97	0.97	1.00	1.14			8.92	8.98	8.67
	velocity	5.12	8.67	9.14	8.95	9.04	9.14	8.76	8.76	8.76	8.50	8.82	8.12				
Clemons, Christina (USA) (1990)	time	2.54	3.54	4.50	5.47	6.42	7.37	8.34	9.31	10.31	11.29		12.45	7 / 2			
	reaction time														2.93	2.87	2.95
	interval		1.00	0.96	0.97	0.95	0.95	0.97	0.97	1.00	0.98	1.16			8.70	8.89	8.64
	velocity	5.12	8.50	8.85	8.76	8.95	8.95	8.76	8.76	8.50	8.67	8.66	8.03				
Marshall, Tonea (USA) (1998)	time	2.50	3.50	4.47	5.42	6.36	7.32	8.29	9.29	10.28	11.29		12.45	6 / 3			
	reaction time														2.92	2.87	3.00
	interval		1.00	0.97	0.95	0.94	0.96	0.97	1.00	0.99	1.01	1.16			8.73	8.89	8.50
	velocity	5.20	8.50	8.76	8.95	9.04	8.85	8.76	8.50	8.59	8.42	8.66	8.03				
100m Hurdles													University FINAL				
Date: 2022.03.26 Wind: 2.5 m/s																	
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Armstrong, Alia (USA) (2000)	time	2.47	3.45	4.43	5.37	6.33	7.30	8.26	9.23	10.20	11.18		12.33	4 / 1			
	reaction time														2.90	2.89	2.92
	interval		0.98	0.98	0.94	0.96	0.97	0.96	0.97	0.97	0.98	1.15			8.79	8.82	8.73
	velocity	5.26	8.67	8.67	9.04	8.85	8.76	8.85	8.76	8.76	8.67	8.74	8.11				
Robinson, Kaylah (USA) (1999)	time	2.50	3.50	4.50	5.47	6.43	7.40	8.36	9.30	10.28	11.27		12.49	5 / 2			
	reaction time														2.97	2.89	2.91
	interval		1.00	1.00	0.97	0.96	0.97	0.96	0.94	0.98	0.99	1.22			8.59	8.82	8.76
	velocity	5.20	8.50	8.50	8.76	8.85	8.76	8.85	9.04	8.67	8.59	8.24	8.01				
Nugent, Ackera (JAM) (2002)	time	2.50	3.53	4.53	5.50	6.47	7.43	8.40	9.40	10.43	11.46		12.72	6 / 3			
	reaction time														3.00	2.90	3.06
	interval		1.03	1.00	0.97	0.97	0.96	0.97	1.00	1.03	1.03	1.26			8.50	8.79	8.33
	velocity	5.20	8.25	8.50	8.76	8.76	8.85	8.76	8.50	8.25	8.25	7.98	7.86				



Time Intervals (s)

Hurdle Phases



Invitational Final
 Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 60fps
 Timing From: Gun Smoke
 Source: <https://www.youtube.com/watch?v=xjkuuTrq0rk>

University Final
 Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1280 x 720 @ 30fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=a-l-GyuM654>

Biomechanical Analysis

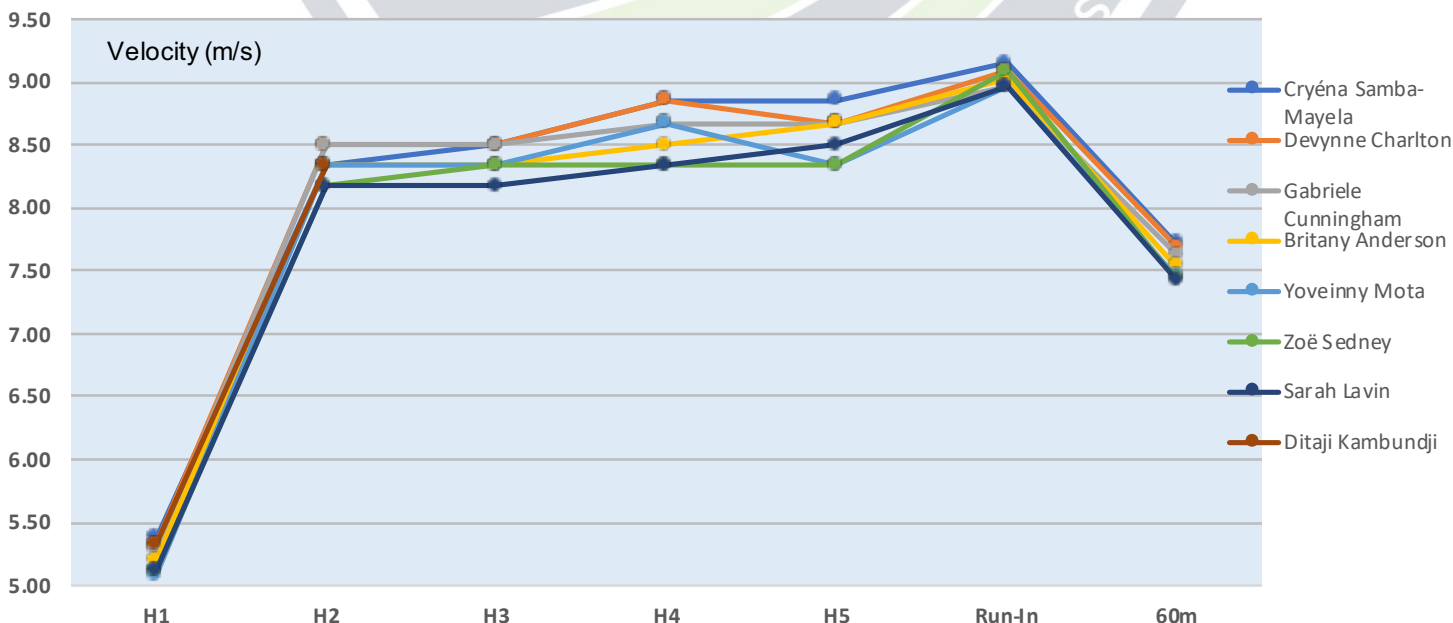
World Athletics Indoor Championships (Belgrade, SRB) (TV Analysis)

Women's 60m Hurdles

Date: 2022.03.19

FINAL

		H1	H2	H3	H4	H5	Run-In	60m	Lane / Place
Samba-Mayela, Cyréna (FRA) (2000)	time	2.42	3.44	4.44	5.40	6.36		7.78	5 / 1
	reaction time	0.119							
	interval velocity		1.02	1.00	0.96	0.96	1.42	NR	
	velocity	5.37	8.33	8.50	8.85	8.85	9.15	7.71	
Charlton, Devynne (BAH) (1995)	time	2.44	3.44	4.44	5.40	6.38		7.81	4 / 2
	reaction time	0.157							
	interval velocity		1.00	1.00	0.96	0.98	1.43	NR	
	velocity	5.33	8.50	8.50	8.85	8.67	9.09	7.68	
Cunningham, Gabriele (USA) (1998)	time	2.46	3.46	4.46	5.44	6.42		7.87	2 / 3
	reaction time	0.164							
	interval velocity		1.00	1.00	0.98	0.98	1.45		
	velocity	5.28	8.50	8.50	8.67	8.67	8.97	7.62	
Anderson, Britany (JAM) (2001)	time	2.50	3.52	4.54	5.54	6.52		7.96	3 / 4
	reaction time	0.140							
	interval velocity		1.02	1.02	1.00	0.98	1.44		
	velocity	5.20	8.33	8.33	8.50	8.67	9.03	7.54	
Mota, Yoveinny (VEN) (2000)	time	2.56	3.58	4.60	5.58	6.60		8.05	1 / 5
	reaction time	0.147							
	interval velocity		1.02	1.02	0.98	1.02	1.45	NR	
	velocity	5.08	8.33	8.33	8.67	8.33	8.97	7.45	
Sedney, Zoë (NED) (2001)	time	2.54	3.58	4.60	5.62	6.64		8.07	6 / 6
	reaction time	0.169							
	interval velocity		1.04	1.02	1.02	1.02	1.43		
	velocity	5.12	8.17	8.33	8.33	8.33	9.09	7.43	
Lavin, Sarah (IRL) (1994)	time	2.54	3.58	4.62	5.64	6.64		8.09	7 / 7
	reaction time	0.152							
	interval velocity		1.04	1.04	1.02	1.00	1.45		
	velocity	5.12	8.17	8.17	8.33	8.50	8.97	7.42	
Kambundji, Ditaji (SUI) (2002)	time	2.44	3.46					dnf	8 / --
	reaction time	0.108							
	interval velocity		1.02						
	velocity	5.33	8.33						



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 25fps

Timing From: First Movement

Source: <https://www.youtube.com/watch?v=knhOokfHv7g>

Men's 400m Hurdles

Biomechanical Analysis

2022 Top 10 Times - Men's 400m Hurdles

		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)		FINAL - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																
date	19-Jul	time	5.63	9.13	12.77	16.30	20.03	23.90	28.03	32.23	36.57	40.97	Henson (2022) - Athlete First: 2022 year end hurdle report	46.29	6 / 1			
reaction time	0.141	interval	3.50	3.64	3.53	3.73	3.87	4.13	4.20	4.34	4.40	5.32	CR NR		10.67	11.73	12.94	
		velocity	7.99	10.00	9.62	9.92	9.38	9.04	8.47	8.33	8.06	7.95	7.52	8.64		9.84	8.95	8.11
H1 lead leg	L	strides	20	13	12	12	12	12	13	13	13	13	16.2	149.2				
dos Santos, Alison (BRA) (2000)		FINAL - 2022 Bauhaus Galan (Stockholm, SWE) (TV Analysis)																
date	30-Jun	time	5.66	9.24	12.80	16.42	20.18	24.08	28.22	32.48	36.84	41.40	Henson (2022) - Athlete First: 2022 year end hurdle report	46.80	6 / 1			
reaction time	0.147	interval	3.58	3.56	3.62	3.76	3.90	4.14	4.26	4.36	4.56	5.40			10.76	11.80	13.18	
		velocity	7.95	9.78	9.83	9.67	9.31	8.97	8.45	8.22	8.03	7.68	7.41	8.55		9.76	8.90	7.97
H1 lead leg	L	strides	20	13	12	12	12	12	13	13	13	13	16.7	149.7				
Benjamin, Rai (USA) (1997)		FINAL - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																
date	19-Jul	time	5.63	9.23	13.03	16.66	20.33		28.26	32.50	36.83	41.33	Henson (2022) - Athlete First: 2022 year end hurdle report	46.89	3 / 2			
reaction time	0.157	interval	3.60	3.80	3.63	3.67		7.93	4.24	4.33	4.50	5.56			11.03	11.60	13.07	
		velocity	7.99	9.72	9.21	9.64	9.54		8.83	8.25	8.08	7.78	7.19	8.53		9.52	9.05	8.03
H1 lead leg	R	strides	20	13	13	13	12		13	13	13	13	16.5	126.5				
dos Santos, Alison (BRA) (2000)		FINAL - 2022 Weltklasse (Zürich, SUI) (TV Analysis)																
date	8-Sep	time	5.70	9.27	12.91	16.58	20.45	24.36	28.50	32.70	37.10	41.67	Henson (2022) - Athlete First: 2022 year end hurdle report	46.98	6 / 1			
reaction time	0.155	interval	3.57	3.64	3.67	3.87	3.91	4.14	4.20	4.40	4.57	5.31			10.88	11.92	13.17	
		velocity	7.89	9.80	9.62	9.54	9.04	8.95	8.45	8.33	7.95	7.66	7.53	8.51		9.65	8.81	7.97
H1 lead leg	L	strides	20	13	12	12	12	12	13	13	13	13	16	149				
Benjamin, Rai (USA) (1997)		FINAL - 2022 USATF National Championships (Eugene, OR) (TV Analysis)																
date	26-Jun	time	5.84	9.51	13.34	17.34	21.35	25.36	29.43	33.60	37.80	42.14	Henson (2022) - Athlete First: 2022 year end hurdle report	47.04	7 / 1			
reaction time		interval	3.67	3.83	4.00	4.01	4.01	4.07	4.17	4.20	4.34	4.90			11.50	12.09	12.71	
		velocity	7.71	9.54	9.14	8.75	8.73	8.60	8.39	8.33	8.06	8.16	8.50		9.13	8.68	8.26	
H1 lead leg	R	strides	20	13	13	13	13	13	13	13	13	13	16	153				
Warholm, Karsten (NOR) (1996)		FINAL - 2022 European Athletics Championships (Munich, GER) (TV Analysis)																
date	19-Aug	time	5.77	9.27	13.03	16.72	20.57	24.59	28.68	32.93	37.30	41.99	Henson (2022) - Athlete First: 2022 year end hurdle report	47.12	4 / 1			
reaction time	0.215	interval	3.50	3.76	3.69	3.85	4.02	4.09	4.25	4.37	4.69	5.13	CR		10.95	11.96	13.31	
		velocity	7.80	10.00	9.31	9.49	9.09	8.71	8.56	8.24	8.01	7.46	7.80	8.49		9.59	8.78	7.89
H1 lead leg	L	strides	20	13	13	13	13	13	13	13	13	15	17.2	156.2				
dos Santos, Alison (BRA) (2000)		FINAL - 2022 Prefontaine Classic (Eugene, OR) (TV Analysis)																
date	28-May	time	5.75	9.36	13.00	16.73	20.56	24.54	28.70	32.93	37.53	42.00	Henson (2022) - Athlete First: 2022 year end hurdle report	47.23	7 / 1			
reaction time	0.194	interval	3.61	3.64	3.73	3.83	3.98	4.16	4.23	4.60	4.47	5.23			10.98	11.97	13.30	
		velocity	7.83	9.70	9.62	9.38	9.14	8.79	8.41	8.27	7.61	7.83	7.65	8.47		9.56	8.77	7.89
H1 lead leg	L	strides	20	13	12	12	12	12	13	13	14	13	16	150				
dos Santos, Alison (BRA) (2000)		FINAL - 2022 Doha Diamond League (Doha, QAT) (TV Analysis)																
date	13-May	time	5.70	9.37	13.11	17.12	21.20	25.36	29.44	33.63	37.83	42.14	Henson (2022) - Athlete First: 2022 year end hurdle report	47.24	7 / 1			
reaction time	0.184	interval	3.67	3.74	4.01	4.08	4.16	4.08	4.19	4.20	4.31	5.10			11.42	12.32	12.70	
		velocity	7.89	9.54	9.36	8.73	8.58	8.41	8.58	8.35	8.33	8.12	7.84	8.47		9.19	8.52	8.27
H1 lead leg	L	strides	20	13	12	13	13	13	13	13	13	13	16.2	152.2				
Warholm, Karsten (NOR) (1996)		FINAL - 2022 ISTAF (Berlin, GER) (TV Analysis)																
date	4-Sep	time	5.76	9.28	12.88	16.60	20.36	24.32	28.48	32.76	37.24	41.96	Henson (2022) - Athlete First: 2022 year end hurdle report	47.24	7 / 1			
reaction time	0.139	interval	3.52	3.60	3.72	3.76	3.96	4.16	4.28	4.48	4.72	5.28			10.84	11.88	13.48	
		velocity	7.81	9.94	9.72	9.41	9.31	8.84	8.41	8.18	7.81	7.42	7.58	8.47		9.69	8.84	7.79
H1 lead leg	L	strides	20	13	13	13	13	13	13	13	13	15	18	157				
dos Santos, Alison (BRA) (2000)		FINAL - 2022 Bislett Games (Oslo, NOR) (TV Analysis)																
date	16-Jun	time	5.74	9.42	13.16	16.92	20.82	24.96	29.20	33.42	37.76	42.16	Henson (2022) - Athlete First: 2022 year end hurdle report	47.26	7 / 1			
reaction time	0.184	interval	3.68	3.74	3.76	3.90	4.14	4.24	4.22	4.34	4.40	5.10			11.18	12.28	12.96	
		velocity	7.84	9.51	9.36	9.31	8.97	8.45	8.25	8.29	8.06	7.95	7.84	8.46		9.39	8.55	8.10
H1 lead leg	L	strides	20	13	12	12	12	12	13	13	13	13	16	149				
McMaster, Kyrone (IVB) (1997)		FINAL - 2022 NCACA (Freeport, BAH) (TV Analysis)																
date	21-Aug	time	5.60	9.23	13.03	16.87	20.77	24.80	28.86	33.06	37.43		Henson (2022) - Athlete First: 2022 year end hurdle report	47.34	6 / 1			
reaction time		interval	3.63	3.80	3.84	3.90	4.03	4.06	4.20	4.37		CR			11.27	11.99		
		velocity	8.04	9.64	9.21	9.11	8.97	8.68	8.62	8.33	8.01	8.45	8.45	105		9.32	8.76	
H1 lead leg	L	strides	13	13	13	13	13	13	13	14								
Bassitt, Trevor (USA) (1998)		FINAL - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																
date	19-Jul	time	5.73	9.43	13.17	16.77	20.56	24.63	28.87	33.17	37.67	42.23	Henson (2022) - Athlete First: 2022 year end hurdle report	47.39	8 / 3			
reaction time	0.147	interval	3.70	3.74	3.60	3.79	4.07	4.24	4.30	4.50	4.56	5.16	PB		11.04	12.10	13.36	
		velocity	7.85	9.46	9.36	9.72	9.23	8.60	8.25	8.14	7.78	7.68	7.75	8.44		9.51	8.68	7.86
H1 lead leg	R	strides	20	13	13	12	12	13	13	13	13	13	16.2	151.2				
Happio, Wilfried (FRA) (1998)		FINAL - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																
date	19-Jul	time	5.70	9.23	12.93	16.50	20.26	24.17	28.36	32.73	37.36	42.10	Henson (2022) - Athlete First: 2022 year end hurdle report	47.41	5 / 4			
reaction time	0.134	interval	3.53	3.70	3.57	3.76	3.91	4.19	4.37	4.63	4.74	5.31	PB		10.80	11.86	13.74	
		velocity	7.89	9.92	9.46	9.80	9.31	8.95	8.35	8.01	7.56	7.38	7.53	8.44		9.72	8.85	7.64
H1 lead leg	L	strides	20	13	13	13	13	13	13	13	15	15	18	159				
Bassitt, Trevor (USA) (1998)		FINAL - 2022 USATF National Championships (Eugene, OR) (TV Analysis)																
date	26-Jun	time	5.97	9.67	13.44	17.25	21.19	25.22	29.43	33.70	38.10	42.54	Henson (2022) - Athlete First: 2022 year end hurdle report	47.47	5 / 2			
reaction time		interval	3.70	3.77	3.81	3.94	4.03	4.21	4.27	4.40	4.44	4.93	PB		11.28	12.18	13.11	
		velocity	7.54	9.46	9.28	9.19	8.88	8.68	8.31	8.20	7.95	7.88	8.11	8.43		9.31	8.62	8.01
H1 lead leg	R	strides	20	13	13	13	13	13	13	13	13	13	16	153				
Benjamin, Rai (USA) (1997)		FINAL - 2022 Doha Diamond League (Doha, QAT) (TV Analysis)																
date	13-May	time	5.60	9.18	13.01	16.98	21.12	25.24	29.30	33.56	37.87	42.27	Henson (2022) - Athlete First: 2022 year end hurdle report	47.49	6 / 2			
reaction time	0.206	interval	3.58	3.83	3.97	4.14	4.12	4.06	4.26	4.31	4.40	5.22			11.38	12.32	12.97	
		velocity	8.04	9.78	9.14	8.82	8.45	8.50	8.62	8.22	8.12	7.95	7.66	8.42		9.23	8.52	8.10
H1 lead leg	R	strides	20	13	13	13	13	13	13	13	13	13	16.2	153.2				

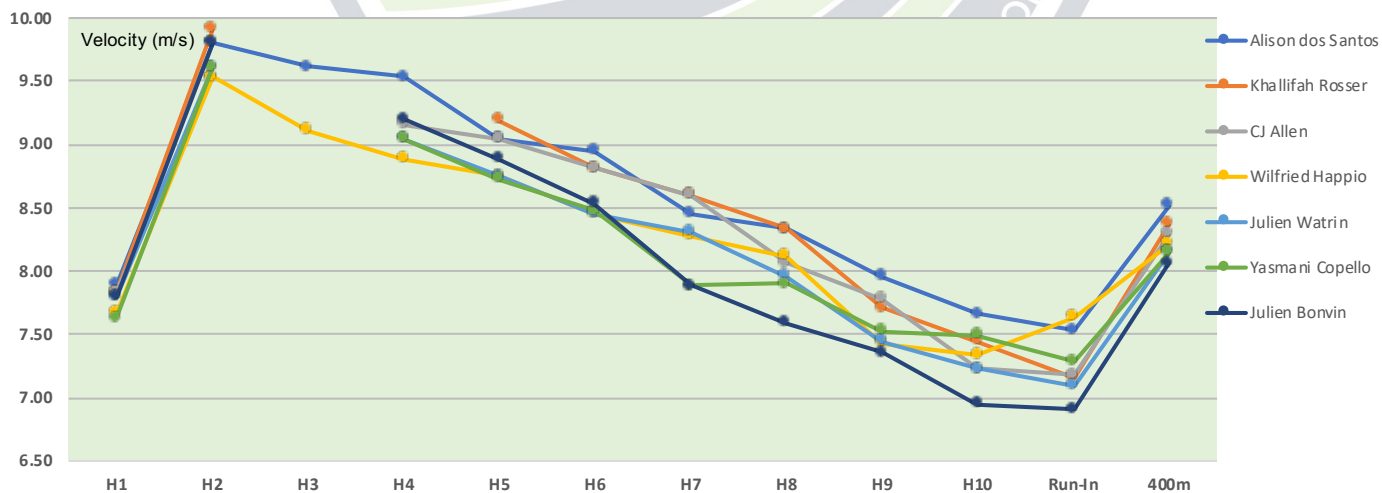
2022 Weltklasse (Zürich, SUI) (TV Analysis)

Men's 400m Hurdles

Date: 2022.09.08

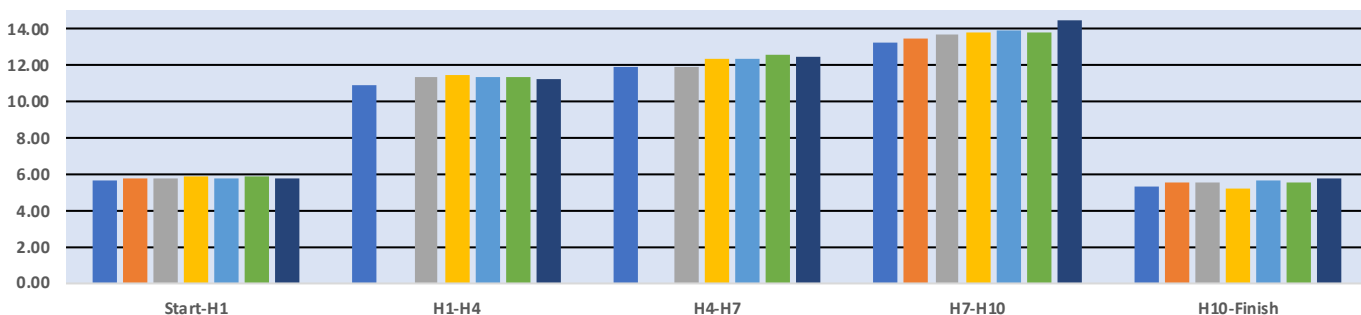
FINAL

		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	9.27	12.91	16.58	20.45	24.36	28.50	32.70	37.10	41.67		46.98	6 / 1			
	reaction time	0.155															
	interval		3.57	3.64	3.67	3.87	3.91	4.14	4.20	4.40	4.57	5.31			10.88	11.92	13.17
	velocity	7.89	9.80	9.62	9.54	9.04	8.95	8.45	8.33	7.95	7.66	7.53	8.51		9.65	8.81	7.97
H1 lead leg	L		20	13	12	12	12	13	13	13	13	16	149				
Rosser, Khalifah (USA) (1995)	time	5.74	9.27			20.69	24.66	28.73	32.93	37.47	42.17		47.76	5 / 2			
	reaction time	0.169															
	interval		3.53			11.42	3.97	4.07	4.20	4.54	4.70	5.59					13.44
	velocity	7.84	9.92			9.19	8.82	8.60	8.33	7.71	7.45	7.16	8.38				7.81
H1 lead leg	R		21	13			13	13	13	14	14	18	119				
Allen, CJ (USA) (1995)	time	5.74	9.41		17.05	20.92	24.89	28.96	33.30	37.80	42.64		48.21	3 / 3			
	reaction time	0.159															
	interval		3.67		7.64	3.87	3.97	4.07	4.34	4.50	4.84	5.57			11.31	11.91	13.68
	velocity	7.84	9.54		9.16	9.04	8.82	8.60	8.06	7.78	7.23	7.18	8.30		9.28	8.82	7.68
H1 lead leg	L		20	13		13	13	13	14	14	15	17.5	132.5				
Happio, Wilfried (FRA) (1998)	time	5.87	9.54	13.38	17.32	21.32	25.46	29.69	34.00	38.71	43.48		48.72	7 / 4			
	reaction time	0.130															
	interval		3.67	3.84	3.94	4.00	4.14	4.23	4.31	4.71	4.77	5.24			11.45	12.37	13.79
	velocity	7.67	9.54	9.11	8.88	8.75	8.45	8.27	8.12	7.43	7.34	7.63	8.21		9.17	8.49	7.61
H1 lead leg	L		20	13	13	13	13	13	13	15	15	17.5	158.5				
Watrin, Julien (BEL) (1992)	time	5.77	9.41		17.15	21.15	25.29	29.50	33.90	38.60	43.44		49.08	8 / 5			
	reaction time	0.183															
	interval		3.64		7.74	4.00	4.14	4.21	4.40	4.70	4.84	5.64			11.38	12.35	13.94
	velocity	7.80	9.62		9.04	8.75	8.45	8.31	7.95	7.45	7.23	7.09	8.15		9.23	8.50	7.53
H1 lead leg	R		20	13		13	13	13	14	15	15	17.7	133.7				
Copello, Yasmani (TUR) (1987)	time	5.90	9.54		17.28	21.29	25.42	29.86	34.29	38.94	43.61		49.10	4 / 6			
	reaction time	0.172															
	interval		3.64		7.74	4.01	4.13	4.44	4.43	4.65	4.67	5.49			11.38	12.58	13.75
	velocity	7.63	9.62		9.04	8.73	8.47	7.88	7.90	7.53	7.49	7.29	8.15		9.23	8.35	7.64
H1 lead leg	R		20	13		13	13	14	14	14	14	17.5	132.5				
Bonvin, Julien (SUI) (1999)	time	5.77	9.34		16.95	20.89	24.99	29.43	34.04	38.80	43.84		49.63	2 / 7			
	reaction time	0.154															
	interval		3.57		7.61	3.94	4.10	4.44	4.61	4.76	5.04	5.79			11.18	12.48	14.41
	velocity	7.80	9.80		9.20	8.88	8.54	7.88	7.59	7.35	6.94	6.91	8.06		9.39	8.41	7.29
H1 lead leg	L		20	13		13	13	14	14	15	15	18.2	135.2				



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=KVFoxnqJtIs>

2022 ISTAF (Berlin, GER) (TV Analysis)

Men's 400m Hurdles

Date: 2022.09.04

FINAL

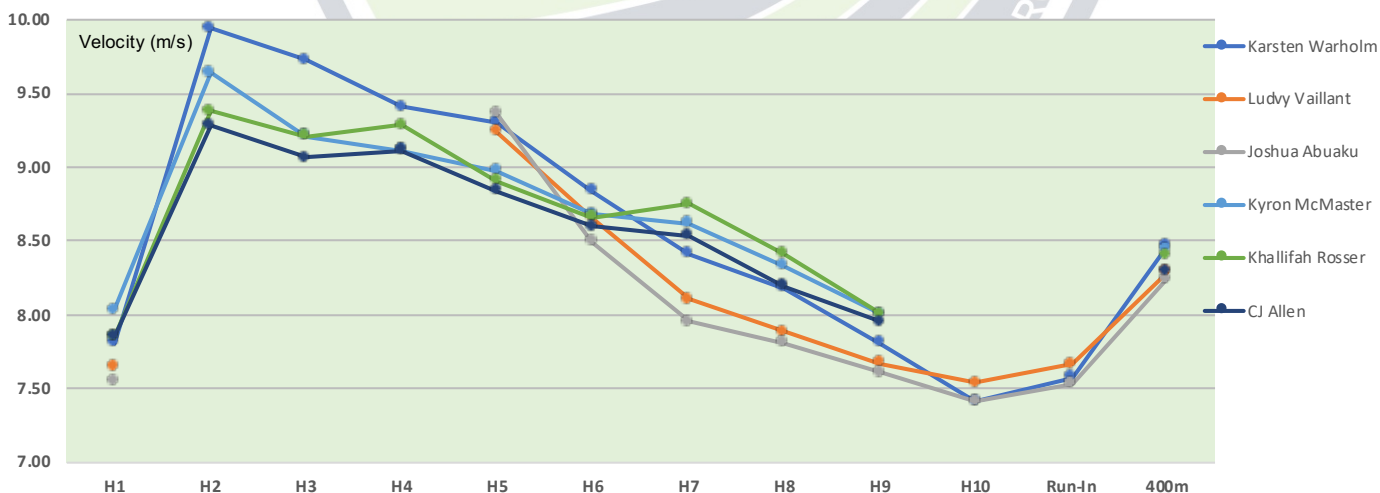
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Warholm, Karsten (NOR) (1996)	time	5.76	9.28	12.88	16.60	20.36	24.32	28.48	32.76	37.24	41.96		47.24	7 / 1			
	reaction time	0.139															
	interval		3.52	3.60	3.72	3.76	3.96	4.16	4.28	4.48	4.72	5.28			10.84	11.88	13.48
	velocity	7.81	9.94	9.72	9.41	9.31	8.84	8.41	8.18	7.81	7.42	7.58	8.47		9.69	8.84	7.79
H1 lead leg	L		20	13	13	13	13	13	13	13	15	18	157				
Vaillant, Ludvy (FRA) (1995)	time	5.88				21.04	25.08	29.40	33.84	38.40	43.04		48.26	6 / 2			
	reaction time	0.120					15.16	4.04	4.32	4.44	4.56	5.22	PB				13.64
	interval		7.65			9.23	8.66	8.10	7.88	7.68	7.54	7.66	8.29				7.70
	velocity	7.81	9.94	9.72	9.41	9.31	8.84	8.41	8.18	7.81	7.42	7.58	8.47				7.79
H1 lead leg	R		21			13	13	14	14	14	14	17	107				
Abuaku, Joshua (GER) (1996)	time	5.96				20.92	25.04	29.44	33.92	38.52	43.24		48.55	5 / 3			
	reaction time	0.174					14.96	4.12	4.40	4.48	4.60	5.31	PB				13.80
	interval		7.55			9.36	8.50	7.95	7.81	7.61	7.42	7.53	8.24				7.61
	velocity	7.81	9.94	9.72	9.41	9.31	8.84	8.41	8.18	7.81	7.42	7.58	8.47				7.79
H1 lead leg	R		20			13	13	14	14	15	15	18	109				

2022 NACAC Championships (Freeport, BAH) (TV Analysis)

Date: 2022.08.21

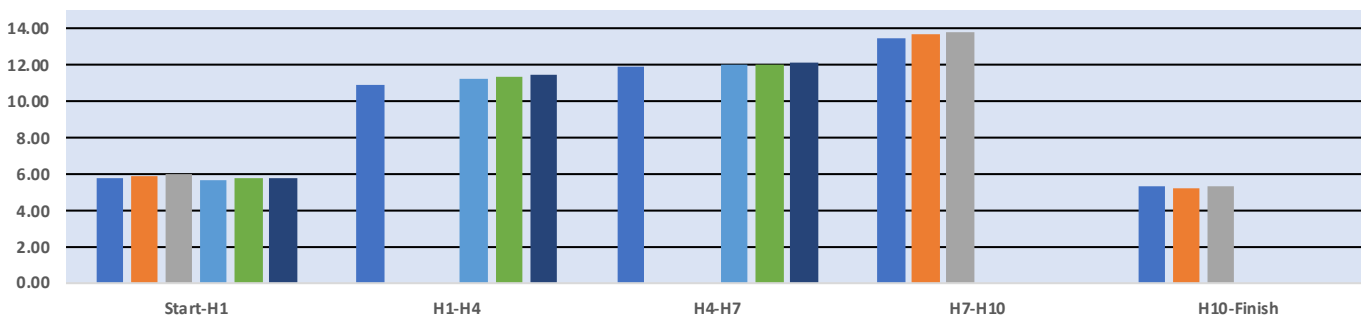
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
McMaster, Kyron (IVB) (1997)	time	5.60	9.23	13.03	16.87	20.77	24.80	28.86	33.06	37.43			47.34	6 / 1			
	reaction time			3.63	3.80	3.84	3.90	4.03	4.06	4.20	4.37		CR		11.27	11.99	
	interval		8.04	9.64	9.21	9.11	8.97	8.68	8.62	8.33	8.01		8.45		9.32	8.76	
	velocity	8.04	9.64	9.21	9.11	8.97	8.68	8.62	8.33	8.01			8.45		9.32	8.76	
H1 lead leg	L		13	13	13	13	13	13	13	14		105					
Rosser, Khallifah (USA) (1995)	time	5.73	9.46	13.26	17.03	20.96	25.00	29.00	33.16	37.53			47.59	4 / 2			
	reaction time			3.73	3.80	3.77	3.93	4.04	4.00	4.16	4.37		PB		11.30	11.97	
	interval		7.85	9.38	9.21	9.28	8.91	8.66	8.75	8.41	8.01		8.41		9.29	8.77	
	velocity	7.85	9.38	9.21	9.28	8.91	8.66	8.75	8.41	8.01			8.41		9.29	8.77	
H1 lead leg	R		21	13	13	13	13	13	13	14		126					
Allen, CJ (USA) (1995)	time	5.73	9.50	13.36	17.20	21.16	25.23	29.33	33.60	38.00			48.23	3 / 3			
	reaction time			3.77	3.86	3.84	3.96	4.07	4.10	4.27	4.40		8.29		11.47	12.13	
	interval		7.85	9.28	9.07	9.11	8.84	8.60	8.54	8.20	7.95		8.29		9.15	8.66	
	velocity	7.85	9.28	9.07	9.11	8.84	8.60	8.54	8.20	7.95			8.29		9.15	8.66	
H1 lead leg	L		13	13	13	13	13		14	14		93					



Time Intervals (s)

Hurdle Phases



ISTAF

Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1280 x 720 @ 30fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=6HsAuNVsOXU&t=20s>

NACAC

Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=ws8YQzQzTI6Q&t=33s>

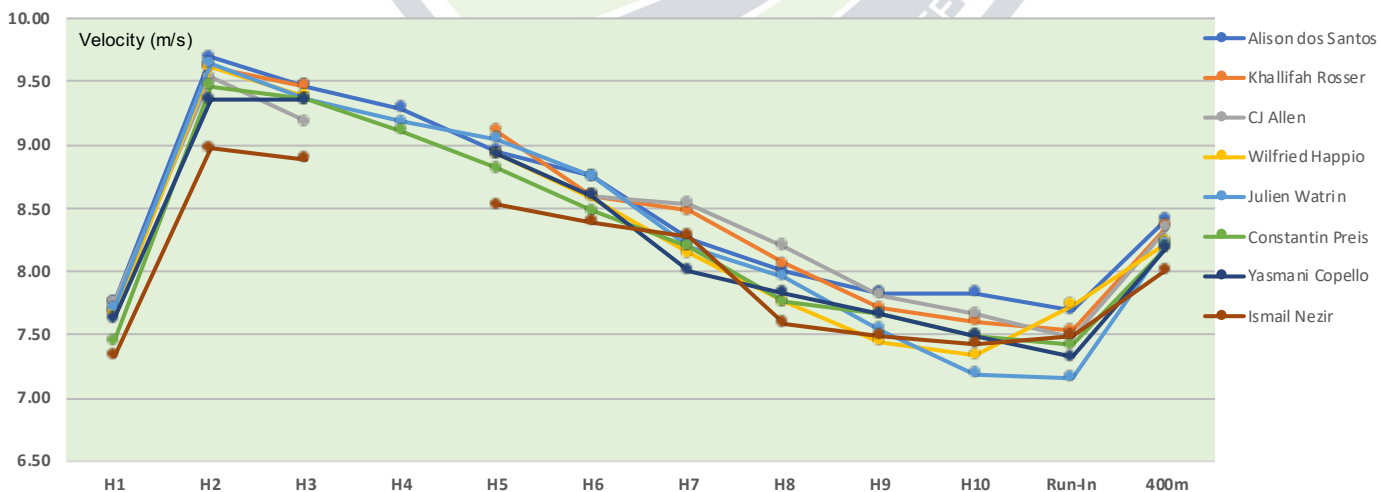
2022 Memorial van Damme (Brussels, BEL) (TV Analysis)

Men's 400m Hurdles

Date: 2022.09.02

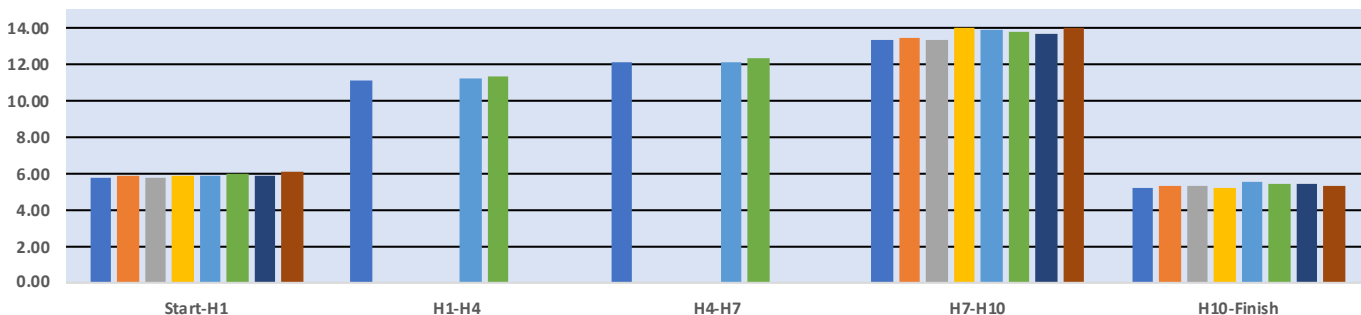
FINAL

		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	9.41	13.11	16.88	20.79	24.79	29.03	33.40	37.87	42.34		47.54	6 / 1			
	reaction time	0.210															
	interval		3.61	3.70	3.77	3.91	4.00	4.24	4.37	4.47	4.47	5.20			11.08	12.15	13.31
	velocity	7.76	9.70	9.46	9.28	8.95	8.75	8.25	8.01	7.83	7.83	7.69	8.41		9.48	8.64	7.89
H1 lead leg	L																
Rosser, Khalifah (USA) (1995)	time	5.87	9.51	13.21		20.89	24.96	29.09	33.43	37.97	42.57		47.88	4 / 2			
	reaction time	0.232															
	interval		3.64	3.70		7.68	4.07	4.13	4.34	4.54	4.60	5.31					13.48
	velocity	7.67	9.62	9.46		9.11	8.60	8.47	8.06	7.71	7.61	7.53	8.35				7.79
H1 lead leg	R																
Allen, CJ (USA) (1995)	time	5.80	9.47	13.28		21.12	25.19	29.29	33.56	38.04	42.61		47.96	2 / 3			
	reaction time	0.178															
	interval		3.67	3.81		7.84	4.07	4.10	4.27	4.48	4.57	5.35	DQ				13.32
	velocity	7.76	9.54	9.19		8.93	8.60	8.54	8.20	7.81	7.66	7.48	8.34				7.88
H1 lead leg	L																
Happio, Wilfried (FRA) (1998)	time	5.87	9.51	13.24		21.08	25.16	29.46	33.97	38.67	43.44		48.61	5 / 4			
	reaction time	0.170															
	interval		3.64	3.73		7.84	4.08	4.30	4.51	4.70	4.77	5.17					13.98
	velocity	7.67	9.62	9.38		8.93	8.58	8.14	7.76	7.45	7.34	7.74	8.23				7.51
H1 lead leg	L																
Watrin, Julien (BEL) (1992)	time	5.84	9.47	13.21	17.02	20.89	24.89	29.16	33.56	38.20	43.07		48.66	7 / 5			
	reaction time	0.224															
	interval		3.63	3.74	3.81	3.87	4.00	4.27	4.40	4.64	4.87	5.59	NR PB		11.18	12.14	13.91
	velocity	7.71	9.64	9.36	9.19	9.04	8.75	8.20	7.95	7.54	7.19	7.16	8.22		9.39	8.65	7.55
H1 lead leg	R																
Preis, Constantin (GER) (1198)	time	6.04	9.74	13.48	17.32	21.29	25.42	29.69	34.20	38.77	43.44		48.83	8 / 6			
	reaction time	0.253															
	interval		3.70	3.74	3.84	3.97	4.13	4.27	4.51	4.57	4.67	5.39			11.28	12.37	13.75
	velocity	7.45	9.46	9.36	9.11	8.82	8.47	8.20	7.76	7.66	7.49	7.42	8.19		9.31	8.49	7.64
H1 lead leg	L																
Copello, Yasmani (TUR) (1987)	time	5.90	9.64	13.38		21.22	25.29	29.66	34.13	38.70	43.37		48.83	3 / 7			
	reaction time	0.190															
	interval		3.74	3.74		7.84	4.07	4.37	4.47	4.57	4.67	5.46					13.71
	velocity	7.63	9.36	9.36		8.93	8.60	8.01	7.83	7.66	7.49	7.33	8.19				7.66
H1 lead leg	R																
Nezir, Ismail (TUR) (2003)	time	6.14	10.04	13.98		22.19	26.36	30.59	35.20	39.87	44.58		49.92	1 / 8			
	reaction time	0.170															
	interval		3.90	3.94		8.21	4.17	4.23	4.61	4.67	4.71	5.34					13.99
	velocity	7.33	8.97	8.88		8.53	8.39	8.27	7.59	7.49	7.43	7.49	8.01				7.51
H1 lead leg	L																



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=oDSyzeJlcXI>

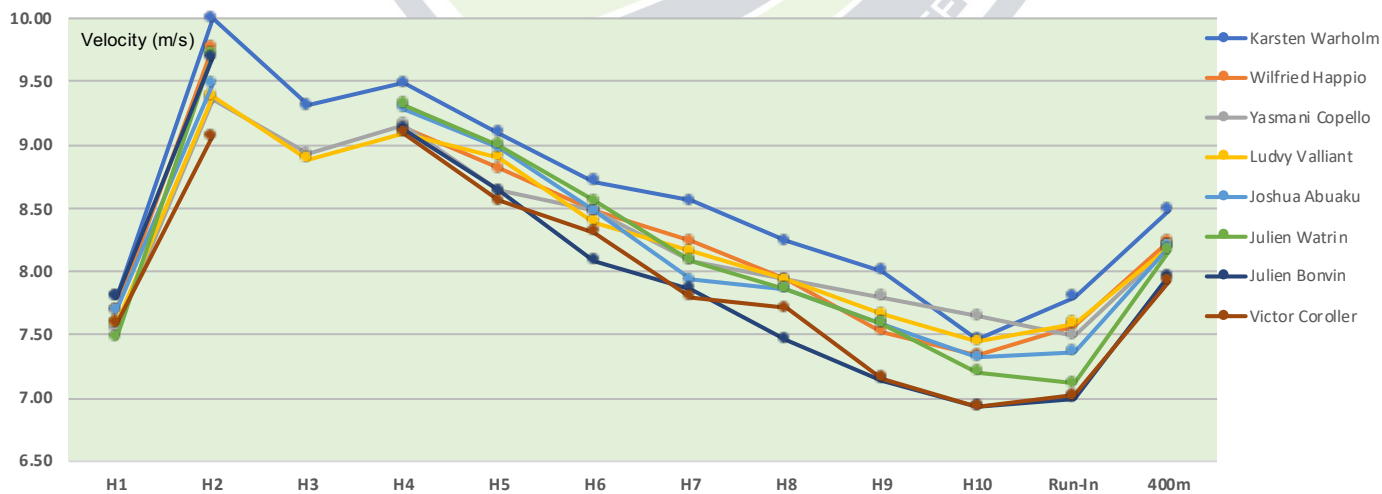
2022 European Athletics Championships (Munich, GER) (TV Analysis)

Men's 400m Hurdles

Date: 2022.08.19

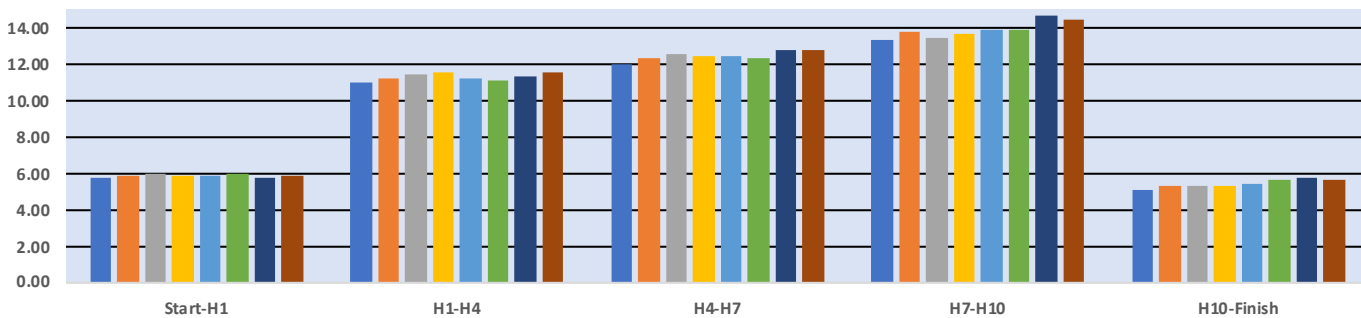
FINAL

		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	5.77	9.27	13.03	16.72	20.57	24.59	28.68	32.93	37.30	41.99		47.12	4 / 1			
	reaction time	0.215															
	interval		3.50	3.76	3.69	3.85	4.02	4.09	4.25	4.37	4.69	5.13	CR		10.95	11.96	13.31
	velocity	7.80	10.00	9.31	9.49	9.09	8.71	8.56	8.24	8.01	7.46	7.80	8.49		9.59	8.78	7.89
H1 lead leg	L																
Happio, Wilfried (FRA) (1998)	time	5.85	9.43		17.09	21.06	25.19	29.44	33.85	38.50	43.27		48.56	3 / 2			
	reaction time	0.185															
	interval		3.58		7.66	3.97	4.13	4.25	4.41	4.65	4.77	5.29			11.24	12.35	13.83
	velocity	7.69	9.78		9.14	8.82	8.47	8.24	7.94	7.53	7.34	7.56	8.24		9.34	8.50	7.59
H1 lead leg	L																
Copello, Yasmani (TUR) (1987)	time	5.97	9.71	13.63	17.45	21.50	25.63	29.96	34.37	38.86	43.44		48.78	6 / 3			
	reaction time	0.240															
	interval		3.74	3.92	3.82	4.05	4.13	4.33	4.41	4.49	4.58	5.34			11.48	12.51	13.48
	velocity	7.54	9.36	8.93	9.16	8.64	8.47	8.08	7.94	7.80	7.64	7.49	8.20		9.15	8.39	7.79
H1 lead leg	R																
Valliant, Ludvy (FRA) (1995)	time	5.93	9.66	13.60	17.45	21.38	25.55	29.84	34.25	38.82	43.52		48.79	5 / 4			
	reaction time	0.193															
	interval		3.73	3.94	3.85	3.93	4.17	4.29	4.41	4.57	4.70	5.27			11.52	12.39	13.68
	velocity	7.59	9.38	8.88	9.09	8.91	8.39	8.16	7.94	7.66	7.45	7.59	8.20		9.11	8.47	7.68
H1 lead leg	R																
Abuaku, Joshua (GER) (1996)	time	5.85	9.54		17.08	20.98	25.11	29.52	33.97	38.58	43.36		48.79	7 / 5			
	reaction time	0.168															
	interval		3.69		7.54	3.90	4.13	4.41	4.45	4.61	4.78	5.43	PB		11.23	12.44	13.84
	velocity	7.69	9.49		9.28	8.97	8.47	7.94	7.87	7.59	7.32	7.37	8.20		9.35	8.44	7.59
H1 lead leg	L																
Watrin, Julien (BEL) (1992)	time	6.02	9.62		17.13	21.02	25.11	29.44	33.89	38.50	43.36		48.98	2 / 6			
	reaction time	0.173															
	interval		3.60		7.51	3.89	4.09	4.33	4.45	4.61	4.86	5.62			11.11	12.31	13.92
	velocity	7.48	9.72		9.32	9.00	8.56	8.08	7.87	7.59	7.20	7.12	8.17		9.45	8.53	7.54
H1 lead leg	R																
Bonvin, Julien (SUI) (1999)	time	5.77	9.38		17.05	21.10	25.43	29.88	34.57	39.47	44.52		50.24	1 / 7			
	reaction time	0.216															
	interval		3.61		7.67	4.05	4.33	4.45	4.69	4.90	5.05	5.72			11.28	12.83	14.64
	velocity	7.80	9.70		9.13	8.64	8.08	7.87	7.46	7.14	6.93	6.99	7.96		9.31	8.18	7.17
H1 lead leg	L																
Coroller, Victor (FRA) (1997)	time	5.93	9.79		17.49	21.58	25.79	30.28	34.82	39.71	44.76		50.46	8 / 8			
	reaction time	0.201															
	interval		3.86		7.70	4.09	4.21	4.49	4.54	4.89	5.05	5.70			11.56	12.79	14.48
	velocity	7.59	9.07		9.09	8.56	8.31	7.80	7.71	7.16	6.93	7.02	7.93		9.08	8.21	7.25
H1 lead leg	R																



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 50fps

Timing From: First Movement

Source: https://www.youtube.com/watch?v=sf_-70eAndI

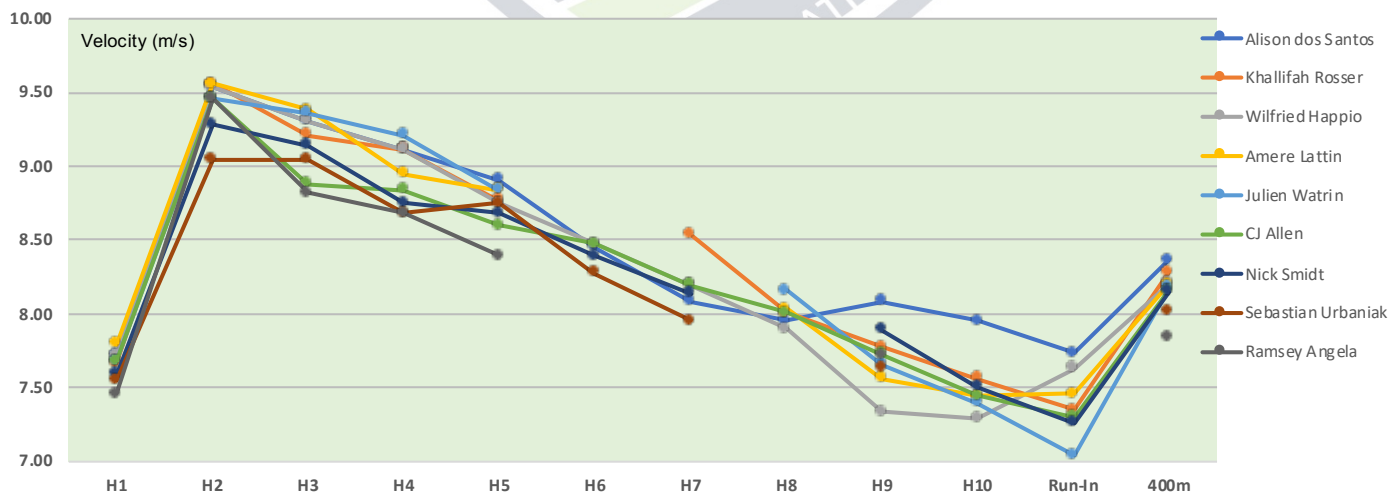
2022 Silesia Kamila Skolimowska Memorial (Chorzów, POL) (TV Analysis)

Men's 400m Hurdles

Date: 2022.08.06

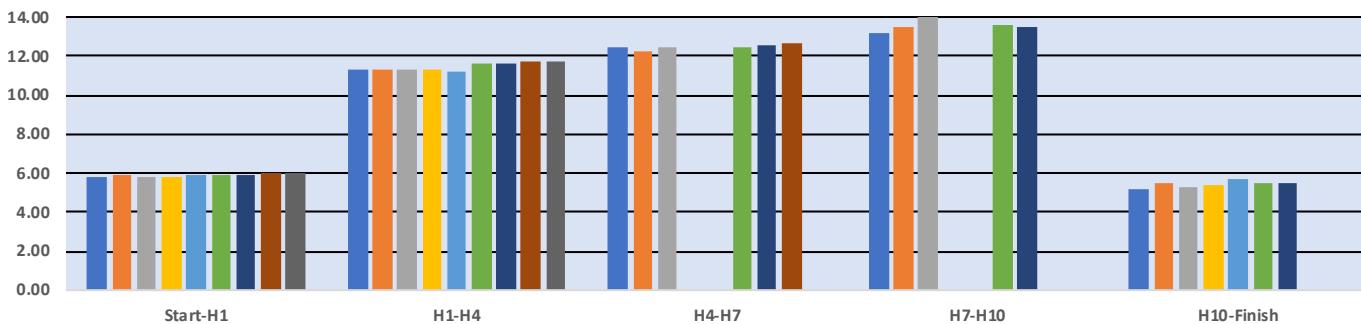
FINAL

		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	5.83	9.50	13.26	17.10	21.03	25.17	29.50	33.90	38.23	42.63		47.80	6 / 1			
	reaction time	0.179															
	interval		3.67	3.76	3.84	3.93	4.14	4.33	4.40	4.33	4.40	5.17			11.27	12.40	13.13
	velocity	7.72	9.54	9.31	9.11	8.91	8.45	8.08	7.95	8.08	7.95	7.74	8.37		9.32	8.47	8.00
H1 lead leg	L																
Rosser, Khalifah (USA) (1995)	time	5.87	9.53	13.33	17.17	21.16		29.36	33.73	38.23	42.86		48.30	4 / 2			
	reaction time	0.177															
	interval		3.66	3.80	3.84	3.99		8.20	4.37	4.50	4.63	5.44			11.30	12.19	13.50
	velocity	7.67	9.56	9.21	9.11	8.77		8.54	8.01	7.78	7.56	7.35	8.28		9.29	8.61	7.78
H1 lead leg	R																
Happio, Wilfried (FRA) (1998)	time	5.83	9.50	13.26	17.10	21.10	25.23	29.50	33.93	38.70	43.50		48.74	5 / 3			
	reaction time	0.154															
	interval		3.67	3.76	3.84	4.00	4.13	4.27	4.43	4.77	4.80	5.24			11.27	12.40	14.00
	velocity	7.72	9.54	9.31	9.11	8.75	8.47	8.20	7.90	7.34	7.29	7.63	8.21		9.32	8.47	7.50
H1 lead leg	L																
Lattin, Amere (USA) (1997)	time	5.77	9.43	13.16	17.07	21.03			34.10	38.73	43.43		48.79	2 / 4			
	reaction time	0.147															
	interval		3.66	3.73	3.91	3.96			13.07	4.63	4.70	5.36			11.30		
	velocity	7.80	9.56	9.38	8.95	8.84			8.03	7.56	7.45	7.46	8.20		9.29		
H1 lead leg	L																
Watrin, Julien (BEL) (1992)	time	5.86	9.56	13.30	17.10	21.06			33.93	38.50	43.23		48.91	3 / 5			
	reaction time	0.225															
	interval		3.70	3.74	3.80	3.96			12.87	4.57	4.73	5.68			11.24		
	velocity	7.68	9.46	9.36	9.21	8.84			8.16	7.66	7.40	7.04	8.18		9.34		
H1 lead leg	R																
Allen, CJ (USA) (1995)	time	5.86	9.56	13.50	17.46	21.53	25.66	29.93	34.30	38.83	43.53		49.01	7 / 6			
	reaction time	0.152															
	interval		3.70	3.94	3.96	4.07	4.13	4.27	4.37	4.53	4.70	5.48			11.60	12.47	13.60
	velocity	7.68	9.46	8.88	8.84	8.60	8.47	8.20	8.01	7.73	7.45	7.30	8.16		9.05	8.42	7.72
H1 lead leg	L																
Smidt, Nick (NED) (1997)	time	5.93	9.70	13.53	17.53	21.56	25.73	30.03		38.90	43.56		49.07	9 / 7			
	reaction time	0.154															
	interval		3.77	3.83	4.00	4.03	4.17	4.30		8.87	4.66	5.51	PB		11.60	12.50	13.53
	velocity	7.59	9.28	9.14	8.75	8.68	8.39	8.14		7.89	7.51	7.26	8.15		9.05	8.40	7.76
H1 lead leg	L																
Urbaniak, Sebastian (POL) (2001)	time	5.96	9.83	13.70	17.73	21.73	25.96	30.36		39.53			49.85	8 / 8			
	reaction time	0.160															
	interval		3.87	3.87	4.03	4.00	4.23	4.40		9.17							
	velocity	7.55	9.04	9.04	8.68	8.75	8.27	7.95		7.63					11.77	12.63	
H1 lead leg	L													8.92	8.31		
Angela, Ramsey (NED) (1999)	time	6.03	9.73	13.70	17.73	21.90				40.03			50.98	1 / 9			
	reaction time	0.188															
	interval		3.70	3.97	4.03	4.17				18.13							
	velocity	7.46	9.46	8.82	8.68	8.39				7.72					11.70		
H1 lead leg	R													8.97			



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=MwIm2TiauOU>

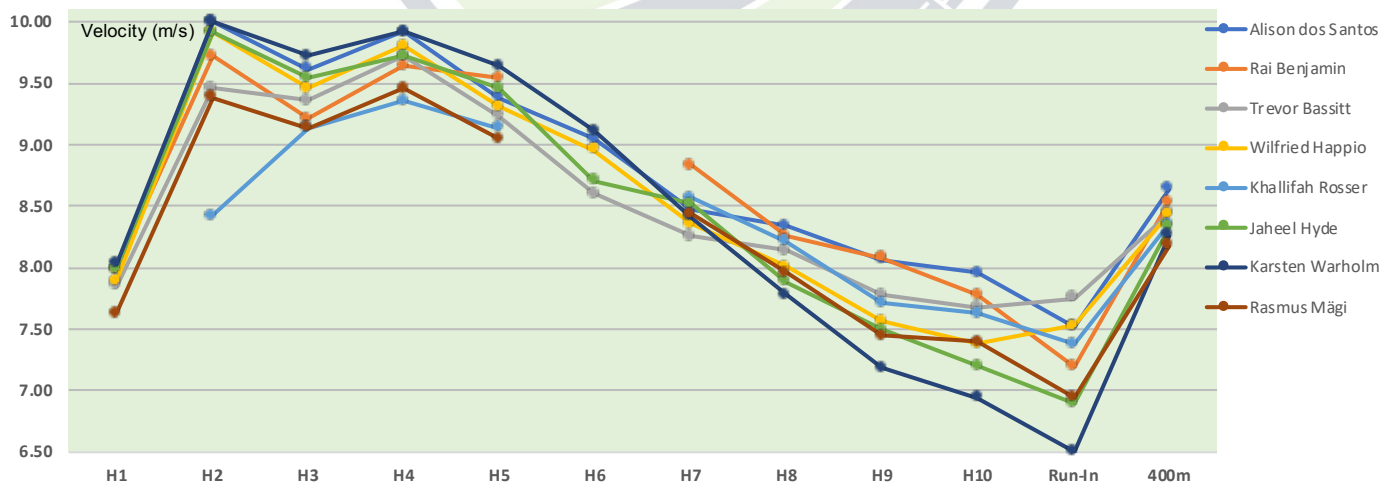
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.07.19

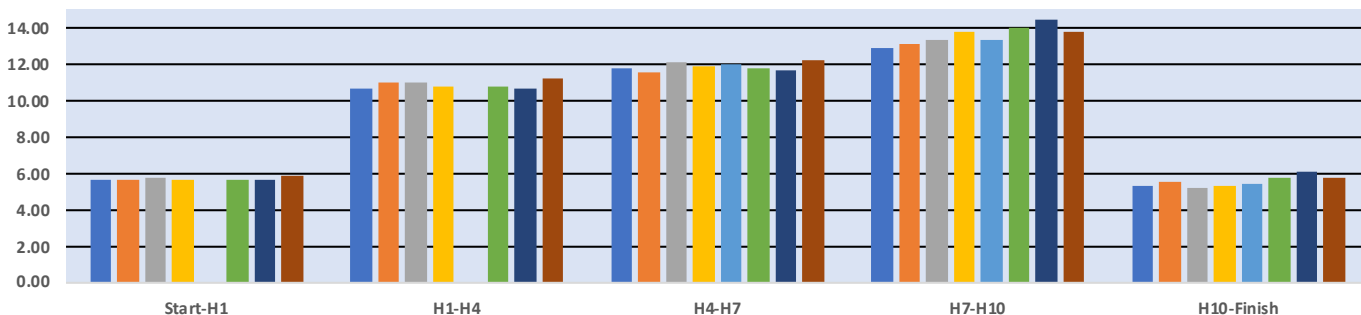
FINAL

		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	5.63	9.13	12.77	16.30	20.03	23.90	28.03	32.23	36.57	40.97		46.29	6 / 1			
	reaction time	0.141															
	interval		3.50	3.64	3.53	3.73	3.87	4.13	4.20	4.34	4.40	5.32	CR NR		10.67	11.73	12.94
	velocity	7.99	10.00	9.62	9.92	9.38	9.04	8.47	8.33	8.06	7.95	7.52	8.64		9.84	8.95	8.11
H1 lead leg	L		20	13	12	12	12	13	13	13	13	16.2	149.2				
Benjamin, Rai (USA) (1997)	time	5.63	9.23	13.03	16.66	20.33		28.26	32.50	36.83	41.33		46.89	3 / 2			
	reaction time	0.157															
	interval		3.60	3.80	3.63	3.67		7.93	4.24	4.33	4.50	5.56			11.03	11.60	13.07
	velocity	7.99	9.72	9.21	9.64	9.54		8.83	8.25	8.08	7.78	7.19	8.53		9.52	9.05	8.03
H1 lead leg	R		20	13	13	12		13	13	13	13	16.5	126.5				
Bassitt, Trevor (USA) (1998)	time	5.73	9.43	13.17	16.77	20.56	24.63	28.87	33.17	37.67	42.23		47.39	8 / 3			
	reaction time	0.147															
	interval		3.70	3.74	3.60	3.79	4.07	4.24	4.30	4.50	4.56	5.16	PB		11.04	12.10	13.36
	velocity	7.85	9.46	9.36	9.72	9.23	8.60	8.25	8.14	7.78	7.68	7.75	8.44		9.51	8.68	7.86
H1 lead leg	R		20	13	13	12	13	13	13	13	13	16.2	151.2				
Happio, Wilfried (FRA) (1998)	time	5.70	9.23	12.93	16.50	20.26	24.17	28.36	32.73	37.36	42.10		47.41	5 / 4			
	reaction time	0.134															
	interval		3.53	3.70	3.57	3.76	3.91	4.19	4.37	4.63	4.74	5.31	PB		10.80	11.86	13.74
	velocity	7.89	9.92	9.46	9.80	9.31	8.95	8.35	8.01	7.56	7.38	7.53	8.44		9.72	8.85	7.64
H1 lead leg	L		20	13	13	13	13	13	13	15	15	18	159				
Rosser, Khalifah (USA) (1995)	time		9.50	13.33	17.07	20.90		29.07	33.33	37.87	42.46		47.88	1 / 5			
	reaction time	0.176															
	interval		3.83	3.74	3.83	3.83	4.02	4.11	4.44	4.67	4.86	5.42				12.00	13.39
	velocity		8.42	9.14	9.36	9.14		8.57	8.22	7.71	7.63	7.38	8.35			8.75	7.84
H1 lead leg			13	13	13	13		14	14	14	17.5	98.5					
Hyde, Jaheel (JAM) (1997)	time	5.63	9.16	12.83	16.43	20.13	24.15	28.26	32.70	37.37	42.23		48.03	7 / 6			
	reaction time	0.149															
	interval		3.53	3.67	3.60	3.70	4.02	4.11	4.44	4.67	4.86	5.80	PB		10.80	11.83	13.97
	velocity	7.99	9.92	9.54	9.72	9.46	8.71	8.52	7.88	7.49	7.20	6.90	8.33		9.72	8.88	7.52
H1 lead leg	L		22	13	13	13	13	14	14	15	15	18.2	165.2				
Warholm, Karsten (NOR) (1996)	time	5.60	9.10	12.70	16.23	19.86	23.70	27.86	32.36	37.23	42.27		48.42	4 / 7			
	reaction time	0.140															
	interval		3.50	3.60	3.53	3.63	3.84	4.16	4.50	4.87	5.04	6.15			10.63	11.63	14.41
	velocity	8.04	10.00	9.72	9.92	9.64	9.11	8.41	7.78	7.19	6.94	6.50	8.26		9.88	9.03	7.29
H1 lead leg	L		20	13	13	13	13	13	15	15	15	18.5	161.5				
Mägi, Rasmus (EST) (1992)	time	5.90	9.63	13.46	17.16	21.03		29.33	33.73	38.43	43.16		48.92	2 / 8			
	reaction time	0.140															
	interval		3.73	3.83	3.70	3.87		8.30	4.40	4.70	4.73	5.76			11.26	12.17	13.83
	velocity	7.63	9.38	9.14	9.46	9.04		8.43	7.95	7.45	7.40	6.94	8.18		9.33	8.63	7.59
H1 lead leg	R		13	13	13	13		14	14	15	18	113					



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=EFLzKktf6RA>

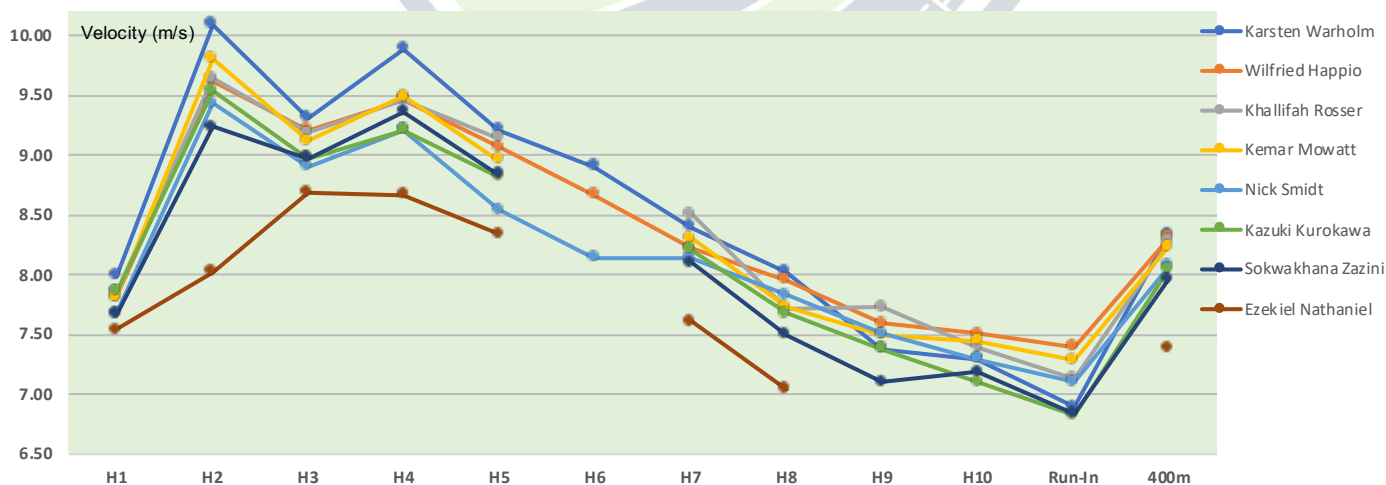
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.07.17

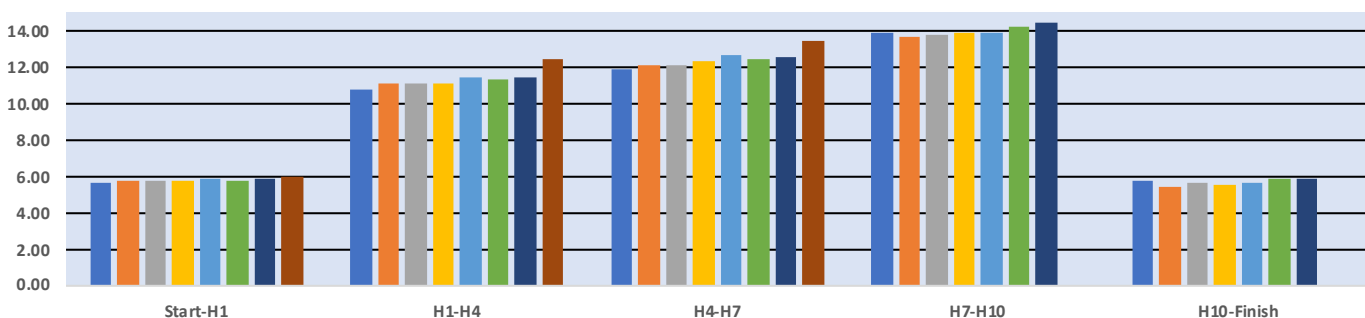
Semi-Final 3

		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	5.63	9.10	12.86	16.40	20.20	24.13	28.30	32.66	37.40	42.20		48.00	5 / 1			
	reaction time	0.169															
	interval velocity	7.99	10.09	9.31	9.89	9.21	8.91	8.39	8.03	7.38	7.29	6.90	8.33		10.77	11.90	13.90
H1 lead leg	L	20	13	13	13	13	13	13	13	15	15	17.7	158.7		9.75	8.82	7.55
Happio, Wilfried (FRA) (1998)	time	5.76	9.40	13.20	16.90	20.76	24.80	29.06	33.46	38.07	42.73		48.14	6 / 2			
	reaction time	0.136															
	interval velocity	7.81	9.62	9.21	9.46	9.07	8.66	8.22	7.95	7.59	7.51	7.39	8.31		11.14	12.16	13.67
H1 lead leg	L	20	13	13	13	13	13	13	13	15	15	18	159		9.43	8.63	7.68
Rosser, Khallifah (USA) (1995)	time	5.73	9.36	13.17	16.87	20.70		28.93	33.47	38.00	42.73		48.34	3 / 3			
	reaction time	0.141															
	interval velocity	7.85	9.64	9.19	9.46	9.14		8.51	7.71	7.73	7.40	7.13	8.27		11.14	12.06	13.80
H1 lead leg	R	21	13	13	13	13		14	14	14	14	18	133		9.43	8.71	7.61
Mowatt, Kemar (JAM) (1995)	time	5.76	9.33	13.17	16.86	20.77		29.20	33.73	38.40	43.10		48.59	4 / 4			
	reaction time	0.143															
	interval velocity	7.81	9.80	9.11	9.49	8.95		8.43	7.73	7.49	7.45	7.29	8.23		11.10	12.34	13.90
H1 lead leg	L	21	13	13	13	13		15	15	15	18	136		9.46	8.51	7.55	
Smidt, Nick (NED) (1997)	time	5.86	9.57	13.50	17.30	21.40	25.70	30.00	34.47	39.13	43.93		49.56	8 / 5			
	reaction time	0.145															
	interval velocity	7.68	9.43	8.91	9.21	8.54	8.14	8.14	7.83	7.51	7.29	7.10	8.07		11.44	12.70	13.93
H1 lead leg	L	20	13	13	13	14	14	14	14	14	15	18	162		9.18	8.27	7.54
Kurokawa, Kazuki (JPN) (2001)	time	5.73	9.40	13.30	17.10	21.07		29.60	34.16	38.90	43.83		49.69	1 / 6			
	reaction time	0.136															
	interval velocity	7.85	9.54	8.97	9.21	8.82		8.53	7.68	7.38	7.10	6.83	8.05		11.37	12.50	14.23
H1 lead leg	L		13	13	13	13		15	15	15	18	115		9.23	8.40	7.38	
Zazini, Sokwakhana (RSA) (2000)	time	5.87	9.66	13.56	17.30	21.26		29.90	34.57	39.50	44.37		50.22	2 / 7			
	reaction time	0.153															
	interval velocity	7.67	9.23	8.97	9.36	8.84		8.64	7.49	7.10	7.19	6.84	7.96		11.43	12.60	14.47
H1 lead leg	L	23	15	15	15	15		16	17	17	20.2	153.2		9.19	8.33	7.26	
Nathaniel, Ezekiel (NGR) (2003)	time	5.97	10.33	14.36	18.40	22.60		31.80	36.77				54.18	7 / 8			
	reaction time	0.176															
	interval velocity	7.54	8.03	8.68	8.66	8.33		9.20	4.97				7.38		12.43	13.40	
H1 lead leg	R	21	15	14	13	13		14	14				104		8.45	7.84	



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=lu7cOzY50p8>

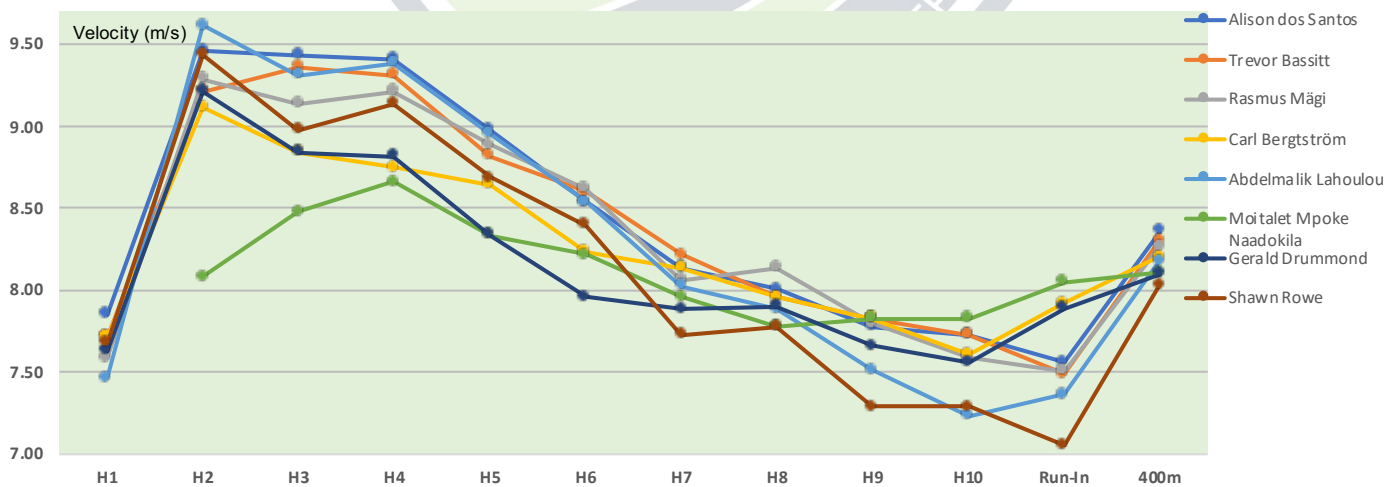
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.07.17

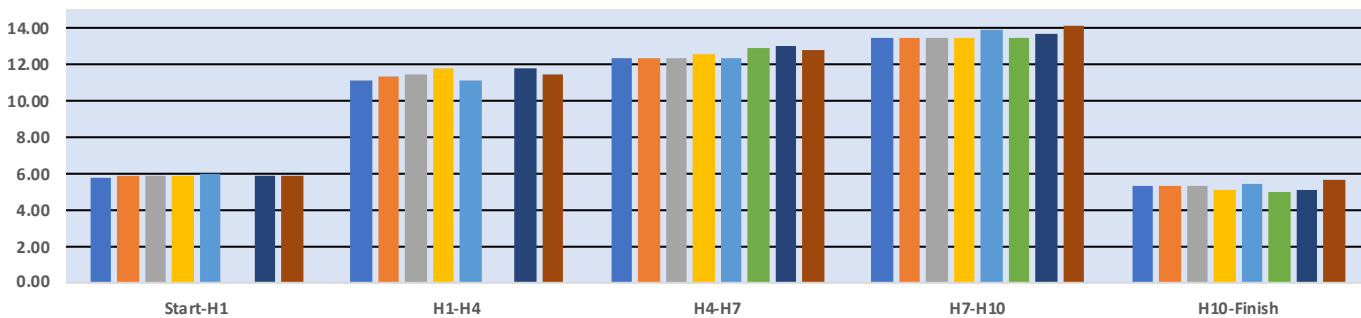
Semi-Final 2

		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	5.73	9.43	13.14	16.86	20.76	24.86	29.16	33.53	38.03	42.56		47.85	5 / 1			
	reaction time	0.166															
	interval velocity	7.85	9.46	9.43	9.41	8.97	8.54	8.14	8.01	7.78	7.73	7.56	8.36		11.13	12.30	13.40
	H1 lead leg	L	20	13	12	12	12	12	13	13	13	13	16	149		9.43	8.54
Bassitt, Trevor (USA) (1998)	time	5.83	9.63	13.37	17.13	21.10	25.17	29.43	33.83	38.30	42.83		48.17	7 / 2			
	reaction time	0.144															
	interval velocity	7.72	9.21	9.36	9.31	8.82	8.60	8.22	7.95	7.83	7.73	7.49	8.30		11.30	12.30	13.40
	H1 lead leg	R	20	13	13	13	13	13	13	13	13	13	16	153		9.29	8.54
Mägi, Rasmus (EST) (1992)	time	5.93	9.70	13.53	17.33	21.27	25.33	29.67	33.97	38.46	43.07		48.40	4 / 3			
	reaction time	0.137															
	interval velocity	7.59	9.28	9.14	9.21	8.88	8.62	8.06	8.14	7.80	7.59	7.50	8.26		11.40	12.34	13.40
	H1 lead leg	R	21	13	13	13	13	13	13	14	14	14	17.5	158.5		9.21	8.51
Bergström, Carl (SWE) (2000)	time	5.83	9.67	13.63	17.63	21.68	25.93	30.23	34.63	39.10	43.70		48.75	8 / 4			
	reaction time	0.161															
	interval velocity	7.72	9.11	8.84	8.75	8.64	8.24	8.14	7.95	7.83	7.61	7.92	8.21		11.80	12.60	13.47
	H1 lead leg	L	22	14	14	14	14	15	15	15	15	15	18.2	171.2		8.90	8.33
Lahoulou, Abdelmalik (ALG) (1992)	time	6.03	9.67	13.43	17.16	21.07	25.17	29.53	33.97	38.63	43.47		48.90	3 / 5			
	reaction time	0.157															
	interval velocity	7.46	9.62	9.31	9.38	8.95	8.54	8.03	7.88	7.51	7.23	7.37	8.18		11.13	12.37	13.94
	H1 lead leg	L	22	13	13	13	13	13	14	14	15	15	17.2	162.2		9.43	8.49
Naadokila, Moitalel Mpoke (KEN) (2000)	time		9.90	14.03	18.07	22.27	26.53	30.93	35.43	39.90	44.37		49.34	1 / 6			
	reaction time	0.149															
	interval velocity		8.08	8.47	8.66	8.33	8.22	7.95	7.78	7.83	7.83	8.05	8.11			12.86	13.44
	H1 lead leg			14	14	14	14	14	14	14	14	14	17	129		8.16	7.81
Drummond, Gerald (CRC) (1994)	time	5.90	9.70	13.66	17.63	21.83	26.23	30.67	35.10	39.67	44.30		49.37	6 / 7			
	reaction time	0.188															
	interval velocity	7.63	9.21	8.84	8.82	8.33	7.95	7.88	7.90	7.66	7.56	7.89	8.10		11.73	13.04	13.63
	H1 lead leg	L	22	14	14	14	14	15	15	15	15	15	18	171		8.95	8.05
Rowe, Shawn (JAM) (1992)	time	5.86	9.57	13.47	17.30	21.33	25.50	30.03	34.53	39.33	44.13		49.80	2 / 8			
	reaction time	0.158															
	interval velocity	7.68	9.43	8.97	9.14	8.68	8.39	7.73	7.78	7.29	7.29	7.05	8.03		11.44	12.73	14.10
	H1 lead leg	L	20	13	13	13	13	13	14	14	14	14	17	158		9.18	8.25



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=lu7cOzY50p8>

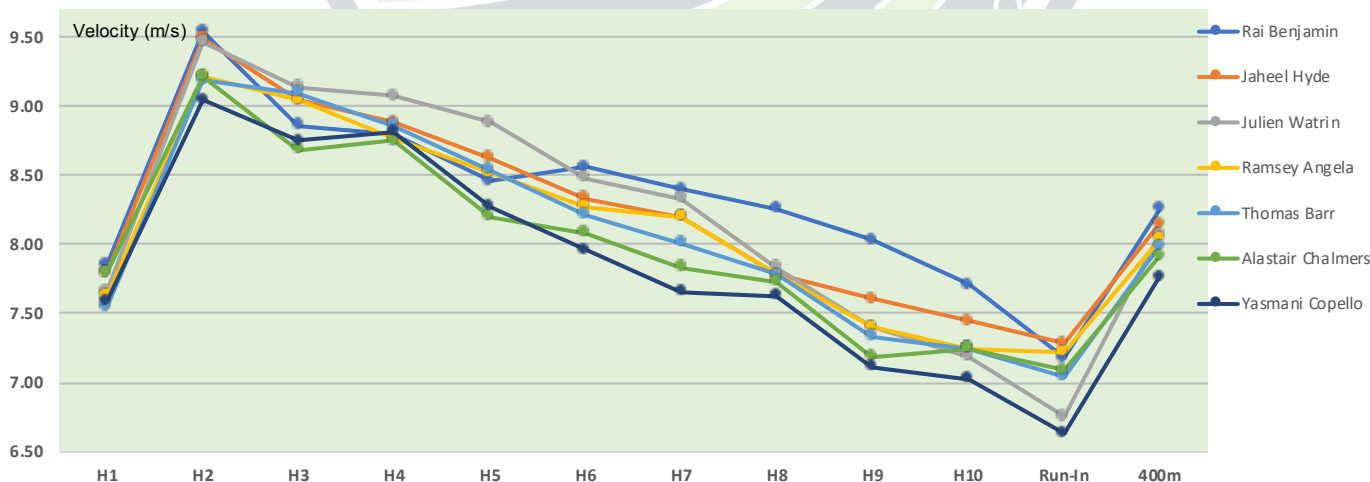
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.07.17

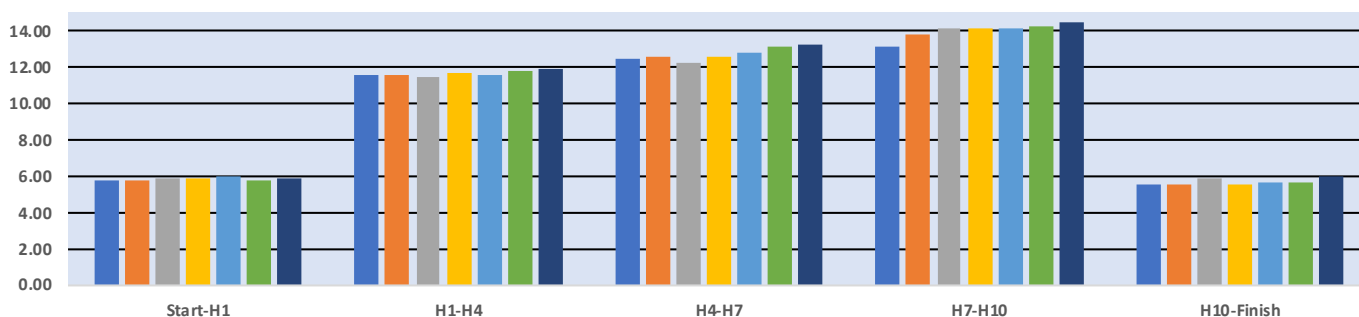
Semi-Final 1

		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	5.73	9.40	13.35	17.33	21.47	25.56	29.73	33.97	38.33	42.87		48.44	6 / 1			
	reaction time	0.181															
	interval		3.67	3.95	3.98	4.14	4.09	4.17	4.24	4.36	4.54	5.57			11.60	12.40	13.14
	velocity	7.85	9.54	8.86	8.79	8.45	8.56	8.39	8.25	8.03	7.71	7.18	8.26		9.05	8.47	7.99
H1 lead leg	R																
		20	13	13	13	13	13	13	13	13	13	16	153				
Hyde, Jaheel (JAM) (1997)	time	5.77	9.46	13.33	17.27	21.33	25.53	29.80	34.30	38.90	43.60		49.09	8 / 2			
	reaction time	0.149															
	interval		3.69	3.87	3.94	4.06	4.20	4.27	4.50	4.60	4.70	5.49			11.50	12.53	13.80
	velocity	7.80	9.49	9.04	8.88	8.62	8.33	8.20	7.78	7.61	7.45	7.29	8.15		9.13	8.38	7.61
H1 lead leg	L																
		22	13	13	13	13	14	14	14	14	15	18	163				
Watrin, Julien (BEL) (1992)	time	5.87	9.57	13.40	17.26	21.20	25.33	29.53	34.00	38.73	43.60		49.52	3 / 3			
	reaction time	0.186															
	interval		3.70	3.83	3.86	3.94	4.13	4.20	4.47	4.73	4.87	5.92			11.39	12.27	14.07
	velocity	7.67	9.46	9.14	9.07	8.88	8.47	8.33	7.83	7.40	7.19	6.76	8.08		9.22	8.56	7.46
H1 lead leg	R																
		21	13	13	13	13	14	14	15	15	15	18.7	164.7				
Angela, Ramsey (NED) (1999)	time	5.90	9.70	13.57	17.56	21.67	25.90	30.17	34.67	39.40	44.23		49.77	4 / 4			
	reaction time	0.155															
	interval		3.80	3.87	3.99	4.11	4.23	4.27	4.50	4.73	4.83	5.54			11.66	12.61	14.06
	velocity	7.63	9.21	9.04	8.77	8.52	8.27	8.20	7.78	7.40	7.25	7.22	8.04		9.01	8.33	7.47
H1 lead leg	R																
		22	14	14	14	14	15	15	15	15	15	18.2	171.2				
Barr, Thomas (IRL) (1992)	time	5.96	9.77	13.62	17.57	21.67	25.93	30.30	34.80	39.57	44.40		50.08	5 / 3			
	reaction time	0.157															
	interval		3.81	3.85	3.95	4.10	4.26	4.37	4.53	4.77	4.83	5.68			11.61	12.73	14.10
	velocity	7.55	9.19	9.09	8.86	8.54	8.22	8.01	7.78	7.34	7.25	7.04	7.99		9.04	8.25	7.45
H1 lead leg	L																
		20	13	13	13	13	14	14	14	15	15	18	162				
Chalmers, Alastair (GBR) (2000)	time	5.77	9.57	13.60	17.60	21.87	26.20	30.67	35.20	40.07	44.90		50.54	1 / 6			
	reaction time	0.157															
	interval		3.80	4.03	4.00	4.27	4.33	4.47	4.53	4.87	4.83	5.64			11.83	13.07	14.23
	velocity	7.80	9.21	8.68	8.75	8.20	8.08	7.83	7.73	7.19	7.25	7.09	7.91		8.88	8.03	7.38
H1 lead leg	L																
		20	13	13	13	13	14	14	15	15	15	18	163				
Copello, Yasmani (TUR) (1987)	time	5.93	9.80	13.80	17.77	22.00	26.40	30.97	35.56	40.48	45.46		51.49	2 / 7			
	reaction time	0.166															
	interval		3.87	4.00	3.97	4.23	4.40	4.57	4.59	4.92	4.98	6.03			11.84	13.20	14.49
	velocity	7.59	9.04	8.75	8.82	8.27	7.95	7.66	7.63	7.11	7.03	6.63	7.77		8.87	7.95	7.25
H1 lead leg	L																
		20	13	13	13	13	14	14	14	15	14	18	161				



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=lu7cOzY50q8>

2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.07.16

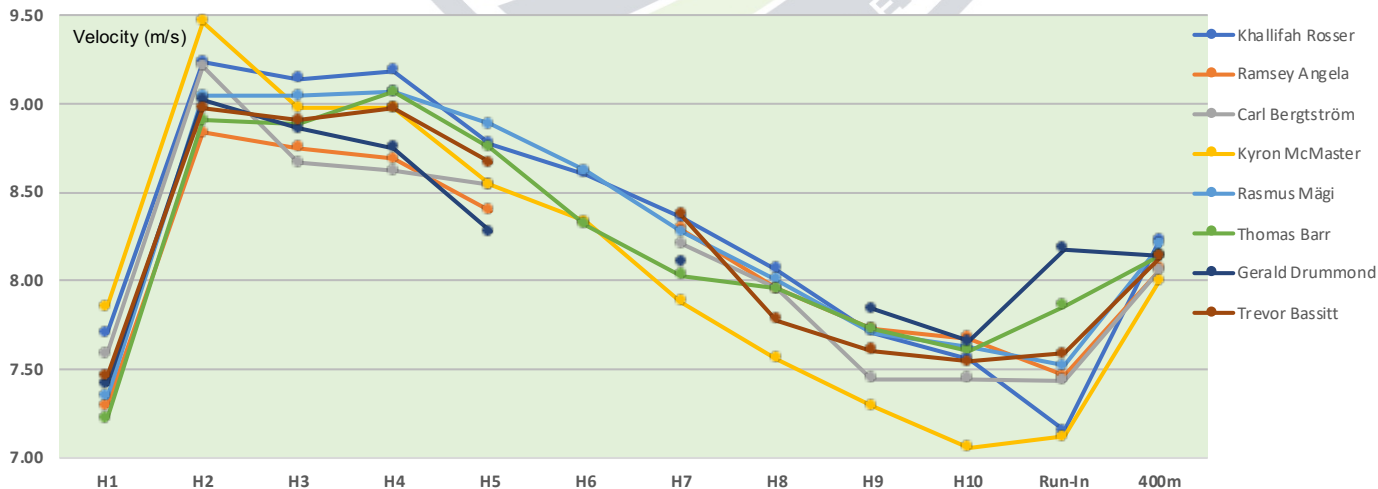
Heat 5

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Rosser, Khalilfah (USA) (1995)	time	5.84	9.63	13.46	17.27	21.26	25.33	29.52	33.86	38.40	43.03		48.62	2 / 1			
	reaction time	0.168															
	interval velocity	7.71	9.23	9.14	9.19	8.77	8.60	8.35	8.06	7.71	7.56	7.16	8.23		11.43	12.25	13.51
H1 lead leg	R												156.2		9.19	8.57	7.77
Angela, Ramsey (NED) (1999)	time	6.17	10.13	14.13	18.16	22.33		30.77	35.17	39.70	44.26		49.62	3 / 2			
	reaction time	0.182															
	interval velocity	7.29	8.84	8.75	8.68	8.39		8.29	7.95	7.73	7.68	7.46	8.06		11.99	12.61	13.49
H1 lead leg	R											141		8.76	8.33	7.78	
Bergtström, Carl (SWE) (2000)	time	5.93	9.73	13.77	17.83	21.93		30.46	34.86	39.56	44.26		49.64	8 / 3			
	reaction time	0.169															
	interval velocity	7.59	9.21	8.66	8.62	8.54		8.21	7.95	7.45	7.45	7.43	8.06		11.90	12.63	13.80
H1 lead leg	L											141		8.82	8.31	7.61	
McMaster, Kyron (IVB) (1997)	time	5.73	9.43	13.33	17.23	21.33	25.53	29.97	34.60	39.40	44.36		49.98	4 / 4			
	reaction time	0.157															
	interval velocity	7.85	9.46	8.97	8.97	8.54	8.33	7.88	7.56	7.29	7.06	7.12	8.00		11.50	12.74	14.39
H1 lead leg	L											160		9.13	8.24	7.30	

Date: 2022.07.16

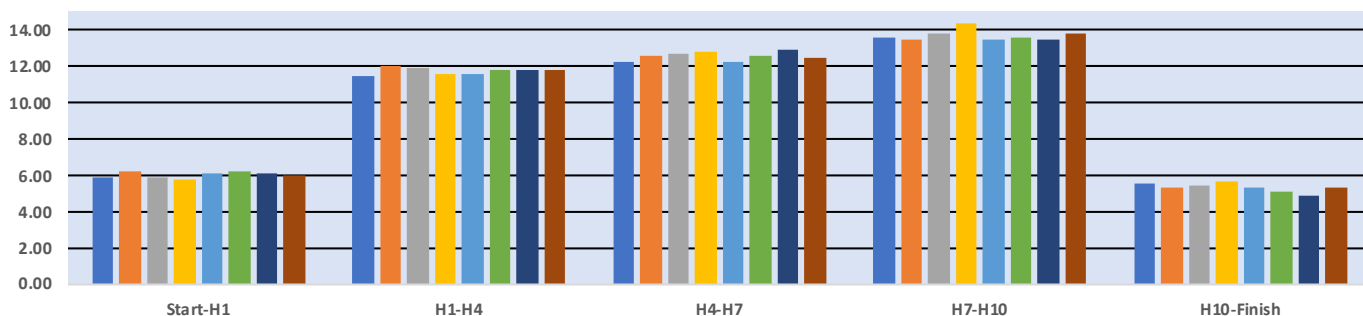
Heat 4

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Mägi, Rasmus (EST) (1992)	time	6.13	10.00	13.87	17.73	21.67	25.73	29.96	34.33	38.87	43.46		48.78	5 / 1			
	reaction time	0.169															
	interval velocity	7.34	9.04	9.04	9.07	8.88	8.62	8.27	8.01	7.71	7.63	7.52	8.20		11.60	12.23	13.50
H1 lead leg	R											158		9.05	8.59	7.78	
Barr, Thomas (IRL) (1992)	time	6.23	10.16	14.10	17.96	21.96	26.17	30.53	34.93	39.46	44.06		49.15	8 / 2			
	reaction time	0.160															
	interval velocity	7.22	8.91	8.88	9.07	8.75	8.31	8.03	7.95	7.73	7.61	7.86	8.14		11.73	12.57	13.53
H1 lead leg	L											157.7		8.95	8.35	7.76	
Drummond, Gerald (CRC) (1994)	time	6.07	9.95	13.90	17.90	22.13		30.77		39.70	44.27		49.16	2 / 3			
	reaction time	0.195															
	interval velocity	7.41	9.02	8.86	8.75	8.27		8.10		7.84	7.66	8.18	8.14		11.83	12.87	13.50
H1 lead leg	L											125.5		8.88	8.16	7.78	
Bassitt, Trevor (USA) (1998)	time	6.03	9.93	13.86	17.76	21.80		30.16	34.66	39.26	43.90		49.17	3 / 4			
	reaction time	0.146															
	interval velocity	7.46	8.97	8.91	8.97	8.66		8.36	4.50	4.60	4.64	5.27	8.14		11.73	12.40	13.74
H1 lead leg	R											127		8.95	8.47	7.64	



Time Intervals (s)

Hurdle Phases



Heat 5

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: First Movement

Source: https://www.youtube.com/watch?v=v2XCv1nM_xY&t=9s

Heat 4

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: Gun Flash

Source: https://www.youtube.com/watch?v=v2XCv1nM_xY&t=9s

2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.07.16

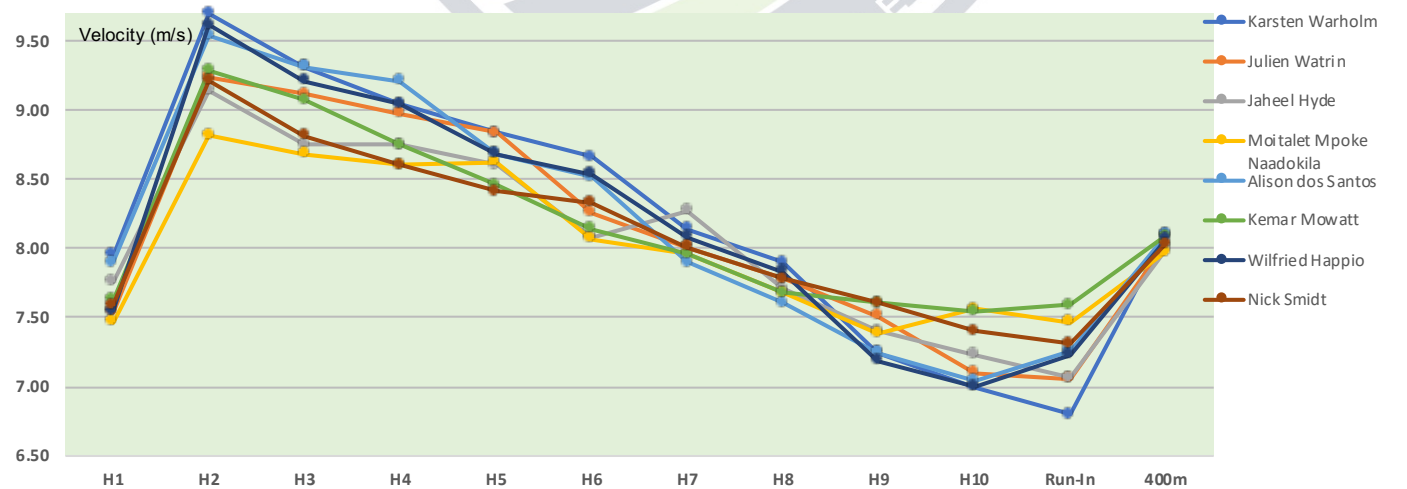
Heat 3

		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	5.66	9.27	13.03	16.90	20.86	24.90	29.20	33.63	38.46	43.46		49.34	3 / 1			
	reaction time	0.164													11.24	12.30	14.26
	interval		3.61	3.76	3.87	3.96	4.04	4.30	4.43	4.83	5.00	5.88			9.34	8.54	7.36
	velocity	7.95	9.70	9.31	9.04	8.84	8.66	8.14	7.90	7.25	7.00	6.80	8.11				
H1 lead leg	L	strides	20	13	13	13	13	13	13	15	15	17.5	158.5				
Watrin, Julien (BEL) (1992)	time	5.97	9.76	13.60	17.50	21.46	25.70	30.07	34.57	39.23	44.16		49.83	5 / 2			
	reaction time	0.199													11.53	12.57	14.09
	interval		3.79	3.84	3.90	3.96	4.24	4.37	4.50	4.66	4.93	5.67			9.11	8.35	7.45
	velocity	7.54	9.23	9.11	8.97	8.84	8.25	8.01	7.78	7.51	7.10	7.05	8.03				
H1 lead leg	R	strides	21	13	13	13	14	14	15	15	15	18	164				
Hyde, Jaheel (JAM) (1997)	time	5.80	9.63	13.63	17.63	21.70	26.03	30.26	34.80	39.53	44.37		50.03	6 / 3			
	reaction time	0.187													11.83	12.63	14.11
	interval		3.83	4.00	4.00	4.07	4.33	4.23	4.54	4.73	4.84	5.66			8.88	8.31	7.44
	velocity	7.76	9.14	8.75	8.75	8.60	8.08	8.27	7.71	7.40	7.23	7.07	8.00				
H1 lead leg	L	strides	22	14	14	14	14	14	15	15	15	18	169				
Naadokila, Moitalet Mpoke (KEN) (2001)	time	6.03	10.00	14.03	18.10	22.16	26.50	30.90	35.46	40.20	44.83		50.19	8 / 4			
	reaction time	0.177													12.07	12.80	13.93
	interval		3.97	4.03	4.07	4.06	4.34	4.40	4.56	4.74	4.63	5.36			8.70	8.20	7.54
	velocity	7.46	8.82	8.68	8.60	8.62	8.06	7.95	7.68	7.38	7.56	7.46	7.97				
H1 lead leg	L	strides	21	14	14	14	14	14	14	14	14	17	164				

Date: 2022.07.16

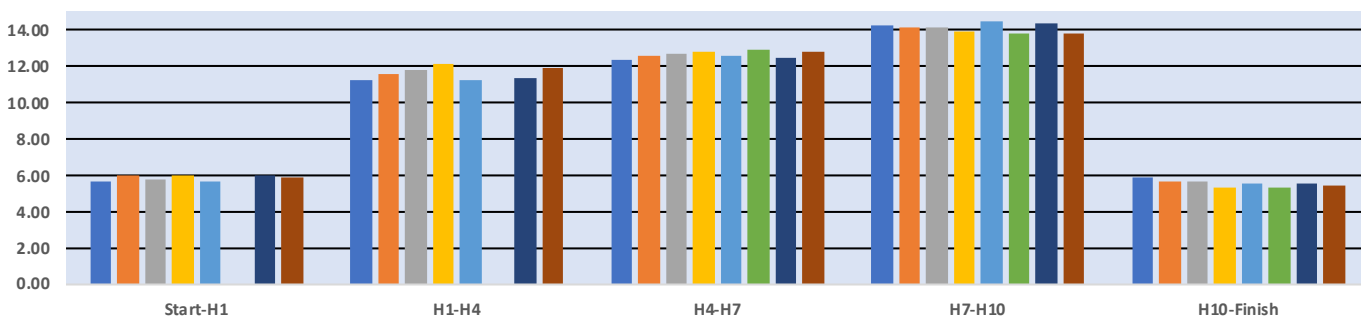
Heat 2

		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	9.37	13.13	16.93	20.96	25.07	29.50	34.10	38.93	43.90		49.41	5 / 1			
	reaction time	0.157													11.23	12.57	14.40
	interval		3.67	3.76	3.80	4.03	4.11	4.43	4.60	4.83	4.97	5.51			9.35	8.35	7.29
	velocity	7.89	9.54	9.31	9.21	8.68	8.52	7.90	7.61	7.25	7.04	7.26	8.10				
H1 lead leg	L	strides	20	13	12	12	12	13	13	14	14	16	151				
Mowatt, Kemar (JAM) (1995)	time	5.90	9.67	13.53	17.53	21.67	25.97	30.37	34.93	39.53	44.17		49.44	7 / 2			
	reaction time	0.146															
	interval		3.77	3.86	4.00	4.14	4.30	4.40	4.56	4.60	4.64	5.27					
	velocity	7.63	9.28	9.07	8.75	8.45	8.14	7.95	7.68	7.61	7.54	7.59	8.09			12.84	13.80
H1 lead leg	L	strides	21	13	13	13	13	14	14	14	15	17.2	161.2		8.18	7.61	
Happio, Wilfried (FRA) (1998)	time	5.96	9.60	13.40	17.27	21.30	25.40	29.73	34.20	39.07	44.07		49.60	6 / 3			
	reaction time	0.308													11.31	12.46	14.34
	interval		3.64	3.80	3.87	4.03	4.10	4.33	4.47	4.87	5.00	5.53			9.28	8.43	7.32
	velocity	7.55	9.62	9.21	9.04	8.68	8.54	8.08	7.83	7.19	7.00	7.23	8.06				
H1 lead leg	L	strides	20	13	13	13	13	13	13	15	15	17.2	158.2				
Smidt, Nick (NED) (1997)	time	5.93	9.73	13.70	17.77	21.93	26.13	30.50	35.00	39.60	44.33		49.80	8 / 4			
	reaction time	0.180													11.84	12.73	13.83
	interval		3.80	3.97	4.07	4.16	4.20	4.37	4.50	4.60	4.73	5.47			8.87	8.25	7.59
	velocity	7.59	9.21	8.82	8.60	8.41	8.33	8.01	7.78	7.61	7.40	7.31	8.03				
H1 lead leg	L	strides	20	13	13	13	13	14	14	14	14	17.7	159.7				



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=v2XCv1nM_xY&t=9s

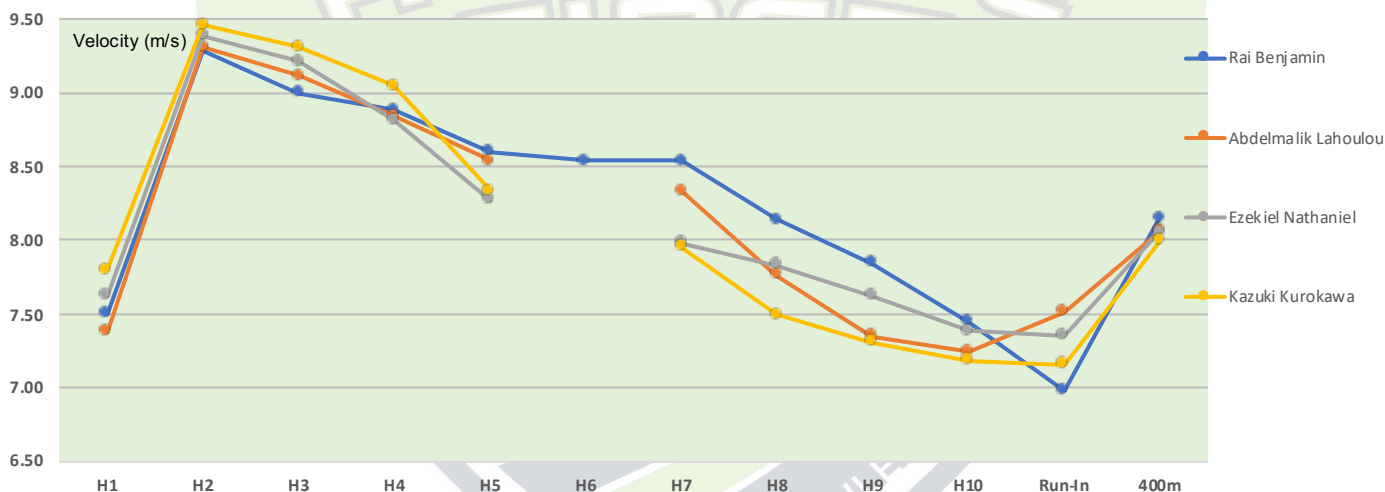
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.07.16

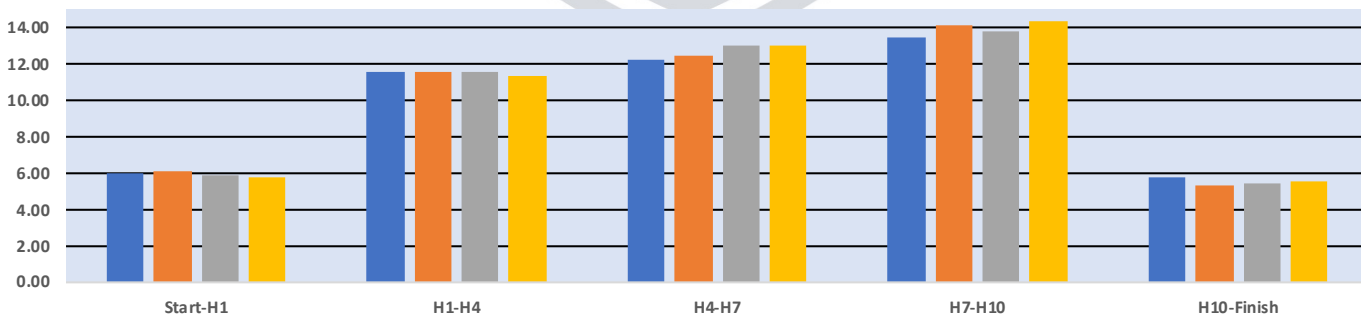
Heat 1

		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	6.00	9.77	13.66	17.60	21.67	25.77	29.87	34.17	38.63	43.33		49.06	4 / 1			
	reaction time	0.156													11.60	12.27	13.46
	interval velocity	7.50	9.28	9.00	8.88	8.60	8.54	8.54	8.14	7.85	7.45	6.98	8.15		9.05	8.56	7.80
	H1 lead leg R	20	13	13	13	13	13	13	13	13	13	16.5	153.5				
Lahoulou, Abdelmalik (ALG) (1992)	time	6.10	9.86	13.70	17.66	21.76		30.16	34.67	39.43	44.26		49.58	6 / 2			
	reaction time	0.171													11.56	12.50	14.10
	interval velocity	7.38	9.31	9.11	8.84	8.54		8.33	7.76	7.35	7.25	7.52	8.07		9.08	8.40	7.45
	H1 lead leg L	22	13	13	13	13			14	14	15	17	120				
Nathaniel, Ezekiel (NGR) (2003)	time	5.90	9.63	13.43	17.40	21.63		30.40	34.87	39.46	44.20		49.64	1 / 3			
	reaction time	0.135													11.50	13.00	13.80
	interval velocity	7.63	9.38	9.21	8.82	8.27		7.98	7.83	7.63	7.38	7.35	8.06		9.13	8.08	7.61
	H1 lead leg R	21	13	13	14	14			14	14	15	17.2	121.2				
Kurokawa, Kazuki (JPN) (2001)	time	5.77	9.47	13.23	17.10	21.30		30.10	34.77	39.56	44.43		50.02	3 / 4			
	reaction time	0.142													11.33	13.00	14.33
	interval velocity	7.80	9.46	9.31	9.04	8.33		7.95	7.49	7.31	7.19	7.16	8.00		9.27	8.08	7.33
	H1 lead leg L	21	13	13	13	14	14		15	15	15	18	151				



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=v2XCv1nM_xY&t=9s

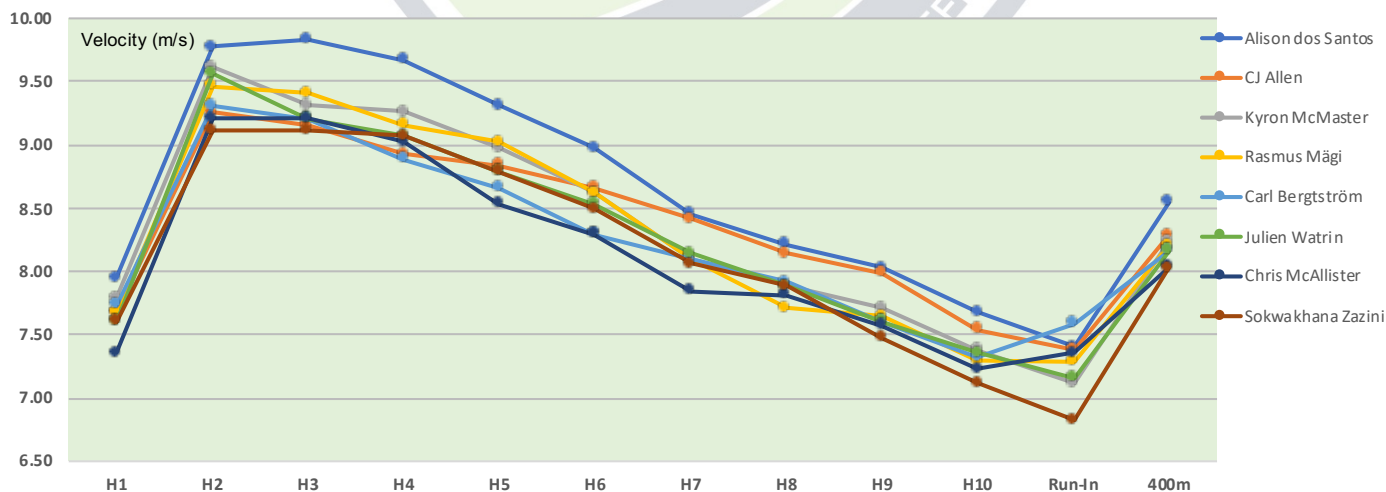
2022 Bauhaus Galan (Stockholm, SWE) (TV Analysis)

Men's 400m Hurdles

Date: 2022.06.30

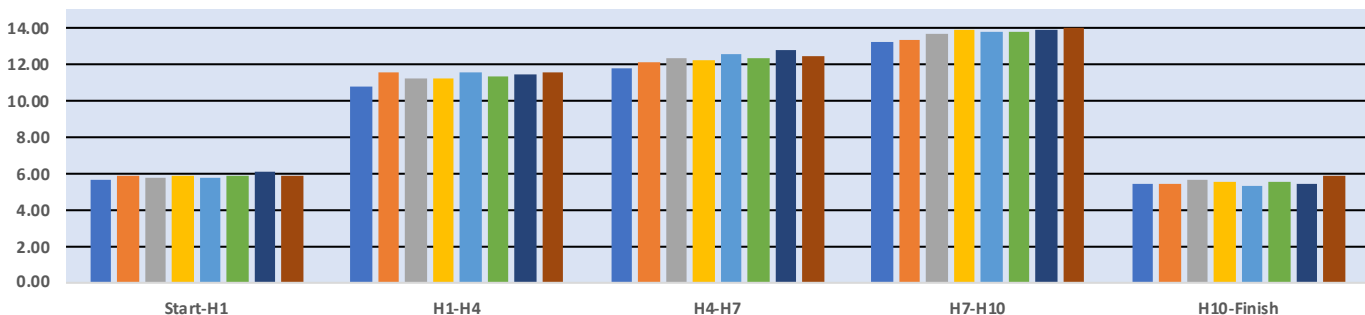
FINAL

		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	5.66	9.24	12.80	16.42	20.18	24.08	28.22	32.48	36.84	41.40	46.80	48.80	6 / 1			
	reaction time	0.147															
	interval		3.58	3.56	3.62	3.76	3.90	4.14	4.26	4.36	4.56	5.40			10.76	11.80	13.18
	velocity	7.95	9.78	9.83	9.67	9.31	8.97	8.45	8.22	8.03	7.68	7.41	8.55		9.76	8.90	7.97
H1 lead leg	L																
	strides	20	13	12	12	12	12	13	13	13	13	16.7	149.7				
Allen, CJ (USA) (1995)	time	5.86	9.64	13.46	17.38	21.34	25.38	29.54	33.84	38.22	42.86		48.28	3 / 2			
	reaction time	0.138															
	interval		3.78	3.82	3.92	3.96	4.04	4.16	4.30	4.38	4.64	5.42			11.52	12.16	13.32
	velocity	7.68	9.26	9.16	8.93	8.84	8.66	8.41	8.14	7.99	7.54	7.38	8.29		9.11	8.63	7.88
H1 lead leg	L																
	strides	20	13	13	13	13	13	13	14	14	15	17.5	158.5				
McMaster, Kyron (IVB) (1997)	time	5.78	9.42	13.18	16.96	20.86	24.92	29.24	33.68	38.22	42.96		48.58	5 / 3			
	reaction time	0.161															
	interval		3.64	3.76	3.78	3.90	4.06	4.32	4.44	4.54	4.74	5.62			11.18	12.28	13.72
	velocity	7.79	9.62	9.31	9.26	8.97	8.62	8.10	7.88	7.71	7.38	7.12	8.23		9.39	8.55	7.65
H1 lead leg	L																
	strides	21	13	13	13	13	13	14	14	14	15	17.5	160.5				
Mägi, Rasmus (EST) (1992)	time	5.86	9.56	13.28	17.10	20.98	25.04	29.36	33.90	38.48	43.28		48.77	4 / 4			
	reaction time	0.155															
	interval		3.70	3.72	3.82	3.88	4.06	4.32	4.54	4.58	4.80	5.49			11.24	12.26	13.92
	velocity	7.68	9.46	9.41	9.16	9.02	8.62	8.10	7.71	7.64	7.29	7.29	8.20		9.34	8.56	7.54
H1 lead leg	R																
	strides	21	13	13	13	13	13	14	14	14	15	17.7	160.7				
Bergström, Carl (SWE) (2000)	time	5.82	9.58	13.38	17.32	21.36	25.58	29.90	34.32	38.92	43.70		48.97	7 / 5			
	reaction time	0.178															
	interval		3.76	3.80	3.94	4.04	4.22	4.32	4.42	4.60	4.78	5.27			11.50	12.58	13.80
	velocity	7.73	9.31	9.21	8.88	8.66	8.29	8.10	7.92	7.61	7.32	7.59	8.17		9.13	8.35	7.61
H1 lead leg	L																
	strides	22	14	14	14	14	15	15	15	15	19	172					
Watrin, Julien (BEL) (1992)	time	5.92	9.58	13.38	17.24	21.22	25.32	29.62	34.06	38.66	43.42		49.01	2 / 6			
	reaction time	0.216															
	interval		3.66	3.80	3.86	3.98	4.10	4.30	4.44	4.60	4.76	5.59			11.32	12.38	13.80
	velocity	7.60	9.56	9.21	9.07	8.79	8.54	8.14	7.88	7.61	7.35	7.16	8.16		9.28	8.48	7.61
H1 lead leg	R																
	strides	21	13	13	13	13	13	14	14	15	15	17.7	161.7				
McAllister, Chris (GBR) (1995)	time	6.12	9.92	13.72	17.60	21.70	25.92	30.38	34.86	39.48	44.32		49.76	8 / 7			
	reaction time	0.175															
	interval		3.80	3.80	3.88	4.10	4.22	4.46	4.48	4.62	4.84	5.44			11.48	12.78	13.94
	velocity	7.35	9.21	9.21	9.02	8.54	8.29	7.85	7.81	7.58	7.23	7.35	8.04		9.15	8.22	7.53
H1 lead leg	R																
	strides	22	14	14	14	14	14	15	15	15	15	152					
Zazini, Sokwakhana (RSA) (2000)	time	5.92	9.76	13.60	17.46	21.44	25.56	29.90	34.34	39.02	43.94		49.80	1 / 8			
	reaction time	0.171															
	interval		3.84	3.84	3.86	3.98	4.12	4.34	4.44	4.68	4.92	5.86			11.54	12.44	14.04
	velocity	7.60	9.11	9.11	9.07	8.79	8.50	8.06	7.88	7.48	7.11	6.83	8.03		9.10	8.44	7.48
H1 lead leg	L																
	strides	23	15	15	15	15	15	16	16	17	17	21	185				



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 50fps

Timing From: First Movement

Source: <https://www.youtube.com/watch?v=EFN5bHQ500c>

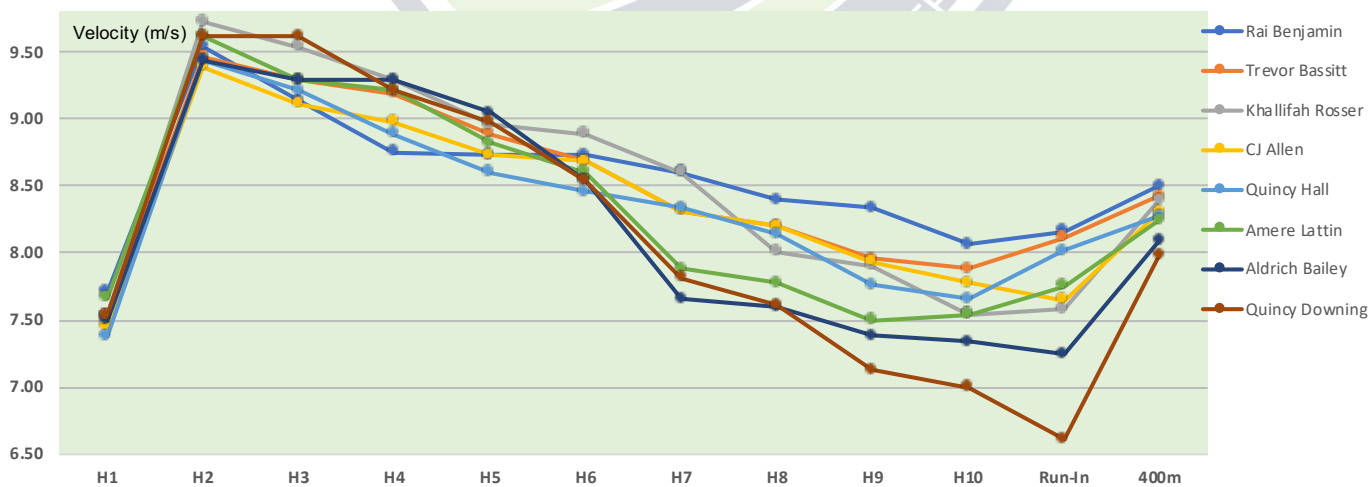
2022 USATF National Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.06.26

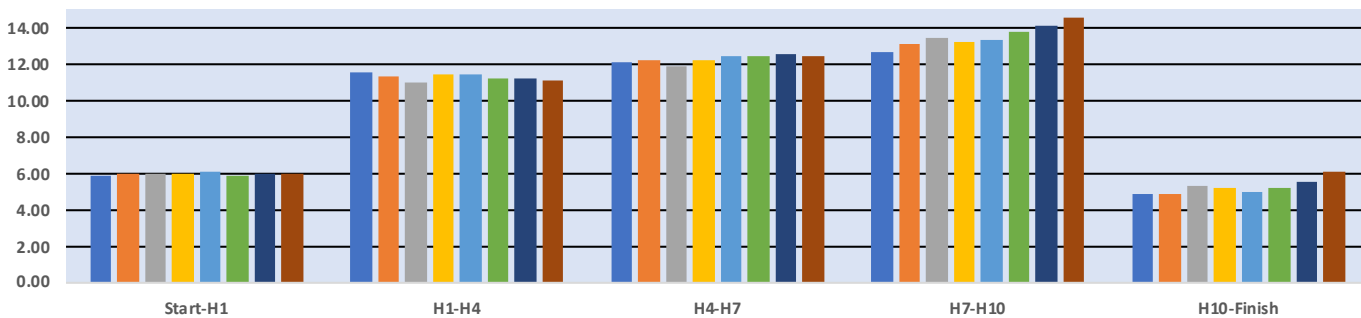
FINAL

		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	13.34	17.34	21.35	25.36	29.43	33.60	37.80	42.14		47.04	7 / 1			
	reaction time		interval	3.67	3.83	4.00	4.01	4.01	4.07	4.17	4.20	4.34	4.90		11.50	12.09	12.71
	velocity	7.71	9.54	9.14	8.75	8.73	8.73	8.60	8.39	8.33	8.06	8.16	8.50		9.13	8.68	8.26
	H1 lead leg	R	strides	20	13	13	13	13	13	13	13	13	16	153			
Bassitt, Trevor (USA) (1998)	time	5.97	9.67	13.44	17.25	21.19	25.22	29.43	33.70	38.10	42.54		47.47	5 / 2			
	reaction time		interval	3.70	3.77	3.81	3.94	4.03	4.21	4.27	4.40	4.44	4.93	PB	11.28	12.18	13.11
	velocity	7.54	9.46	9.28	9.19	8.88	8.68	8.31	8.20	7.95	7.88	8.11	8.43		9.31	8.62	8.01
	H1 lead leg	R	strides	20	13	13	13	13	13	13	13	13	16	153			
Rosser, Khallifah (USA) (1995)	time	5.97	9.57	13.24	17.01	20.92	24.86	28.93	33.30	37.73	42.37		47.65	4 / 3			
	reaction time		interval	3.60	3.67	3.77	3.91	3.94	4.07	4.37	4.43	4.64	5.28	PB	11.04	11.92	13.44
	velocity	7.54	9.72	9.54	9.28	8.95	8.88	8.60	8.01	7.90	7.54	7.58	8.39		9.51	8.81	7.81
	H1 lead leg	R	strides	21	13	13	13	13	14	14	14	14	17.7	159.7			
Allen, CJ (USA) (1995)	time	6.04	9.77	13.61	17.51	21.52	25.55	29.76	34.03	38.44	42.94		48.17	8 / 4			
	reaction time		interval	3.73	3.84	3.90	4.01	4.03	4.21	4.27	4.41	4.50	5.23	PB	11.47	12.25	13.18
	velocity	7.45	9.38	9.11	8.97	8.73	8.68	8.31	8.20	7.94	7.78	7.65	8.30		9.15	8.57	7.97
	H1 lead leg	L	strides	20	13	13	13	13	14	14	14	14	17.5	158.5			
Hall, Quincy (USA) (1998)	time	6.10	9.81	13.61	17.55	21.62	25.76	29.96	34.26	38.77	43.34		48.33	6 / 5			
	reaction time		interval	3.71	3.80	3.94	3.97	4.07	4.44	4.30	4.51	4.57	4.99		11.45	12.41	13.38
	velocity	7.38	9.43	9.21	8.88	8.60	8.45	8.33	8.14	7.76	7.66	8.02	8.28		9.17	8.46	7.85
	H1 lead leg	R	strides	21	13	13	13	13	13	13	14	14	16	156			
Lattin, Amere (USA) (1997)	time	5.87	9.51	13.28	17.08	21.05	25.12	29.56	34.06	38.73	43.37		48.53	2 / 6			
	reaction time		interval	3.64	3.77	3.80	3.97	4.07	4.44	4.50	4.67	4.64	5.16	PB	11.21	12.48	13.81
	velocity	7.67	9.62	9.28	9.21	8.82	8.60	7.88	7.78	7.49	7.54	7.75	8.24		9.37	8.41	7.60
	H1 lead leg	L	strides	20	13	13	13	13	14	14	14	14	17	158			
Bailey, Aldrich (USA) (1994)	time	6.00	9.71	13.48	17.25	21.12	25.22	29.79	34.40	39.14	43.91		49.43	9 / 7			
	reaction time		interval	3.71	3.77	3.77	3.87	4.10	4.57	4.61	4.74	4.77	5.52		11.25	12.54	14.12
	velocity	7.50	9.43	9.28	9.28	9.04	8.54	7.66	7.59	7.38	7.34	7.25	8.09		9.33	8.37	7.44
	H1 lead leg	L	strides	21	13	13	12	12	13	14	13	14	14	139			
Downing, Quincy (USA) (1993)	time	5.97	9.61	13.25	17.05	20.95	25.05	29.53	34.13	39.04	44.04		50.09	3 / 8			
	reaction time		interval	3.64	3.64	3.80	3.90	4.10	4.48	4.60	4.91	5.00	6.05		11.08	12.48	14.51
	velocity	7.54	9.62	9.62	9.21	8.97	8.54	7.81	7.61	7.13	7.00	6.61	7.99		9.48	8.41	7.24
	H1 lead leg	R	strides	21	13	13	13	13	14	14	15	15	144				



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 50fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=gKH1vHVb0w>

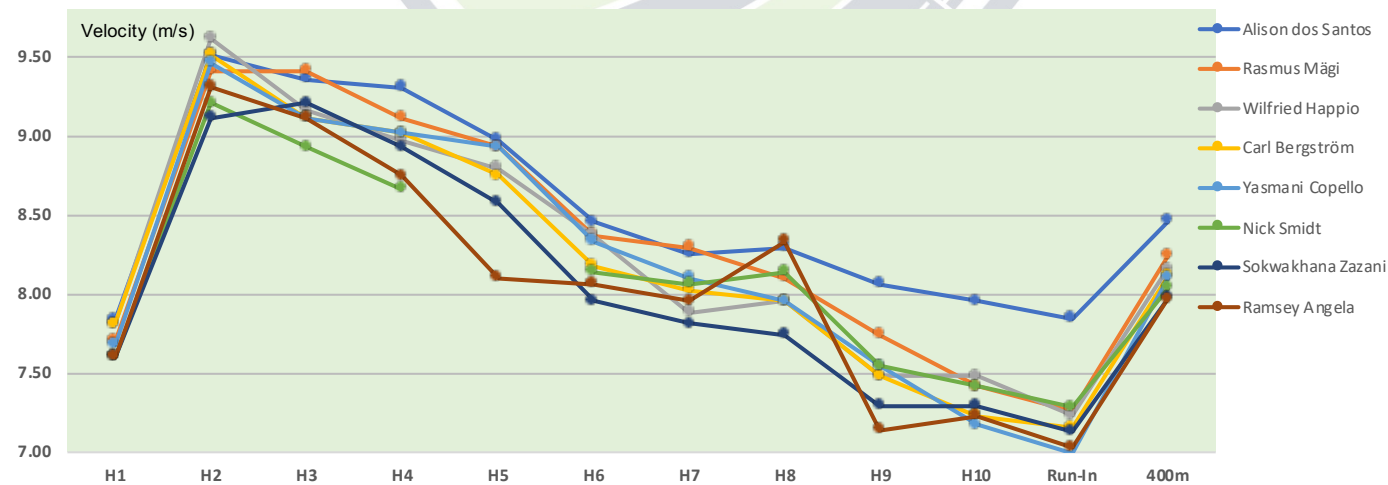
2022 Bislett Games (Oslo, NOR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.06.16

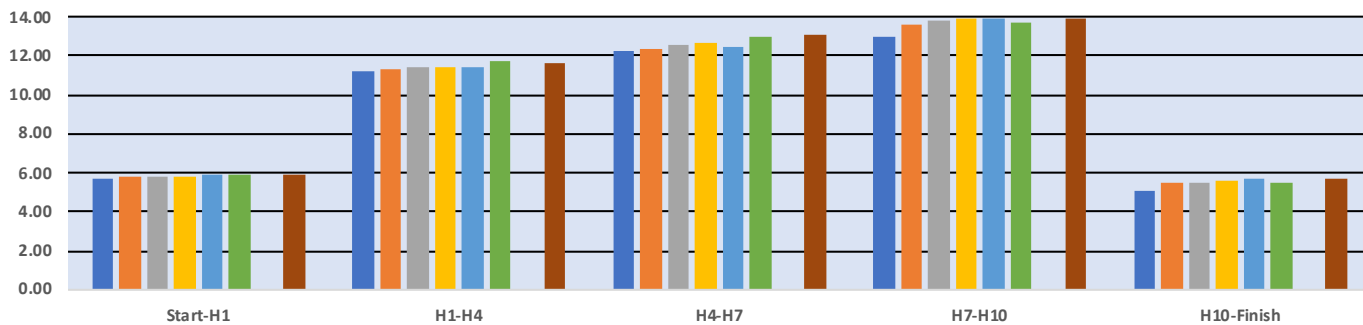
FINAL

		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	5.74	9.42	13.16	16.92	20.82	24.96	29.20	33.42	37.76	42.16	47.26		7 / 1			
	reaction time	0.184															
	interval		3.68	3.74	3.76	3.90	4.14	4.24	4.22	4.34	4.40	5.10			11.18	12.28	12.96
	velocity	7.84	9.51	9.36	9.31	8.97	8.45	8.25	8.29	8.06	7.95	7.84	8.46		9.39	8.55	8.10
H1 lead leg	L																
Mägi, Rasmus (EST) (1992)	time	5.84	9.56	13.28	17.12	21.04	25.22	29.44	33.76	38.28	43.00	48.51		6 / 2			
	reaction time	0.165															
	interval		3.72	3.72	3.84	3.92	4.18	4.22	4.32	4.52	4.72	5.51			11.28	12.32	13.56
	velocity	7.71	9.41	9.41	9.11	8.93	8.37	8.29	8.10	7.74	7.42	7.26	8.25		9.31	8.52	7.74
H1 lead leg	R																
Happio, Wilfried (FRA) (1998)	time	5.76	9.40	13.22	17.12	21.10	25.28	29.72	34.12	38.80	43.48	49.01		3 / 3			
	reaction time	0.150															
	interval		3.64	3.82	3.90	3.98	4.18	4.44	4.40	4.68	4.68	5.53	PB		11.36	12.60	13.76
	velocity	7.81	9.62	9.16	8.97	8.79	8.37	7.88	7.95	7.48	7.48	7.23	8.16		9.24	8.33	7.63
H1 lead leg	L																
Bergström, Carl (SWE) (2000)	time	5.76	9.44	13.28	17.16	21.16	25.44	29.80	34.20	38.88	43.72	49.31		5 / 4			
	reaction time	0.172															
	interval		3.68	3.84	3.88	4.00	4.28	4.36	4.40	4.68	4.84	5.59			11.40	12.64	13.92
	velocity	7.81	9.51	9.11	9.02	8.75	8.18	8.03	7.95	7.48	7.23	7.16	8.11		9.21	8.31	7.54
H1 lead leg	L																
Copello, Yasmani (TUR) (1987)	time	5.86	9.56	13.40	17.28	21.20	25.40	29.72	34.12	38.76	43.64	49.36		4 / 5			
	reaction time	0.177															
	interval		3.70	3.84	3.88	3.92	4.20	4.32	4.40	4.64	4.88	5.72			11.42	12.44	13.92
	velocity	7.68	9.46	9.11	9.02	8.93	8.33	8.10	7.95	7.54	7.17	6.99	8.10		9.19	8.44	7.54
H1 lead leg	R																
Smidt, Nick (NED) (1997)	time	5.92	9.72	13.64	17.68		26.28	30.62	34.92	39.56	44.28	49.77		1 / 6			
	reaction time	0.172															
	interval		3.80	3.92	4.04		8.60	4.34	4.30	4.64	4.72	5.49			11.76	12.94	13.66
	velocity	7.60	9.21	8.93	8.66		8.14	8.06	8.14	7.54	7.42	7.29	8.04		8.93	8.11	7.69
H1 lead leg	L																
Zazini, Sokwakhana (RSA) (2000)	time	5.92	9.76	13.56	17.48	21.56	25.96	30.44	34.96	39.76	44.56	50.17		8 / 7			
	reaction time	0.184															
	interval		3.84	3.80	3.92	4.08	4.40	4.48	4.52	4.80	4.80	5.61			11.56	12.96	14.12
	velocity	7.60	9.11	9.21	8.93	8.58	7.95	7.81	7.74	7.29	7.29	7.13	7.97		9.08	8.10	7.44
H1 lead leg	L																
Angela, Ramsey (NED) (1999)	time	5.92	9.68	13.52	17.52	21.84	26.18	30.58	34.78	39.68	44.52	50.21		2 / 8			
	reaction time	0.184															
	interval		3.76	3.84	4.00	4.32	4.34	4.40	4.20	4.90	4.84	5.69			11.60	13.06	13.94
	velocity	7.60	9.31	9.11	8.75	8.10	8.06	7.95	8.33	7.14	7.23	7.03	7.97		9.05	8.04	7.53
H1 lead leg	R																



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 50fps

Timing From: First Movement

Source: <https://www.youtube.com/watch?v=gKH1vHVbolw>

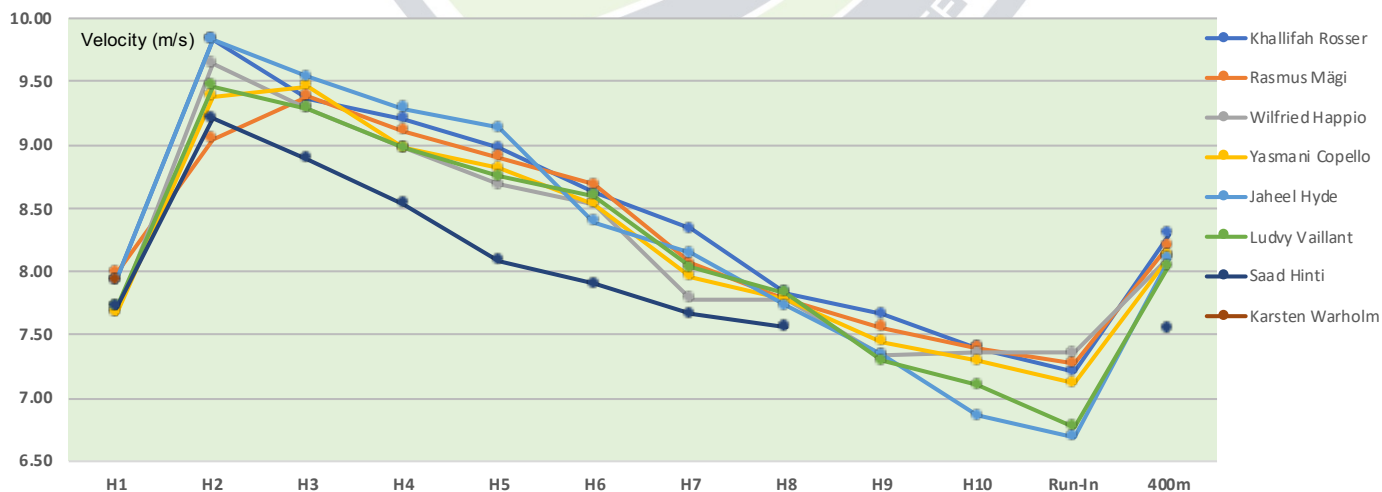
2022 Meeting International Mohammed VI d'Athlétisme (Rabat, MAR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.06.05

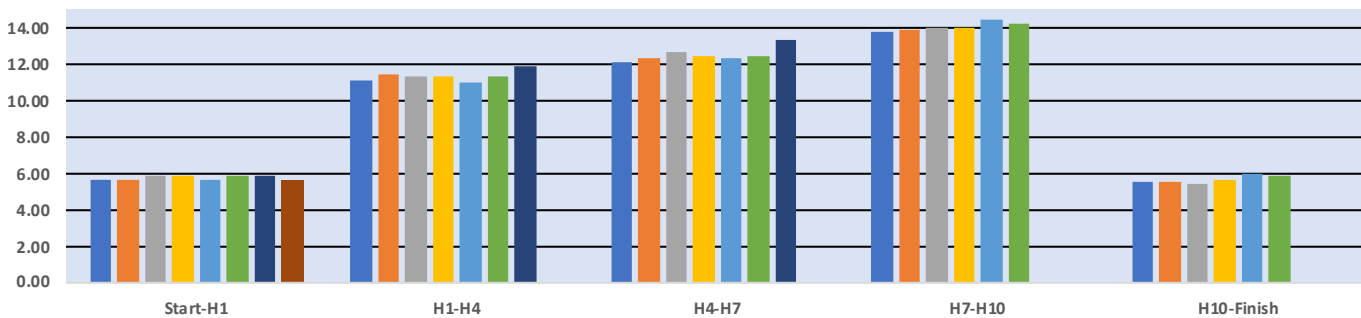
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Rosser, Khalifah (USA) (1995)	time	5.67	9.23	12.97	16.77	20.67	24.73	28.93	33.40	37.97	42.70		48.25	6 / 1			
	reaction time	0.166															
	interval		3.56	3.74	3.80	3.90	4.06	4.20	4.47	4.57	4.73	5.55			11.10	12.16	13.77
	velocity	7.94	9.83	9.36	9.21	8.97	8.62	8.33	7.83	7.66	7.40	7.21	8.29		9.46	8.63	7.63
H1 lead leg	R																
	strides	21	13	13	13	13	13	14	14	14	15	18	161				
Mägi, Rasmus (EST) (1992)	time	5.63	9.50	13.23	17.07	21.00	25.03	29.37	33.87	38.50	43.23		48.73	4 / 2			
	reaction time	0.146															
	interval		3.87	3.73	3.84	3.93	4.03	4.34	4.50	4.63	4.73	5.50			11.44	12.30	13.86
	velocity	7.99	9.04	9.38	9.11	8.91	8.68	8.06	7.78	7.56	7.40	7.27	8.21		9.18	8.54	7.58
H1 lead leg	R																
	strides	21	13	13	13	13	13	13	14	14	14	17.7	158.7				
Happio, Wilfried (FRA) (1998)	time	5.87	9.50	13.27	17.17	21.20	25.30	29.80	34.30	39.07	43.83		49.27	2 / 3			
	reaction time	0.143															
	interval		3.63	3.77	3.90	4.03	4.10	4.50	4.50	4.77	4.76	5.44			11.30	12.63	14.03
	velocity	7.67	9.64	9.28	8.97	8.68	8.54	7.78	7.78	7.34	7.35	7.35	8.12		9.29	8.31	7.48
H1 lead leg	L																
	strides	20	13	13	13	13	13	14	14	15	15	18.2	161.2				
Copello, Yasmani (TUR) (1987)	time	5.87	9.60	13.30	17.20	21.17	25.27	29.67	34.17	38.87	43.67		49.29	5 / 4			
	reaction time	0.177															
	interval		3.73	3.70	3.90	3.97	4.10	4.40	4.50	4.70	4.80	5.62			11.33	12.47	14.00
	velocity	7.67	9.38	9.46	8.97	8.82	8.54	7.95	7.78	7.45	7.29	7.12	8.12		9.27	8.42	7.50
H1 lead leg	R																
	strides	20	13	13	13	13	13	14	14	14	18	159					
Hyde, Jaheel (JAM) (1997)	time	5.67	9.23	12.90	16.67	20.50	24.67	28.97	33.50	38.27	43.37		49.35	8 / 5			
	reaction time	0.150															
	interval		3.56	3.67	3.77	3.83	4.17	4.30	4.53	4.77	5.10	5.98			11.00	12.30	14.40
	velocity	7.94	9.83	9.54	9.28	9.14	8.39	8.14	7.73	7.34	6.86	6.69	8.11		9.55	8.54	7.29
H1 lead leg	L																
	strides	22	13	13	13	13	14	14	14	15	15	19	165				
Vaillant, Ludvy (FRA) (1995)	time	5.83	9.53	13.30	17.20	21.20	25.27	29.63	34.10	38.90	43.83		49.74	3 / 6			
	reaction time	0.141															
	interval		3.70	3.77	3.90	4.00	4.07	4.36	4.47	4.80	4.93	5.91			11.37	12.43	14.20
	velocity	7.72	9.46	9.28	8.97	8.75	8.60	8.03	7.83	7.29	7.10	6.77	8.04		9.23	8.45	7.39
H1 lead leg	R																
	strides	21	13	13	13	13	13	14	14	15	15	18	162				
Hinti, Saad (MAR) (2002)	time	5.83	9.63	13.57	17.67	22.00	26.43	31.00	35.63				52.98	1 / 7			
	reaction time	0.191															
	interval		3.80	3.94	4.10	4.33	4.43	4.57	4.63								
	velocity	7.72	9.21	8.88	8.54	8.08	7.90	7.66	7.56				7.55		11.84	13.33	
H1 lead leg	R													8.87	7.88		
	strides	21	14	14	15	15	15	15	15			124					
Warholm, Karsten (NOR) (1996)	time	5.67												dnf	7 / --		
	reaction time	0.163															
	interval																
	velocity	7.94															
H1 lead leg	L																
	strides	20															
	strides	20											20				



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=ux.l3fV.ljGzc&t=18s>

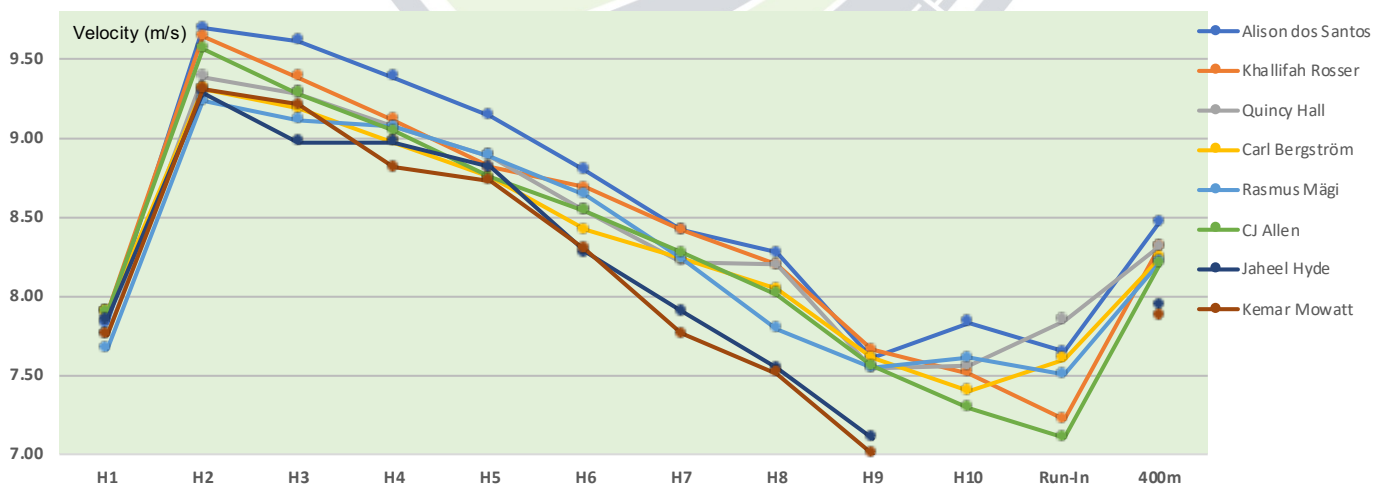
2022 Prefontaine Classic (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.05.28

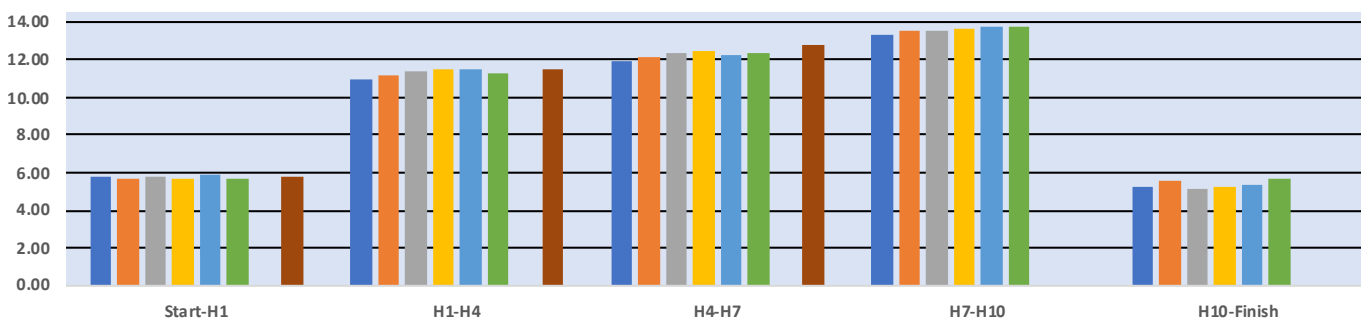
FINAL

		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	5.75	9.36	13.00	16.73	20.56	24.54	28.70	32.93	37.53	42.00		47.23	7 / 1			
	reaction time	0.194															
	interval velocity	7.83	9.70	9.62	9.38	9.14	8.79	8.41	8.27	7.61	7.83	7.65	8.47		10.98	11.97	13.30
	H1 lead leg	L	20	13	12	12	12	12	13	13	14	13	16	150	9.56	8.77	7.89
Rosser, Khalifah (USA) (1995)	time	5.70	9.33	13.06	16.90	20.87	24.90	29.06	33.33	37.90	42.56		48.10	4 / 2			
	reaction time	0.158															
	interval velocity	7.89	9.64	9.38	9.11	8.82	8.68	8.41	8.20	7.66	7.51	7.22	8.32		11.20	12.16	13.50
	H1 lead leg	R	21	13	13	13	13	13	14	14	15	15	18	162	9.38	8.63	7.78
Hall, Quincy (USA) (1995)	time	5.80	9.53	13.30	17.16	21.10	25.20	29.46	33.73	38.37	43.00		48.10	6 / 3			
	reaction time	0.213															
	interval velocity	7.76	9.38	9.28	9.07	8.88	8.54	8.22	8.20	7.54	7.56	7.84	8.32		11.36	12.30	13.54
	H1 lead leg	R	21	13	13	13	13	13	13	13	14	14	16	156	9.24	8.54	7.75
Bergström, Carl (SWE) (2000)	time	5.70	9.46	13.27	17.17	21.17	25.33	29.58	33.93	38.53	43.26		48.52	9 / 4			
	reaction time	0.172															
	interval velocity	7.89	9.31	9.19	8.97	8.75	8.41	8.24	8.05	7.61	7.40	7.60	8.24		11.47	12.41	13.68
	H1 lead leg	L	22	14	14	14	14	15	15	15	15	15	153		9.15	8.46	7.68
Mägi, Rasmus (EST) (1992)	time	5.87	9.66	13.50	17.36	21.30	25.35	29.60	34.09	38.73	43.33		48.66	3 / 5			
	reaction time	0.174															
	interval velocity	7.67	9.23	9.11	9.07	8.88	8.64	8.24	7.80	7.54	7.61	7.50	8.22		11.49	12.24	13.73
	H1 lead leg	R	21	13	13	13	13	13	14	14	14	14	142		9.14	8.58	7.65
Allen, CJ (USA) (1995)	time	5.70	9.36	13.13	17.00	21.00	25.10	29.33	33.70	38.33	43.13		48.76	5 / 6			
	reaction time	0.156															
	interval velocity	7.89	9.56	9.28	9.04	8.75	8.54	8.27	8.01	7.56	7.29	7.10	8.20		11.30	12.33	13.80
	H1 lead leg	L	20	13	13	13	13	13	13	14	15	15	142		9.29	8.52	7.61
Hyde, Jaheel (JAM) (1997)	time	5.73	9.50	13.40	17.30	21.27	25.50	29.93	34.57	39.50			50.38	2 / 7			
	reaction time	0.157															
	interval velocity	7.85	9.28	8.97	8.97	8.82	8.27	7.90	7.54	7.10			7.94		11.57	12.63	
	H1 lead leg	L	21	13	13	13	13	14	15	15	15		132		9.08	8.31	
Mowatt, Kemar (JAM) (1995)	time	5.80	9.56	13.36	17.33	21.34	25.56	30.07	34.73	39.73			50.81	8 / 8			
	reaction time	0.157															
	interval velocity	7.76	9.31	9.21	8.82	8.73	8.29	7.76	7.51	7.00			7.87		11.53	12.74	
	H1 lead leg	L	21	13	13	13	13	14	14	14	15		130		9.11	8.24	



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 25fps

Timing From: First Movement

Source: https://www.youtube.com/watch?v=_KZZSTexdh0&t=29s

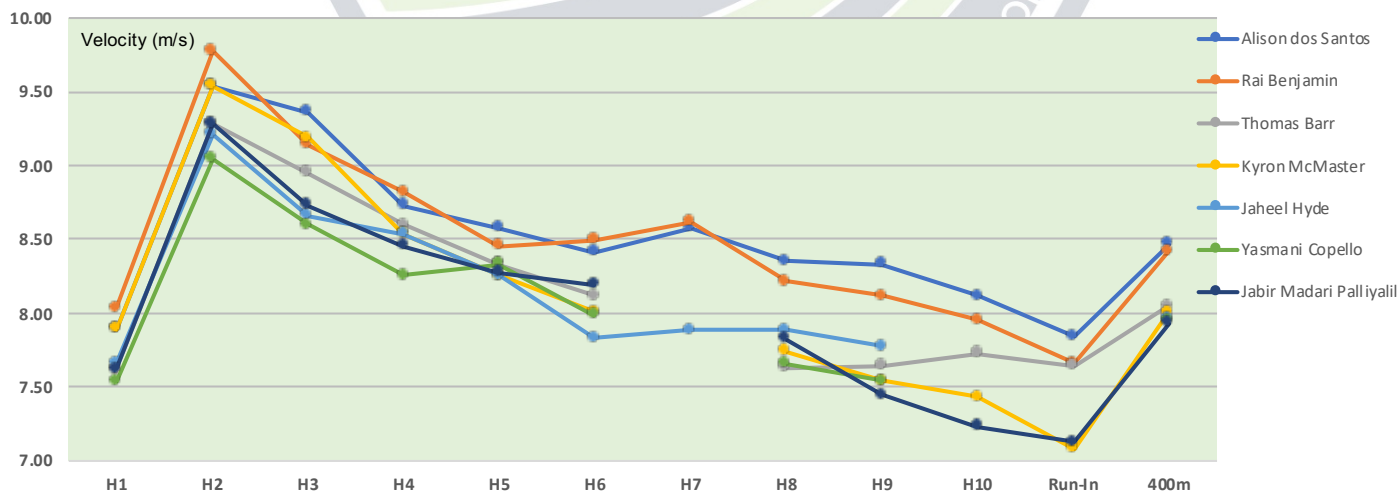
2022 Doha Diamond League (Doha, QAT) (TV Analysis)

Men's 400m Hurdles

Date 2022.05.13

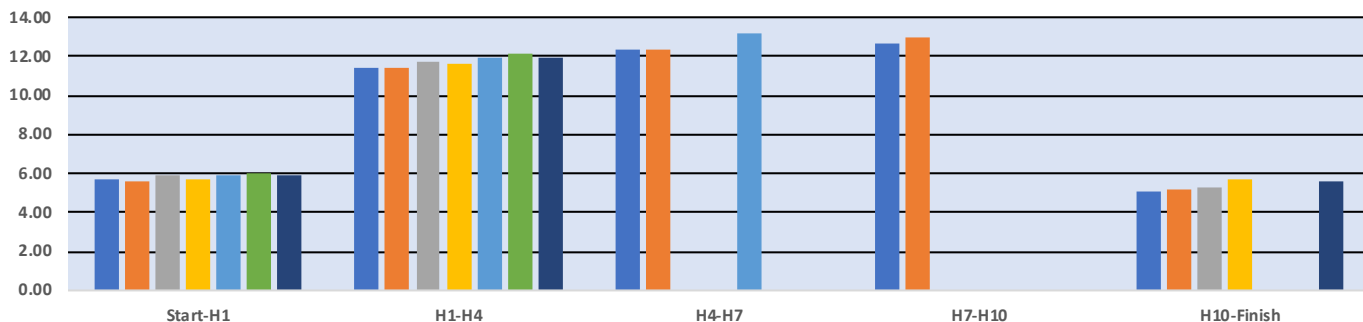
FINAL

		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	9.37	13.11	17.12	21.20	25.36	29.44	33.63	37.83	42.14		47.24	7 / 1			
	reaction time	0.172															
	interval		3.67	3.74	4.01	4.08	4.16	4.08	4.19	4.20	4.31	5.10			11.42	12.32	12.70
	velocity	7.89	9.54	9.36	8.73	8.58	8.41	8.58	8.35	8.33	8.12	7.84	8.47		9.19	8.52	8.27
H1 lead leg	L																
Benjamin, Rai (USA) (1997)	time	5.60	9.18	13.01	16.98	21.12	25.24	29.30	33.56	37.87	42.27		47.49	6 / 2			
	reaction time	0.206															
	interval		3.58	3.83	3.97	4.14	4.12	4.06	4.26	4.31	4.40	5.22			11.38	12.32	12.97
	velocity	8.04	9.78	9.14	8.82	8.45	8.50	8.62	8.22	8.12	7.95	7.66	8.42		9.23	8.52	8.10
H1 lead leg	R																
Barr, Thomas (IRL) (1992)	time	5.90	9.67	13.58	17.65	21.85	26.16		35.33	39.91	44.44		49.67	2 / 3			
	reaction time	0.171															
	interval		3.77	3.91	4.07	4.20	4.31		9.17	4.58	4.53	5.23			11.75		
	velocity	7.63	9.28	8.95	8.60	8.33	8.12		7.63	7.64	7.73	7.65	8.05		8.94		
H1 lead leg	L																
McMaster, Kyron (IVB) (1997)	time	5.70	9.37	13.18	17.28	21.52	25.89		34.93	39.57	44.28		49.93	3 / 4			
	reaction time	0.208							9.04	4.64	4.71	5.65			11.58		
	interval		3.67	3.81	4.10	4.24	4.37		7.74	7.54	7.43	7.08	8.01		9.07		
	velocity	7.89	9.54	9.19	8.54	8.25	8.01		7.74	7.54	7.43	7.08	8.01				
H1 lead leg	L																
Hyde, Jaheel (JAM) (1997)	time	5.87	9.67	13.71	17.81	22.05	26.52	30.96	35.40	39.90			50.23	8 / 5			
	reaction time	0.167															
	interval		3.80	4.04	4.10	4.24	4.47	4.44	4.44	4.50					11.94	13.15	
	velocity	7.67	9.21	8.66	8.54	8.25	7.83	7.88	7.88	7.78			7.96		8.79	7.98	
H1 lead leg	L																
Copello, Yasmani (TUR) (1987)	time	5.97	9.84	13.91	18.15	22.35	26.73		35.87	40.51			50.30	5 / 6			
	reaction time	0.191							9.14	4.64					12.18		
	interval		3.87	4.07	4.24	4.20	4.38		7.66	7.54			7.95		8.62		
	velocity	7.54	9.04	8.60	8.25	8.33	7.99		7.66	7.54			7.95				
H1 lead leg	R																
Madari Palliyalil, Jabir (IND) (1996)	time	5.90	9.67	13.68	17.82	22.05	26.32		35.27	39.97	44.81		50.42	1 / 7			
	reaction time	0.156							8.95	4.70	4.84	5.61			11.92		
	interval		3.77	4.01	4.14	4.23	4.27		7.82	7.45	7.23	7.13	7.93		8.81		
	velocity	7.63	9.28	8.73	8.45	8.27	8.20		7.82	7.45	7.23	7.13	7.93				
H1 lead leg	L																



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=SqvYbwH11HA>

Women's 400m Hurdles

Biomechanical Analysis

2022 Top 10 Times - Women's 400m Hurdles

Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10												
McLaughlin, Sydney (USA) (1999)																	
FINAL - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																	
date	22-Jul	time	6.10	10.10	14.10	18.27	22.50	26.84	31.23	35.80	40.40	45.17	50.68	5 / 1	12.17	12.96	13.94
reaction time	0.158	interval	4.00	4.00	4.17	4.23	4.34	4.39	4.57	4.60	4.77	5.51	WR		8.63	8.10	7.53
		velocity	7.38	8.75	8.75	8.39	8.27	8.06	7.97	7.66	7.61	7.34	7.26	7.89			
H1 lead leg	R	strides	22	14	14	14	14	14	14	15	15	15	18.7	169.7			
McLaughlin, Sydney (USA) (1999)																	
FINAL - 2022 USATF National Championships (Eugene, OR) (TV Analysis)																	
date	25-Jun	time	6.20	10.14	14.21	18.48	22.85	27.36	31.89	36.53	41.31	46.08	51.41	5 / 1	12.28	13.41	14.19
reaction time		interval	3.94	4.07	4.27	4.37	4.51	4.53	4.64	4.78	4.77	5.33	WR		8.55	7.83	7.40
		velocity	7.26	8.88	8.60	8.20	8.01	7.76	7.73	7.54	7.32	7.34	7.50	7.78			
H1 lead leg	R	strides	22	14	14	14	14	14	14	15	15	15	18.2	168.2			
McLaughlin, Sydney (USA) (1999)																	
FINAL - 2022 Music City Track Carnival (Nashville, TN) (TV Analysis)																	
date	5-Jun	time	5.84	10.37	14.46	18.65	23.42	27.27	31.87	36.50	41.33	46.33	51.61	5 / 1	12.81	13.22	14.46
reaction time		interval	4.53	4.09	4.19	4.77	3.85	4.60	4.63	4.83	5.00	5.28			8.20	7.94	7.26
		velocity	7.71	7.73	8.56	8.35	8.39	7.79	7.61	7.56	7.25	7.00	7.58	7.75			
H1 lead leg	R	strides	14	14	14	16	13	15	15	15	16	16	117				
McLaughlin, Sydney (USA) (1999)																	
FINAL - 2022 Gyulai István Memorial (Székesfehérvár, HUN) (TV Analysis)																	
date	8-Aug	time	6.24	10.27	14.36	18.63	22.96		32.16	36.86	41.63	46.30	51.68	4 / 1	12.39	13.53	14.14
reaction time	0.182	interval	4.03	4.09	4.27	4.33		9.20	4.70	4.77	4.67	5.38			8.47	7.76	7.43
		velocity	7.21	8.68	8.56	8.20	8.08		7.61	7.45	7.34	7.49	7.43	7.74			
H1 lead leg	R	strides	22	14	14	14	14		15	15	15	18	141				
McLaughlin, Sydney (USA) (1999)																	
Semi-Final 3 - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																	
date	20-Jul	time	6.12	10.10	14.30	18.42	22.73	27.27	31.90	36.60	41.43	46.43	52.17	6 / 1	12.30	13.48	14.53
reaction time	0.174	interval	3.98	4.20	4.12	4.31	4.54	4.63	4.70	4.83	5.00	5.74			8.54	7.79	7.23
		velocity	7.35	8.79	8.33	8.50	8.12	7.71	7.56	7.45	7.25	7.00	6.97	7.67			
H1 lead leg	R	strides	22	14	14	14	14	15	15	15	15	16	18	172			
Bot, Femke (NED) (2000)																	
FINAL - 2022 Bauhaus Galan (Stockholm, SWE) (TV Analysis)																	
date	30-Jun	time	6.36	10.38	14.46	18.64	22.94	27.42	32.02	36.70	41.48	46.40	52.27	6 / 1	12.28	13.38	14.38
reaction time	0.203	interval	4.02	4.08	4.18	4.30	4.44	4.60	4.68	4.78	4.92	5.87			8.55	7.85	7.30
		velocity	7.08	8.71	8.58	8.37	8.14	7.81	7.61	7.48	7.32	7.11	6.81	7.65			
H1 lead leg	L	strides	22	15	15	15	15	15	15	15	15	15	19	176			
Bot, Femke (NED) (2000)																	
FINAL - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																	
date	22-Jul	time	6.43	10.47	14.57	18.82	23.30		32.22	36.90	41.70	46.63	52.27	4 / 2	12.39	13.40	14.41
reaction time	0.179	interval	4.04	4.10	4.25	4.48		8.92	4.68	4.80	4.93	5.64			8.47	7.84	7.29
		velocity	7.00	8.66	8.54	8.24	7.81		7.85	7.48	7.29	7.10	7.09	7.65			
H1 lead leg	L	strides	22	15	15	15	15		15	15	15	19	146				
Bot, Femke (NED) (2000)																	
FINAL - 2022 Bislett Games (Oslo, NOR) (TV Analysis)																	
date	16-Jun	time	6.32	10.34	14.48	18.62	22.88	27.38	31.98	36.66	41.58	46.74	52.61	6 / 1	12.30	13.36	14.76
reaction time	0.177	interval	4.02	4.14	4.14	4.26	4.50	4.60	4.68	4.92	5.16	5.87			8.54	7.86	7.11
		velocity	7.12	8.71	8.45	8.45	8.22	7.78	7.61	7.48	7.11	6.78	6.81	7.60			
H1 lead leg	L	strides	22	15	15	15	15	15	15	15	15	16	19.5	175.5			
Bot, Femke (NED) (2000)																	
FINAL - 2022 European Athletics Championships (Munich, GER) (TV Analysis)																	
date	26-Aug	time	6.43	10.46	14.70	18.93	23.27	27.73	32.37	37.10	41.97	46.93	52.67	3 / 1	12.50	13.44	14.56
reaction time		interval	4.03	4.24	4.23	4.34	4.46	4.64	4.73	4.87	4.96	5.74	CR		8.40	7.81	7.21
		velocity	7.00	8.68	8.25	8.27	8.06	7.85	7.54	7.40	7.19	7.06	6.97	7.59			
H1 lead leg	L	strides	22	15	15	15	15	15	15	15	15	15	18.7	175.7			
Bot, Femke (NED) (2000)																	
Semi-Final 2 - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																	
date	20-Jul	time	6.30	10.27	14.50	18.73	23.17	27.77	32.47	37.20	42.13	47.17	52.84	3 / 1	12.43	13.74	14.70
reaction time	0.171	interval	3.97	4.23	4.23	4.44	4.60	4.70	4.73	4.93	5.04	5.67			8.45	7.64	7.14
		velocity	7.14	8.82	8.27	8.27	7.88	7.61	7.45	7.40	7.10	6.94	7.05	7.57			
H1 lead leg	L	strides	22	15	15	15	15	15	15	15	15	15	18	175			
McLaughlin, Sydney (USA) (1999)																	
Semi-Final 1 - 2022 USATF National Championships (Eugene, OR) (TV Analysis)																	
date	24-Jun	time	6.26	10.26	14.40	18.73	23.20	27.83	32.60	37.46	42.30	47.23	52.90	5 / 1	12.47	13.87	14.63
reaction time		interval	4.00	4.14	4.33	4.47	4.63	4.77	4.86	4.84	4.93	5.67			8.42	7.57	7.18
		velocity	7.19	8.75	8.45	8.08	7.83	7.56	7.34	7.20	7.23	7.10	7.05	7.56			
H1 lead leg	R	strides	22	14	14	14	14	15	15	15	15	16	18.2	172.2			
Bot, Femke (NED) (2000)																	
FINAL - 2022 Athletissima (Lausanne, SUI) (TV Analysis)																	
date	26-Aug	time	6.27	10.36	14.55	18.97	23.40	28.00	32.67	37.34	42.30	47.33	52.95	5 / 1	12.70	13.70	14.66
reaction time	0.155	interval	4.09	4.19	4.42	4.43	4.60	4.67	4.67	4.96	5.03	5.62			8.27	7.66	7.16
		velocity	7.18	8.56	8.35	7.92	7.90	7.61	7.49	7.49	7.06	6.96	7.12	7.55			
H1 lead leg	L	strides	22	15	15	15	15	15	15	15	15	15	19	176			
Bot, Femke (NED) (2000)																	
FINAL - 2022 Golden Gala Pietro Mennea (Rome, ITA) (TV Analysis)																	
date	9-Jun	time	6.43	10.47	14.63	18.90	23.27	27.80	32.47	37.24	42.13	47.27	53.02	5 / 1	12.47	13.57	14.80
reaction time	0.188	interval	4.04	4.16	4.27	4.37	4.53	4.67	4.77	4.89	5.14	5.75			8.42	7.74	7.09
		velocity	7.00	8.66	8.41	8.20	8.01	7.73	7.49	7.34	7.16	6.81	6.96	7.54			
H1 lead leg	L	strides	22	15	15	15	15	15	15	15	15	15	19.5	161.5			
Bot, Femke (NED) (2000)																	
FINAL - 2022 Weltklasse (Zürich, SUI) (TV Analysis)																	
date	8-Sep	time	6.37	10.41	14.55	18.72	23.06	27.56	32.14	36.83	41.71	46.98	53.03	6 / 1	12.35	13.42	14.84
reaction time	0.189	interval	4.04	4.14	4.17	4.34	4.50	4.58	4.69	4.88	5.27	6.05			8.50	7.82	7.08
		velocity	7.06	8.66	8.45	8.39	8.06	7.78	7.64	7.46	7.17	6.64	6.61	7.54			
H1 lead leg	L	strides	22	15	15	15	15	15	15	15	15	16	19	177			
Wilson, Britton (USA) (2000)																	
FINAL - 2022 USATF National Championships (Eugene, OR) (TV Analysis)																	
date	25-Jun	time	6.57	10.57	14.75	19.01	23.42	27.96	32.53	37.20	42.14	47.38	53.08	6 / 2	12.44	13.52	14.85
reaction time		interval	4.00	4.18	4.26	4.41	4.54	4.57	4.67	4.94	5.24	5.70	PB		8.44	7.77	7.07
		velocity	6.85	8.75	8.37	8.22	7.94	7.71	7.66	7.49	7.09	6.68	7.02	7.54			
H1 lead leg	R	strides	23	15	15	15	15	15	15	15	16	16	160				
Muhammad, Dalilah (USA) (1990)																	
FINAL - 2022 World Athletics Championships (Eugene, OR) (TV Analysis)																	
date	22-Jul	time	6.17	10.13	14.23	18.66	23.17	27.70	32.28	37.03	42.17	47.23	53.13	6 / 3	12.49	13.62	14.95
reaction time	0.162	interval	3.96	4.10	4.43	4.51	4.53	4.58	4.75	5.14	5.06	5.90			8.41	7.71	7.02
		velocity	7.29	8.84	8.54	7.90	7.76	7.73	7.64	7.37	6.81	6.92	6.78	7.53			
H1 lead leg	R	strides	22	14	14	15	15	15	15	15	16	16	157				

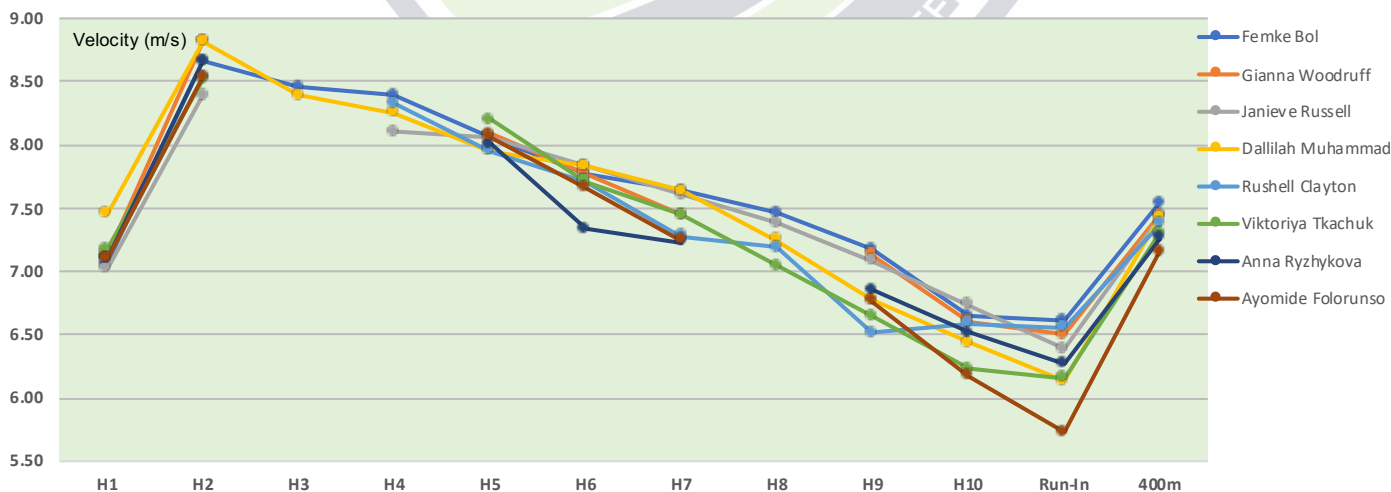
2022 Weltklasse (Zürich, SUI) (TV Analysis)

Women's 400m Hurdles

Date 2022.09.08

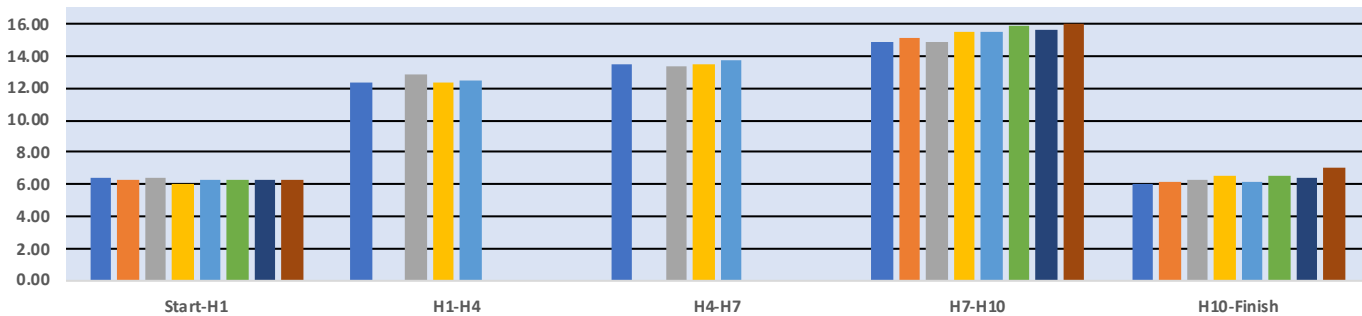
FINAL

		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	6.37	10.41	14.55	18.72	23.06	27.56	32.14	36.83	41.71	46.98		53.03	6 / 1			
	reaction time	0.189															
	interval		4.04	4.14	4.17	4.34	4.50	4.58	4.69	4.88	5.27	6.05			12.35	13.42	14.84
	velocity	7.06	8.66	8.45	8.39	8.06	7.78	7.64	7.46	7.17	6.64	6.61	7.54		8.50	7.82	7.08
H1 lead leg	L																
Woodruff, Gianna (PAN) (1993)	time	6.31	10.28			23.26	27.76	32.46		42.27	47.57		53.72	3 / 2			
	reaction time	0.203															
	interval		3.97			12.98	4.50	4.70		9.81	5.30	6.15					15.11
	velocity	7.13	8.92			8.09	7.78	7.45		7.14	6.60	6.50	7.45				6.95
H1 lead leg	L						15	15			16	19.2	103.2				
Russell, Janieve (JAM) (1993)	time	6.41	10.58	19.22	23.56	28.03	32.63	37.37	42.31	47.51			53.77	4 / 3			
	reaction time	0.155															
	interval		4.17	8.64	4.34	4.47	4.60	4.74	4.94	5.20	6.26				12.81	13.41	14.88
	velocity	7.02	8.39	8.10	8.06	7.83	7.61	7.38	7.09	6.73	6.39	7.44			8.20	7.83	7.06
H1 lead leg	R					15	15	15		16	17	20	136				
Muhammad, Dalilah (USA) (1990)	time	6.04	10.01	14.18	18.42	22.82	27.29	31.87	36.70	41.87	47.31		53.83	5 / 4			
	reaction time	0.150															
	interval		3.97	4.17	4.24	4.40	4.47	4.58	4.83	5.17	5.44	6.52			12.38	13.45	15.44
	velocity	7.45	8.82	8.39	8.25	7.95	7.83	7.64	7.25	6.77	6.43	6.13	7.43		8.48	7.81	6.80
H1 lead leg	R					15	15	15	15	16	16	20	179				
Clayton, Rushell (JAM) (1992)	time	6.34	10.44		18.85	23.25	27.79	32.60	37.47	42.84	48.15		54.25	7 / 5			
	reaction time	0.148															
	interval		4.10		8.41	4.40	4.54	4.81	4.87	5.37	5.31	6.10			12.51	13.75	15.55
	velocity	7.10	8.54		8.32	7.95	7.71	7.28	7.19	6.52	6.59	6.56	7.37		8.39	7.64	6.75
H1 lead leg	R					16	15	16	16	17	17	19.2	154.2				
Tkachuk, Viktoriya (UKR) (1994)	time	6.27	10.38			23.19	27.73	32.43	37.40	42.67	48.29		54.79	8 / 6			
	reaction time	0.216															
	interval		4.11		8.41	4.54	4.70	4.97	5.27	5.62	6.50						15.86
	velocity	7.18	8.52		8.20	7.71	7.45	7.04	6.64	6.23	6.15	7.30					6.62
H1 lead leg	L						15	15	16	16	17	20.5	136.5				
Ryzhykova, Anna (UKR) (1989)	time	6.34	10.38			23.49	28.26	33.10		43.31	48.68		55.06	2 / 7			
	reaction time	0.167															
	interval		4.04		13.11	4.77	4.84		10.21	5.37	6.38						15.58
	velocity	7.10	8.66		8.01	7.34	7.23		6.86	6.52	6.27	7.26					6.74
H1 lead leg	R					15	15			16	19.7	101.7					
Folorunso, Ayomide (ITA) (1996)	time	6.34	10.44			23.46	28.03	32.86		43.21	48.88		55.86	1 / 8			
	reaction time	0.179															
	interval		4.10		13.02	4.57	4.83		10.35	5.67	6.98						16.02
	velocity	7.10	8.54		8.06	7.66	7.25		6.76	6.17	5.73	7.16					6.55
H1 lead leg	L					15	16	16			17	22	124				



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=qwP7qW-uSxE>

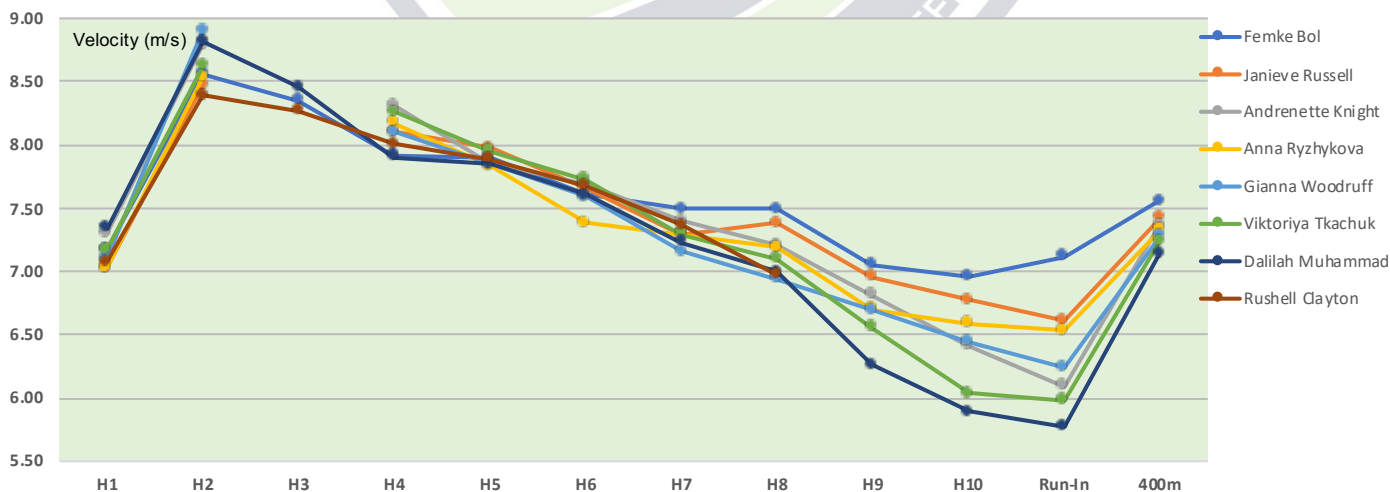
2022 Athletissima (Lausanne, SUI) (TV Analysis)

Women's 400m Hurdles

Date 2022.08.26

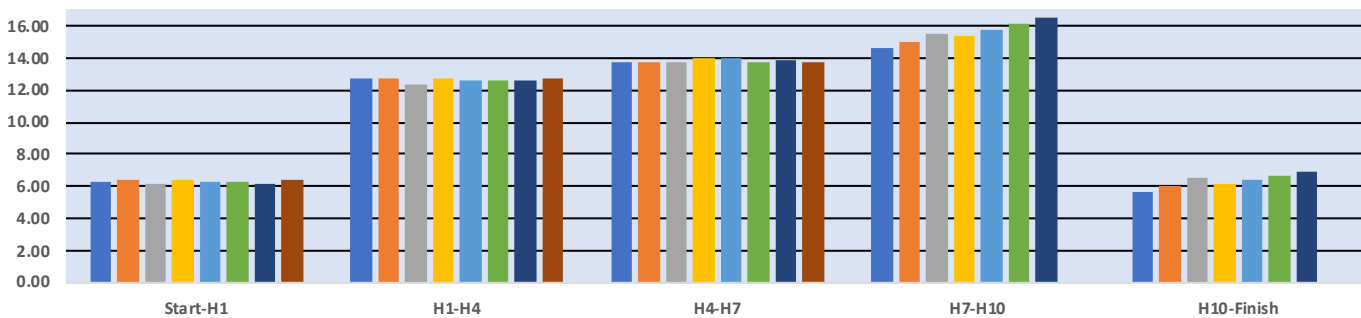
FINAL

		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	10.36	14.55	18.97	23.40	28.00	32.67	37.34	42.30	47.33		52.95	5 / 1				
	reaction time	0.155	interval	4.09	4.19	4.42	4.43	4.60	4.67	4.67	4.96	5.03	5.62		12.70	13.70	14.66	
	H1 lead leg	L	velocity	7.18	8.56	8.35	7.92	7.90	7.61	7.49	7.06	6.96	6.72	7.55		8.27	7.66	7.16
			strides	22	15	15	15	15	15	15	15	15	176					
Russell, Janieve (JAM) (1993)	time	6.40	10.53		19.17	23.56	28.13	32.93	37.67	42.70	47.87		53.92	2 / 2				
	reaction time	0.167	interval	4.13	4.13	8.64	4.39	4.57	4.80	4.74	5.03	5.17	6.05		12.77	13.76	14.94	
	H1 lead leg	R	velocity	7.03	8.47	8.10	7.97	7.66	7.29	7.38	6.96	6.77	6.61	7.42		8.22	7.63	7.03
			strides	23	15		15	16	16	17	17	20	155					
Knight, Andrenette (JAM) (1996)	time	6.16	10.14		18.56	23.02	27.57	32.30	37.16	42.30	47.76		54.33	1 / 3				
	reaction time	0.148	interval	3.98	3.98	8.42	4.46	4.55	4.73	4.86	5.14	5.46	6.57		12.40	13.74	15.46	
	H1 lead leg	R	velocity	7.31	8.79	8.31	7.85	7.69	7.40	7.20	6.81	6.41	6.09	7.36		8.47	7.64	6.79
			strides	22	15		15	15	16	16	16	20	152					
Ryzhykova, Anna (UKR) (1989)	time	6.40	10.50		19.06	23.53	28.27	33.07	37.94	43.16	48.47		54.59	3 / 4				
	reaction time	0.197	interval	4.10	4.10	8.56	4.47	4.74	4.80	4.87	5.22	6.12		12.66	14.01	15.40		
	H1 lead leg	R	velocity	7.03	8.54	8.18	7.83	7.38	7.29	7.19	6.70	6.59	6.54	7.33		8.29	7.49	6.82
			strides	22	14		14	15	15	16	16	19.2	146.2					
Woodruff, Gianna (PAN) (1993)	time	6.33	10.26		18.90	23.36	27.97	32.86	37.90	43.13	48.56		54.97	8 / 5				
	reaction time	0.193	interval	3.93	3.93	8.64	4.46	4.61	4.89	5.04	5.23	5.43	6.41		12.57	13.96	15.70	
	H1 lead leg	L	velocity	7.11	8.91	8.10	7.85	7.59	7.16	6.94	6.69	6.45	6.24	7.28		8.35	7.52	6.69
			strides	23	15		15	15	16	16	17	19.5	151.5					
Tkachuk, Viktoriya (UKR) (1994)	time	6.27	10.33		18.80	23.20	27.73	32.53	37.46	42.80	48.60		55.29	7 / 6				
	reaction time	0.211	interval	4.06	4.06	8.47	4.40	4.53	4.80	4.93	5.34	5.80	6.69		12.53	13.73	16.07	
	H1 lead leg	L	velocity	7.18	8.62	8.26	7.95	7.73	7.29	7.10	6.55	6.03	5.98	7.23		8.38	7.65	6.53
			strides	22	15		15	15	16	17	18	20.7	153.7					
Muhammad, Dalilah (USA) (1990)	time	6.13	10.10	14.24	18.67	23.13	27.73	32.57	37.57	43.16	49.10		56.03	4 / 7				
	reaction time	0.184	interval	3.97	4.14	4.43	4.46	4.60	4.84	5.00	5.59	6.93		12.54	13.90	16.53		
	H1 lead leg	R	velocity	7.34	8.82	8.45	7.90	7.85	7.61	7.23	7.00	6.26	5.89	5.77	7.14		8.37	7.55
			strides	22	14	14	15	15	15	15	16	17	158					
Clayton, Rushell (JAM) (1992)	time	6.36	10.53	14.76	19.13	23.57	28.13	32.88	37.90	fell			dnf	6 / --				
	reaction time	0.161	interval	4.17	4.23	4.37	4.44	4.56	4.75	5.02					12.77	13.75		
	H1 lead leg	R	velocity	7.08	8.39	8.27	8.01	7.88	7.68	7.37	6.97				8.22	7.64		
			strides	22	15	15	15	15	15	16			128					



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=OIGvQel3Cwk>

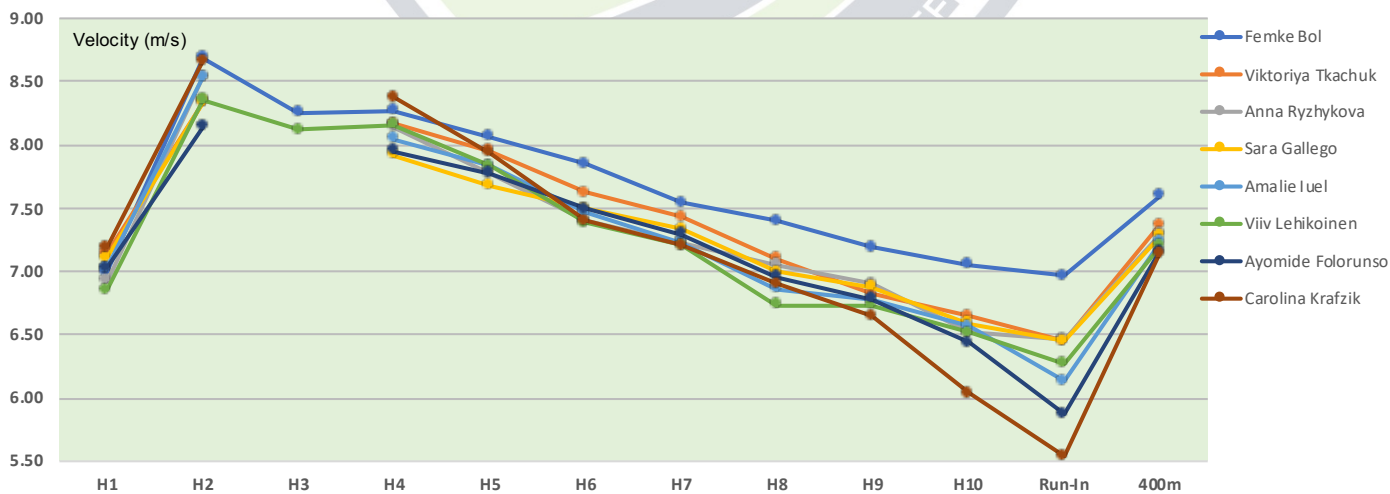
2022 European Athletics Championships (Munich, GER) (TV Analysis)

Women's 400m Hurdles

Date 2022.08.19

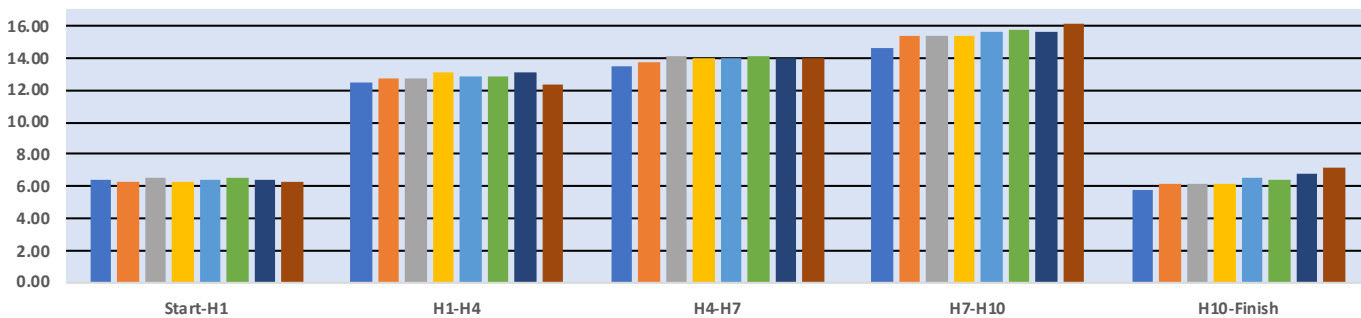
FINAL

		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	6.43	10.46	14.70	18.93	23.27	27.73	32.37	37.10	41.97	46.93	52.67	52.67	3 / 1			
	reaction time	0.279															
	interval		4.03	4.24	4.23	4.34	4.46	4.64	4.73	4.87	4.96	5.74	CR		12.50	13.44	14.56
	velocity	7.00	8.68	8.25	8.27	8.06	7.85	7.54	7.40	7.19	7.06	6.97	7.59		8.40	7.81	7.21
H1 lead leg	L																
Tkachuk, Viktoriya (UKR) (1994)	time	6.30	10.50		19.07	23.47	28.06	32.77	37.70	42.83	48.10		54.30	7 / 2			
	reaction time	0.195															
	interval		4.20		8.57	4.40	4.59	4.71	4.93	5.13	5.27	6.20			12.77	13.70	15.33
	velocity	7.14	8.33		8.17	7.95	7.63	7.43	7.10	6.82	6.64	6.45	7.37		8.22	7.66	6.85
H1 lead leg	L																
Ryzhykova, Anna (UKR) (1989)	time	6.50	10.60		19.20	23.70	28.43	33.27	38.23	43.30	48.67		54.86	5 / 3			
	reaction time	0.250															
	interval		4.10		8.60	4.50	4.73	4.84	4.96	5.07	5.37	6.19			12.70	14.07	15.40
	velocity	6.92	8.54		8.14	7.78	7.40	7.23	7.06	6.90	6.52	6.46	7.29		8.27	7.46	6.82
H1 lead leg	R																
Gallego, Sara (ESP) (2000)	time	6.33	10.53		19.37	23.93	28.60	33.37	38.37	43.46	48.77		54.97	6 / 4			
	reaction time	0.143															
	interval		4.20		8.84	4.56	4.67	4.77	5.00	5.09	5.31	6.20			13.04	14.00	15.40
	velocity	7.11	8.33		7.92	7.68	7.49	7.34	7.00	6.88	6.59	6.45	7.28		8.05	7.50	6.82
H1 lead leg	L																
Iuel, Amalie (NOR) (1996)	time	6.40	10.50		19.20	23.67	28.36	33.20	38.30	43.47	48.80		55.32	1 / 5			
	reaction time	0.186															
	interval		4.10		8.70	4.47	4.69	4.84	5.10	5.17	5.33	6.52			12.80	14.00	15.60
	velocity	7.03	8.54		8.05	7.83	7.46	7.23	6.86	6.77	6.57	6.13	7.23		8.20	7.50	6.73
H1 lead leg	L																
Lehikoinen, Viivi (FIN) (1999)	time	6.57	10.76	15.07	19.36	23.83	28.57	33.43	38.63	43.83	49.20		55.58	4 / 6			
	reaction time	0.291															
	interval		4.19	4.31	4.29	4.47	4.74	4.86	5.20	5.37	6.38				12.79	14.07	15.77
	velocity	6.85	8.35	8.12	8.16	7.83	7.38	7.20	6.73	6.73	6.52	6.27	7.20		8.21	7.46	6.66
H1 lead leg	R																
Folorunso, Ayomide (ITA) (1996)	time	6.40	10.70		19.50	24.00	28.67	33.47	38.50	43.66	49.10		55.91	2 / 7			
	reaction time	0.197															
	interval		4.30		8.80	4.50	4.67	4.80	5.03	5.16	5.44	6.81			13.10	13.97	15.63
	velocity	7.03	8.14		7.95	7.78	7.49	7.29	6.96	6.78	6.43	5.87	7.15		8.02	7.52	6.72
H1 lead leg	L																
Krafzik, Carolina (GER) (1995)	time	6.26	10.30		18.66	23.07	27.80	32.66	37.73	43.00	48.80		56.02	8 / 8			
	reaction time	0.215															
	interval		4.04		8.36	4.41	4.73	4.86	5.07	5.27	5.80	7.22			12.40	14.00	16.14
	velocity	7.19	8.66		8.37	7.94	7.40	7.20	6.90	6.64	6.03	5.54	7.14		8.47	7.50	6.51
H1 lead leg	L																



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=xQ-7q_dGwBg

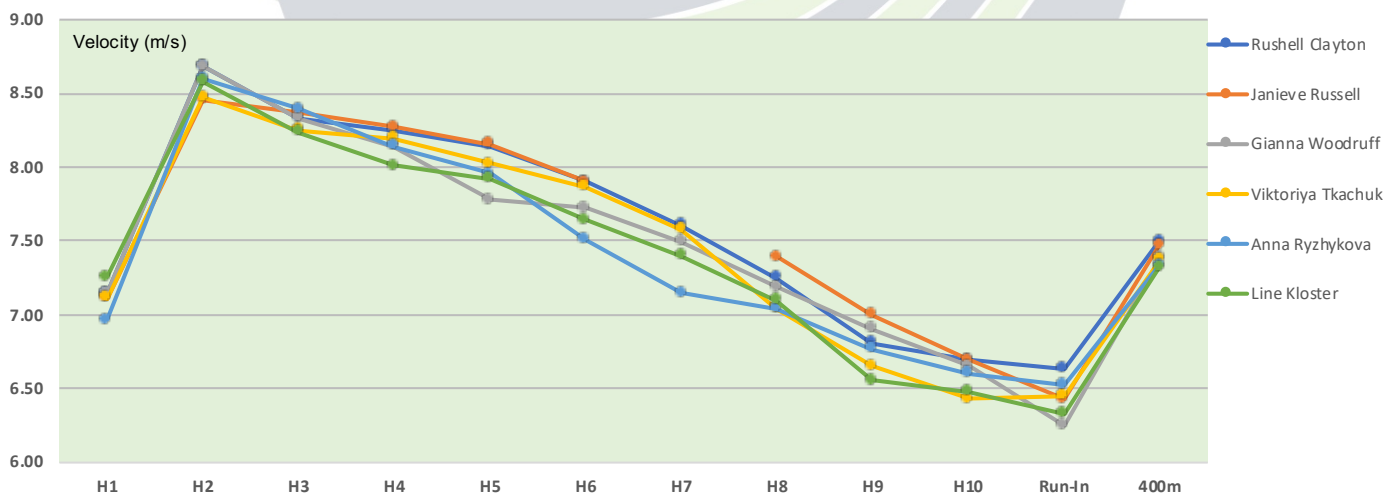
2022 Herculis Meeting International d'Athlétisme (Monaco, MON) (TV Analysis)

Women's 400m Hurdles

Date 2022.08.10

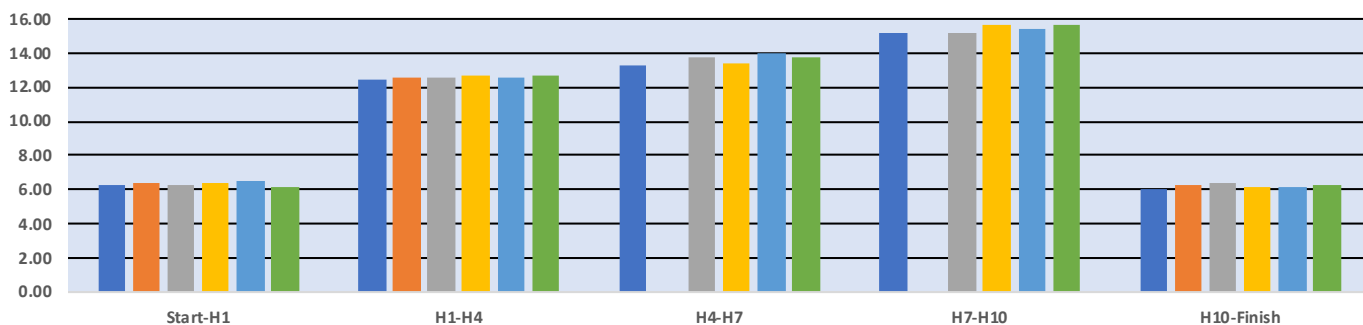
FINAL

		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	6.30	10.33	14.53	18.77	23.07	27.50	32.10	36.93	42.07	47.30		53.33	6 / 1			
	reaction time	0.179															
	interval		4.03	4.20	4.24	4.30	4.43	4.60	4.83	5.14	5.23	6.03			12.47	13.33	15.20
	velocity	7.14	8.68	8.33	8.25	8.14	7.90	7.61	7.25	6.81	6.69	6.63	7.50		8.42	7.88	6.91
H1 lead leg	L																
	strides	21	15	15	15	15	15	15	16	16	17	19.7	179.7				
Russell, Janieve (JAM) (1993)	time	6.33	10.47	14.65	18.88	23.17	27.60		37.07	42.07	47.30		53.52	3 / 2			
	reaction time	0.180															
	interval		4.14	4.18	4.23	4.29	4.43		9.47	5.00	5.23	6.22			12.55		
	velocity	7.11	8.45	8.37	8.27	8.16	7.90		7.39	7.00	6.69	6.43	7.47		8.37		
H1 lead leg	R																
	strides	23	15	15	15	15	15			16	17	20	151				
Woodruff, Gianna (PAN) (1993)	time	6.30	10.33	14.53	18.83	23.33	27.86	32.53	37.40	42.47	47.73		54.13	4 / 3			
	reaction time	0.203															
	interval		4.03	4.20	4.30	4.50	4.53	4.67	4.87	5.07	5.26	6.40			12.53	13.70	15.20
	velocity	7.14	8.68	8.33	8.14	7.78	7.73	7.49	7.19	6.90	6.65	6.25	7.39		8.38	7.66	6.91
H1 lead leg	L																
	strides	23	15	15	15	15	15	15	16	16	17	19.5	166.5				
Tkachuk, Viktoriya (UKR) (1994)	time	6.33	10.46	14.70	18.97	23.33	27.78	32.40	37.37	42.63	48.07		54.27	8 / 4			
	reaction time	0.253															
	interval		4.13	4.24	4.27	4.36	4.45	4.62	4.97	5.26	5.44	6.20			12.64	13.43	15.67
	velocity	7.11	8.47	8.25	8.20	8.03	7.87	7.58	7.04	6.65	6.43	6.45	7.37		8.31	7.82	6.70
H1 lead leg	L																
	strides	22	15	15	15	15	15	15	16	16	17	19.7	180.7				
Ryzhykova, Anna (UKR) (1989)	time	6.46	10.53	14.70	19.00	23.40	28.06	32.96	37.93	43.10	48.40		54.53	5 / 5			
	reaction time	0.189															
	interval		4.07	4.17	4.30	4.40	4.66	4.90	4.97	5.17	5.30	6.13			12.54	13.96	15.44
	velocity	6.97	8.60	8.39	8.14	7.95	7.51	7.14	7.04	6.77	6.60	6.53	7.34		8.37	7.52	6.80
H1 lead leg	R																
	strides	22	14	14	14	14	15	15	15	16	19.2	158.2					
Kloster, Line (NOR) (1990)	time	6.20	10.28	14.53	18.90	23.32	27.90	32.63	37.56	42.90	48.30		54.62	7 / 6			
	reaction time	0.156															
	interval		4.08	4.25	4.37	4.42	4.58	4.73	4.93	5.34	5.40	6.32			12.70	13.73	15.67
	velocity	7.26	8.58	8.24	8.01	7.92	7.64	7.40	7.10	6.55	6.48	6.33	7.32		8.27	7.65	6.70
H1 lead leg	R																
	strides	22	15	15	15	15	15	15	15	16	16	20	179				



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=gPZE18RRJcl>

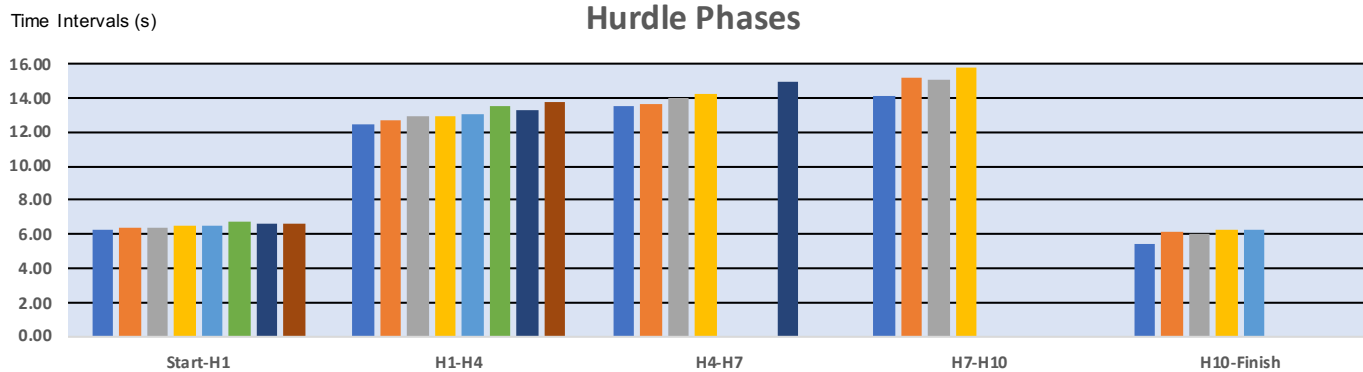
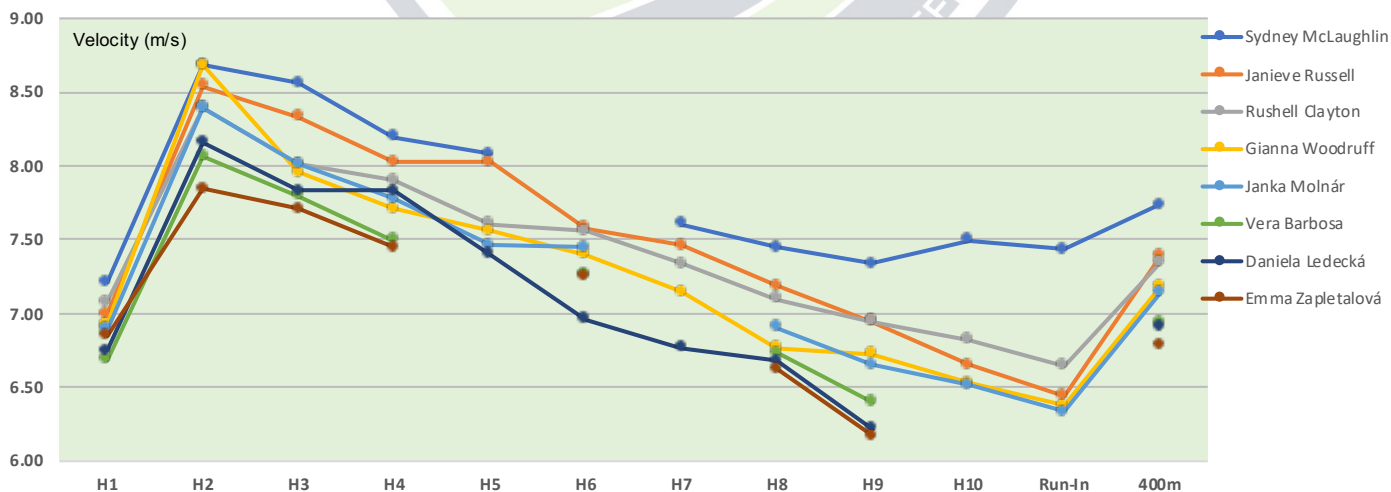
2022 Gyulai István Memorial (Székesfehérvár, HUN) (TV Analysis)

Women's 400m Hurdles

Date 2022.08.08

FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
McLaughlin, Sydney (USA) (1999)	time	6.24	10.27	14.36	18.63	22.96		32.16	36.86	41.63	46.30		51.68	4 / 1			
	reaction time	0.182															
	interval velocity	7.21	8.03	8.56	8.20	8.08		9.20	4.70	4.77	4.67	5.38			12.39	13.53	14.14
	H1 lead leg R	strides	22	14	14	14	14		7.61	7.45	7.34	7.49	7.74	141		8.47	7.76
Russell, Janieve (JAM) (1993)	time	6.43	10.53	14.73	19.09	23.45	28.07	32.76	37.63	42.67	47.93		54.14	5 / 2			
	reaction time	0.168															
	interval velocity	7.00	8.54	8.33	8.03	8.03	7.58	7.46	7.19	6.94	6.65	6.44	7.39		12.66	13.67	15.17
	H1 lead leg R	strides	23	15	15	15	15		16	16	17	17	132		8.29	7.68	6.92
Clayton, Rushell (JAM) (1992)	time	6.36	10.53	14.90	19.33	23.93	28.56	33.33	38.26	43.30	48.43		54.45	7 / 3			
	reaction time	0.196															
	interval velocity	7.08	8.39	8.01	7.90	7.61	7.56	7.34	7.10	6.94	6.82	6.64	7.35		12.97	14.00	15.10
	H1 lead leg L	strides	22	15	15	15	15		16	16	16	16	145		8.10	7.50	6.95
Woodruff, Gianna (PAN) (1993)	time	6.50	10.53	14.93	19.47	24.10	28.83	33.73	38.90	44.10	49.46		55.73	6 / 4			
	reaction time	0.234															
	interval velocity	6.92	8.68	7.95	7.71	7.56	7.40	7.14	6.77	6.73	6.53	6.38	7.18		12.97	14.26	15.73
	H1 lead leg L	strides	23	15	15	15	15		15	16	16	17	147		8.10	7.36	6.68
Molnár, Janka (HUN) (2001)	time	6.53	10.70	15.07	19.57	24.26	28.96		39.10	44.36	49.73		56.04	3 / 5			
	reaction time	0.232															
	interval velocity	6.89	8.39	8.01	7.78	7.46	7.45		10.14	5.26	5.37	6.31	7.14		13.04		
	H1 lead leg L	strides	23	16	16	16	16		17	17	17	121			8.05		
Barbosa, Vera (POR) (1989)	time	6.73	11.07	15.56	20.23		29.87		40.26	45.73			57.66	1 / 6			
	reaction time	0.248															
	interval velocity	6.69	8.06	7.80	7.49		9.64		10.39	5.47			6.94		13.50		
	H1 lead leg L	strides	24	16	16	16	16			18			106		7.78		
Ledecká, Daniela (SVK) (1996)	time	6.67	10.96	15.43	19.90	24.63	29.66	34.83	40.07	45.70			57.89	8 / 7			
	reaction time	0.146															
	interval velocity	6.75	8.16	7.83	7.83	7.40	6.96	6.77	6.68	6.22			6.91		13.23	14.93	
	H1 lead leg R	strides	23	15	15	15	15	16	16	17			148		7.94	7.03	
Zapletalová, Emma (SVK) (2000)	time	6.57	11.03	15.57	20.27		29.93		40.50	46.17			59.00	2 / 8			
	reaction time	0.160															
	interval velocity	6.85	7.85	7.71	7.45		9.66		10.57	5.67			6.78		13.70		
	H1 lead leg R	strides	23	16	16	16	16		7.25	6.62	17		104		7.66		



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=7bSum-4l4vM>

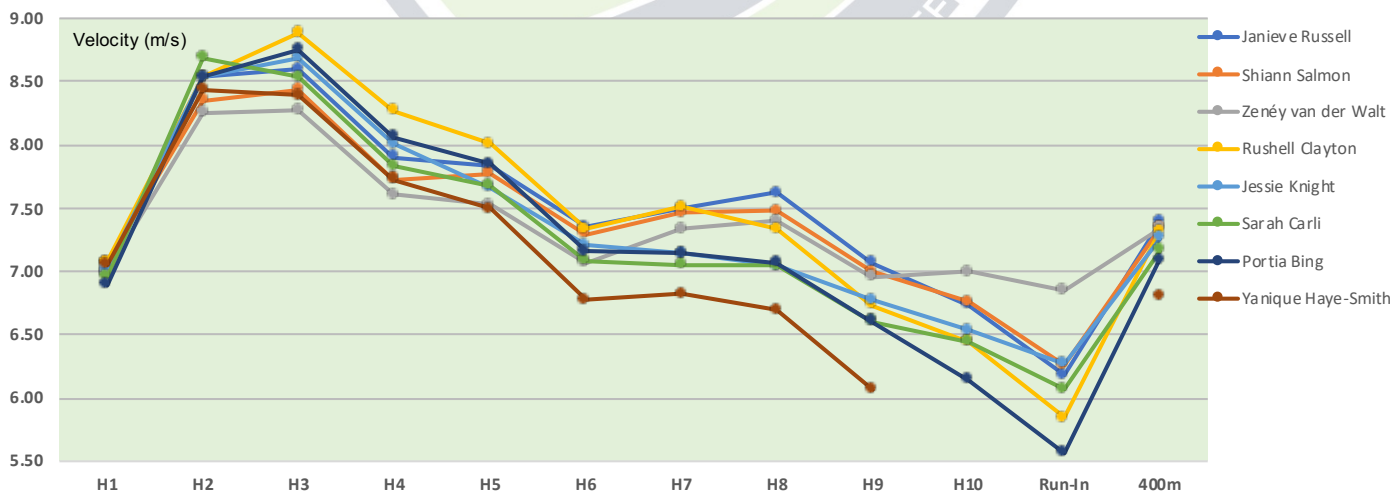
2022 Commonwealth Games (Birmingham, GBR) (TV Analysis)

Women's 400m Hurdles

Date 2022.08.06

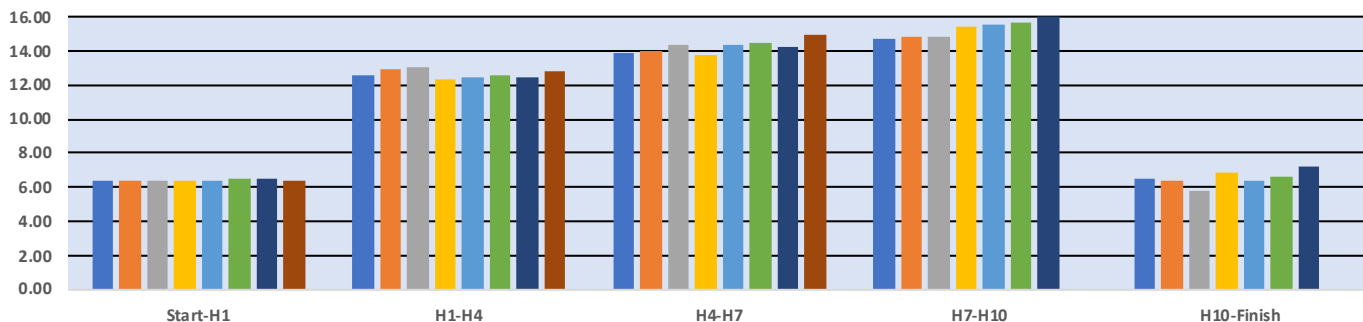
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Russell, Janieve (JAM) (1993)	time	6.43	10.53	14.60	19.03	23.50	28.26	32.93	37.52	42.47	47.67	54.14		7 / 1			
	reaction time	0.148													12.60	13.90	14.74
	interval velocity	7.00	8.54	8.60	7.90	7.83	7.35	7.46	4.59	4.95	5.20	6.47	7.39		8.33	7.55	7.12
H1 lead leg	R																
Salmon, Shiann (JAM) (1999)	time	6.36	10.55	14.70	19.23	23.73	28.53	33.22	37.90	42.90	48.08	54.47		4 / 2			
	reaction time	0.195													12.87	13.99	14.86
	interval velocity	7.08	8.35	8.43	7.73	7.78	7.29	7.46	7.48	7.00	6.76	6.26	7.34		8.16	7.51	7.07
H1 lead leg	L																
van der Walt, Zenéy (RSA) (2000)	time	6.43	10.67	14.90	19.50	24.15	29.10	33.87	38.60	43.63	48.63	54.47		6 / 3			
	reaction time	0.168													13.07	14.37	14.76
	interval velocity	7.00	8.25	8.27	7.61	7.53	7.07	7.34	7.40	6.96	7.00	6.85	7.34		8.03	7.31	7.11
H1 lead leg	L																
Clayton, Rushell (JAM) (1992)	time	6.36	10.46	14.40	18.63	23.00	27.77	32.43	37.20	42.40	47.83	54.67		5 / 4			
	reaction time	0.147													12.27	13.80	15.40
	interval velocity	7.08	8.54	8.88	8.27	8.01	7.34	7.51	7.34	6.73	6.45	5.85	7.32		8.56	7.61	6.82
H1 lead leg	L																
Knight, Jessie (GBR) (1994)	time	6.40	10.50	14.53	18.90	23.47	28.33	33.23	38.20	43.37	48.73	55.11		8 / 5			
	reaction time	0.160													12.50	14.33	15.50
	interval velocity	7.03	8.54	8.68	8.01	7.66	7.20	7.14	7.04	6.77	6.53	6.27	7.26		8.40	7.33	6.77
H1 lead leg	R																
Carli, Sarah (AUS) (1994)	time	6.47	10.50	14.60	19.07	23.63	28.57	33.53	38.50	43.80	49.23	55.82		2 / 6			
	reaction time	0.263													12.60	14.46	15.70
	interval velocity	6.96	8.68	8.54	7.83	7.68	7.09	7.06	7.04	6.60	6.45	6.07	7.17		8.33	7.26	6.69
H1 lead leg	L																
Bing, Portia (NZL) (1993)	time	6.53	10.63	14.63	18.97	23.43	28.32	33.22	38.17	43.47	49.17	56.36		9 / 7			
	reaction time	0.173													12.44	14.25	15.95
	interval velocity	6.89	8.54	8.75	8.06	7.85	7.16	7.14	7.07	6.60	6.14	5.56	7.10		8.44	7.37	6.58
H1 lead leg	R																
Haye-Smith, Yanique (TKS) (1990)	time	6.38	10.53	14.70	19.23	23.90	29.07	34.20	39.43	45.20	51.78	58.78		3 / 8			
	reaction time	0.170													12.85	14.97	
	interval velocity	7.05	8.43	8.39	7.73	7.49	6.77	6.82	6.69	6.07	6.07	6.81	158		8.17	7.01	
H1 lead leg	R																



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=E0V3Xc9uJLk>

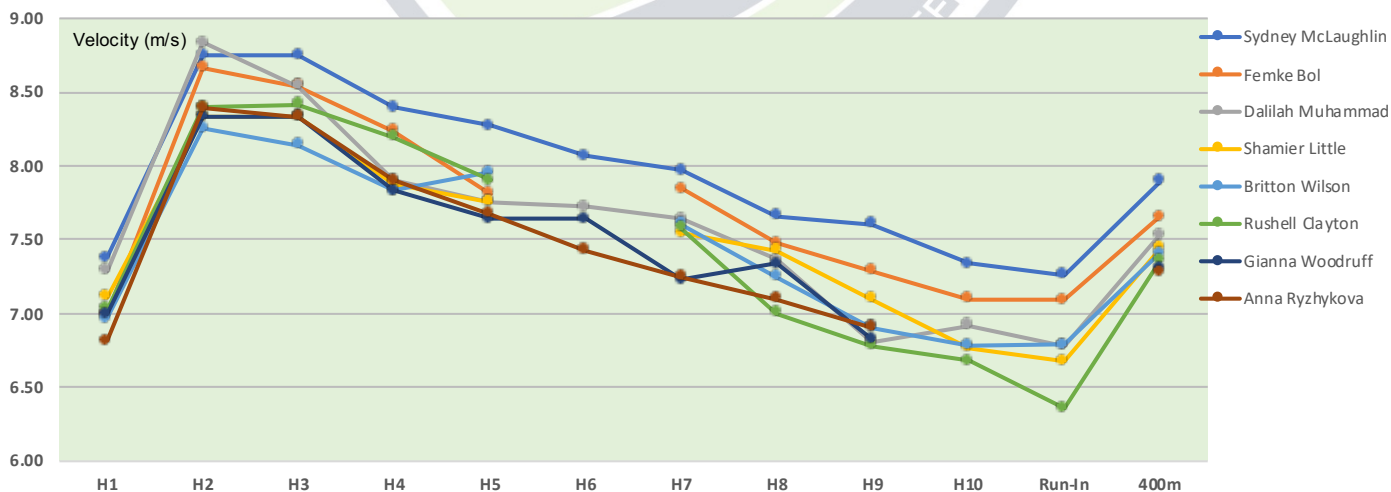
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.07.22

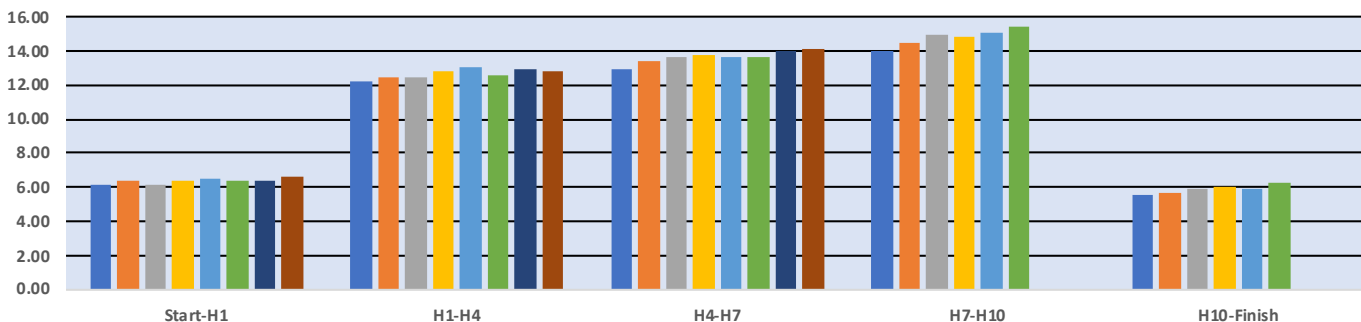
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
McLaughlin, Sydney (USA) (1999)	time	6.10	10.10	14.10	18.27	22.50	26.84	31.23	35.80	40.40	45.17		50.68	5 / 1			
	reaction time	0.158															
	interval		4.00	4.00	4.17	4.23	4.34	4.39	4.57	4.60	4.77	5.51			12.17	12.96	13.94
	velocity	7.38	8.75	8.75	8.39	8.27	8.06	7.97	7.66	7.61	7.34	7.26	7.89		8.63	8.10	7.53
H1 lead leg	R											18.7	169.7				
Bol, Femke (NED) (2000)	time	6.43	10.47	14.57	18.82	23.30		32.22	36.90	41.70	46.63		52.27	4 / 2			
	reaction time	0.179															
	interval		4.04	4.10	4.25	4.48		8.92	4.68	4.80	4.93	5.64			12.39	13.40	14.41
	velocity	7.00	8.66	8.54	8.24	7.81		7.85	7.48	7.29	7.10	7.09	7.65		8.47	7.84	7.29
H1 lead leg	L											19	146				
Muhammad, Dalilah (USA) (1990)	time	6.17	10.13	14.23	18.66	23.17	27.70	32.28	37.03	42.17	47.23		53.13	6 / 3			
	reaction time	0.162															
	interval		3.96	4.10	4.43	4.51	4.53	4.58	4.75	5.14	5.06	5.90			12.49	13.62	14.95
	velocity	7.29	8.84	8.54	7.90	7.76	7.73	7.64	7.37	6.81	6.92	6.78	7.53		8.41	7.71	7.02
H1 lead leg	R											157					
Little, Shamier (USA) (1995)	time	6.33	10.53	14.73	19.17	23.68		32.96	37.67	42.60	47.77		53.76	3 / 4			
	reaction time	0.147															
	interval		4.20	4.20	4.44	4.51		9.28	4.71	4.93	5.17	5.99			12.84	13.79	14.81
	velocity	7.11	8.33	8.33	7.88	7.76		7.54	7.43	7.10	6.77	6.68	7.44		8.18	7.61	7.09
H1 lead leg	R											128					
Wilson, Britton (USA) (2000)	time	6.46	10.70	15.00	19.47	23.87		33.07	37.90	42.97	48.13		54.02	1 / 5			
	reaction time	0.141															
	interval		4.24	4.30	4.47	4.40		9.20	4.83	5.07	5.16	5.89			13.01	13.60	15.06
	velocity	6.97	8.25	8.14	7.83	7.95		7.61	7.25	6.90	6.78	6.79	7.40		8.07	7.72	6.97
H1 lead leg	R											130					
Clayton, Rushell (JAM) (1992)	time	6.40	10.57	14.73	19.00	23.43		32.67	37.67	42.83	48.07		54.36	2 / 6			
	reaction time	0.145															
	interval		4.17	4.16	4.27	4.43		9.24	5.00	5.16	5.24	6.29			12.60	13.67	15.40
	velocity	7.03	8.39	8.41	8.20	7.90		7.58	7.00	6.78	6.68	6.36	7.36		8.33	7.68	6.82
H1 lead leg	L											130					
Woodruff, Gianna (PAN) (1993)	time	6.43	10.63	14.83	19.30	23.88	28.46	33.30	38.07	43.20			54.75	7 / 7			
	reaction time	0.177															
	interval		4.20	4.20	4.47	4.58	4.58	4.84	4.77	5.13							
	velocity	7.00	8.33	8.33	7.83	7.64	7.64	7.23	7.34	6.82			7.31		12.87	14.00	
H1 lead leg	R											147		8.16	7.50		
Ryzhykova, Anna (UKR) (1989)	time	6.60	10.77	14.97	19.40	23.96	28.67	33.50	38.43	43.50			54.93	8 / 8			
	reaction time	0.167															
	interval		4.17	4.20	4.43	4.56	4.71	4.83	4.93	5.07							
	velocity	6.82	8.39	8.33	7.90	7.68	7.43	7.25	7.10	6.90			7.28		12.80	14.10	
H1 lead leg	R											137		8.20	7.45		



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=RMZQOj-Gf4o&t=11769s>

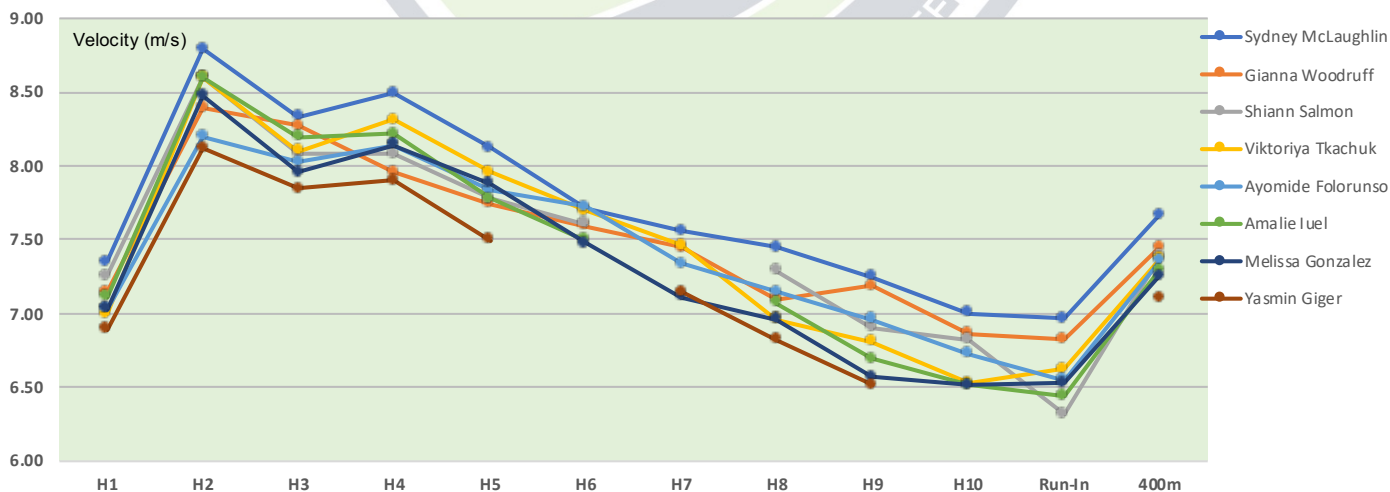
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.07.20

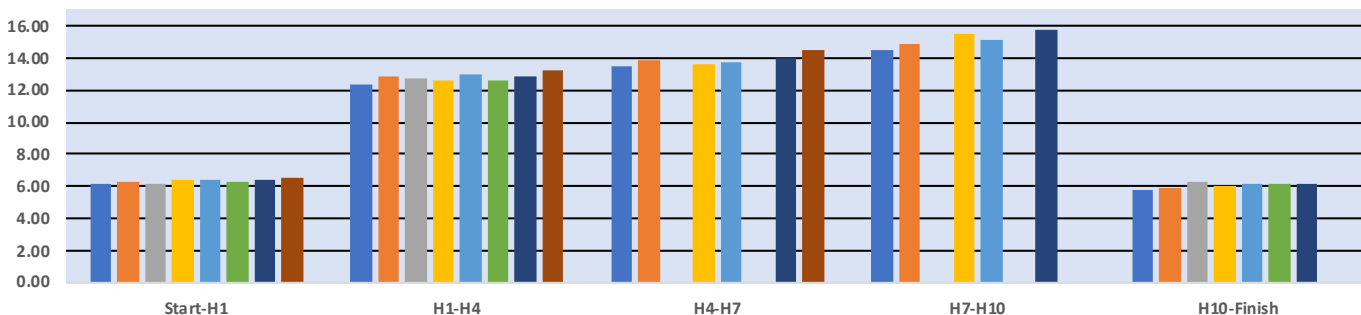
Semi-Final 3

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
McLaughlin, Sydney (USA) (1999)	time	6.12	10.10	14.30	18.42	22.73	27.27	31.90	36.60	41.43	46.43	52.17		6 / 1			
	reaction time	0.174															
	interval velocity	7.35	8.79	8.33	8.50	8.12	7.71	7.56	7.45	7.25	7.00	6.97	7.67		12.30	13.48	14.53
H1 lead leg	R														8.54	7.79	7.23
Woodruff, Gianna (PAN) (1993)	time	6.30	10.47	14.70	19.10	23.62	28.23	32.93	37.86	42.73	47.83		53.69		7 / 2		
	reaction time	0.211															
	interval velocity	7.14	8.39	8.27	7.95	7.74	7.59	7.45	7.10	7.19	6.86	6.83	7.45		12.80	13.83	14.90
H1 lead leg	L														8.20	7.59	7.05
Salmon, Shiann (JAM) (1999)	time	6.20	10.27	14.60	18.93	23.43	28.03		37.63	42.70	47.83		54.16		3 / 3		
	reaction time	0.187															
	interval velocity	7.26	8.60	8.08	8.08	7.78	7.61		9.60	5.07	5.13	6.33	7.39		12.73		
H1 lead leg	L														8.25		
Tkachuk, Viktoriya (UKR) (1994)	time	6.43	10.50	14.82	19.03	23.43	27.98	32.67	37.70	42.84	48.20		54.24		8 / 4		
	reaction time	0.212															
	interval velocity	7.00	8.60	8.10	8.31	7.95	7.69	7.46	6.96	6.81	6.53	6.62	7.37		12.60	13.64	15.53
H1 lead leg	L														8.33	7.70	6.76
Folorunso, Ayomide (ITA) (1996)	time	6.40	10.67	15.03	19.33	23.80	28.33	33.10	38.00	43.03	48.23		54.34		5 / 5		
	reaction time	0.188															
	interval velocity	7.03	8.20	8.03	8.14	7.83	7.73	7.34	7.14	6.96	6.73	6.55	7.36		12.93	13.77	15.13
H1 lead leg	L														8.12	7.63	6.94
luel, Amalie (NOR) (1996)	time	6.33	10.40	14.67	18.93	23.43	28.10		38.00	43.23	48.60		54.81		4 / 6		
	reaction time	0.123															
	interval velocity	7.11	8.60	8.20	8.22	7.78	7.49		9.90	5.23	5.37	6.21	7.30		12.60		
H1 lead leg	L														8.33		
Gonzalez, Melissa (COL) (1994)	time	6.40	10.53	14.93	19.23	23.67	28.35	33.27	38.30	43.63	49.00		55.13		1 / 7		
	reaction time	0.143															
	interval velocity	7.03	8.47	7.95	8.14	7.88	7.48	7.11	6.96	6.57	6.52	6.53	7.26		12.83	14.04	15.73
H1 lead leg	L														8.18	7.48	6.68
Giger, Yasmin (SUI) (1999)	time	6.53	10.84	15.30	19.73	24.40		34.20	39.33	44.70			56.31		2 / 8		
	reaction time	0.154															
	interval velocity	6.89	8.12	7.85	7.90	7.49		9.80	5.13	5.37			7.10		13.20	14.47	
H1 lead leg	R														7.95	7.26	



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=B-Pu9se9z3A>

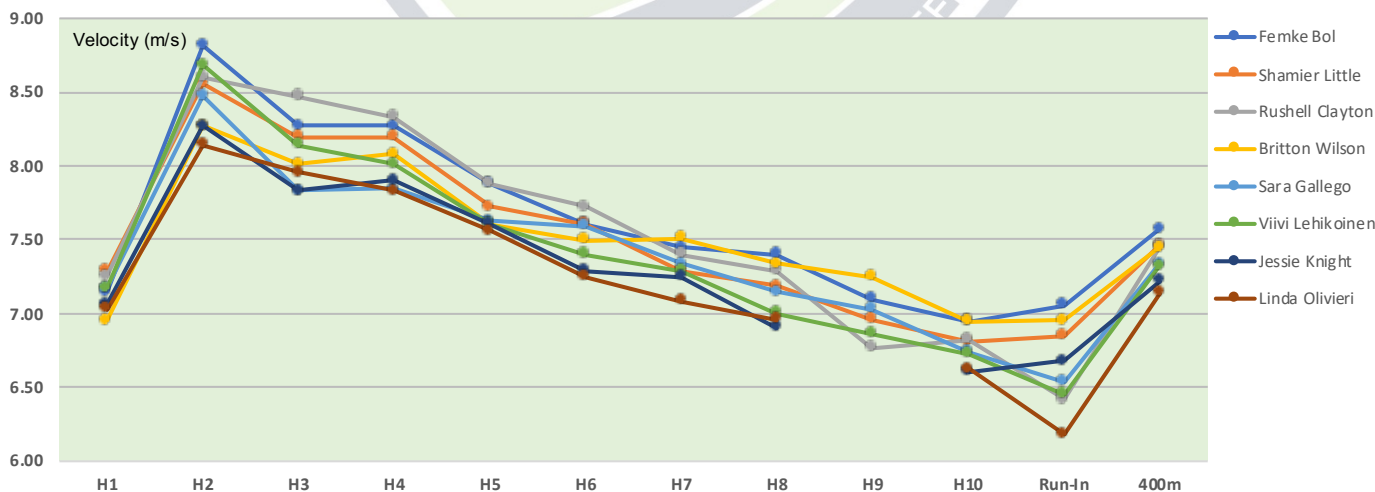
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.07.20

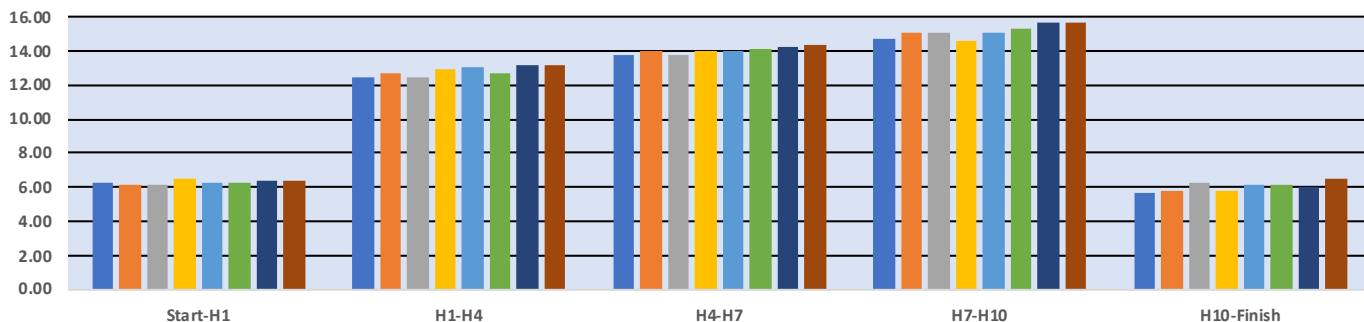
Semi-Final 2

		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	6.30	10.27	14.50	18.73	23.17	27.77	32.47	37.20	42.13	47.17		52.84	3 / 1			
	reaction time	0.171	interval	3.97	4.23	4.23	4.44	4.60	4.70	4.73	4.93	5.04	5.67		12.43	13.74	14.70
	velocity	7.14	8.82	8.27	8.27	7.88	7.61	7.45	7.40	7.10	6.94	6.85	7.57		8.45	7.64	7.14
H1 lead leg	L	strides	22	15	15	15	15	15	15	15	15	18	175				
Little, Shamier (USA) (1995)	time	6.17	10.26	14.53	18.80	23.33	27.93	32.73	37.60	42.63	47.77		53.61	6 / 2			
	reaction time	0.178	interval	4.09	4.27	4.27	4.53	4.60	4.80	4.87	5.03	5.14	5.84		12.63	13.93	15.04
	velocity	7.29	8.56	8.20	8.20	7.73	7.61	7.29	7.19	6.96	6.81	6.85	7.46		8.31	7.54	6.98
H1 lead leg	R	strides	23	15	15	15	15	15	15	16	16	19.2	179.2				
Clayton, Rushell (JAM) (1992)	time	6.20	10.27	14.40	18.60	23.04	27.57	32.30	37.10	42.27	47.40		53.63	8 / 3			
	reaction time	0.169	interval	4.07	4.13	4.20	4.44	4.53	4.73	4.80	5.17	5.13	6.23	PB	12.40	13.70	15.10
	velocity	7.26	8.60	8.47	8.33	7.88	7.73	7.40	7.29	6.77	6.82	6.42	7.46		8.47	7.66	6.95
H1 lead leg	L	strides	22	14	14	15	15	15	15	16	16	19.2	176.2				
Wilson, Britton (USA) (2000)	time	6.47	10.70	15.07	19.40	24.00	28.67	33.33	38.10	42.93	47.97		53.72	5 / 4			
	reaction time	0.159	interval	4.23	4.37	4.33	4.60	4.67	4.66	4.77	4.83	5.04	5.75		12.93	13.93	14.64
	velocity	6.96	8.27	8.01	8.08	7.61	7.49	7.51	7.34	7.25	6.94	6.96	7.45		8.12	7.54	7.17
H1 lead leg	R	strides	23	15	15	15	15	15	15	15	16	18.2	177.2				
Gallego, Sara (ESP) (2000)	time	6.27	10.40	14.87	19.33	23.92	28.53	33.30	38.20	43.18	48.37		54.49	7 / 5			
	reaction time	0.136	interval	4.13	4.47	4.46	4.59	4.61	4.77	4.90	4.98	5.19	6.12		13.06	13.97	15.07
	velocity	7.18	8.47	7.83	7.85	7.63	7.59	7.34	7.14	7.03	6.74	6.54	7.34		8.04	7.52	6.97
H1 lead leg	L	strides	24	15	16	16	16	16	17	17	21	174					
Lehikoinen, Viivi (FIN) (1999)	time	6.27	10.30	14.60	18.97	23.57	28.30	33.10	38.10	43.20	48.40		54.60	4 / 6			
	reaction time	0.168	interval	4.03	4.30	4.37	4.60	4.73	4.80	5.00	5.10	5.20	6.20	NR PB	12.70	14.13	15.30
	velocity	7.18	8.68	8.14	8.01	7.61	7.40	7.29	7.00	6.86	6.73	6.45	7.33		8.27	7.43	6.86
H1 lead leg	R	strides	23	15	15	15	16	16	16	17	17	20.2	187.2				
Knight, Jessie (GBR) (1994)	time	6.37	10.60	15.07	19.50	24.10	28.90	33.73	38.80	43.90	49.40		55.39	2 / 7			
	reaction time	0.148	interval	4.23	4.47	4.43	4.60	4.80	4.83	5.07	10.60	5.99		13.13	14.23	15.67	
	velocity	7.06	8.27	7.83	7.90	7.61	7.29	7.25	6.90	6.60	6.68	7.22		8.00	7.38	6.70	
H1 lead leg	R	strides	22	15	15	15	15	15	15	19	146						
Olivieri, Linda (ITA) (1998)	time	6.40	10.70	15.10	19.57	24.20	29.03	33.97	39.00	44.10	49.57		56.04	1 / 8			
	reaction time	0.135	interval	4.30	4.40	4.47	4.63	4.83	4.94	5.03	10.57	6.47		13.17	14.40	15.60	
	velocity	7.03	8.14	7.95	7.83	7.56	7.25	7.09	6.96	6.62	6.18	7.14		7.97	7.29	6.73	
H1 lead leg	R	strides	23	15	15	15	15	16	16	16	130						



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=B-Pu9se9z3A>

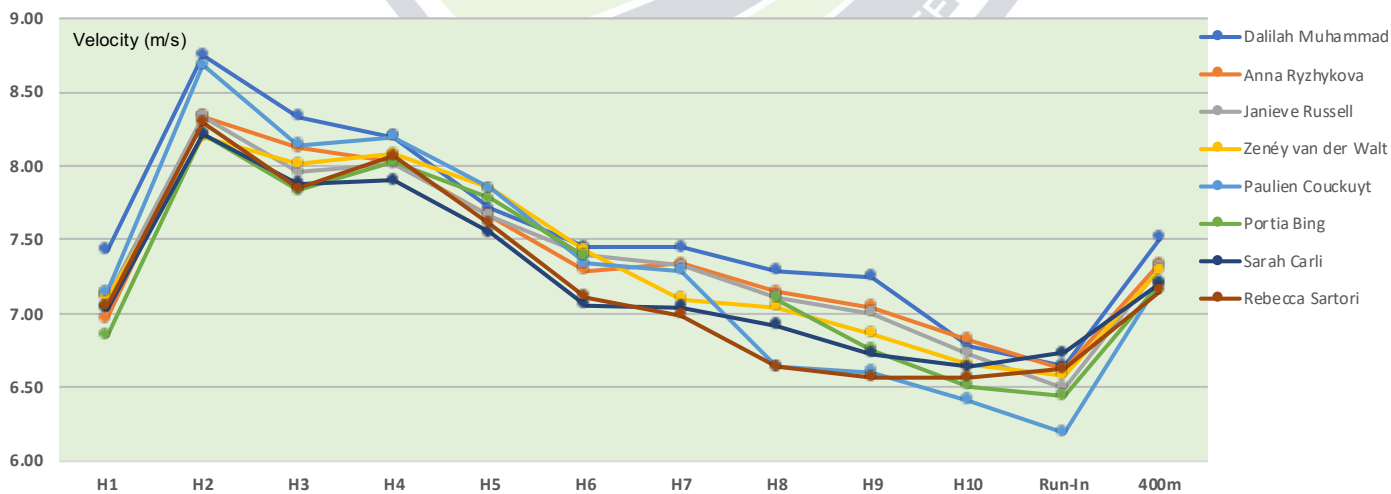
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.07.20

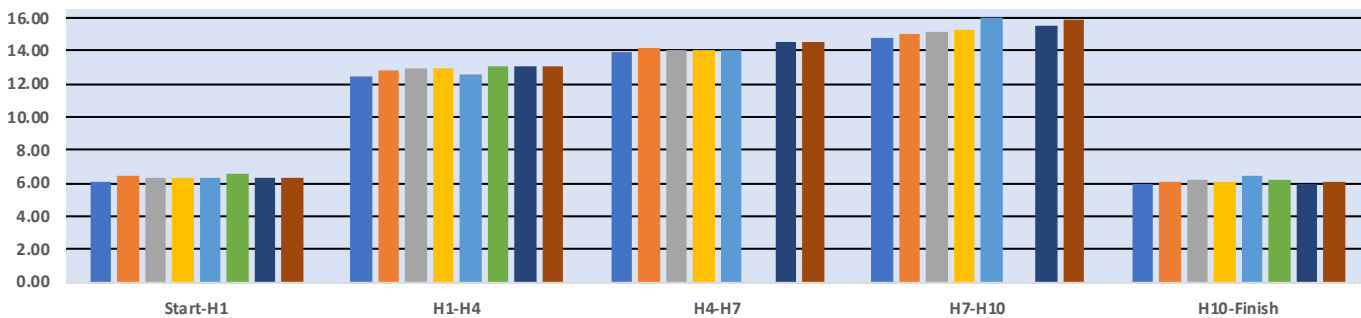
Semi-Final 1

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Muhammad, Dalilah (USA) (1990)	time	6.06	10.06	14.26	18.53	23.07	27.77	32.47	37.27	42.10	47.26		53.28	4 / 1			
	reaction time	0.224															
	interval		4.00	4.20	4.27	4.54	4.70	4.70	4.80	4.83	5.16	6.02			12.47	13.94	14.79
	velocity	7.43	8.75	8.33	8.20	7.71	7.45	7.45	7.29	7.25	6.78	6.64	7.51		8.42	7.53	7.10
H1 lead leg	R																
Ryzhykova, Anna (UKR) (1989)	time	6.46	10.66	14.97	19.33	23.90	28.70	33.47	38.37	43.34	48.47		54.51	5 / 2			
	reaction time	0.175															
	interval		4.20	4.31	4.36	4.57	4.80	4.77	4.90	4.97	5.13	6.04			12.87	14.14	15.00
	velocity	6.97	8.33	8.12	8.03	7.66	7.29	7.34	7.14	7.04	6.82	6.62	7.34		8.16	7.43	7.00
H1 lead leg	R																
Russell, Janieve (JAM) (1993)	time	6.33	10.53	14.93	19.30	23.87	28.60	33.38	38.30	43.30	48.50		54.66	6 / 3			
	reaction time	0.130															
	interval		4.20	4.40	4.37	4.57	4.73	4.78	4.92	5.00	5.20	6.16			12.97	14.08	15.12
	velocity	7.11	8.33	7.95	8.01	7.66	7.40	7.32	7.11	7.00	6.73	6.49	7.32		8.10	7.46	6.94
H1 lead leg	R																
van der Walt, Zenéy (RSA) (2000)	time	6.33	10.60	14.97	19.30	23.76	28.47	33.40	38.37	43.47	48.73		54.81	3 / 4			
	reaction time	0.162															
	interval		4.27	4.37	4.33	4.46	4.71	4.93	4.97	5.10	5.26	6.08	PB		12.97	14.10	15.33
	velocity	7.11	8.20	8.01	8.08	7.85	7.43	7.10	7.04	6.86	6.65	6.58	7.30		8.10	7.45	6.85
H1 lead leg	L																
Couckuyt, Paulien (BEL) (1997)	time	6.30	10.33	14.63	18.90	23.36	28.13	32.93	38.20	43.50	48.96		55.42	8 / 5			
	reaction time	0.201															
	interval		4.03	4.30	4.27	4.46	4.77	4.80	5.27	5.30	5.46	6.46			12.60	14.03	16.03
	velocity	7.14	8.68	8.14	8.20	7.85	7.34	7.29	6.64	6.60	6.41	6.19	7.22		8.33	7.48	6.55
H1 lead leg	L																
Bing, Portia (NZL) (1993)	time	6.57	10.83	15.30	19.66	24.16	28.90		38.76	43.94	49.32		55.53	1 / 6			
	reaction time	0.191															
	interval		4.26	4.47	4.36	4.50	4.74		9.86	5.18	5.38	6.21			13.09		
	velocity	6.85	8.22	7.83	8.03	7.78	7.38		7.10	6.76	6.51	6.44	7.20		8.02		
H1 lead leg	R																
Carli, Sarah (AUS) (1994)	time	6.40	10.66	15.10	19.53	24.17	29.13	34.10	39.16	44.36	49.63		55.57	7 / 7			
	reaction time	0.257															
	interval		4.26	4.44	4.43	4.64	4.96	4.97	5.06	5.20	5.27	5.94			13.13	14.57	15.53
	velocity	7.03	8.22	7.88	7.90	7.54	7.06	7.04	6.92	6.73	6.64	6.73	7.20		8.00	7.21	6.76
H1 lead leg	L																
Sartori, Rebecca (ITA) (1997)	time	6.38	10.60	15.06	19.40	24.00	28.92	33.93	39.20	44.53	49.86		55.90	2 / 8			
	reaction time	0.199															
	interval		4.22	4.46	4.34	4.60	4.92	5.01	5.27	5.33	5.33	6.04			13.02	14.53	15.93
	velocity	7.05	8.29	7.85	8.06	7.61	7.11	6.99	6.64	6.57	6.57	6.62	7.16		8.06	7.23	6.59
H1 lead leg	L																



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=B-Pu9se9z3A>

2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.07.19

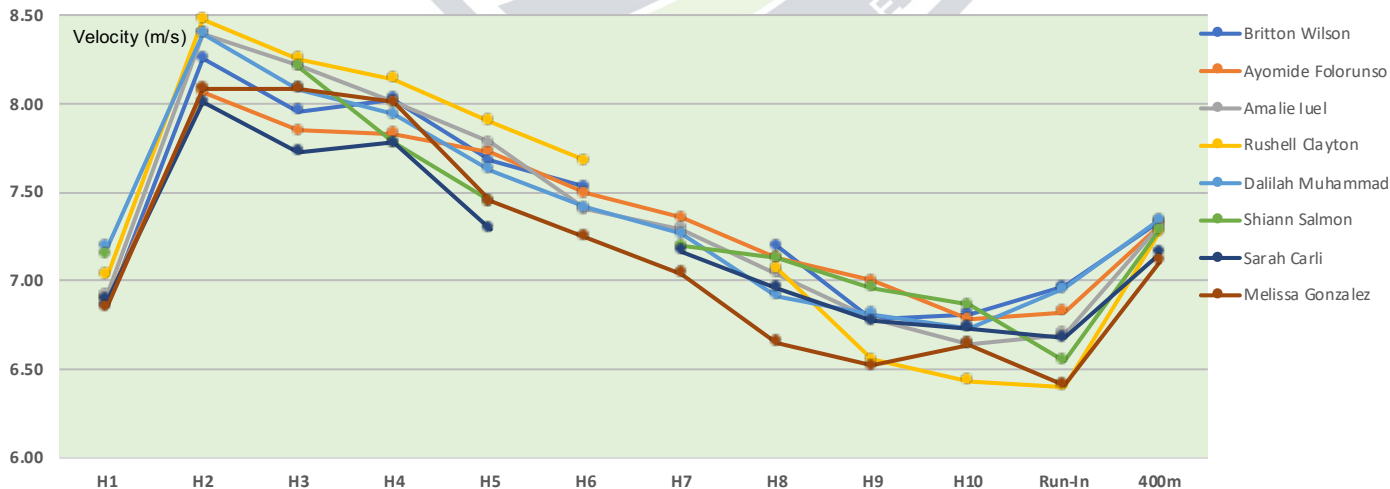
Heat 5

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Wilson, Britton (USA) (2000)	time	6.56	10.80	15.20	19.56	24.12	28.77		38.50	43.66	48.80		54.54	4 / 1			
	reaction time	0.154															
	interval		4.24	4.40	4.36	4.56	4.65		9.73	5.16	5.14	5.74			13.00		
	velocity	6.86	8.25	7.95	8.03	7.68	7.53		7.19	6.78	6.81	6.97	7.33		8.08		
H1 lead leg	R		23	15	15	15	15			16	16	18	148				
Folorunso, Ayomide (ITA) (1996)	time	6.53	10.87	15.33	19.80	24.33	29.00	33.76	38.67	43.67	48.83		54.69	5 / 2			
	reaction time	0.176															
	interval		4.34	4.46	4.47	4.53	4.67	4.76	4.91	5.00	5.16	5.86			13.27	13.96	15.07
	velocity	6.89	8.06	7.85	7.83	7.73	7.49	7.35	7.13	7.00	6.78	6.83	7.31		7.91	7.52	6.97
H1 lead leg	L		23	15	15	15	15		16	17	17	20	168				
Iuel, Amalie (NOR) (1996)	time	6.50	10.67	14.93	19.30	23.80	28.53	33.33	38.30	43.46	48.73		54.70	7 / 3			
	reaction time	0.140															
	interval		4.17	4.26	4.37	4.50	4.73	4.80	4.97	5.16	5.27	5.97	PB		12.80	14.03	15.40
	velocity	6.92	8.39	8.22	8.01	7.78	7.40	7.29	7.04	6.78	6.64	6.70	7.31		8.20	7.48	6.82
H1 lead leg	L		23	15	15	15	15	15	15	16	16	19	179				
Clayton, Rushell (JAM) (1992)	time	6.40	10.53	14.77	19.07	23.50	28.06		37.96	43.30	48.74		54.99	2 / 4			
	reaction time	0.157															
	interval		4.13	4.24	4.30	4.43	4.56		9.90	5.34	5.44	6.25			12.67		
	velocity	7.03	8.47	8.25	8.14	7.90	7.68		7.07	6.55	6.43	6.40	7.27		8.29		
H1 lead leg	L		22	15	15	15	15			17	17	19.5	150.5				

Date 2022.07.19

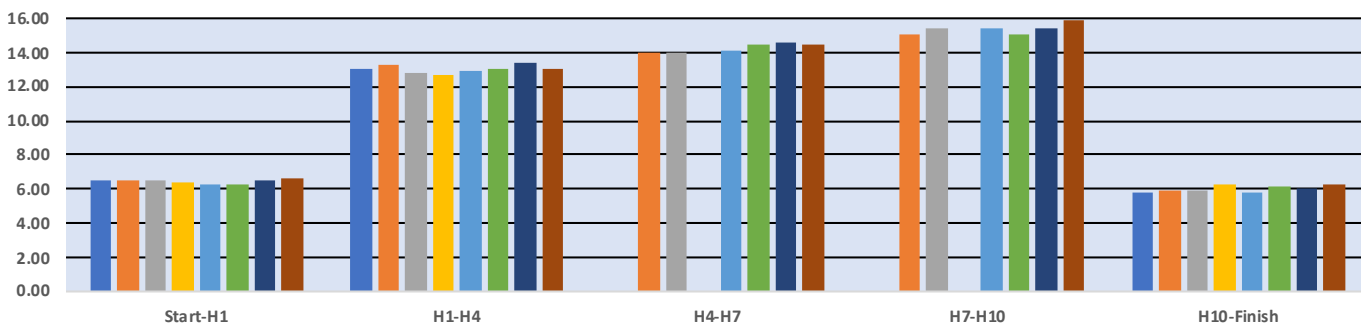
Heat 4

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Muhammad, Dalilah (USA) (1990)	time	6.26	10.43	14.76	19.17	23.76	28.48	33.30	38.36	43.50	48.70		54.45	3 / 1			
	reaction time	0.169															
	interval		4.17	4.33	4.41	4.59	4.72	4.82	5.06	5.14	5.20	5.75			12.91	14.13	15.40
	velocity	7.19	8.39	8.08	7.94	7.63	7.42	7.26	6.92	6.81	6.73	6.96	7.35		8.13	7.43	6.82
H1 lead leg	R		22	15	15	15	15	15	16	16	16	19	1679				
Salmon, Shiann (JAM) (1999)	time	6.30		14.83	19.33	24.03		33.76	38.67	43.70	48.80		54.91	2 / 2			
	reaction time	0.176															
	interval			8.53	4.50	4.70		9.73	4.91	5.03	5.10	6.11			13.03	14.43	15.04
	velocity	7.14		8.21	7.78	7.45		7.19	7.13	6.96	6.86	6.55	7.28		8.06	7.28	6.98
H1 lead leg	L		22		15	15			16	16	16	19.7	119.7				
Carli, Sarah (AUS) (1994)	time	6.53	10.90	15.43	19.93	24.73		34.50	39.53	44.70	49.90		55.89	4 / 3			
	reaction time	0.279															
	interval		4.37	4.53	4.50	4.80		9.77	5.03	5.17	5.20	5.99			13.40	14.57	15.40
	velocity	6.89	8.01	7.73	7.78	7.29		7.16	6.96	6.77	6.73	6.68	7.16		7.84	7.21	6.82
H1 lead leg	L		23	15	15	16			16	17	17	19.2	153.2				
Gonzalez, Melissa (COL) (1994)	time	6.57	10.90	15.23	19.60	24.30	29.13	34.10	39.36	44.73	50.00		56.24	5 / 4			
	reaction time	0.143															
	interval		4.33	4.33	4.37	4.70	4.83	4.97	5.26	5.37	5.27	6.24			13.03	14.50	15.90
	velocity	6.85	8.08	8.08	8.01	7.45	7.25	7.04	6.65	6.52	6.64	6.41	7.11		8.06	7.24	6.60
H1 lead leg	L		23	15	15	16	16	16	17	17	17	20	187				



Time Intervals (s)

Hurdle Phases



Heat 5

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: Gun Flash

Source: <https://www.youtube.com/watch?v=EFLzKk1f6RA>

Heat 4

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: Gun Flash

Source: <https://www.youtube.com/watch?v=EFLzKk1f6RA>

2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.07.19

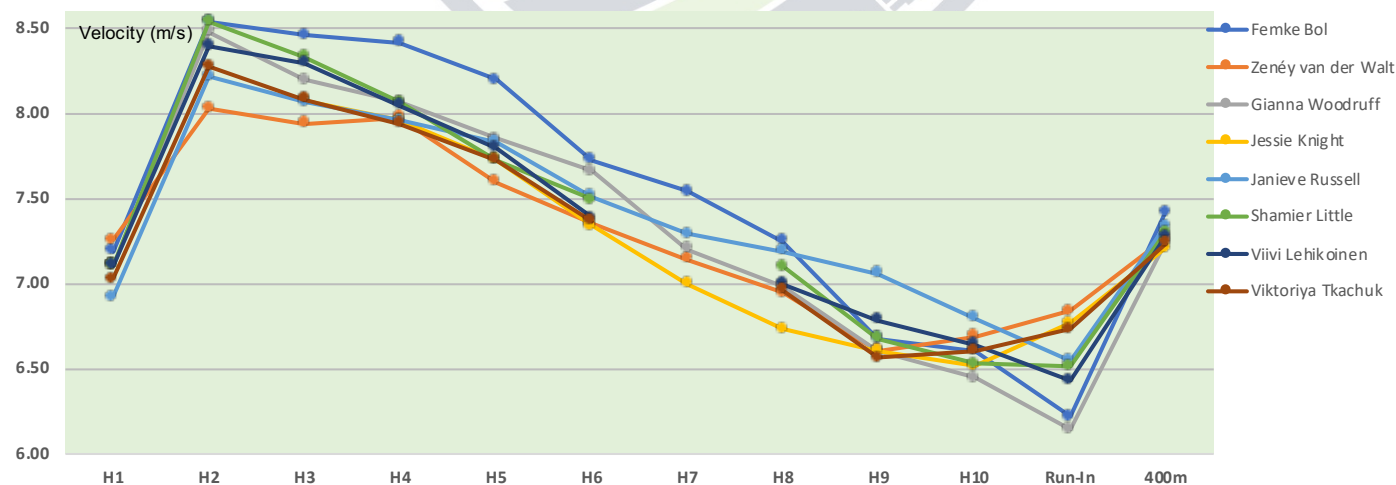
Heat 3

		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	6.26	10.36	14.50	18.66	22.93	27.46	32.10	36.93	42.17	47.47		53.90	8 / 1			
	reaction time	0.191															
	interval		4.10	4.14	4.16	4.27	4.53	4.64	4.83	5.24	5.30	6.43			12.40	13.44	15.37
	velocity	7.19	8.54	8.45	8.41	8.20	7.73	7.54	7.25	6.68	6.60	6.22	7.42		8.47	7.81	6.83
H1 lead leg	L			15	15	15	15	15	15	16	16	18.7	177.7				
van der Walt, Zenéy (RSA) (2000)	time	6.20	10.56	14.97	19.36	23.97	28.73	33.63	38.67	43.97	49.20		55.05	7 / 2			
	reaction time	0.160															
	interval		4.36	4.41	4.39	4.61	4.76	4.90	5.04	5.30	5.23	5.85			13.16	14.27	15.57
	velocity	7.26	8.03	7.94	7.97	7.59	7.35	7.14	6.94	6.60	6.69	6.84	7.27		7.98	7.36	6.74
H1 lead leg	L			15	15	15	15	15	16	16	16	19	179				
Woodruff, Gianna (PAN) (1993)	time	6.33	10.46	14.73	19.07	23.53	28.10	32.96	37.97	43.27	48.70		55.21	6 / 3			
	reaction time	0.185															
	interval		4.13	4.27	4.34	4.46	4.57	4.86	5.01	5.30	5.43	6.51			12.74	13.89	15.74
	velocity	7.11	8.47	8.20	8.06	7.85	7.66	7.20	6.99	6.60	6.45	6.14	7.25		8.24	7.56	6.67
H1 lead leg	L			15	15	15	15	16	16	17	17	20	184				
Knight, Jessie (GBR) (1994)	time	6.33		15.00	19.40	23.93	28.70	33.70	38.90	44.20	49.57		55.48	2 / 4			
	reaction time	0.144			8.67	4.40	4.53	4.77	5.00	5.20	5.30	5.91			13.07	14.30	15.87
	interval				8.07	7.95	7.73	7.34	7.00	6.73	6.60	6.52	7.21		8.03	7.34	6.62
	velocity	7.11			15	15	15	15	15	15	16	16	19	126			
H1 lead leg	R																

Date 2022.07.19

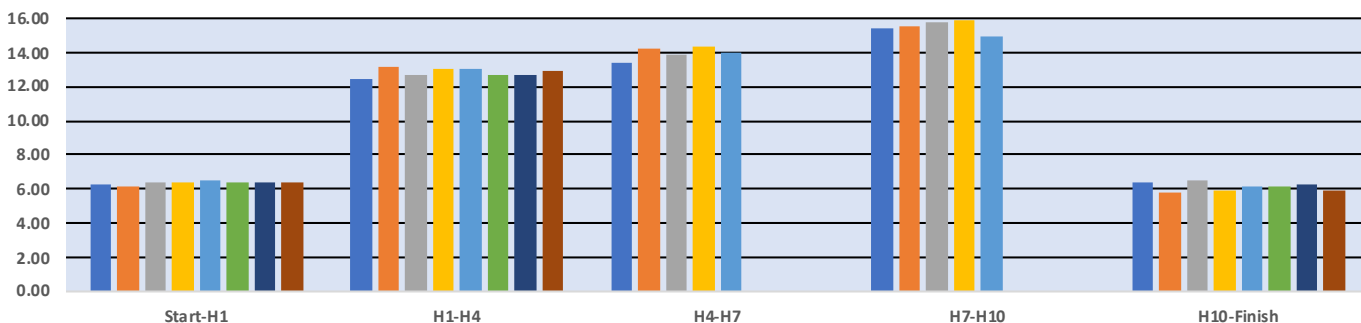
Heat 2

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Russell, Janieve (JAM) (1993)	time	6.50	10.76	15.10	19.50	23.97	28.63	33.43	38.30	43.26	48.41		54.52	5 / 1			
	reaction time	0.124															
	interval		4.26	4.34	4.40	4.47	4.66	4.80	4.87	4.96	5.15	6.11			13.00	13.93	14.98
	velocity	6.92	8.22	8.06	7.95	7.83	7.51	7.29	7.19	7.06	6.80	6.55	7.34		8.08	7.54	7.01
H1 lead leg	R			15	15	15	15	16	16	16	16	19.5	181.5				
Little, Shamier (USA) (1995)	time	6.33	10.43	14.63	18.97	23.50	28.17		38.03	43.27	48.63		54.77	8 / 2			
	reaction time	0.165															
	interval		4.10	4.20	4.34	4.53	4.67		9.86	5.24	5.36	6.14			12.64		
	velocity	7.11	8.54	8.33	8.06	7.73	7.49		7.10	6.68	6.53	6.51	7.30		8.31		
H1 lead leg	R			15	15	15	15			16	16	19	149				
Lehikoinen, Viivi (FIN) (1999)	time	6.33	10.50	14.72	19.07	23.56	28.30		38.30	43.46	48.73		54.95	3 / 3			
	reaction time	0.165															
	interval		4.17	4.22	4.35	4.49	4.74		10.00	5.16	5.27	6.22			12.74		
	velocity	7.11	8.39	8.29	8.05	7.80	7.38		7.00	6.78	6.64	6.43	7.28		8.24		
H1 lead leg	R			15	15	16	16			17	17	20.2	154.2				
Tkachuk, Viktoriya (UKR) (1994)	time	6.40	10.63	14.96	19.37	23.90	28.65		38.70	44.03	49.33		55.27	2 / 4			
	reaction time	0.199															
	interval		4.23	4.33	4.41	4.53	4.75		10.05	5.33	5.30	5.94			12.97		
	velocity	7.03	8.27	8.08	7.94	7.73	7.37		6.97	6.57	6.60	6.73	7.24		8.10		
H1 lead leg	L			15	15	15	15			17	17	19.2	128.2				



Time Intervals (s)

Hurdle Phases



Heat 3

Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=EFLzKk1f6RA>

Heat 2

Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30fps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=EFLzKk1f6RA>

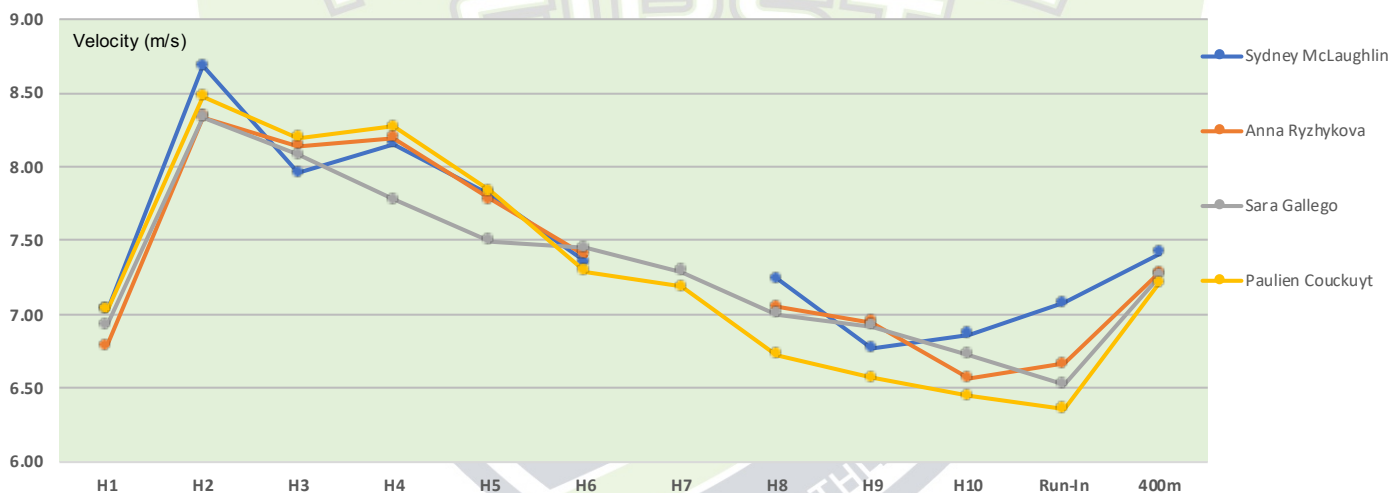
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.07.19

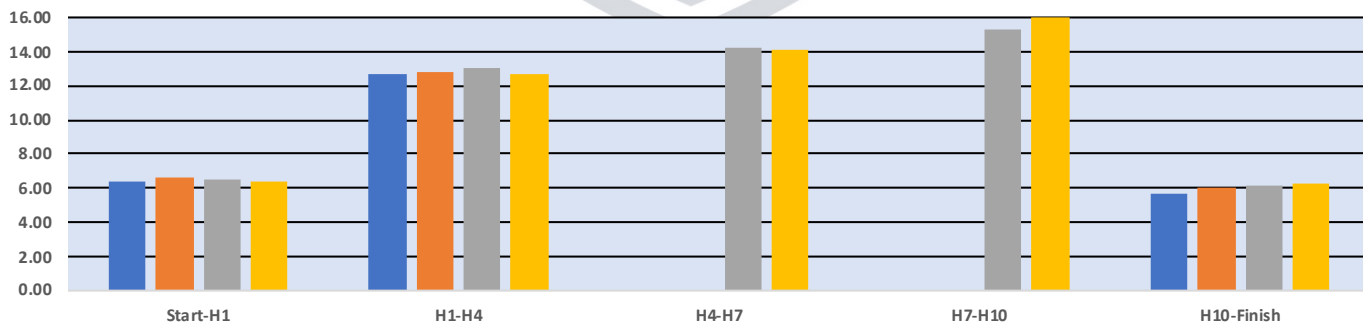
Heat 1

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
McLaughlin, Sydney (USA) (1999)	time	6.40	10.43	14.83	19.12	23.60	28.36		38.03	43.20	48.30		53.95	8 / 1			
	reaction time	0.168															
	interval		4.03	4.40	4.29	4.48	4.76		9.67	5.17	5.10	5.65					12.72
	velocity	7.03	8.68	7.95	8.16	7.81	7.35		7.24	6.77	6.86	7.08	7.41				8.25
H1 lead leg	R		22	14	14	14	14	15		16	16	18	143				
Ryzhykova, Anna (UKR) (1989)	time	6.63	10.83	15.13	19.40	23.90	28.63		38.56	43.60	48.93		54.93	2 / 2			
	reaction time	0.139															
	interval		4.20	4.30	4.27	4.50	4.73		9.93	5.04	5.33	6.00					12.77
	velocity	6.79	8.33	8.14	8.20	7.78	7.40		7.05	6.94	6.57	6.67	7.28				8.22
H1 lead leg	R		22	14	14	14	14	15		15	15	19.2	142.2				
Gallego, Sara (ESP) (2000)	time	6.50	10.70	15.03	19.53	24.20	28.90	33.70	38.70	43.76	48.96		55.09	7 / 3			
	reaction time	0.125															
	interval		4.20	4.33	4.50	4.67	4.70	4.80	5.00	5.06	5.20	6.13					13.03
	velocity	6.92	8.33	8.08	7.78	7.49	7.45	7.29	7.00	6.92	6.73	6.53	7.26				14.17
H1 lead leg	L		23	15	16	16	16	16	17	17	17	20.2	189.2		8.06	7.41	6.88
Couckuyt, Paulien (BEL) (1997)	time	6.40	10.53	14.80	19.03	23.50	28.30	33.17	38.37	43.70	49.13		55.42	5 / 4			
	reaction time	0.168															
	interval		4.13	4.27	4.23	4.47	4.80	4.87	5.20	5.33	5.43	6.29					12.63
	velocity	7.03	8.47	8.20	8.27	7.83	7.29	7.19	6.73	6.57	6.45	6.36	7.22				14.14
H1 lead leg	L		23	15	15	15	15	16	16	17	17	21	187		8.31	7.43	6.58



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=EFLzKkif6RA>

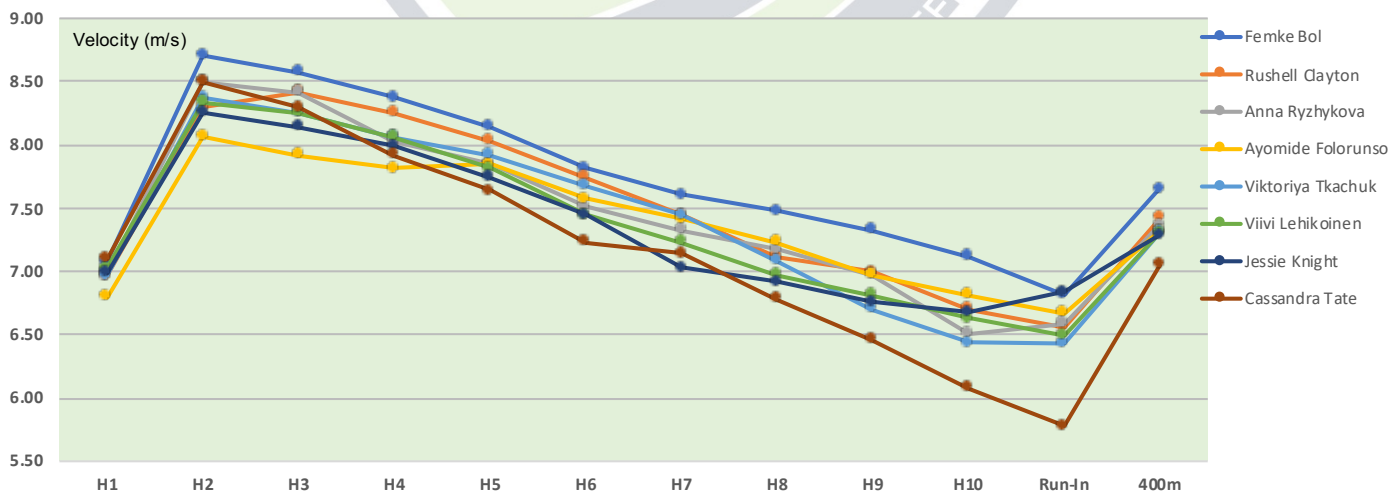
2022 Bauhaus Galan (Stockholm, SWE) (TV Analysis)

Women's 400m Hurdles

Date 2022.06.30

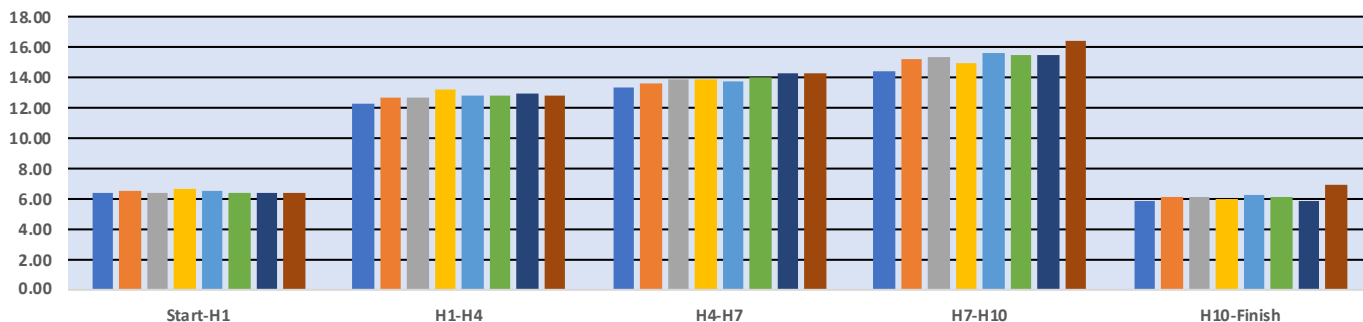
FINAL

		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	6.36	10.38	14.46	18.64	22.94	27.42	32.02	36.70	41.48	46.40		52.27	6 / 1				
	reaction time	0.203	interval	4.02	4.08	4.18	4.30	4.48	4.60	4.68	4.78	5.87			12.28	13.38	14.38	
	H1 lead leg	L	velocity	7.08	8.71	8.58	8.37	8.14	7.81	7.61	7.32	7.11	6.81	7.65		8.55	7.85	7.30
			strides	22	15	15	15	15	15	15	15	19	176					
Clayton, Rushell (JAM) (1992)	time	6.46	10.68	14.84	19.08	23.44	27.96	32.66	37.58	42.58	47.80		53.90	7 / 2				
	reaction time	0.143	interval	4.22	4.16	4.24	4.36	4.52	4.70	4.92	5.00	6.10			12.62	13.58	15.14	
	H1 lead leg	L	velocity	6.97	8.29	8.41	8.25	8.03	7.74	7.45	7.11	7.00	6.56	7.42		8.32	7.73	6.94
			strides	23	15	15	15	15	16	16	16	19.7	181.7					
Ryzhykova, Anna (UKR) (1989)	time	6.44	10.56	14.72	19.08	23.54	28.20	32.98	37.86	42.88	48.26		54.33	4 / 3				
	reaction time	0.165	interval	4.12	4.16	4.36	4.46	4.66	4.78	4.88	5.02	6.07			12.64	13.90	15.28	
	H1 lead leg	R	velocity	6.99	8.50	8.41	8.03	7.85	7.51	7.32	7.17	6.97	6.51	6.59	7.36		8.31	7.55
			strides	22	14	14	14	14	15	15	15	16	173					
Folorunso, Ayomide (ITA) (1996)	time	6.62	10.96	15.38	19.86	24.32	28.94	33.66	38.50	43.52	48.66		54.66	3 / 4				
	reaction time	0.192	interval	4.34	4.42	4.48	4.46	4.62	4.72	4.84	5.02	6.00			13.24	13.80	15.00	
	H1 lead leg	L	velocity	6.80	8.06	7.92	7.81	7.85	7.58	7.42	7.23	6.97	6.67	7.32		7.93	7.61	7.00
			strides	23	15	15	15	16	16	17	17	20.2	185.2					
Tkachuk, Viktoriya (UKR) (1994)	time	6.46	10.64	14.88	19.22	23.64	28.20	32.90	37.84	43.06	48.50		54.72	8 / 5				
	reaction time	0.244	interval	4.18	4.24	4.34	4.42	4.56	4.70	4.94	5.22	5.44	6.22		12.76	13.68	15.60	
	H1 lead leg	L	velocity	6.97	8.37	8.25	8.06	7.92	7.68	7.45	7.09	6.70	6.43	6.43	7.31		8.23	7.68
			strides	22	15	15	15	15	15	16	16	17	20	181				
Lehikoinen, Viivi (FIN) (1999)	time	6.40	10.60	14.84	19.18	23.66	28.36	33.20	38.22	43.36	48.64		54.80	2 / 6				
	reaction time	0.180	interval	4.20	4.24	4.34	4.48	4.70	4.84	5.02	5.14	5.28	6.16		12.78	14.02	15.44	
	H1 lead leg	L	velocity	7.03	8.33	8.25	8.06	7.81	7.45	7.23	6.97	6.81	6.63	6.49	7.30		8.22	7.49
			strides	24	16	16	16	16	16	16	17	17	20.5	190.5				
Knight, Jessie (GBR) (1994)	time	6.44	10.68	14.98	19.36	23.88	28.58	33.56	38.62	43.80	49.04		54.89	5 / 7				
	reaction time	0.157	interval	4.24	4.30	4.38	4.52	4.70	4.98	5.06	5.18	5.24	5.85		12.92	14.20	15.48	
	H1 lead leg	R	velocity	6.99	8.25	8.14	7.99	7.74	7.45	7.03	6.92	6.76	6.68	6.84	7.29		8.13	7.39
			strides	22	15	15	15	15	15	15	16	16	19	178				
Tate, Cassandra (USA) (1990)	time	6.34	10.46	14.68	19.10	23.68	28.52	33.42	38.58	44.00	49.76		56.68	1 / 8				
	reaction time	0.214	interval	4.12	4.22	4.42	4.58	4.84	4.90	5.16	5.42	5.76	6.92		12.76	14.32	16.34	
	H1 lead leg	L	velocity	7.10	8.50	8.29	7.92	7.64	7.23	7.14	6.78	6.46	6.08	5.78	7.06		8.23	7.33
			strides	22	14	14	14	14	15	15	16	16	17	20	177			



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 50fps

Timing From: First Movement

Source: <https://www.youtube.com/watch?v=52zTAhBw4Bk>

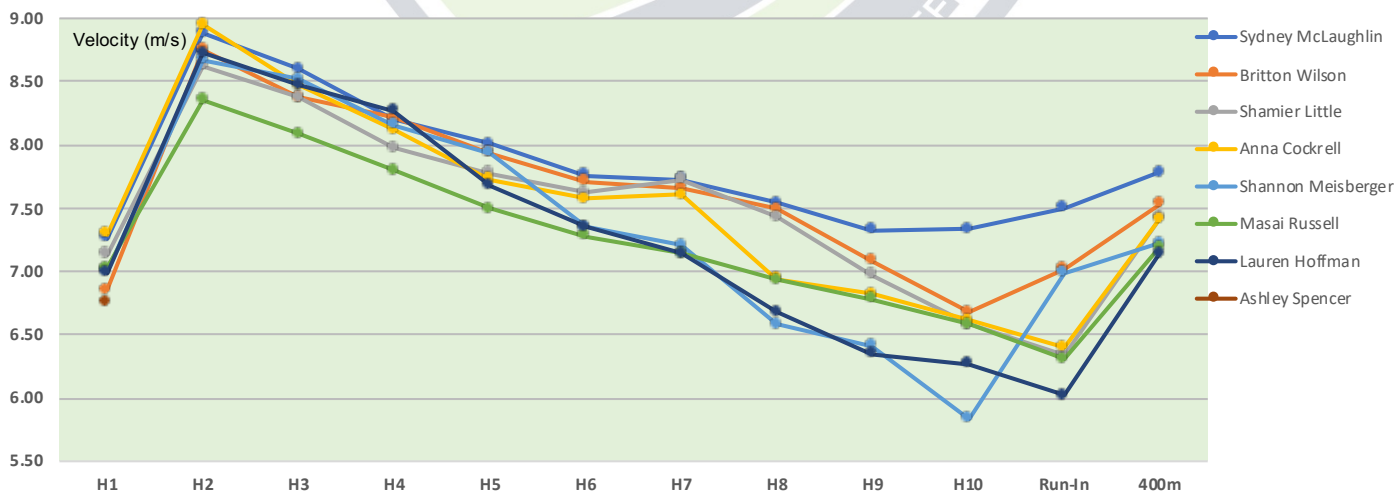
2022 USATF National Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.06.25

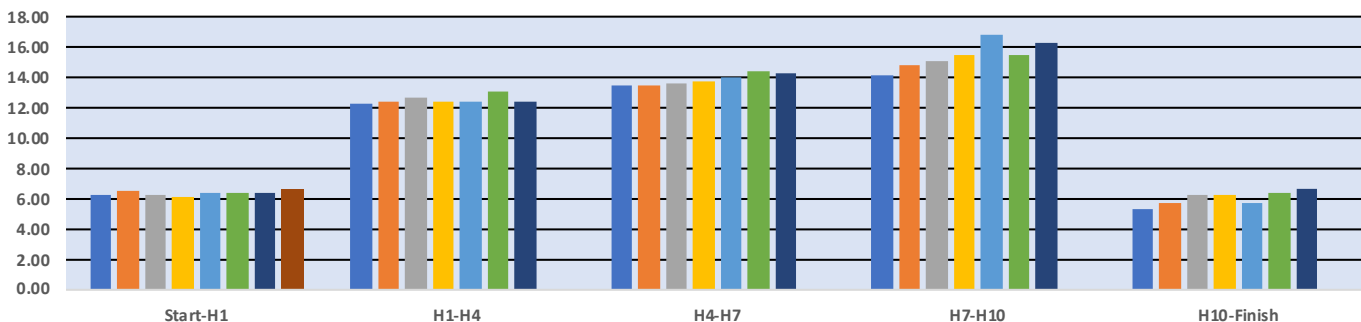
FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
McLaughlin, Sydney (USA) (1999)	time	6.20	10.14	14.21	18.48	22.85	27.36	31.89	36.53	41.31	46.08	51.41	53.08	5 / 1			
	reaction time		3.94	4.07	4.27	4.37	4.51	4.53	4.64	4.78	4.77	5.33	WR		12.28	13.41	14.19
	velocity	7.26	8.88	8.60	8.20	8.01	7.76	7.73	7.54	7.32	7.34	7.50	7.78		8.55	7.83	7.40
	H1 lead leg R strides	22	14	14	14	14	14	14	14	14	15	15	18.2	168.2			
Wilson, Britton (USA) (2000)	time	6.57	10.57	14.75	19.01	23.42	27.96	32.53	37.20	42.14	47.38	53.08	53.08	6 / 2			
	reaction time		4.00	4.18	4.26	4.41	4.54	4.57	4.67	4.94	5.24	5.70	PB		12.44	13.52	14.85
	velocity	6.85	8.75	8.37	8.22	7.94	7.71	7.66	7.49	7.09	6.68	7.02	7.54		8.44	7.77	7.07
	H1 lead leg R strides	23	15	15	15	15	15	15	15	16	16	16	160				
Little, Shamier (USA) (1995)	time	6.31	10.37	14.55	18.94	23.44	28.03	32.56	37.27	42.29	47.61	53.94	53.92	8 / 3			
	reaction time		4.06	4.18	4.39	4.50	4.59	4.53	4.71	5.02	5.32	6.31			12.63	13.62	15.05
	velocity	7.13	8.62	8.37	7.97	7.78	7.63	7.73	7.43	6.97	6.58	6.34	7.42		8.31	7.71	6.98
	H1 lead leg R strides	23	15	15	15	15	15	15	15	16	16	144					
Cockrell, Anna (USA) (1997)	time	6.17	10.08	14.21	18.52	23.05	27.67	32.27	37.31	42.44	47.73	54.03	53.98	7 / 4			
	reaction time		3.91	4.13	4.31	4.53	4.62	4.60	5.04	5.13	5.29	6.25			12.35	13.75	15.46
	velocity	7.29	8.95	8.47	8.12	7.73	7.58	7.61	6.94	6.82	6.62	6.40	7.41		8.50	7.64	6.79
	H1 lead leg L strides	22	14	14	15	15	15	16	15	16	16	142					
Meisberger, Shannon (USA) (1999)	time	6.42	10.46	14.57	18.86	23.27	28.03	32.89	38.21	43.67	49.67	55.42	55.39	9 / 5			
	reaction time		4.04	4.11	4.29	4.41	4.76	4.86	5.32	5.46	6.00	5.72	PB		12.44	14.03	16.78
	velocity	7.01	8.67	8.52	8.16	7.94	7.35	7.20	6.58	6.41	5.83	6.99	7.22		8.44	7.48	6.26
	H1 lead leg L strides	22	15	15	15	15	16	16	16	16	130						
Russell, Masai (USA) (2000)	time	6.40	10.59	14.92	19.41	24.08	28.89	33.79	38.84	44.00	49.32	55.66	55.66	4 / 6			
	reaction time		4.19	4.33	4.49	4.67	4.81	4.90	5.05	5.16	5.32	6.34			13.01	14.38	15.53
	velocity	7.03	8.35	8.08	7.80	7.49	7.28	7.14	6.93	6.78	6.58	6.31	7.19		8.07	7.30	6.76
	H1 lead leg R strides	24	16	16	16	16	17	17	17	17	139						
Hoffman, Lauren (USA) (1999)	time	6.44	10.45	14.58	18.81	23.37	28.13	33.03	38.27	43.78	49.36	56.00	56.00	2 / 7			
	reaction time		4.01	4.13	4.23	4.56	4.76	4.90	5.24	5.51	5.58	6.64			12.37	14.22	16.33
	velocity	6.99	8.73	8.47	8.27	7.68	7.35	7.14	6.68	6.35	6.27	6.02	7.14		8.49	7.38	6.43
	H1 lead leg L strides	23	15	15	15	16	16	17	18	18	135						
Spencer, Ashley (USA) (1993)	time	6.67											dnf	3 / --			
	reaction time																
	H1 lead leg R strides	23											23				



Time Intervals (s)

Hurdle Phases



First & 2nd Place

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: Gun Flash

Source: <https://www.youtube.com/watch?v=6aGddPD9Ifs>

3rd - 7th Place

Source: USATF (2022) - Results powered by Karmarush.com.

Retrieved from <https://results.usatf.org/2022Outdoors/>

Times taken at the exact hurdle distances, the athlete is on top of the hurdle

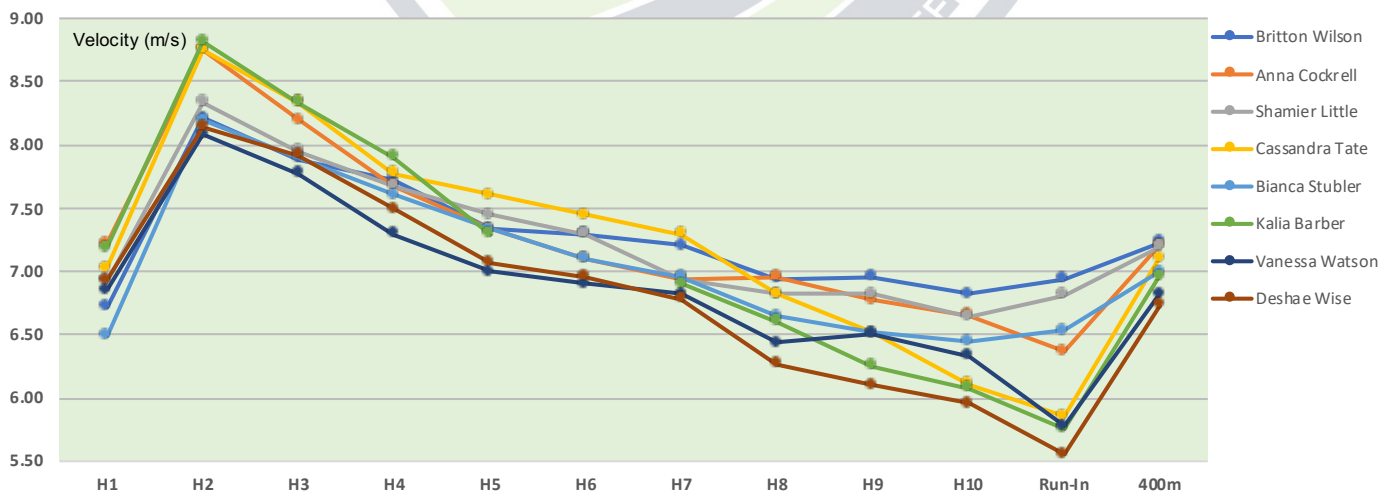
2022 USATF National Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.06.24

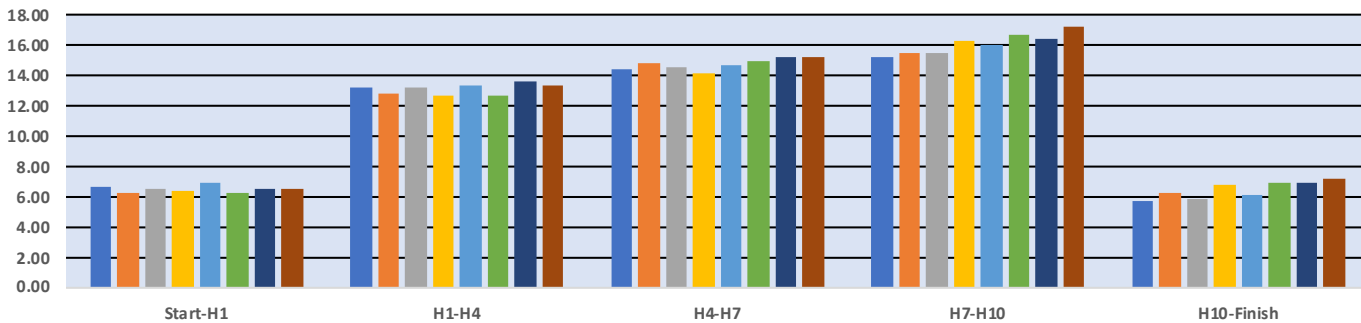
Semi-Final 2

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Wilson, Britton (USA) (2000)	time	6.70	10.96	15.40	19.93	24.70	29.50	34.36	39.40	44.43	49.56		55.32	6 / 1			
	reaction time														13.23	14.43	15.20
	interval		4.26	4.44	4.53	4.77	4.80	4.86	5.04	5.03	5.13	5.76			7.94	7.28	6.91
	velocity	6.72	8.22	7.88	7.73	7.34	7.29	7.20	6.94	6.96	6.82	6.94	7.23				
H1 lead leg	L	24	16	16	16	16	16	16	16	16	16	18.5	186.5				
Cockrell, Anna (USA) (1997)	time	6.23	10.23	14.50	19.06	23.83	28.76	33.80	38.83	44.00	49.26		55.54	5 / 2			
	reaction time														12.83	14.74	15.46
	interval		4.00	4.27	4.56	4.77	4.93	5.04	5.03	5.17	5.26	6.28			8.18	7.12	6.79
	velocity	7.22	8.75	8.20	7.68	7.34	7.10	6.94	6.96	6.77	6.65	6.37	7.20				
H1 lead leg	L	22	14	14	15	15	15	16	16	16	16	20	179				
Little, Shamier (USA) (1995)	time	6.50	10.70	15.10	19.66	24.36	29.16	34.20	39.33	44.46	49.73		55.60	7 / 3			
	reaction time														13.16	14.54	15.53
	interval		4.20	4.40	4.56	4.70	4.80	5.04	5.13	5.13	5.27	5.87			7.98	7.22	6.76
	velocity	6.92	8.33	7.95	7.68	7.45	7.29	6.94	6.82	6.82	6.64	6.81	7.19				
H1 lead leg	R	23	15	15	15	15	15	16	16	16	16	20	182				
Tate, Cassandra (USA) (1990)	time	6.40	10.40	14.60	19.10	23.70	28.40	33.20	38.33	43.70	49.43		56.26	4 / 4			
	reaction time														12.70	14.10	16.23
	interval		4.00	4.20	4.50	4.60	4.70	4.80	5.13	5.37	5.73	6.83			8.27	7.45	6.47
	velocity	7.03	8.75	8.33	7.78	7.61	7.45	7.29	6.82	6.52	6.11	5.86	7.11				
H1 lead leg	R	22	14	14	15	15	15	15	15	16	17	21	179				
Stubler, Bianca (USA) (1999)	time	6.93	11.20	15.63	20.23	25.00	29.93	34.96	40.23	45.60	51.03		57.15	2 / 5			
	reaction time														13.30	14.73	16.07
	interval		4.27	4.43	4.60	4.77	4.93	5.03	5.27	5.37	5.43	6.12			7.89	7.13	6.53
	velocity	6.49	8.20	7.90	7.61	7.34	7.10	6.96	6.64	6.52	6.45	6.54	7.00				
H1 lead leg	L	24	16	16	16	16	16	17	17	17	17	20	176				
Barber, Kaila (USA) (1993)	time	6.26	10.23	14.43	18.86	23.66		33.80	39.10	44.70	50.46		57.41	3 / 6			
	reaction time														12.60	14.94	16.66
	interval		3.97	4.20	4.43	4.80		10.14	5.30	5.60	5.76	6.95			8.33	7.03	6.30
	velocity	7.19	8.82	8.33	7.90	7.29		6.90	6.60	6.25	6.08	5.76	6.97				
H1 lead leg	L	23	15	15	15	16						21	156				
Watson, Vanessa (USA) (2001)	time	6.57	10.90	15.40	20.20	25.20	30.27	35.40	40.84	46.22	51.75	58.67	58.67	9 / 7			
	reaction time														13.63	15.20	16.35
	interval		4.33	4.50	4.80	5.00	5.07	5.13	5.44	5.38	5.53	6.92			7.70	6.91	6.42
	velocity	6.85	8.08	7.78	7.29	7.00	6.90	6.82	6.43	6.51	6.33	5.78	6.82				
H1 lead leg	R	24	16	16	16	17	17	17	17			140					
Wise, Deshae (USA) (1999)	time	6.49	10.79	15.21	19.88	24.83	29.86	35.02	40.60	46.34	52.22	59.42	59.42	8 / 8			
	reaction time														13.39	15.14	17.20
	interval		4.30	4.42	4.67	4.95	5.03	5.16	5.58	5.74	5.88	7.20			7.84	6.94	6.10
	velocity	6.93	8.14	7.92	7.49	7.07	6.96	6.78	6.27	6.10	5.95	5.56	6.73				
H1 lead leg	R	24	16	16	16	16	16	17	17			138					



Time Intervals (s)

Hurdle Phases



1st - 6th Place

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1280 x 720 @ 30fps

Timing From: Gun Flash

Source: <https://www.youtube.com/watch?v=4aPGPscxl2l>

7th & 8th Place

Source: USATF (2022) - Results powered by Karmarush.com.

Retrieved from <https://results.usatf.org/2022Outdoors/>

Times taken at the exact hurdle distances, the athlete is on top of the hurdle

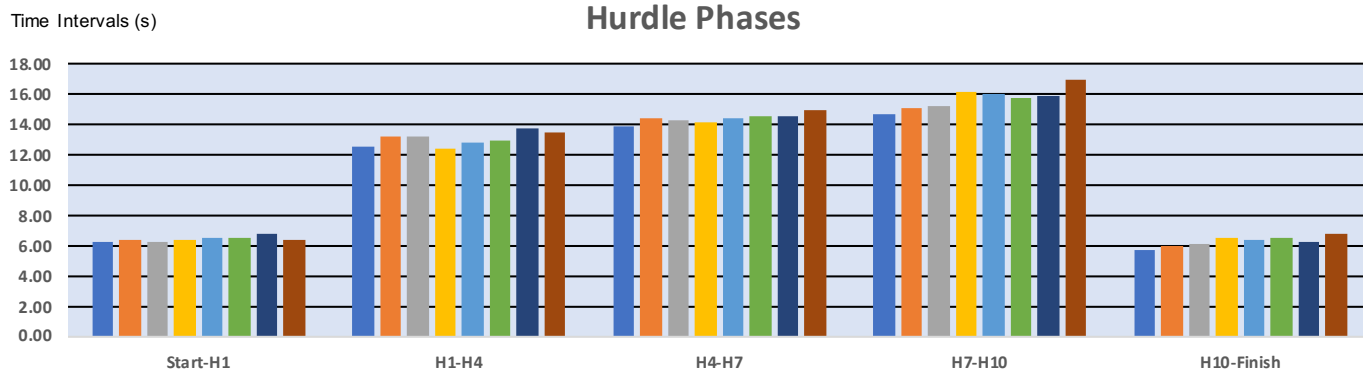
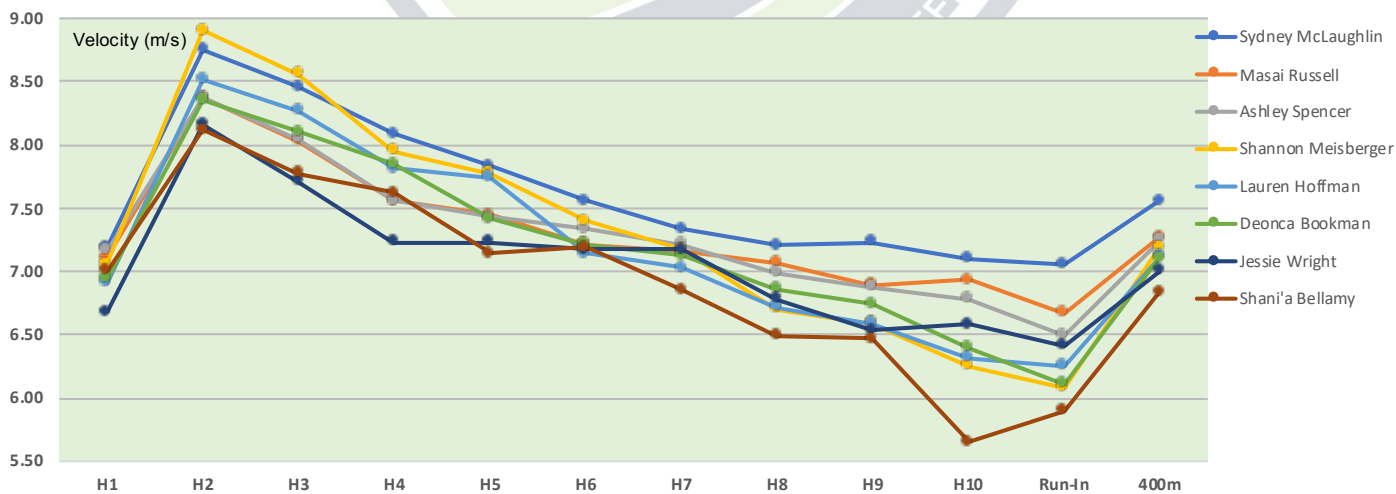
2022 USATF National Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.06.24

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, Sydney (USA) (1999)	time	6.26	10.26	14.40	18.73	23.20	27.83	32.60	37.46	42.30	47.23	52.90	52.90	5 / 1			
	reaction time		4.00	4.14	4.33	4.47	4.63	4.77	4.86	4.84	4.93	5.67			12.47	13.87	14.63
	velocity	7.19	8.75	8.45	8.08	7.83	7.56	7.34	7.20	7.23	7.10	7.05	7.56		8.42	7.57	7.18
	H1 lead leg R	22	14	14	14	14	15	15	15	15	16	18.2	172.2				
Russell, Masai (USA) (2000)	time	6.33	10.51	14.87	19.50	24.20	29.05	33.94	38.89	43.97	49.02	55.02	55.02	6 / 2			
	reaction time		4.18	4.36	4.63	4.70	4.85	4.89	4.95	5.08	5.05	6.00	PB		13.17	14.44	15.08
	velocity	7.11	8.37	8.03	7.56	7.45	7.22	7.16	7.07	6.89	6.93	6.67	7.27		7.97	7.27	6.96
	H1 lead leg R	24	16	16	16	16	17	17	17	17	17	139					
Spencer, Ashley (USA) (1993)	time	6.28	10.46	14.81	19.44	24.15	28.92	33.77	38.78	43.87	49.03	55.19	55.19	4 / 3			
	reaction time		4.18	4.35	4.63	4.71	4.77	4.85	5.01	5.09	5.16	6.16			13.16	14.33	15.26
	velocity	7.17	8.37	8.05	7.56	7.43	7.34	7.22	6.99	6.88	6.78	6.49	7.25		7.98	7.33	6.88
	H1 lead leg L	22	15	15	15	15	15	15	15	15	15	127					
Meisberger, Shannon (USA) (1999)	time	6.37	10.30	14.39	18.79	23.29	28.02	32.90	38.12	43.43	49.03	55.61	55.61	8 / 4			
	reaction time		3.93	4.09	4.40	4.50	4.73	4.88	5.22	5.31	5.60	6.58	PB		12.42	14.11	16.13
	velocity	7.06	8.91	8.56	7.95	7.78	7.40	7.17	6.70	6.59	6.25	6.08	7.19		8.45	7.44	6.51
	H1 lead leg L	22	15	15	15	15	16	16	16	17	17	147					
Hoffman, Lauren (USA) (1999)	time	6.51	10.62	14.85	19.33	23.85	28.75	33.73	38.94	44.25	49.79	56.19	56.19	9 / 5			
	reaction time		4.11	4.23	4.48	4.52	4.90	4.98	5.21	5.31	5.54	6.40			12.82	14.40	16.06
	velocity	6.91	8.52	8.27	7.81	7.74	7.14	7.03	6.72	6.59	6.32	6.25	7.12		8.19	7.29	6.54
	H1 lead leg L	23	15	15	15	16	16	16	17	17	17	133					
Bookman, Deonca (USA) (1995)	time	6.48	10.67	14.99	19.45	24.17	29.02	33.93	39.03	44.22	49.69	56.24	56.24	7 / 6			
	reaction time		4.19	4.32	4.46	4.72	4.85	4.91	5.10	5.19	5.47	6.55			12.97	14.48	15.76
	velocity	6.94	8.35	8.10	7.85	7.42	7.22	7.13	6.86	6.74	6.40	6.11	7.11		8.10	7.25	6.66
	H1 lead leg L	24	16	16	16	17	17	17	18	18	18	124					
Wright, Jessica (USA) (2000)	time	6.74	11.03	15.57	20.41	25.25	30.13	35.01	40.17	45.53	50.85	57.09	57.09	3 / 7			
	reaction time		4.29	4.54	4.84	4.84	4.88	4.88	5.16	5.36	5.32	6.24			13.67	14.60	15.84
	velocity	6.68	8.16	7.71	7.23	7.23	7.17	7.17	6.78	6.53	6.58	6.41	7.01		7.68	7.19	6.63
	H1 lead leg R	24	16	17	17	17	17	17	18	18	18	126					
Bellamy, Shani'a (USA) (2002)	time	6.42	10.73	15.23	19.82	24.72	29.59	34.70	40.09	45.50	51.69	58.47	58.47	2 / 8			
	reaction time		4.31	4.50	4.59	4.90	4.87	5.11	5.39	5.41	6.19	6.78			13.40	14.88	16.99
	velocity	7.01	8.12	7.78	7.63	7.14	7.19	6.85	6.49	6.47	5.65	5.90	6.84		7.84	7.06	6.18
	H1 lead leg L	23	15	15	15	15	15	16	16	16	16	115					



First Place - Sydney McLaughlin

2nd - 8th Place

Evaluated with: ObjectusVideo

Source: USATF (2022) - Results powered by Karmarush.com.

Quality & Frame Rate: 1280 x 720 @ 30fps

Retrieved from <https://results.usatf.org/2022Outdoors/>

Timing From: Gun Flash

Times taken at the exact hurdle distances, the athlete is on top of the hurdle

Source: <https://www.youtube.com/watch?v=4aPGPscx12I>

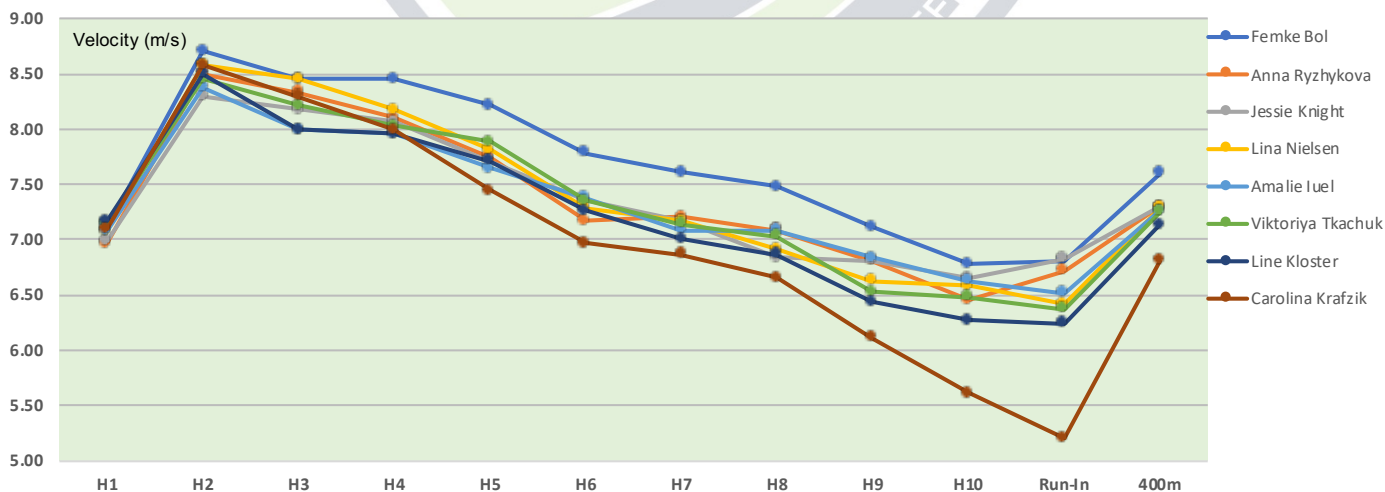
2022 Bislett Games (Oslo, NOR) (TV Analysis)

Women's 400m Hurdles

Date 2022.06.16

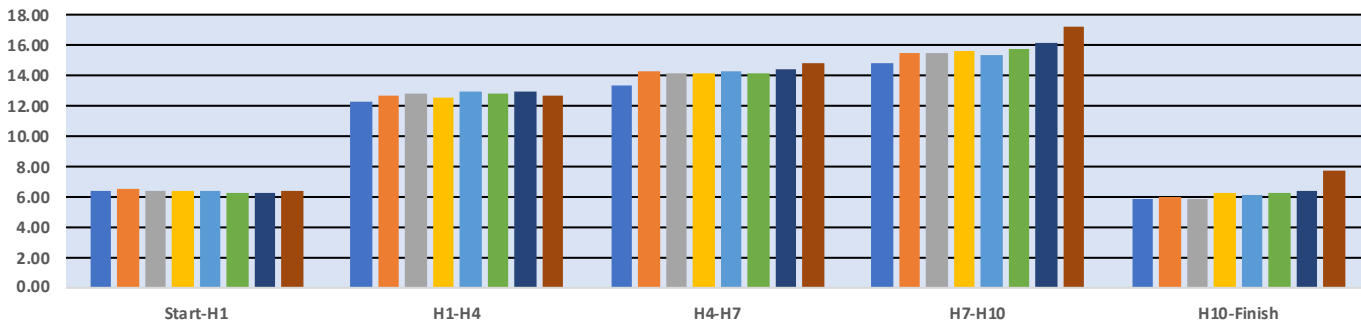
FINAL

		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	6.32	10.34	14.48	18.62	22.88	27.38	31.98	36.66	41.58	46.74	52.61	52.61	6 / 1			
	reaction time	0.177	interval	4.02	4.14	4.14	4.26	4.50	4.60	4.68	4.92	5.16	5.87		12.30	13.36	14.76
	H1 lead leg	L	velocity	7.12	8.71	8.45	8.45	8.22	7.78	7.61	7.48	7.11	6.78	6.81	7.60	8.54	7.86
			strides	22	15	15	15	15	15	15	16	19.5	177.5				
Ryzhykova, Anna (UKR) (1989)	time	6.46	10.58	14.78	19.10	23.62	28.50	33.36	38.30	43.44	48.86	54.81	54.81	7 / 2			
	reaction time	0.175	interval	4.12	4.20	4.32	4.52	4.88	4.86	4.94	5.14	5.42	5.95		12.64	14.26	15.50
	H1 lead leg	R	velocity	6.97	8.50	8.33	8.10	7.74	7.17	7.20	7.09	6.81	6.46	6.72	7.30	8.31	7.36
			strides	22	14	14	14	14	15	15	16	19.2	173.2				
Knight, Jessie (GBR) (1994)	time	6.44	10.66	14.94	19.28	23.82	28.58	33.46	38.58	43.72	48.98	54.84	54.84	4 / 3			
	reaction time	0.160	interval	4.22	4.28	4.34	4.54	4.76	4.88	5.12	5.14	5.26	5.86		12.84	14.18	15.52
	H1 lead leg	R	velocity	6.99	8.29	8.18	8.06	7.71	7.35	7.17	6.84	6.81	6.65	6.83	7.29	8.18	7.40
			strides	22	15	15	15	15	15	16	16	19.2	179.2				
Nielsen, Lina (GBR) (1996)	time	6.36	10.44	14.58	18.86	23.34	28.14	33.02	38.08	43.36	48.68	54.91	54.91	8 / 4			
	reaction time	0.147	interval	4.08	4.14	4.28	4.48	4.80	4.88	5.06	5.28	5.32	6.23		12.50	14.16	15.66
	H1 lead leg	L	velocity	7.08	8.58	8.45	8.18	7.81	7.29	7.17	6.92	6.63	6.58	6.42	7.28	8.40	7.42
			strides	23	15	15	15	15	15	16	16	19.2	180.2				
luel, Amalie (NOR) (1994)	time	6.36	10.54	14.92	19.32	23.90	28.64	33.58	38.52	43.64	48.92	55.06	55.06	2 / 5			
	reaction time	0.148	interval	4.18	4.38	4.40	4.58	4.74	4.94	4.94	5.12	5.28	6.14		12.96	14.26	15.34
	H1 lead leg	L	velocity	7.08	8.37	7.99	7.95	7.64	7.38	7.09	7.09	6.84	6.63	6.51	7.26	8.10	7.36
			strides	23	15	15	15	15	16	16	16	17	19.7	183.7			
Tkachuk, Viktoriya (UKR) (1994)	time	6.30	10.44	14.70	19.06	23.50	28.26	33.16	38.14	43.50	48.90	55.18	55.18	5 / 6			
	reaction time	0.142	interval	4.14	4.26	4.36	4.44	4.76	4.90	4.98	5.36	5.40	6.28		12.76	14.10	15.74
	H1 lead leg	L	velocity	7.14	8.45	8.22	8.03	7.88	7.35	7.14	7.03	6.53	6.48	6.37	7.25	8.23	7.45
			strides	22	15	15	15	15	16	16	17	17	20	183			
Kloster, Line (NOR) (1990)	time	6.28	10.40	14.78	19.18	23.72	28.54	33.54	38.64	44.08	49.66	56.07	56.07	3 / 7			
	reaction time	0.135	interval	4.12	4.38	4.40	4.54	4.82	5.00	5.10	5.44	5.58	6.41		12.90	14.36	16.12
	H1 lead leg	R	velocity	7.17	8.50	7.99	7.95	7.71	7.26	7.00	6.86	6.43	6.27	6.24	7.13	8.14	7.31
			strides	22	14	15	15	15	16	16	17	17	20	182			
Krafzik, Carolina (GER) (1995)	time	6.34	10.42	14.64	19.02	23.72	28.74	33.84	39.10	44.82	51.06	58.74	58.74	1 / 8			
	reaction time	0.170	interval	4.08	4.22	4.38	4.70	5.02	5.10	5.26	5.72	6.24	7.68		12.68	14.82	17.22
	H1 lead leg	L	velocity	7.10	8.58	8.29	7.95	7.45	6.97	6.86	6.65	6.12	5.61	5.21	6.81	8.28	7.09
			strides	23	15	15	15	17	17	17	18	20	157				



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=T3w8xwhxlrk>

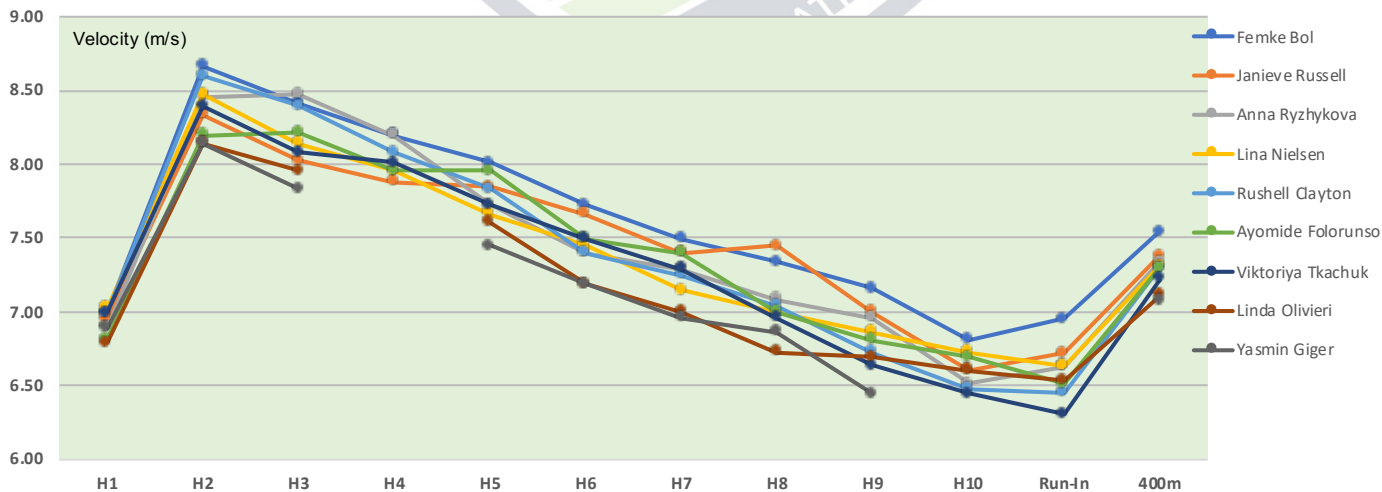
2022 Golden Gala Pietro Mennea (Rome, ITA) (TV Analysis)

Women's 400m Hurdles

Date: 2022.06.09

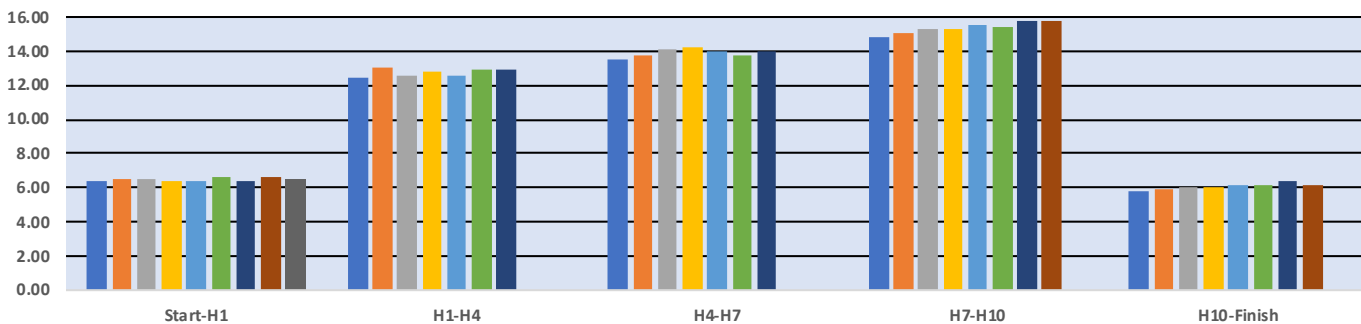
FINAL

		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	6.43	10.47	14.63	18.90	23.27	27.80	32.47	37.24	42.13	47.27		53.02	5 / 1			
	reaction time	0.188															
	interval		4.04	4.16	4.27	4.37	4.53	4.67	4.77	4.89	5.14	5.75			12.47	13.57	14.80
	velocity	7.00	8.66	8.41	8.20	8.01	7.73	7.49	7.34	7.16	6.81	6.96	7.54		8.42	7.74	7.09
H1 lead leg	L						15	15	15	15	15	19.5	161.5				
Russell, Janieve (JAM) (1993)	time	6.47	10.67	15.03	19.47	23.93	28.50	33.23	37.93	42.93	48.23		54.18	6 / 2			
	reaction time	0.140															
	interval		4.20	4.36	4.44	4.46	4.57	4.73	4.70	5.00	5.30	5.95			13.00	13.76	15.00
	velocity	6.96	8.33	8.03	7.88	7.85	7.66	7.40	7.45	7.00	6.60	6.72	7.38		8.08	7.63	7.00
H1 lead leg	R						15	16	16	17	17	20	169				
Ryzhykova, Anna (UKR) (1989)	time	6.53	10.67	14.80	19.07	23.60	28.33	33.13	38.07	43.10	48.47		54.50	4 / 3			
	reaction time	0.187															
	interval		4.14	4.13	4.27	4.53	4.73	4.80	4.94	5.03	5.37	6.03			12.54	14.06	15.34
	velocity	6.89	8.45	8.47	8.20	7.73	7.40	7.29	7.09	6.96	6.52	6.63	7.34		8.37	7.47	6.84
H1 lead leg	R				14	14	15	15	15	15	16	19.5	159.5				
Nielsen, Lina (GBR) (1996)	time	6.40	10.53	14.83	19.23	23.80	28.50	33.40	38.40	43.50	48.70		54.73	9 / 4			
	reaction time	0.148															
	interval		4.13	4.30	4.40	4.57	4.70	4.90	5.00	5.10	5.20	6.03	PB		12.83	14.17	15.30
	velocity	7.03	8.47	8.14	7.95	7.66	7.45	7.14	7.00	6.86	6.73	6.63	7.31		8.18	7.41	6.86
H1 lead leg	L				23	15	15	16	16	16	16	19	182				
Clayton, Rushell (JAM) (1992)	time	6.43	10.50	14.67	19.00	23.47	28.20	33.03	38.00	43.20	48.60		54.80	7 / 5			
	reaction time	0.164															
	interval		4.07	4.17	4.33	4.47	4.73	4.83	4.97	5.20	5.40	6.20			12.57	14.03	15.57
	velocity	7.00	8.60	8.39	8.08	7.83	7.40	7.25	7.04	6.73	6.48	6.45	7.30		8.35	7.48	6.74
H1 lead leg	L				23	15	15	16	16	16	17	20	170				
Folorunso, Ayomide (ITA) (1996)	time	6.60	10.87	15.13	19.53	23.93	28.60	33.33	38.33	43.47	48.70		54.84	3 / 6			
	reaction time	0.192															
	interval		4.27	4.26	4.40	4.40	4.67	4.73	5.00	5.14	5.23	6.14			12.93	13.80	15.37
	velocity	6.82	8.20	8.22	7.95	7.95	7.49	7.40	7.00	6.81	6.69	6.51	7.29		8.12	7.61	6.83
H1 lead leg	L				23	15	15	16	16	16	17	20.5	170.5				
Tkachuk, Viktoriya (UKR) (1994)	time	6.43	10.60	14.93	19.30	23.83	28.50	33.30	38.33	43.60	49.03		55.37	8 / 7			
	reaction time	0.193															
	interval		4.17	4.33	4.37	4.53	4.67	4.80	5.03	5.27	5.43	6.34			12.87	14.00	15.73
	velocity	7.00	8.39	8.08	8.01	7.73	7.49	7.29	6.96	6.64	6.45	6.31	7.22		8.16	7.50	6.68
H1 lead leg	L				22	15	15	15	15	16	16	17	20	166			
Olivieri, Linda (ITA) (1998)	time	6.63	10.93	15.33		24.53	29.40	34.40	39.60	44.83	50.13		56.25	2 / 8			
	reaction time	0.150															
	interval		4.30	4.40		9.20	4.87	5.00	5.20	5.23	5.30	6.12					15.73
	velocity	6.79	8.14	7.95		7.61	7.19	7.00	6.73	6.69	6.60	6.54	7.11				6.68
H1 lead leg	R				23	15	15	15	17	17	17	149					
Giger, Yasmin (SUI) (1999)	time	6.53	10.83	15.30		24.70	29.57	34.60	39.70	45.13			56.52	1 / 9			
	reaction time	0.155															
	interval		4.30	4.47		9.40	4.87	5.03	5.10	5.43							
	velocity	6.89	8.14	7.83		7.45	7.19	6.96	6.86	6.45			7.08				
H1 lead leg	R				23	15	15	16	16	17		132					



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=iYFVaoe8BPc>

2022 Music City Track Carnival (Nashville, TN) (TV Analysis)

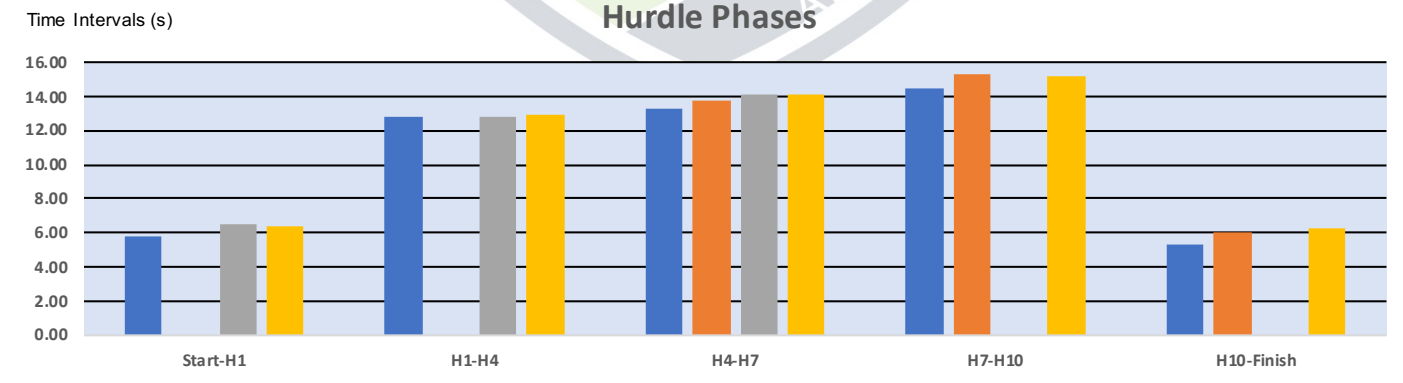
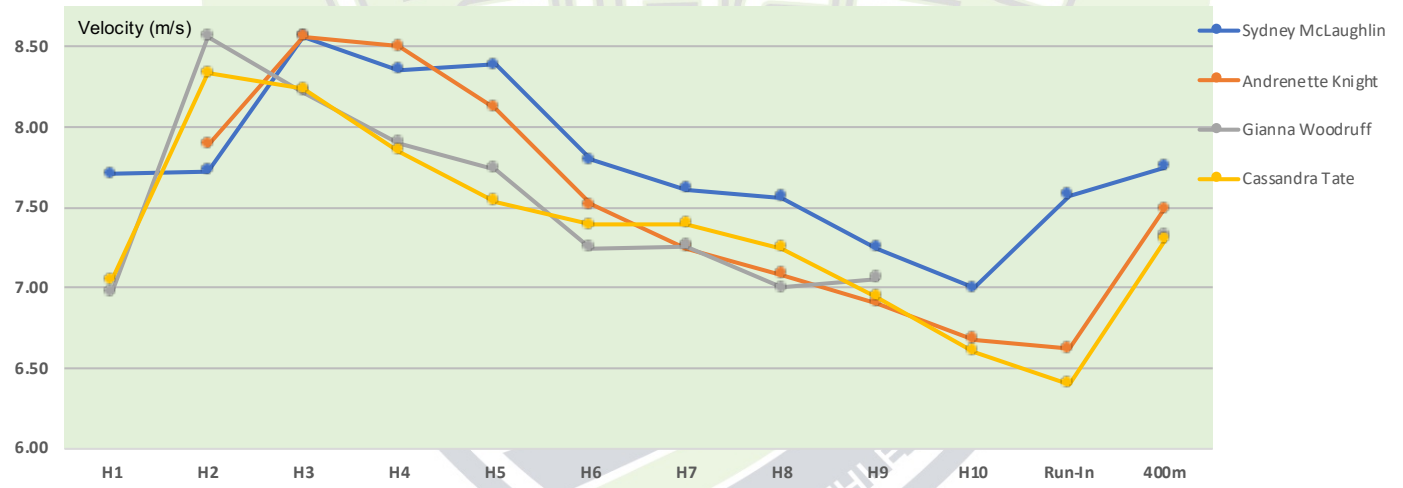
Women's 400m Hurdles

Date: 2022.06.05

(H5 5m long)

FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
McLaughlin, Sydney (USA) (1999)	time	5.84	10.37	14.46	18.65	23.42	27.27	31.87	36.50	41.33	46.33		51.61	5 / 1			
	reaction time		4.53	4.09	4.19	4.77	3.85	4.60	4.63	4.83	5.00	5.28			12.81	13.22	14.46
	velocity	7.71	7.73	8.56	8.35	8.39	7.79	7.61	7.56	7.25	7.00	7.58	7.75		8.20	7.94	7.26
	H1 lead leg strides		14	14	14	16	13	15	15		16		117				
Knight, Andrenette (JAM) (1996)	time		10.14	14.23	18.35	23.28	27.27	32.10	37.04	42.11	47.35		53.39	4 / 2			
	reaction time			4.09	4.12	4.93	3.99	4.83	4.94	5.07	5.24	6.04	PB			13.75	15.25
	velocity		7.89	8.56	8.50	8.11	7.52	7.25	7.09	6.90	6.68	6.62	7.49			7.64	6.89
	H1 lead leg strides			15	15	17	13	16	16		16		108				
Woodruff, Gianna (PAN) (1993)	time	6.45	10.54	14.80	19.23	24.40	28.54	33.36	38.36	43.32			54.63	6 / 3			
	reaction time		4.09	4.26	4.43	5.17	4.14	4.82	5.00	4.96						12.78	14.13
	velocity	6.98	8.56	8.22	7.90	7.74	7.25	7.26	7.00	7.06			7.32		8.22	7.43	
	H1 lead leg strides	23	15	15	15	17	13		16	16			130				
Tate, Cassandra (USA) (1990)	time	6.38	10.58	14.83	19.29	24.60	28.66	33.39	38.22	43.26	48.56		54.81	7 / 4			
	reaction time		4.20	4.25	4.46	5.31	4.06	4.73	4.83	5.04	5.30	6.25			12.91	14.10	15.17
	velocity	7.05	8.33	8.24	7.85	7.53	7.39	7.40	7.25	6.94	6.60	6.40	7.30		8.13	7.45	6.92
	H1 lead leg strides	21	14	14	14	17	13	15	15	15			138				



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1280 x 716 @ 30fps
 Timing From: Gun Flash
 Source: https://www.youtube.com/watch?v=eA-Okk_fs_k&t=12s

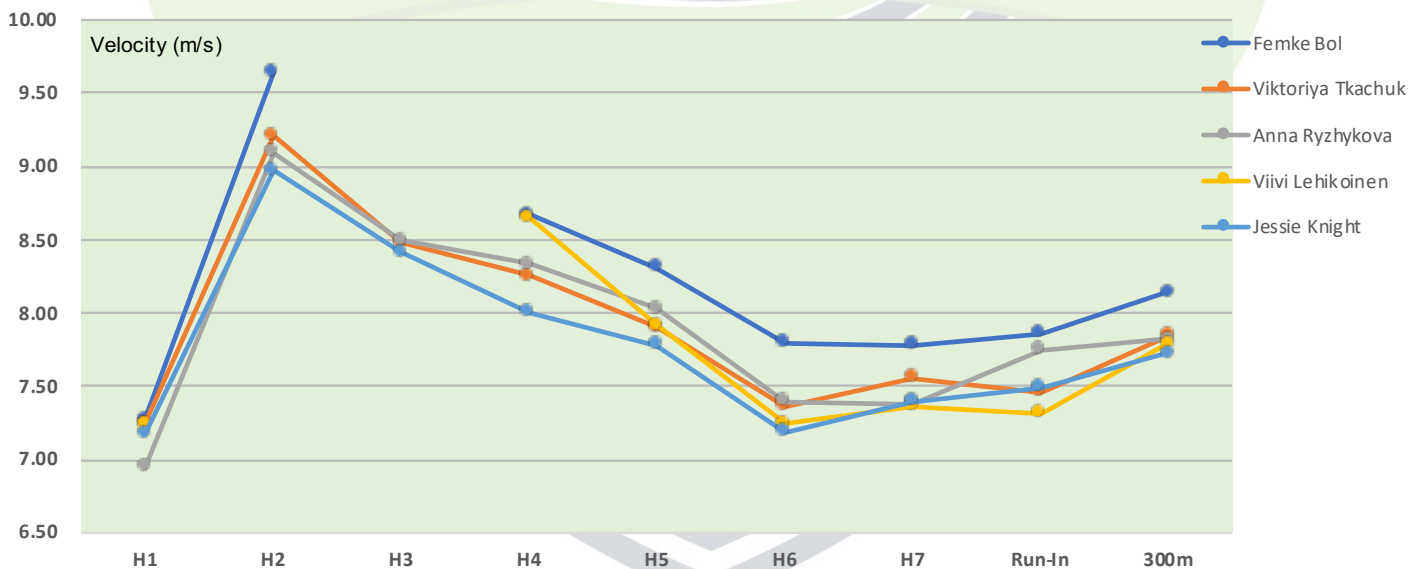
2022 Golden Spike (Ostrava, CZE) (300m Hurdles) (TV Analysis)

Women's 400m Hurdles

Date 2022.05.31

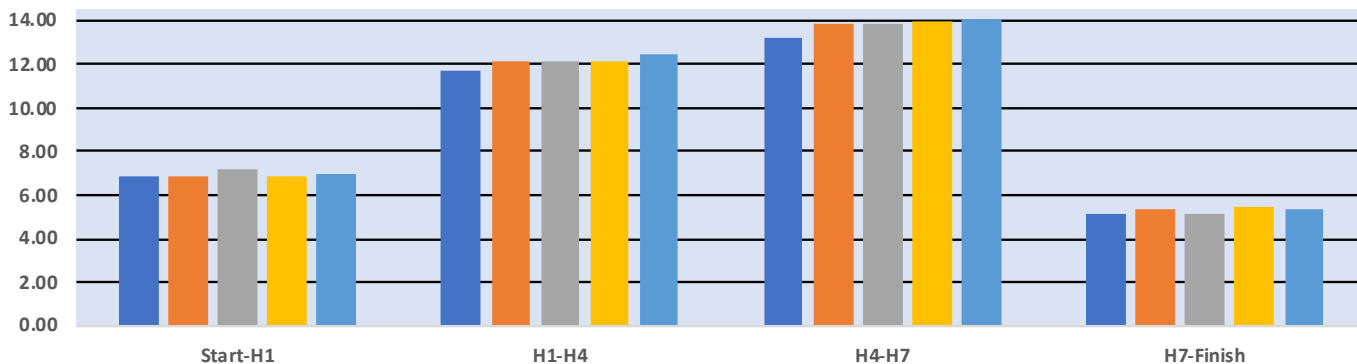
FINAL

		H1	H2	H3	H4	H5	H6	H7	Run-In	300m	Lane / Place	H1-H4	H4-H7	H7-H10
Bol, Femke (NED) (2000)	time	6.87	10.50		18.57	22.78	27.27	31.77		36.86	5 / 1			
	reaction time	0.215	3.63		8.07	4.21	4.49	4.50	5.09	WB PB		11.70	13.20	
	velocity	7.28	9.64		8.67	8.31	7.80	7.78	7.86	8.14		8.97	7.95	
	H1 lead leg	L	24	15			15	15	15	18.5	102.5			
Tkachuk, Viktoriya (UKR) (1994)	time	6.90	10.70	14.83	19.07	23.50	28.25	32.88		38.24	3 / 2			
	reaction time	0.246	3.80	4.13	4.24	4.43	4.75	4.63	5.36	NR PB		12.17	13.81	
	velocity	7.25	9.21	8.47	8.25	7.90	7.37	7.56	7.46	7.85		8.63	7.60	
	H1 lead leg	L	24	15	15	15	15	15	19	118				
Ryzhykova, Anna (UKR) (1989)	time	7.20	11.05	15.17	19.37	23.73	28.46	33.20		38.36	6 / 3			
	reaction time	0.208	3.85	4.12	4.20	4.36	4.73	4.74	5.16	PB		12.17	13.83	
	velocity	6.94	9.09	8.50	8.33	8.03	7.40	7.38	7.75	7.82		8.63	7.59	
	H1 lead leg	R	24	14		14	14		15	18	99			
Lehikoinen, Viivi (FIN) (1999)	time	6.90			19.03	23.45	28.28	33.03		38.50	7 / 4			
	reaction time	0.202			12.13	4.42	4.83	4.75	5.47	NR PB		12.13	14.00	
	velocity	7.25			8.66	7.92	7.25	7.37	7.31	7.79		8.66	7.50	
	H1 lead leg	R	26			16	16		16	19.7	93.7			
Knight, Jessie (GBR) (1994)	time	6.97	10.87	15.03	19.40	23.90	28.77	33.50		38.84	4 / 5			
	reaction time	0.170	3.90	4.16	4.37	4.50	4.87	4.73	5.34	NR PB		12.43	14.10	
	velocity	7.17	8.97	8.41	8.01	7.78	7.19	7.40	7.49	7.72		8.45	7.45	
	H1 lead leg	R	24	15	15	15	15	15	18.2	117.2				



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=VGSZ_MF2eqp

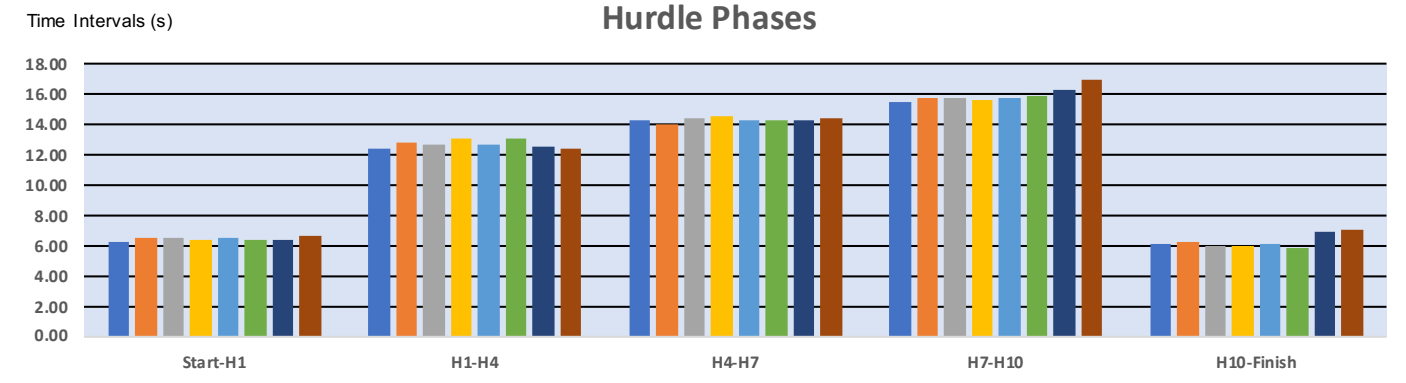
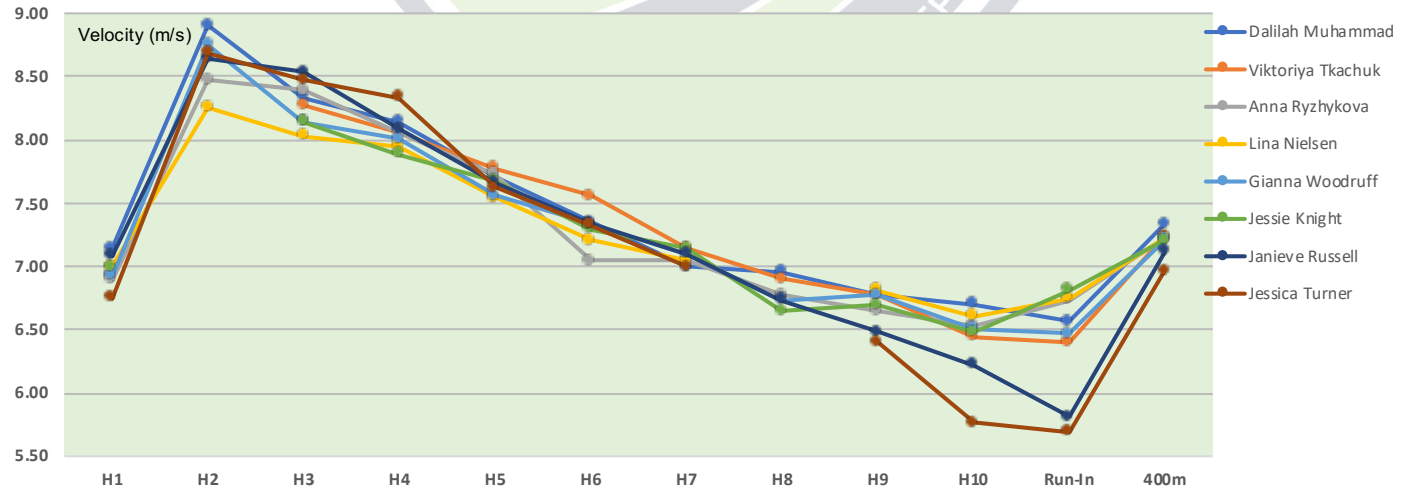
2022 Müller Birmingham Diamond League (Birmingham, GBR) (TV Analysis)

Women's 400m Hurdles

Date 2022.05.21

FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Muhammad, Dalilah (USA) (1990)	time	6.30	10.23	14.43	18.73	23.27	28.03	33.03	38.06	43.23	48.45		54.54	4 / 1			
	reaction time	0.160															
	interval		3.93	4.20	4.30	4.54	4.76	5.00	5.03	5.17	5.22	6.09			12.43	14.30	15.42
	velocity	7.14	8.91	8.33	8.14	7.71	7.35	7.00	6.96	6.77	6.70	6.57	7.33		8.45	7.34	6.81
H1 lead leg	R																
Tkachuk, Viktoriya (UKR) (1994)	time	6.50		14.96	19.30	23.80	28.43	33.33	38.40	43.57	49.00		55.25	3 / 2			
	reaction time	0.188															
	interval			8.46	4.34	4.50	4.63	4.90	5.07	5.17	5.43	6.25			12.80	14.03	15.67
	velocity	6.92		8.27	8.06	7.78	7.56	7.14	6.90	6.77	6.45	6.40	7.24		8.20	7.48	6.70
H1 lead leg	L																
Ryzhykova, Anna (UKR) (1989)	time	6.53	10.66	14.83	19.17	23.70	28.67	33.63	38.80	44.07	49.43		55.37	5 / 3			
	reaction time	0.173															
	interval		4.13	4.17	4.34	4.53	4.97	4.96	5.17	5.27	5.36	5.94			12.64	14.46	15.80
	velocity	6.89	8.47	8.39	8.06	7.73	7.04	7.06	6.77	6.64	6.53	6.73	7.22		8.31	7.26	6.65
H1 lead leg	R																
Nielsen, Lina (GBR) (1996)	time	6.43	10.67	15.03	19.43	24.07	28.93	33.90		44.17	49.47		55.40	8 / 4			
	reaction time	0.156															
	interval		4.24	4.36	4.40	4.64	4.86	4.97		10.27	5.30	5.93			13.00	14.47	15.57
	velocity	7.00	8.25	8.03	7.95	7.54	7.20	7.04		6.82	6.60	6.75	7.22		8.08	7.26	6.74
H1 lead leg	L																
Woodruff, Gianna (PAN) (1993)	time	6.50	10.50	14.80	19.17	23.80	28.57	33.50	38.70	43.87	49.25		55.43	7 / 5			
	reaction time	0.218															
	interval		4.00	4.30	4.37	4.63	4.77	4.93	5.20	5.17	5.38	6.18			12.67	14.33	15.75
	velocity	6.92	8.75	8.14	8.01	7.56	7.34	7.10	6.73	6.77	6.51	6.47	7.22		8.29	7.33	6.67
H1 lead leg	L																
Knight, Jessie (GBR) (1994)	time	6.43		15.03	19.47	24.03	28.83	33.73	39.00	44.23	49.63		55.50	2 / 6			
	reaction time	0.147															
	interval			8.60	4.44	4.56	4.80	4.90	5.27	5.23	5.40	5.87			13.04	14.26	15.90
	velocity	7.00		8.14	7.88	7.68	7.29	7.14	6.64	6.69	6.48	6.81	7.21		8.05	7.36	6.60
H1 lead leg	R																
Russell, Janieve (JAM) (1993)	time	6.35	10.40	14.50	18.83	23.40	28.17	33.10	38.30	43.70	49.33		56.21	6 / 7			
	reaction time	0.135															
	interval		4.05	4.10	4.33	4.57	4.77	4.93	5.20	5.40	5.63	6.88			12.48	14.27	16.23
	velocity	7.09	8.64	8.54	8.08	7.66	7.34	7.10	6.73	6.48	6.22	5.81	7.12		8.41	7.36	6.47
H1 lead leg	R																
Turner, Jessica (GBR) (1995)	time	6.67	10.70	14.83	19.03	23.62	28.40	33.40		44.33	50.40		57.43	9 / 8			
	reaction time	0.24															
	interval		4.03	4.13	4.20	4.59	4.78	5.00		10.93	6.07	7.03			12.36	14.37	17.00
	velocity	6.75	8.68	8.47	8.33	7.63	7.32	7.00		6.40	5.77	5.69	6.97		8.50	7.31	6.18
H1 lead leg	L																



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30fps
 Timing From: Gun Flash
 Source: <https://www.youtube.com/watch?v=MW6WgY1qkBs>